United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with the Oklahoma Agricultural Experiment Station and the Oklahoma Conservation Commission

Soil Survey of Greer County, Oklahoma

How To Use This Soil Survey

This survey 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. Also described is the use and management of the soils and the major soil properties. This data may be updated as further information about soil management becomes available.

The detailed soil map unit descriptions, when used in conjunction with 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 in this survey, 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.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 2004. Soil names and descriptions were approved in September 2005. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2004. This survey was made cooperatively by the Natural Resources Conservation Service, the Oklahoma Agricultural Experiment Station, and the Oklahoma Conservation Commission. It is part of the technical assistance furnished to the Greer County Conservation District.

Cover: Irrigated cotton on Tipton loam, 0 to 1 percent slopes.

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Summary of Tables

Foreword

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

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to 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 is available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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Soil Survey of Greer County, Oklahoma

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Natural Resources Conservation Service

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This soil survey updates the survey of Greer County published in 1967 *(7)*. It provides additional information and shows the soils in greater detail.

Greer County is in the southwestern part of Oklahoma (fig. 1). Adjacent counties are Harmon County on the west, Beckham County on the north, Kiowa County on the east, and Jackson County on the south. It has an area of 643 square miles, or 411,642 acres. Mangum, the county seat, is located is in the south-central part of the county.

General Nature of the Survey Area

This section provides general information about the survey area. It describes history; industry and transportation; physiography and drainage; natural resources; and climate.

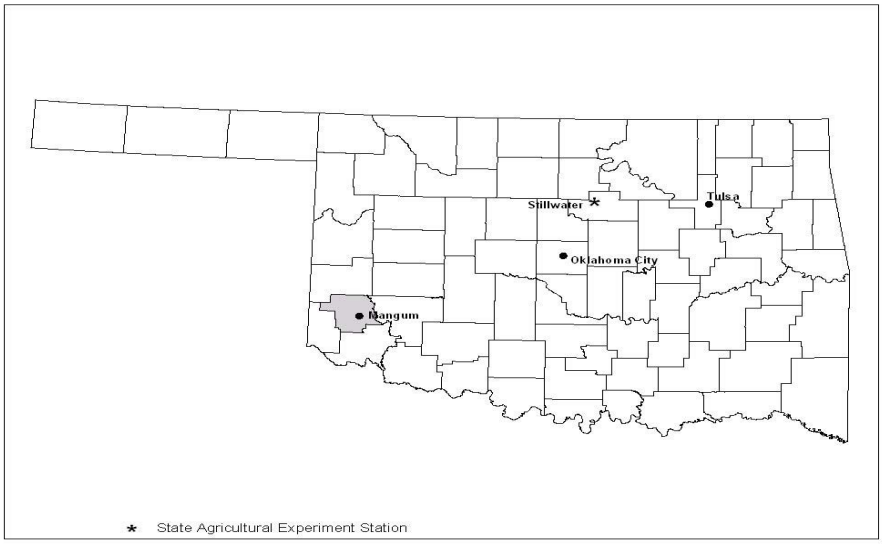

Figure 1.—Location of Greer County in Oklahoma.

History

Burna Cole, Museum of the Western Prairie, Altus, Oklahoma helped prepare this section.

From the time of Coronado's exploration of the plains of Texas, the Oklahoma Panhandle, and western Kansas in 1542, the area of present day Greer County has been fought over and in dispute between nations. The region was claimed by Spain as part of the "right of exploration" based on Coronado's expedition. France laid claim to the region also, as a "right of exploration," when in 1673, Father Marquette and Louis Jolliet followed the course of the Mississippi as far south as the Arkansas River and claimed the river and all its drainage for France. Following the French and Indian War, France ceded its territory west of the Mississippi River to Spain. Napoleon, however, negotiated for the return of the territory but then in 1803 sold the region as the Louisiana Purchase to the United States.

Always in dispute, first between the French and the Spanish, the boundaries became even more hotly contested when the more aggressive Americans became Spain's neighbors. France had told the United States it would receive the boundaries just as France had received them from Spain. It was bounded on the east by the Mississippi River, on the south by the Gulf of Mexico, on the west by the Sabine River, the Red River, the Arkansas River and the Continental Divide. But the Red River was a problematic boundary. In spite of the fact that Pedro Vial had mapped the Red River to its headwaters in the Palo Duro Canyon in 1785, several expeditions by the United States to locate the headwaters failed. The United States finally secured an accurate mapping of the river in 1852 by Captain Randolph Marcy and Captain George McCellan; however, they did mis-locate the 100th meridian at that time. The most southern and westerly flowing branch, known as the Prairie Dog branch was deemed by the United States as the boundary with Mexico. Mexico and later the Republic of Texas regarded the North Fork of the Red River to be the principal river bed and therefore the boundary. Texas proceeded to organize a county and named it Greer after John Greer, Lt. Governor of Texas.

Following the Civil War, John Lytle opened the Great Western Cattle Trail through the region. The trail was in use from 1874 until about 1888. An average of 300,000 head of cattle moved over the trail annually, along with approximately 7,000 horses and 1,000 men.

When President Harrison signed the Organic Act authorizing the organization of Oklahoma Territory in 1890, He also directed that suit be brought against Texas in the United States Supreme Court to settle once and for all the question of boundary and jurisdiction. In 1896, the Supreme Court found in favor of the United States and against Texas. A region containing 1.4 million acres of land was added to the Oklahoma Territory. At statehood in 1907, Old Greer County was divided into present day Greer, Harmon, Jackson, and the southern half of Beckham counties.

Settlement of Old Greer County was primarily emigration by Texans into the region. Cattle ranches such as the Cross-S, owned by the Eddleman brothers, Ikard-Harold Cattle, and Franklin Cattle all ran their livestock on the open plains, meanwhile nesters (squatters, sod-busters, and farmers) drifted into the area looking for a better future. Texas also had offered land to veterans of the Texas War of Independence from Mexico in 1836. One recipient of such a grant was Captain A. S. Mangum for whom the town of Mangum is named. Once the land became a part of the Oklahoma Territory, the United States Government allowed those in residence to file on 160 acre homesteads and the option to purchase an additional 160 acres.

Industry and Transportation

Greer County has adequate transportation facilities. U.S. Highway 283 and State Highway 34 extend north to south through the center of the county. State Highway 9

extends generally east to west through the center of the county. State Highway 6 extends along the eastern side of the county from north to south. Several county roads have been surfaced and are suitable for all-weather travel. An airport facility is located at Mangum.

Agriculture provides a major part of the income in Greer County. Cotton, peanuts, alfalfa, livestock, and related products are the principal sources.

The oil and gas industry also provide a source of income in the county. A granite quarry and state correctional facility are located in the town of Granite.

Physiography and Drainage

Greer County contains parts of three Major Land Resource Areas within its boundaries. The western part of the county is in the Central Rolling Red Plains—western part (78B). The remainder of the county is located in the Central Rolling Red Plains—eastern part (78C) with the exception of a small portion of the east-central part which is in the Wichita Mountains (82B).

Elevation ranges from 1,410 to 2,303 feet. The highest point in the county is located at the top of Walsh Mountain northwest of the town of Granite. The lowest point in the county is located at the southern boundary where the Salt Fork of the Red River leaves the county.

The relief in Greer County can be divided into four basic topographic types. The eastern and central parts of the county are characterized by nearly level and gently sloping alluvial terraces of fine and moderately fine textured soils. These soils are very productive and most are cultivated.

The western part of the county is characterized by nearly level to moderately sloping hills formed from the interbedded gypsum, dolomite, claystone, and sandstone of Permian age. This area contains karst topography that formed in gypsum and dolomite bedrock with numerous sinkholes. Most of the soils in this area were formed from the Permian bedrock or local alluvium and range from very shallow to very deep to bedrock. They are moderately productive but are susceptible to erosion when cultivated. Many acres in this area have been reseeded to native grass or tame pasture species.

The third type of relief is characterized by steep escarpments, rolling hills, and areas of badlands which runs generally from north to south through the central part of the county. This area is a transitional zone from the rolling uplands in the west to the alluvial terraces in the east. The soils in this region are generally clayey and range from shallow to very deep to bedrock. These soils have low to moderate productivity and are susceptible to erosion when cultivated.

The fourth type occurs in the eastern and southwestern parts of the county. These areas are characterized by gently sloping to steep sand dunes and very gently sloping alluvial terraces. The soils in this area are mainly very deep loamy or sandy soils formed in alluvial or windblown sediments and range from low to moderately high productivity.

The entire county is located in the Red River Basin and the general drainage pattern is from west to east in the western part of the county and north to south in the eastern part of the county. There are three major rivers and several smaller streams that comprise the drainage of Greer County. The North Fork of the Red River flows generally from north to south, is the eastern boundary of the county, and flows into the Red River. The Salt Fork of the Red River flows from west to east in the southern part of the county to about Mangum then turns and flows south into the Red River. The Elm Fork of the River flows from west to east through the central part of the county and flows into the North Fork of the Red River just below Lake Altus.

There are several smaller tributaries which flow into the larger rivers. Deer Creek and Haystack Creek drain the northwestern part of the county and flow into the Elm

Fork River. Lake Creek drains the northeastern part of the county and flows into the North Fork of the Red River. Russell Hollow Creek drains the southwestern part of the county and flows south into Jackson County where it joins the Salt Fork of the Red River.

Natural Resources

The natural resources of the county are mainly soil, water, petroleum products, and scenic beauty.

The soil and available water are the most important natural resources of the county. A large acreage in the county is productive and has a high potential for native grasses and for cotton, peanuts, and alfalfa. Rangeland makes up about forty percent of the county. In the past, overgrazing and erosion damaged much of the rangeland. Proper management can increase the production of native grasses.

Irrigation has become an important factor in the production of agricultural crops in Greer County. Approximately 11,740 acres are irrigated or have the potential for irrigation in Greer County with cotton, alfalfa, and peanuts being the main crops. Water for irrigation in Greer County comes mainly from two sources, Lake Altus and underground wells.

Lake Altus via a system of canals managed by the Lugert-Altus Irrigation District, supplies water to approximately 46,000 acres between the Salt and North Forks of the Red River. Approximately 2,517 acres of this is located in southeastern Greer County. Most of the water from the Lugert-Altus Irrigation District is applied by canals and furrows.

Wells supply water for irrigation from underground aquifers located in sand and gravel deposits along some of the major streams and rivers in the county. Generally, these aquifers supply water with high enough quality for human or livestock consumption. Well water is applied by both furrow and sprinkler systems. The number of center-pivot sprinkler systems has been increasing because they require less labor and increase water efficiency

Oil and gas wells have been drilled and are operating in the county. Gypsum beds outcrop in the northwest and southwestern parts, and some areas are mined for road gravel.

Greer County is rich in scenic beauty. It has granite mountains in the eastern part of the county, grass-covered sand dunes in the northeastern part of the county coupled with highly dissected canyons and small buttes in the northwestern and southwestern parts.

Climate

Prepared by the Natural Resources Conservation Service, National Water and Climate Center, Portland, Oregon.

The climate tables were created using data from the climate station at Mangum Research Station, Oklahoma.

Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from First Order station Amarillo, Texas.

The table, “Temperature and Precipitation,” provides data on temperature and precipitation for the survey area as recorded at Mangum Research Station in the period 1971 to 2000. The table, “Freeze Dates in Spring and Fall,” shows probable dates of the first freeze in fall and the last freeze in spring. The table, “Growing Season,” provides data on the length of the growing season.

In winter, the average temperature is 41.1 degrees F and the average daily minimum temperature is 27.6 degrees. The lowest temperature on record, which occurred at Mangum Research Station on December 23, 1989, was -11 degrees. In summer, the average temperature is 81.7 degrees and the average daily maximum

temperature is 96.0 degrees. The highest temperature, which occurred at Mangum Research Station on July 3, 1980, was 117 degrees.

Growing degree days are shown in the table, “Temperature and Precipitation.” They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The average annual total precipitation is 27.91 inches. Of this, about 21.9 inches, or 78 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 6.45 inches at Mangum Research Station on October 20, 1983. Thunderstorms occur on about 49 days each year, and most occur between May and August.

The average seasonal snowfall is 3.2 inches. The greatest snow depth at any one time during the period of record was 8 inches recorded on February 10, 1986. On an average, about 1 day per year has at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 7.0 inches recorded on March 10, 1948.

The average relative humidity in mid-afternoon is about 40 percent. Humidity is higher at night, and the average at dawn is about 73 percent. The sun shines 78 percent of the time in summer and 69 percent in winter. The prevailing wind is from the south or southwest. Average wind speed is highest, between 15 and 16 miles per hour, in March and April.

Temperature and Precipitation

(Recorded in the period 1971-2000 at Mangum Research Station, Oklahoma)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January	51.7	25.2	38.5	79	2	11	0.90	0.24	1.66	1	1.3
February	58.6	30.0	44.3	84	4	50	1.16	0.33	2.23	2	0.9
March	68.3	38.0	53.1	93	16	173	1.71	0.79	2.84	3	0.0
April	77.4	46.2	61.8	97	26	367	2.25	0.82	3.72	3	0.0
May	84.7	56.9	70.8	103	38	643	4.65	1.83	7.02	5	0.0
June	93.0	65.4	79.2	108	51	881	4.20	1.94	6.14	5	0.0
July	98.3	69.2	83.7	110	58	1,047	2.22	0.47	3.71	3	0.0
August	96.6	67.9	82.3	108	56	996	2.73	0.87	4.42	3	0.0
September	88.5	60.7	74.6	104	38	730	3.14	0.90	5.36	4	0.0
October	78.1	49.0	63.5	98	27	427	2.67	0.74	4.37	3	0.0
November	63.5	36.9	50.2	85	16	116	1.22	0.56	2.04	2	0.0
December	53.3	27.7	40.5	77	5	18	1.07	0.22	1.80	2	0.9
Yearly:											
Average	76.0	47.8	61.9	---	---	---	---	---	---	---	---
Extreme	117	-11	---	112	-2	---	---	---	---	---	---
Total	---	---	---	---	---	5,459	27.91	22.28	32.79	36	3.2

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

Freeze Dates in Spring and Fall

(Recorded in the period 1971-2000 at Mangum Research Station, Oklahoma)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 29	April 11	April 13
2 years in 10 later than--	March 21	April 4	April 10
5 years in 10 later than--	March 7	March 23	April 5
First freezing temperature in fall:			
1 year in 10 earlier than--	October 29	October 23	October 12
2 years in 10 earlier than--	November 6	October 29	October 19
5 years in 10 earlier than--	November 22	November 9	November 1

Growing Season

(Recorded for the period 1971-2000 at Mangum Research Station, Oklahoma)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	226	204	188
8 years in 10	237	213	195
5 years in 10	258	230	208
2 years in 10	279	247	222
1 year in 10	290	256	229

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

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

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

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

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

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

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

The descriptions, names, and delineations of the soils in this survey area may not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas.

Formation of the Soils

This section describes the factors of soil formation and how they relate to the soils in Greer County.

Factors of Soil Formation

Soil is produced by the action of soil-forming processes on materials deposited or accumulated by geologic agents. The characteristics of the soil at any given point are determined by the physical and mineralogical composition of the parent material; the climate under which the soil material has accumulated and existed since accumulation; living organisms on and in the soil; topography, or relief; and the length of time that the forces of soil development have acted on the soil material.

Parent Material

Parent material influences the chemical, physical, mineral composition, and color of the soil; whether the parent material is unconsolidated or consolidated; and the degree of consolidation influence the rate of soil formation.

Soils on the uplands in Greer County formed in material weathered from sandstone, clay, shale, gypsum, and dolomite.

Alluvial sediment is extensive along the streams and rivers in the county. The kind of sediment deposited and the kinds of soil that formed in it depend largely on the source of the sediment and the velocity of the streams.

Climate

Greer County has a dry, subhumid climate. The climate is fairly uniform throughout the county; differences between soils cannot be attributed to differences in climate based on the present climatic regime. The temperatures and amount of moisture have been sufficient to promote the formation of distinct layers in many of the soils. Soil leaching is slow to moderate. The physical abrasion and redistribution of materials by wind action contributes to soil formation. Cold temperatures occur often enough and long enough for freezing and thawing to alter materials.

Living Organisms

Plants, burrowing animals, insects, and microorganisms have a direct influence on the formation of soils. Differences among native grasses and woody plants in the county have resulted in differential losses and gains of organic matter and plant nutrients and indifferences in soil structure and porosity. Soils that formed under prairie vegetation, such as those of the Roark and Tipton series, have a dark grayish brown surface layer and a moderately high content of organic matter. Soils that formed under woody vegetation, such as those of the Devol series, have a brown surface layer and a low content of organic matter.

Topography

Relief influences the formation of the soils mainly by affecting water movement, erosion, soil temperature, and kind of plant cover. In Greer County, the resistance of underlying formations to weathering and geological erosion determines relief. The topography of the western part of Greer County is gently rolling uplands with very gently sloping to moderately sloping hills. The soils formed on summits and shoulders of hills are generally very shallow to moderately deep to bedrock. The soils formed on side and foot slopes are generally deep or very deep to bedrock. The eastern part of Greer County is nearly level to very gently sloping terraces with occasional low hills. The soils are generally very deep to bedrock, except on the summits and shoulders of hills, which are moderately deep or deep to bedrock. A transitional zone between these areas is characterized by steep rock escarpments and areas of badlands.

Time

As a factor in soil formation, time is difficult to measure strictly in years. The length of time needed for development of genetic horizons depends on the intensity and the interactions of the soil-forming factors in promoting the losses, gains, transfers, or transformations of the constituents necessary in the formation of soil horizons. Soils that have no definite genetic horizons are young or immature. Mature or older soils have approached equilibrium with their environment and tend to have well defined horizons.

The soils in Greer County range from young to old. Hollister and Tillman soils are examples of old soils. Grandfield soils are younger, but they have well expressed horizons. Lincoln and Gracemont soils are young soils that formed in recent sediments on flood plains and show little horizon development.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. “Classification of the Soils,” shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Twelve soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in sol. An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Fluvent (Fluv, meaning flood plain, plus ent, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Ustifluvents (Usti, meaning dryness, plus fluvent, the suborder of Entisols that occurs on flood plains).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective Typic identifies the subgroup that typifies the great group. An example is Typic Ustifluvents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineralogy class, cation-exchange activity class, soil temperature regime, soil depth, and reaction class. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is sandy, mixed, thermic Typic Ustifluvents.

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

Descriptions of the soils are available in the “Official Series Descriptions,” which are online at **http://soils.usda.gov.** Characteristics of the soil and the material in which it formed are identified for each soil series. A pedon, a small three-dimensional area of soil, which is typical of the series, is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(3)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(5)*.

Classification of the Soils

A '*' in the first column indicates that the component kind is a taxadjunct to the series. A '%' in the first column indicates that the component kind is a miscellaneous area. A '&' in the first column indicates that the component kind is a family. (See text for a description of those characteristics that are outside the range of the series)

Component name	Family or higher taxonomic class
Acme	Fine-silty, mixed, superactive, thermic Gypsic Calciustolls
Altus	Fine-loamy, mixed, superactive, thermic Pachic Argiustolls
Arnett	Fine-loamy, mixed, active, thermic Typic Haplustalfs
Aspermont	Fine-silty, mixed, active, thermic Typic Calciustepts
%Badland	
Beckman	Fine, mixed, active, thermic Fluventic Haplustepts
Brico	Clayey-skeletal, mixed, active, thermic Typic Argiustolls
Bukreek	Fine-loamy, mixed, superactive, thermic Typic Paleustolls
Burford	Fine-silty, mixed, superactive, thermic Typic Haplustepts
Carey	Fine-silty, mixed, superactive, thermic Typic Argiustolls
Carwile	Fine, mixed, superactive, thermic Typic Argiaquolls
Clairemont	Fine-silty, mixed, superactive, calcareous, thermic Typic Ustifluvents
Cottonwood	Loamy, mixed, superactive, calcareous, thermic Lithic Ustorthents
%Dam	
Deepwood	Coarse-silty, mixed, superactive, thermic Typic Haplustepts
Delwin	Fine-loamy, mixed, active, thermic Typic Paleustalfs
Devol	Coarse-loamy, mixed, superactive, thermic Typic Haplustalfs
Dodson	Fine, smectitic, thermic Pachic Argiustolls
Duke	Fine, mixed, active, thermic Sodic Haplusterts
Eastall	Fine, smectitic, thermic Ustic Epiaquerts
Eda	Mixed, thermic Lamellic Ustipsamments
Ezell	Sandy, mixed, thermic Aeric Fluvaquents
Farry	Fine-loamy, mixed, superactive, thermic Typic Argiustolls
Frankirk	Fine, mixed, superactive, thermic Typic Argiustolls
Gotebo	Coarse-silty, mixed, active, thermic Typic Haplustepts
Gracemont	Coarse-loamy, mixed, superactive, calcareous, thermic Oxyaquic Udifluvents
Gracemore	Sandy, mixed, thermic Oxyaquic Udifluvents
Grandfield	Fine-loamy, mixed, superactive, thermic Typic Haplustalfs
Grandmore	Fine-loamy, mixed, active, thermic Typic Haplustalfs
Hardeman	Coarse-loamy, mixed, superactive, thermic Typic Haplustepts
Harmon	Loamy-skeletal, carbonatic, thermic, shallow Typic Ustorthents
Hayfork	Fine, mixed, active, thermic Pachic Haplustolls
Headrick	Fine-loamy, mixed, active, thermic Oxyaquic Haplustalfs
Heatly	Loamy, mixed, active, thermic Arenic Paleustalfs
Hollister	Fine, smectitic, thermic Typic Haplusterts
Jester	Mixed, thermic Typic Ustipsamments
Knoco	Clayey, mixed, active, calcareous, thermic, shallow Aridic Ustorthents
La Casa	Fine, mixed, superactive, thermic Typic Argiustolls
*Lawton	Fine, mixed, superactive, thermic Pachic Argiustolls
Lawton	Fine, mixed, superactive, thermic Typic Argiustolls
Lincoln	Sandy, mixed, thermic Typic Ustifluvents
Madge	Fine-loamy, mixed, superactive, thermic Typic Argiustolls
McKnight	Fine-loamy, mixed, active, thermic Typic Haplustalfs
Nipsum	Fine, mixed, superactive, thermic Cumulic Haplustolls
Nobscot	Loamy, mixed, superactive, thermic Arenic Paleustalfs
Oakley	Fine-loamy, mixed, active, thermic Typic Calciustolls
Ozark	Fine-loamy, mixed, active, thermic Typic Argiustolls
%Pits	
Quanah	Fine-silty, mixed, superactive, thermic Typic Calciustolls
Quinlan	Loamy, mixed, superactive, thermic, shallow Typic Haplustepts
Retrop	Fine-silty, mixed, superactive, calcareous, thermic Oxyaquic Udifluvents
Roark	Fine, mixed, superactive, thermic Pachic Argiustolls
%Rock outcrop	
Rups	Fine-silty, mixed, superactive, thermic Oxyaquic Haplustolls
Shrewder	Coarse-loamy, mixed, superactive, thermic Typic Haplustepts
Southside	Mixed, thermic Typic Ustipsamments

Classification of the Soils--Continued

Component name	Family or higher taxonomic class
Spikebox	Loamy, mixed, active, thermic, shallow Typic Haplustepts
Springer	Coarse-loamy, mixed, superactive, thermic Typic Paleustalfs
Spur	Fine-loamy, mixed, superactive, thermic Fluventic Haplustolls
Talpa	Loamy, mixed, superactive, thermic Lithic Calciustolls
Tillman	Fine, mixed, superactive, thermic Vertic Paleustolls
Tilvern	Fine, mixed, active, thermic Vertic Haplustepts
Tipton	Fine-loamy, mixed, superactive, thermic Pachic Argiustolls
Treadway	Fine, mixed, semiactive, thermic Gypsic Haplustepts
&Unnamed	Fine-loamy, gypsic, thermic Gypsic Haplustepts
Vernon	Fine, mixed, active, thermic Typic Haplustepts
Vinson	Fine-silty, mixed, superactive, thermic Entic Haplustolls
%Water	
Westill	Fine, mixed, active, thermic Vertic Argiustolls
Westola	Coarse-loamy, mixed, superactive, calcareous, thermic Typic Ustifluvents
Willow	Fine-silty, mixed, superactive, thermic Typic Argiustolls
Woodward	Coarse-silty, mixed, superactive, thermic Typic Haplustepts

Detailed Soil Map Units

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

A map unit delineation on the detailed soil maps represents an area on the landscape and consists of one or more soils or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, are mapped without areas of minor components of other taxonomic classes. Consequently, map units are made up of the soils or miscellaneous areas for which they are named and some areas of included soils that belong to other taxonomic classes.

Most soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting or similar soils. They may or may not be mentioned in the map unit description. Other soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting or dissimilar, minor components. They generally are in small areas and could not be mapped separately because of the scale used. Descriptions of the soils are available in the “Official Series Descriptions,” which are online at **http://soils.usda.gov.** Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The areas of minor soils or miscellaneous areas are mentioned in the map unit descriptions. A few areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

Soils of one series can differ in texture of the surface layer or of the underlying layers. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Aspermont silt loam, 3 to 5 percent slopes, is a phase of the Aspermont series.

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

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Burford-Spikebox outcrop complex, 3 to 12 percent slopes, is an example.

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

The table, “Acreage and Proportionate Extent of the Soils,” provides the acreage and proportionate extent of each map unit. Other tables (see “Summary of Tables”) show properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
AceB	Acme silt loam, 0 to 2 percent slopes	1,140	0.3
ArHF	Arnett-Hardeman complex, 3 to 15 percent slopes	669	0.2
ArnB	Arnett sandy loam, 1 to 3 percent slopes	309	*
ArnC	Arnett sandy loam, 3 to 5 percent slopes	4,113	1.0
AsmB	Aspermont silt loam, 1 to 3 percent slopes	3,848	0.9
AsmC	Aspermont silt loam, 3 to 5 percent slopes	6,117	1.5
BekA	Beckman silty clay, 0 to 1 percent slopes, occasionally flooded	9,177	2.2
BfdB	Burford loam, 1 to 3 percent slopes	2,650	0.6
BfdC	Burford loam, 3 to 5 percent slopes	1,217	0.3
BfSC2	Burford-Spikebox complex, 3 to 5 percent slopes, eroded	3,945	1.0
BfSE	Burford-Spikebox complex, 3 to 12 percent slopes	7,551	1.8
BriE	Brico cobbly loam, 3 to 12 percent slopes	514	0.1
BukA	Bukreek loam, 0 to 1 percent slopes	366	*
CarB	Carey loam, 1 to 3 percent slopes	355	*
CawA	Carwile fine sandy loam, 0 to 1 percent slopes, frequently ponded	60	*
CVRD	Cottonwood-Vinson-Rock outcrop complex, 1 to 8 percent slopes	12,894	3.1
DAM	Large dam	99	*
DeSD	Devol and Springer loamy sands, 3 to 8 percent slopes	5,374	1.3
DkuA	Duke silty clay, 0 to 1 percent slopes, occasionally flooded	2,290	0.6
DodA	Dodson loam, 0 to 1 percent slopes	6,010	1.5
DodB	Dodson loam, 1 to 3 percent slopes	1,096	0.3
EatA	Eastall silty clay, 0 to 1 percent slopes, frequently ponded	200	*
EdsB	Eda sand, 0 to 3 percent slopes	1,206	0.3
EdsD	Eda sand, 3 to 8 percent slopes	7,076	1.7
EdsF	Eda sand, 8 to 15 percent slopes	4,305	1.0
FraB	Frankirk loam, 1 to 3 percent slopes	2,254	0.5
FryB	Farry loam, 1 to 3 percent slopes	1,019	0.2
GdfB	Grandfield fine sandy loam, 1 to 3 percent slopes	1,641	0.4
GlGB	Grandmore and Grandfield loamy sands, 0 to 3 percent slopes	24,252	5.9
GlsB	Grandfield loamy sand, 0 to 3 percent slopes	6,681	1.6
GlsD	Grandfield loamy sand, 3 to 8 percent slopes	2,863	0.7
GmuA	Gracemont fine sandy loam, saline, 0 to 1 percent slopes, occasionally flooded	976	0.2
GmwA	Gracemont fine sandy loam, saline, 0 to 1 percent slopes, frequently flooded	915	0.2
GrrA	Gracemore clay loam, saline, 0 to 1 percent slopes, occasionally flooded	983	0.2
GtbB	Gotebo loam, 1 to 3 percent slopes	1,694	0.4
HdmB	Hardeman fine sandy loam, 1 to 3 percent slopes	2,948	0.7
HdmC	Hardeman fine sandy loam, 3 to 5 percent slopes	2,357	0.6
HfkA	Hayfork silty clay loam, 0 to 1 percent slopes, rarely flooded	999	0.2
HksA	Headrick loamy sand, 0 to 1 percent slopes	1,685	0.4
HolA	Hollister silty clay loam, 0 to 1 percent slopes	21,475	5.2
HrAC	Harmon-Aspermont complex, 1 to 5 percent slopes	167	*
HSAF	Hardeman-Southside-Arnett complex, 3 to 20 percent slopes	11,310	2.7
JesC	Jester fine sand, 1 to 5 percent slopes	1,908	0.5
KcRG	Knoco soils and Rock outcrop, 12 to 40 percent slopes	21,062	5.1
KoBE	Knoco-Badland complex, 1 to 12 percent slopes	12,737	3.1
KRCF	Knoco, Rock outcrop, and Cottonwood soils, 2 to 20 percent slopes	7,230	1.8
LacB	La Casa silty clay loam, 1 to 3 percent slopes	6,853	1.7
LnuA	Lincoln loamy sand, 0 to 1 percent slopes, occasionally flooded	2,932	0.7
LnWA	Lincoln and Westola soils, 0 to 1 percent slopes, frequently flooded	6,051	1.5
LwtA	Lawton loam, 0 to 1 percent slopes	3,386	0.8
LwtB	Lawton loam, 1 to 3 percent slopes	2,726	0.7
LwtC2	Lawton loam, 3 to 5 percent slopes, eroded	608	0.1
M-W	Miscellaneous water	96	*
MagB	Madge loam, 1 to 3 percent slopes	4,724	1.1
MdgB	Madge fine sandy loam, 1 to 3 percent slopes	7,482	1.8
MknB	McKnight fine sandy loam, 1 to 3 percent slopes	1,210	0.3
MktB	McKnight loamy fine sand, 0 to 3 percent slopes	2,702	0.7

See footnote at end of table.

Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
MktC2	McKnight loamy fine sand, 3 to 5 percent slopes, eroded	4,615	1.1
NpsB	Nipsum silty clay loam, 0 to 2 percent slopes	1,347	0.3
NstC	Nobscot sand, 2 to 5 percent slopes	4,155	1.0
OakA	Oakley loam, 0 to 1 percent slopes	941	0.2
OakB	Oakley loam, 1 to 3 percent slopes	1,315	0.3
OzkA	Ozark fine sandy loam, 0 to 1 percent slopes	3,733	0.9
PIT	Pits	477	0.1
QhTC	Quanah-Talpa complex, 1 to 5 percent slopes	203	*
QnRG	Quinlan-Rock outcrop complex, 12 to 45 percent slopes	504	0.1
RakA	Roark loam, 0 to 1 percent slopes	10,087	2.5
RKBG	Rock outcrop-Brico complex, 8 to 50 percent slopes	1,152	0.3
RKO	Rock outcrop, granite	2,447	0.6
RuuA	Rups silty clay loam, 0 to 1 percent slopes, occasionally flooded	831	0.2
RuwA	Rups silty clay loam, 0 to 1 percent slopes, frequently flooded	820	0.2
SKRG	Spikebox-Knoco-Rock outcrop complex, 12 to 40 percent slopes	1,321	0.3
SpDB	Springer and Devol loamy sands, 0 to 3 percent slopes	10,622	2.6
SplA	Spur loam, 0 to 1 percent slopes, occasionally flooded	2,756	0.7
SurA	Spur clay loam, 0 to 1 percent slopes, rarely flooded	3,107	0.8
SuuA	Spur clay loam, 0 to 1 percent slopes, occasionally flooded	12,388	3.0
SuwA	Spur clay loam, 0 to 1 percent slopes, frequently flooded	5,816	1.4
TARD	Talpa-Aspermont-Rock outcrop complex, 1 to 8 percent slopes	5,949	1.4
TilA	Tillman clay loam, 0 to 1 percent slopes	1,277	0.3
TilB	Tillman clay loam, 1 to 3 percent slopes	4,407	1.1
TipA	Tipton loam, 0 to 1 percent slopes	7,825	1.9
TlvB	Tilvern clay loam, 1 to 3 percent slopes	4,947	1.2
TpfA	Tipton fine sandy loam, 0 to 1 percent slopes	3,872	0.9
TrwB	Treadway silty clay loam, 0 to 2 percent slopes	2,707	0.7
VeKE	Vernon-Knoco complex, 1 to 12 percent slopes	12,909	3.1
VerC	Vernon clay loam, 3 to 5 percent slopes	3,609	0.9
VeTE	Vernon-Talpa complex, 1 to 12 percent slopes, stony	5,005	1.2
W	Water	5,554	1.3
WlwB	Willow loam, 1 to 3 percent slopes	4,877	1.2
WooB	Woodward loam, 1 to 3 percent slopes	925	0.2
WooC	Woodward loam, 3 to 5 percent slopes	1,256	0.3
WoQE	Woodward-Quinlan complex, 5 to 12 percent slopes	2,067	0.5
WslA	Westola fine sandy loam, 0 to 1 percent slopes, occasionally flooded	6,374	1.5
WstA	Westola fine sandy loam, 0 to 1 percent slopes, rarely flooded	910	0.2
WtlA	Westill clay loam, 0 to 1 percent slopes	3,292	0.8
WtlB	Westill clay loam, 1 to 3 percent slopes	16,736	4.1
	Total	411,642	100.0

* Less than 0.1 percent.

AceB—Acme silt loam, 0 to 2 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 5 to 250 acres
Note: A fluctuating water table affects this map unit in years of average or above average precipitation.

Component Description

Acme
Composition: 85 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium
Slope: 0 to 2 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 8.4 inches
Depth to the top of the seasonal high water table: 4.0 to 6.0
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078BY079TX Loamy PE 25-36

Typical profile:
Ap—0 to 12 inches; silt loam
Bk—12 to 24 inches; silty clay loam
Bky1—24 to 44 inches; gypsiferous loam
Bky2—44 to 55 inches; gypsiferous loam
BCy—55 to 80 inches; gypsiferous loam

Representative profile location: Greer County, Oklahoma; 300 feet south and 2,300 feet west of the northeast corner of Section 2, T.6 N., R.24 W. Latitude—35 degrees, 1 minutes, 39.43 seconds N; Longitude—99 degrees, 42 minutes, 16.07 seconds W. (NAD83) USGS Quadrangle: Plainview.

Additional Components

Unnamed: 10 percent
Hollister: 5 percent

ArHF—Arnett-Hardeman complex, 3 to 15 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 20 to 2,000 acres
Note: Areas of this map unit have been mined for gravel that was used for roadbed material.

Component Description

Arnett
Composition: 45 percent
Geomorphic setting: Stream terrace on valley
Position on landform: Riser
Parent material: Loamy alluvium over gravelly alluvium
Slope: 3 to 8 percent
Runoff: Medium
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 8.8 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 4e
Ecological site number and name: R078CY110TX Sandy Loam Prairie PE 31-44

Typical profile:
A—0 to 15 inches; sandy loam
Bt—15 to 40 inches; sandy clay loam
2Bt—40 to 58 inches; gravelly sandy clay loam
2BC—58 to 80 inches; gravelly coarse sandy loam

Representative profile location: Jackson County, Oklahoma; 100 feet north and 170 feet east of the southwest corner of Section 20, T.4 N., R.19 W. Latitude—34 degrees, 47 minutes, 53 seconds N; Longitude—99 degrees, 12 minutes, 45 seconds W. USGS Quadrangle: Warren.

Hardeman
Composition: 40 percent
Geomorphic setting: Stream terrace on valley
Position on landform: Riser
Parent material: Coarse-loamy alluvium and eolian deposits
Slope: 3 to 15 percent
Runoff: Low
Depth: Greater than 60 inches

Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately rapid
Slowest permeability class within 80 inches: Moderately rapid
Drainage class: Well drained
Available water capacity: About 7.7 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078CY110TX Sandy Loam Prairie PE 31-44

Typical profile:
A—0 to 7 inches; fine sandy loam
Bw—7 to 40 inches; fine sandy loam
Bk—40 to 60 inches; loam
BCk—60 to 80 inches; fine sandy loam

Representative profile location: Jackson County, Oklahoma; 2,520 feet north and 2,600 feet west of the southeast corner of Section 31, T.3 N., R.18 W. Latitude—34 degrees, 41 minutes, 19 seconds N; Longitude—99 degrees, 07 minutes, 53 seconds W. USGS Quadrangle: Headrick.

Additional Components

Southside: 10 percent
Westola: 5 percent

ArnB—Arnett sandy loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Arnett
Composition: 85 percent
Geomorphic setting: Terrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium over gravelly alluvium
Slope: 1 to 3 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 7.9 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078CY110TX Sandy Loam Prairie PE 31-44

Typical profile:
Ap—0 to 4 inches; sandy loam
Bt—4 to 21 inches; sandy clay loam
2Btk—21 to 50 inches; gravelly sandy clay loam
2BCk—50 to 67 inches; gravelly clay loam

Representative profile location: Jackson County, Oklahoma; 1,450 feet south and 2,300 feet east of the northwest corner of Section 26, T.1 S., R.24 W. Latitude—34 degrees, 26 minutes, 50 seconds N; Longitude—99 degrees, 40 minutes, 58 seconds W. USGS Quadrangle: Eldorado.

Additional Components

Farry: 10 percent
Mcknight: 5 percent

ArnC—Arnett sandy loam, 3 to 5 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Arnett
Composition: 83 percent
Geomorphic setting: Terrace on alluvial plain
Position on landform: Riser
Parent material: Loamy alluvium over gravelly alluvium
Slope: 3 to 5 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 7.1 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY110TX Sandy Loam Prairie PE 31-44

Typical profile:
Ap—0 to 7 inches; sandy loam

Bt—7 to 17 inches; clay loam
2Bt—17 to 31 inches; gravelly sandy clay loam
2BC—31 to 44 inches; gravelly coarse sandy loam
2Ck—44 to 57 inches; stratified loamy coarse sand to gravelly clay loam
3Ck—57 to 80 inches; stratified loamy coarse sand to clay loam

Representative profile location: Jackson County, Oklahoma; 850 feet south and 250 feet west of the northeast corner of Section 22, T.1 S., R.24 W. Latitude—34 degrees, 27 minutes, 44 seconds N; Longitude—99 degrees, 41 minutes, 30 seconds W. USGS Quadrangle: Eldorado.

Additional Components

Mcknight: 10 percent
Farry: 7 percent

AsmB—Aspermont silt loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 26 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Aspermont
Composition: 80 percent
Geomorphic setting: Hill on karst
Position on landform: Interfluve
Parent material: Fine-silty colluvium over silty and clayey residuum weathered from shale and siltstone
Slope: 1 to 3 percent
Runoff: Medium
Depth: Densic bedrock at 40 to 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 9.3 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078BY079TX Loamy PE 25-36

Typical profile:
Ap—0 to 6 inches; silt loam
Bk1—6 to 34 inches; silty clay loam
Bk2—34 to 43 inches; silty clay loam

2BCk—43 to 50 inches; silty clay loam
2Cd—50 to 80 inches; silty clay

Representative profile location: Jackson County, Oklahoma; 950 feet north and 1,550 feet east of the southwest corner of Section 22, T.2 N., R.23 W. Latitude—34 degrees, 37 minutes, 33 seconds N; Longitude—99 degrees, 36 minutes, 33 seconds W. USGS Quadrangle: Duke.

Additional Components

La Casa: 14 percent
Cottonwood: 3 percent
Harmon: 3 percent

AsmC—Aspermont silt loam, 3 to 5 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 26 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 5 to 350 acres

Component Description

Aspermont
Composition: 81 percent
Geomorphic setting: Hill on karst
Position on landform: Side slope
Parent material: Fine-silty colluvium over silty and clayey residuum weathered from shale and siltstone
Slope: 3 to 5 percent
Runoff: Medium
Depth: Densic bedrock at 40 to 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 9.3 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078BY079TX Loamy PE 25-36

Typical profile:
Ap—0 to 8 inches; silt loam
Bk1—8 to 35 inches; silty clay loam
Bk2—35 to 50 inches; silty clay loam
2Cd—50 to 80 inches; silty clay

Representative profile location: Jackson County, Oklahoma; 1,700 feet south and 450 feet east of the northwest corner of Section 14, T.1 S., R.23 W. Latitude—34 degrees, 28 minutes, 27 seconds N; Longitude—99 degrees, 35 minutes, 05 seconds W. USGS Quadrangle: Quanah NE.

Additional Components

La Casa: 13 percent
Cottonwood: 3 percent
Harmon: 3 percent

BekA—Beckman silty clay, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

MLRA: 78B
Elevation: 1,000 to 1,990 feet
Mean annual precipitation: 24 to 33 inches
Mean annual air temperature: 58 to 62 degrees F
Frost-free period: 200 to 220 days
Shape and configuration: Long and narrow, 5 to 6,000 acres

Component Description

Beckman (fig. 2)
Composition: 85 percent
Geomorphic setting: Flood plain on upland
Parent material: Calcareous and saline clayey alluvium derived from claystone
Slope: 0 to 1 percent
Runoff: High
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Very slow
Drainage class: Moderately well drained
Available water capacity: About 6.5 inches
Depth to the top of the seasonal high water table: 3.0 to 6.0
Flooding: Occasional
Ponding: None
Salt affected: Saline within 30 inches
Sodium affected: Sodic within 30 inches

Interpretive Groups

Land capability nonirrigated: 4w
Ecological site number and name: R078CY046OK Clayey Saline Bottomland PE 32-44

Typical profile:
A—0 to 4 inches; silty clay
Bk—4 to 14 inches; silty clay
Bkyz—14 to 41 inches; silty clay
Cyz—41 to 80 inches; silty clay

Representative profile location: Beckham County, Oklahoma; 430 feet north and 675 feet east of the southwest corner of Section 28, T.8 N., R.23 W. Latitude—35 degrees, 07 minutes, 57 seconds N; Longitude—99 degrees, 38 minutes, 23 seconds W. USGS Quadrangle: Delhi.

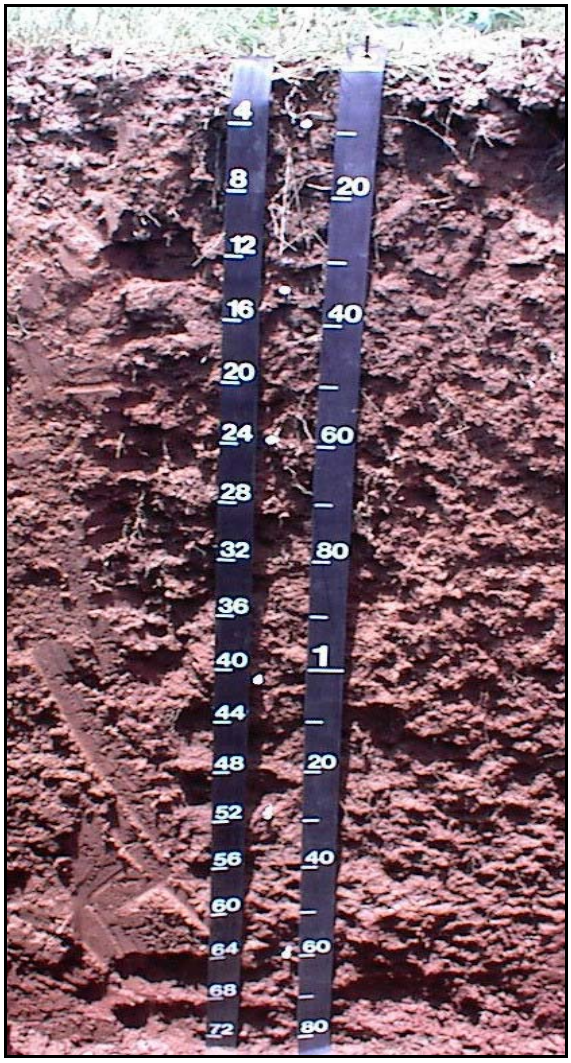

Figure 2.—Profile of Beckman silty clay, 0 to 1 percent slopes, occasionally flooded. The scale on the left is in inches; scale on the right is in centimeters.

Additional Components

Duke: 10 percent
Rups: 3 percent
Spur: 2 percent

BfdB—Burford loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Burford (fig. 3)
Composition: 90 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Shoulder
Parent material: Silty alluvium over silty and clayey residuum weathered from shale and siltstone
Slope: 1 to 3 percent
Runoff: Medium
Depth: Densic bedrock at 40 to 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Slow
Slowest permeability class within 80 inches: Impermeable

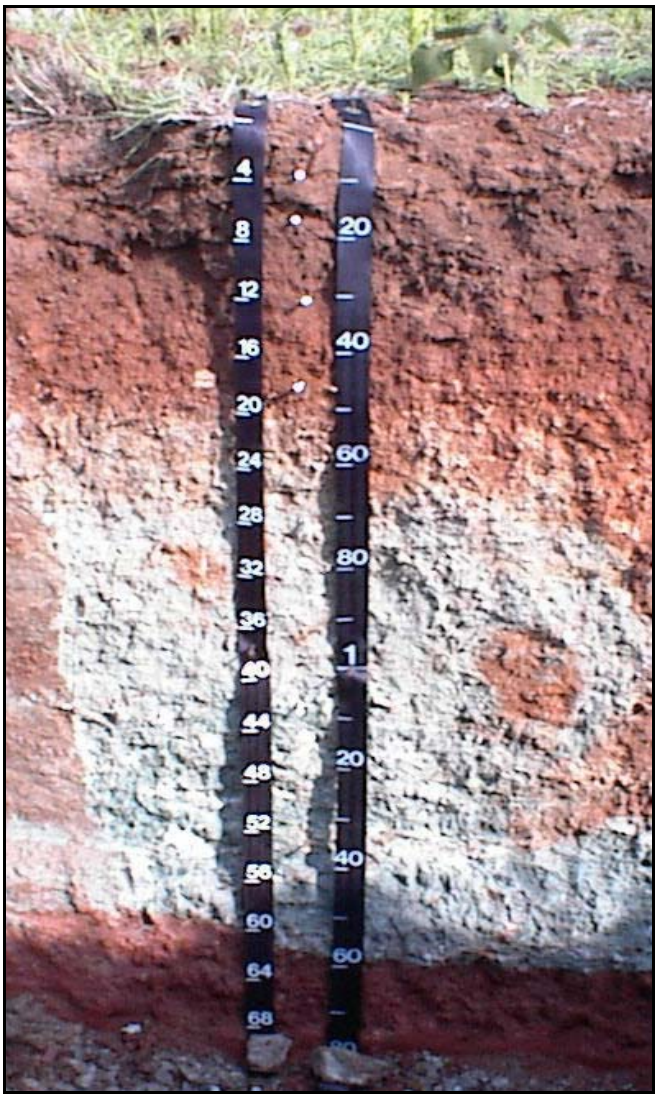

Figure 3.—Profile of Burford loam, 1 to 3 percent slopes. A lithologic discontinuity occurs at a depth of 25 inches. Shale and siltstone bedrock occur below a depth of 53 inches. The scale on the left is in inches; scale on the right is in centimeters.

Drainage class: Well drained
Available water capacity: About 7.9 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 2e
Ecological site number and name: R078CY057OK Loamy Prairie (calcareous) PE 32-44

Typical profile:
Ap—0 to 5 inches; loam
Bw—5 to 12 inches; silty clay loam
Bk—12 to 30 inches; clay loam
2BCk—30 to 43 inches; silty clay loam
2Cd—43 to 80 inches; silty clay

Representative profile location: Jackson County, Oklahoma; 2,350 feet south and 1,400 feet east of the northwest corner of Section 19, T.3 N., R.20 W. Latitude—34 degrees, 43 minutes, 08 seconds N; Longitude—99 degrees, 20 minutes, 50 seconds W. USGS Quadrangle: Altus.

Additional Components

Tillman: 5 percent
Vernon: 5 percent

BfdC—Burford loam, 3 to 5 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 5 to 100 acres

Component Description

Burford
Composition: 92 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Backslope
Parent material: Silty alluvium over silty and clayey residuum weathered from shale and siltstone
Slope: 3 to 5 percent
Runoff: Medium
Depth: Densic bedrock at 40 to 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 7.4 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY057OK Loamy Prairie (calcareous) PE 32-44

Typical profile:
Ap—0 to 6 inches; loam
Bk—6 to 24 inches; clay loam
2Bk—24 to 40 inches; silty clay loam
2Cd—40 to 80 inches; silty clay

Representative profile location: Jackson County, Oklahoma; 500 feet south and 50 feet west of the northeast corner of Section 36, T.1 N., R.20 W. Latitude—34 degrees, 31 minutes, 12 seconds N; Longitude—99 degrees, 14 minutes, 45 seconds W. USGS Quadrangle: Tipton.

Additional Components

Vernon: 5 percent
Spikebox: 3 percent

BfSC2—Burford-Spikebox complex, 3 to 5 percent slopes, eroded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 1,800 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Long and narrow, 5 to 250 acres
Note: This map unit has sustained moderate erosion because of cultivation. The forage production and species composition of native grasses that have been reseeded can vary widely from site to site. This is because of the degree of erosion and seed source of grasses that have been planted. For information about the original native vegetation, refer to the range site data for the map unit.

Component Description

Burford
Composition: 50 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Backslope
Parent material: Silty alluvium over silty and clayey residuum weathered from shale and siltstone
Slope: 3 to 5 percent
Runoff: Medium
Depth: Densic bedrock at 40 to 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained

Available water capacity: About 7.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY856OK Eroded Loamy Prairie PE 32-44

Typical profile:
Ap—0 to 6 inches; loam
Bk—6 to 35 inches; silty clay loam
BC—35 to 40 inches; silty clay loam
2Cd—40 to 80 inches; clay loam

Representative profile location: Greer County, OK; 1,850 feet north and 950 feet west of the southeast corner of Section 5, T.6 N., R.24 W. Latitude—35 degrees, 01 minutes, 18 seconds N; Longitude—99 degrees, 45 minutes, 04 seconds W. USGS Quadrangle: Minnow Creek.

Spikebox
Composition: 40 percent
Geomorphic setting: Hillslope on hill on upland
Position on landform: Side slope
Parent material: Loamy residuum weathered from sandstone and siltstone
Slope: 3 to 5 percent
Runoff: Medium
Depth: Paralithic bedrock at 8 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 2.2 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 4s
Land capability irrigated: 4s
Ecological site number and name: R078CY883OK Eroded Shallow Prairie PE 32-44

Typical profile:
Ap—0 to 7 inches; loam
BC—7 to 15 inches; loam
Cr—15 to 40 inches; bedrock

Representative profile location: Greer County, OK; 1,950 feet north and 950 feet west of the southeast corner of Section 5, T.6 N., R.24 W. Latitude—35 degrees, 01 minutes, 19 seconds N; Longitude—99 degrees, 45 minutes, 04 seconds W. USGS Quadrangle: Minnow Creek.

Additional Components

Gotebo: 7 percent
Vernon: 3 percent

BfSE—Burford-Spikebox complex, 3 to 12 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 1,800 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Long and narrow, 5 to 500 acres

Component Description

Burford
Composition: 50 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Backslope
Parent material: Silty alluvium over silty and clayey residuum weathered from shale and siltstone
Slope: 3 to 12 percent
Runoff: High
Depth: Densic bedrock at 40 to 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 10.7 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078CY057OK Loamy Prairie (calcareous) PE 32-44

Typical profile:
A—0 to 10 inches; loam
Bw—10 to 29 inches; loam
Bk—29 to 44 inches; loam
2BCk—44 to 57 inches; clay loam
2Cd—57 to 80 inches; clay loam

Representative profile location: Greer County, OK; 2,550 feet north and 2,000 feet west of the southeast corner of Section 14, T.6 N., R.23 W. Latitude—34 degrees, 59 minutes, 39 seconds N; Longitude—99 degrees, 35 minutes, 47 seconds W. USGS Quadrangle: Mangum North.

Spikebox
Composition: 40 percent
Geomorphic setting: Hillslope on hill on upland
Position on landform: Side slope
Parent material: Loamy residuum weathered from sandstone and siltstone
Slope: 3 to 12 percent
Runoff: High
Depth: Paralithic bedrock at 8 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate

Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 2.1 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078CY084OK Shallow Prairie (south) PE 32-44

Typical profile:
A—0 to 6 inches; loam
BC—6 to 14 inches; loam
Cr—14 to 40 inches; bedrock

Representative profile location: Greer County, OK; 2,700 feet north and 1,900 feet west of the southeast corner of Section 14, T.6 N., R.23 W. Latitude—34 degrees, 59 minutes, 44 seconds N; Longitude—99 degrees, 35 minutes, 45 seconds W. USGS Quadrangle: Mangum North.

Additional Components

Gotebo: 7 percent
Vernon: 3 percent

BriE—Brico cobbly loam, 3 to 12 percent slopes

Map Unit Setting

MLRA: 82B
Elevation: 1,000 to 2,490 feet
Mean annual precipitation: 27 to 33 inches
Mean annual air temperature: 58 to 61 degrees F
Frost-free period: 200 to 220 days
Shape and configuration: Irregular, 5 to 150 acres

Component Description

Brico
Composition: 85 percent
Geomorphic setting: Mountain slope on mountains
Position on landform: Mountain flank
Parent material: Clayey colluvium derived from granite
Slope: 3 to 12 percent
Runoff: High
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 6.1 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R082BY004OK Boulder Ridge Savannah PE 38-48

Typical profile:
A—0 to 11 inches; cobbly loam
Bt1—11 to 24 inches; very cobbly clay
Bt2—24 to 40 inches; very cobbly clay loam
BC—40 to 72 inches; extremely cobbly clay loam

Representative profile location: Kiowa County, Oklahoma; 600 feet south and 50 feet east of the northwest corner of Section 11, T.3 N., R.16 W. Latitude—34 degrees, 45 minutes, 10 seconds N; Longitude—98 degrees, 51 minutes, 39 seconds W. USGS Quadrangle: Cooperton, OK.

Additional Components

Lawton: 10 percent
Rock outcrop: 5 percent

BukA—Bukreek loam, 0 to 1 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,500 to 2,200 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 58 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 50 to 250 acres

Component Description

Bukreek
Composition: 92 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Calcareous fine-loamy alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 9.5 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 1
Land capability irrigated: 1
Ecological site number and name: R078BY081TX Loamy Prairie PE 25-36

Typical profile:
Ap—0 to 11 inches; loam
Bt1—11 to 18 inches; clay loam

Bt2—18 to 30 inches; clay loam
Btk—30 to 74 inches; clay loam
BCk—74 to 80 inches; loam

Representative profile location: Greer County, Oklahoma; 100 feet north and 1,100 feet west of the southeast corner of Section 13, T.6 N., R.22 W. Latitude—34 degrees, 59 minutes, 15 seconds N; Longitude—99 degrees, 28 minutes, 13 seconds W. USGS Quadrangle: Granite.

Additional Components

Dodson: 8 percent

CarB—Carey loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,500 to 2,200 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 10 to 200 acres

Component Description

Carey
Composition: 90 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Shoulder
Parent material: Fine-silty alluvium over silty residuum weathered from sandstone
Slope: 1 to 3 percent
Runoff: Low
Depth: Densic bedrock at 60 to 80 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 9.8 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078BY081TX Loamy Prairie PE 25-36

Typical profile:
A—0 to 15 inches; loam
Bt—15 to 42 inches; clay loam
BCk—42 to 65 inches; loam
Cd—65 to 80 inches; loam

Representative profile location: Harmon County, Oklahoma; 150 feet south and 2,500 feet east of the northwest corner of Section 36, T.6 N., R.26 W. Latitude—34 degrees, 57 minutes, 27 seconds N; Longitude—99 degrees, 53 minutes, 48.5 seconds W. USGS Quadrangle: Madge.

Additional Components

Madge: 5 percent
Woodward: 5 percent

CawA—Carwile fine sandy loam, 0 to 1 percent slopes, frequently ponded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 38 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Circular, 5 to 15 acres

Component Description

Carwile
Composition: 90 percent
Geomorphic setting: Depression on dune field on sandhills on upland
Parent material: Loamy and clayey alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Very slow
Drainage class: Poorly drained
Available water capacity: About 9.4 inches
Depth to the top of the seasonal high water table: 0.0 to 3.0 feet
Flooding: None
Ponding: Frequent

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site number and name: R078CY098OK Depressional Upland PE 32-44

Typical profile:
A—0 to 15 inches; fine sandy loam
Bt1—15 to 27 inches; clay loam
Bt2—27 to 57 inches; sandy clay loam
BC—57 to 80 inches; fine sandy loam

Representative profile location: Greer County, Oklahoma; 1,500 feet south and 1,000 feet west of the northeast corner of Section 26, T.7 N., R.22 W. Latitude—35 degrees, 03 minutes, 17 seconds N; Longitude—99 degrees, 29 minutes, 12 seconds W. USGS Quadrangle: Lake Creek.

Additional Components

Headrick: 5 percent
Ozark: 5 percent

CVRD—Cottonwood-Vinson-Rock outcrop complex, 1 to 8 percent slopes

Map Unit Setting (fig. 4)

MLRA: 78B
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Cottonwood
Composition: 42 percent
Geomorphic setting: Hillslope on hill on karst
Position on hillslope: Backslope
Parent material: Calcareous loamy residuum weathered from gypsum
Slope: 1 to 8 percent
Runoff: Very high
Depth: Paralithic bedrock at 3 to 12 inches; lithic bedrock at 8 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Very slow
Drainage class: Well drained
Available water capacity: About 1.2 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Figure 4.—Landscape of an area of Cottonwood-Vinson-Rock outcrop complex, 1 to 8 percent slopes.

Interpretive Groups

Land capability nonirrigated: 7s
Ecological site number and name: R078BY076TX Gyp PE 25-36

Typical profile:
A—0 to 5 inches; silt loam
Cy—5 to 8 inches; gypsiferous silt loam
Cr—8 to 15 inches; gypsiferous bedrock
R—15 to 20 inches; gypsiferous bedrock

Representative profile location: Jackson County, Oklahoma; 3,600 feet south and 1,650 feet east of the northwest corner of Section 25, T.1 N., R.23 W. Latitude—34 degrees, 31 minutes, 34 seconds N; Longitude—99 degrees, 34 minutes, 23 seconds W. USGS Quadrangle: Prairie Hill.

Interpretive Groups

Land capability nonirrigated: 7s
Ecological site number and name: R078BY076TX Gyp PE 25-36

Typical profile:
A—0 to 5 inches; silt loam
Cy—5 to 8 inches; gypsiferous silt loam
Cr—8 to 15 inches; gypsiferous bedrock
R—15 to 20 inches; gypsiferous bedrock

Representative profile location: Jackson County, Oklahoma; 3,600 feet south and 1,650 feet east of the northwest corner of Section 25, T.1 N., R.23 W. Latitude—34 degrees, 31 minutes, 34 seconds N; Longitude—99 degrees, 34 minutes, 23 seconds W. USGS Quadrangle: Prairie Hill.

Vinson
Composition: 25 percent
Geomorphic setting: Hillslope on hill on karst
Position on hillslope: Shoulder
Parent material: Calcareous loamy residuum weathered from gypsum
Slope: 1 to 5 percent
Runoff: High
Depth: Lithic bedrock at 20 to 40 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Very slow
Drainage class: Well drained
Available water capacity: About 4.2 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 4e
Ecological site number and name: R078BY079TX Loamy PE 25-36

Typical profile:
A—0 to 4 inches; silt loam
Bw—4 to 15 inches; silty clay loam
Bk—15 to 22 inches; silty clay loam
Cr—22 to 28 inches; bedrock
R—28 to 60 inches; bedrock

Representative profile location: Jackson County, Oklahoma; 3,200 feet south and 1,700 feet east of the northwest corner of Section 25, T.1 N., R.23 W. Latitude—34 degrees, 31 minutes, 34 seconds N; Longitude—99 degrees, 34 minutes, 23 seconds W. USGS Quadrangle: Prairie Hill.

Rock outcrop
Composition: 23 percent
Geomorphic setting: Hill on karst
Position on landform: Side slope
Parent material: Gypsum
Slope: 1 to 8 percent
Runoff: Very high
Depth: Lithic bedrock at 0 to 3 inches
Slowest permeability class within 80 inches: Very slow
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 8s

Typical profile:
R—0 to 60 inches; bedrock

Representative profile location: Jackson County, Oklahoma; 3,400 feet south and 1,700 feet east of the northwest corner of Section 25, T.1 N., R.23 W. Latitude—34 degrees, 31 minutes, 36 seconds N; Longitude—99 degrees, 31 minutes, 39 seconds W. USGS Quadrangle: Prairie Hill.

Additional Components

Aspermont: 7 percent
Spur: 3 percent

DAM—Large dam

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 2 to 35 acres
Note: These structures are upstream flood control dams.

Component Description

Dam
Composition: 100 percent
Geomorphic setting: Artificial levee
Parent material: Mine spoil or earthy fill
Slope: 0 to 45 percent
Runoff: Very high
Depth: Greater than 60 inches
Slowest permeability class within 80 inches: Slow
Depth to the top of the seasonal high water table: Greater than 6 feet

Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 8

Typical profile:
C—0 to 80 inches; variable

Representative profile location: Jackson County, Oklahoma; 1,800 feet south and 2,500 feet east of the northwest corner of Section 30, T.3 N., R.22 W. Latitude—34 degrees, 42 minutes, 19 seconds N; Longitude—99 degrees, 33 minutes, 11 seconds W. USGS Quadrangle: Duke.

DeSD—Devol and Springer loamy sands, 3 to 8 percent slopes

Map Unit Setting (fig. 5)

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 32 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 450 acres

Figure 5.—Landscape of an area of Devol and Springer loamy sands, 3 to 8 percent slopes.

Component Description

Devol
Composition: 60 percent
Geomorphic setting: Dune on sand sheet on stream terrace on alluvial plain
Parent material: Coarse-loamy alluvium and sandy eolian deposits
Slope: 3 to 8 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately rapid
Slowest permeability class within 80 inches: Moderately rapid
Drainage class: Well drained
Available water capacity: About 5.8 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 4e
Land capability irrigated: 4e
Ecological site number and name: R078CY105TX Loamy Sand Prairie PE 31-44

Typical profile:
Ap—0 to 8 inches; loamy sand
Bt1—8 to 28 inches; fine sandy loam
Bt2—28 to 47 inches; fine sandy loam
BC—47 to 62 inches; loamy sand
C—62 to 80 inches; loamy sand

Representative profile location: Greer County, Oklahoma; 850 feet north and 1,700 feet west of the southeast corner of Section 35, T.7 N., R.21 W. Latitude—35 degrees, 1 minute, 55 seconds N; Longitude—99 degrees, 23 minutes, 1 second W. USGS Quadrangle: Lake Creek.

Springer
Composition: 27 percent
Geomorphic setting: Dune on sand sheet on stream terrace on alluvial plain
Parent material: Coarse-loamy eolian sands over loamy alluvium
Slope: 3 to 8 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately rapid
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 6.0 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 4e
Land capability irrigated: 4e
Ecological site number and name: R078CY105TX Loamy Sand Prairie PE 31-44

Typical profile:
Ap—0 to 15 inches; loamy sand
Bt—15 to 41 inches; fine sandy loam
BC—41 to 52 inches; fine sand
Btb—52 to 70 inches; fine sandy loam
BCb—70 to 80 inches; loamy sand

Representative profile location: Greer County, Oklahoma; 2,050 feet south and 1,300 feet east of the northwest corner of Section 29, T.5 N., R.21 W. Latitude—34 degrees, 52 minutes, 48 seconds N; Longitude—99 degrees, 26 minutes, 41 seconds W. USGS Quadrangle: Granite.

Additional Components

Eda: 10 percent
Grandfield: 3 percent

DkuA—Duke silty clay, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

MLRA: 78B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 32 inches
Mean annual air temperature: 57 to 65 degrees F
Frost-free period: 180 to 240 days
Shape and configuration: Long and narrow, 5 to 150 acres

Component Description

Duke (fig. 6)
Composition: 80 percent
Geomorphic setting: Flood plain on alluvial plain
Parent material: Calcareous clayey alluvium
Slope: 0 to 1 percent
Runoff: High
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Very slow
Drainage class: Well drained
Available water capacity: About 7.7 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: Occasional
Ponding: None
Salt affected: Saline within 30 inches
Sodium affected: Sodic within 30 inches

Interpretive Groups

Land capability nonirrigated: 4w
Ecological site number and name: R078BY070TX Clayey Bottomland PE 25-36

Typical profile:
A—0 to 5 inches; silty clay
Bnyz—5 to 12 inches; clay
Bnssyz—12 to 44 inches; silty clay
BC—44 to 80 inches; stratified silt loam to clay

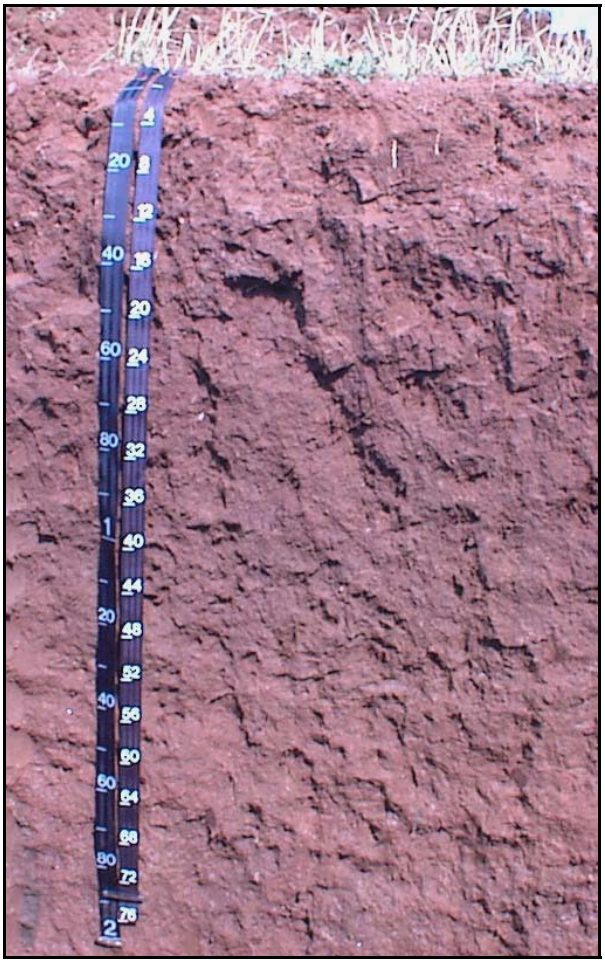

Figure 6.—Profile of Duke silty clay, 0 to 1 percent slopes, occasionally flooded. The scale on the left is in inches; scale on the right is in centimeters.

Representative profile location: Harmon County, Oklahoma; 1,900 feet north and 1,800 feet east of the southwest corner of Section 26, T.3 N., R.24 W. Latitude—34 degrees, 42 minutes, 4.54 seconds N; Longitude—99 degrees, 41 minutes, 47.20 seconds W. USGS Quadrangle: Mcqueen, OK.

Additional Components

Beckman: 7 percent
Spur: 7 percent
Clairemont: 6 percent

DodA—Dodson loam, 0 to 1 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,500 to 2,200 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 58 to 64 degrees F

Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 10 to 3,000 acres

Component Description

Dodson (fig. 7)
Composition: 92 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Silty and clayey alluvium and lacustrine deposits
Slope: 0 to 1 percent
Runoff: Low
Depth: Greater than 60 inches

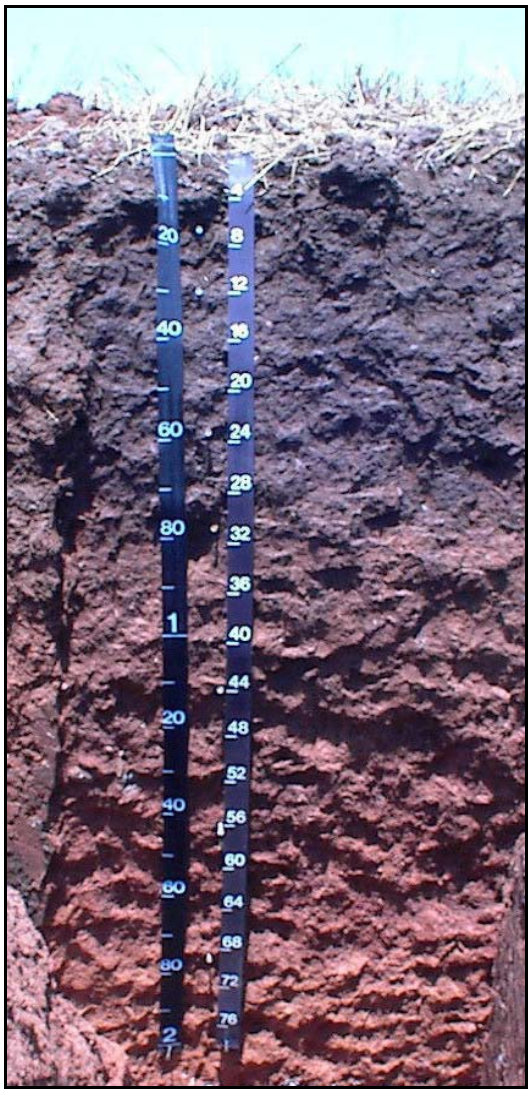

Figure 7.—Profile of Dodson loam, 0 to 1 percent slopes. The dark mollic epipedon is about 31 inches thick. The scale on the left is in centimeters; scale on the right is in inches.

Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 10.5 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 1
Land capability irrigated: 1
Ecological site number and name: R078CY096TX Clay Loam PE 31-44

Typical profile:
Ap—0 to 7 inches; loam
Bt—7 to 37 inches; clay loam
Btk—37 to 56 inches; clay loam
Bk—56 to 72 inches; sandy clay loam
BCk—72 to 80 inches; sandy loam

Representative profile location: Harmon County, Oklahoma; 360 feet north and 650 feet east of the southwest corner of Section 27, T. 5 N., R. 25 W. Latitude— 34 degrees, 52 minutes, 21.28 seconds N; Longitude— 99 degrees, 50 minutes, 02.57 seconds W. USGS Quadrangle: Vinson, OK.

Additional Components

Madge: 5 percent
Altus: 3 percent

DodB—Dodson loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,500 to 2,200 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 58 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Long and narrow, 10 to 600 acres

Component Description

Dodson
Composition: 87 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Silty and clayey alluvium and lacustrine deposits
Slope: 1 to 3 percent
Runoff: Medium
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 10.5 inches

Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078CY096TX Clay Loam PE 31-44

Typical profile:
Ap—0 to 6 inches; loam
Bt—6 to 26 inches; clay
Btk—26 to 56 inches; clay loam
Bk—56 to 83 inches; clay loam
2BCk—83 to 91 inches; silty clay

Representative profile location: Harmon County, Oklahoma; 1,050 feet north and 600 feet west of the southeast corner of Section 4, T. 5 N., R. 24 W. Latitude—34 degrees, 55 minutes, 56.75 seconds N; Longitude—99 degrees, 43 minutes, 59.04 seconds W. USGS Quadrangle: Reed, OK.

Additional Components

Madge: 10 percent
Altus: 3 percent

EatA—Eastall silty clay, 0 to 1 percent slopes, frequently ponded

Map Unit Setting

MLRA: 78B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Circular, 3 to 50 acres
Note: Ponding affects this map unit in the spring and summer months of years with average to above average precipitation. The duration of the ponded periods is long or very long.

Component Description

Eastall
Composition: 94 percent
Geomorphic setting: Closed depression on karst
Position on landform: Dip
Parent material: Clayey lacustrine deposits
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Very slow
Drainage class: Poorly drained
Available water capacity: About 8.9 inches

Depth to the top of the seasonal high water table: At soil surface
Flooding: None
Ponding: Frequent

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site number and name: R078BY078TX Lakebed PE 25-36

Typical profile:
A—0 to 12 inches; silty clay
Bw—12 to 19 inches; clay
Bss1—19 to 56 inches; clay
Bss2—56 to 76 inches; silty clay
Bkss—76 to 95 inches; silty clay loam

Representative profile location: Jackson County, Oklahoma; 2,500 feet north and 2,100 feet west of the southeast corner of Section 34, T.1 N., R.23 W. Latitude—34 degrees, 30 minutes, 50 seconds N; Longitude—99 degrees, 36 minutes, 13 seconds W. USGS Quadrangle: Prairie Hill.

Additional Components

Hollister: 3 percent
Nipsum: 3 percent

EdsB—Eda sand, 0 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 32 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Eda (fig. 8)
Composition: 87 percent
Geomorphic setting: Dune on dune field on sandhills on upland
Parent material: Eolian sands
Slope: 0 to 3 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Rapid
Slowest permeability class within 80 inches: Rapid
Drainage class: Somewhat excessively drained
Available water capacity: About 3.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Figure 8.—Profile of Eda sand, 0 to 3 percent slopes. The scale on the left is in centimeters; scale on the right is in inches.

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY017OK Deep Sand Savannah (west) PE 32-44

Typical profile:

Ap—0 to 11 inches; sand
E and Bt—11 to 35 inches; loamy sand
C—35 to 80 inches; fine sand

Representative profile location: Jackson County, Oklahoma; 2,100 feet north and 475 feet west of the southeast corner of Section 17, T.4 N., R.19 W. Latitude—34 degrees, 49 minutes, 04 seconds N; Longitude—99 degrees, 12 minutes, 49 seconds W. USGS Quadrangle: Warren.

Additional Components

Devol: 8 percent
Heatly: 5 percent

EdsD—Eda sand, 3 to 8 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 32 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 20 to 600 acres

Component Description

Eda
Composition: 87 percent
Geomorphic setting: Dune on dune field on sandhills on upland
Parent material: Eolian sands
Slope: 3 to 8 percent
Runoff: Very low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Rapid
Slowest permeability class within 80 inches: Rapid
Drainage class: Somewhat excessively drained
Available water capacity: About 3.7 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 4e
Land capability irrigated: 4e
Ecological site number and name: R078CY017OK Deep Sand Savannah (west) PE 32-44

Typical profile:
Ap—0 to 13 inches; sand
E and Bt—13 to 50 inches; loamy sand
C—50 to 80 inches; fine sand

Representative profile location: Jackson County, Oklahoma; 2,500 feet south and 1,900 feet west of the northeast corner of Section 33, T.4 N., R.20 W. Latitude—34 degrees, 46 minutes, 35 seconds N; Longitude—99 degrees, 18 minutes, 21 seconds W. USGS Quadrangle: Blair.

Additional Components

Devol: 8 percent
Grandfield: 5 percent

EdsF—Eda sand, 8 to 15 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 32 inches
Mean annual air temperature: 57 to 64 degrees F

Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Eda
Composition: 90 percent
Geomorphic setting: Dune on dune field on sandhills on upland
Parent material: Eolian sands
Slope: 8 to 15 percent
Runoff: Very low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Rapid
Slowest permeability class within 80 inches: Rapid
Drainage class: Somewhat excessively drained
Available water capacity: About 3.4 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078CY017OK Deep Sand Savannah (west) PE 32-44

Typical profile:
A—0 to 18 inches; sand
E and Bt—18 to 40 inches; fine sand
C—40 to 80 inches; fine sand

Representative profile location: Jackson County, Oklahoma; 1,550 feet south and 2,100 feet west of the northeast corner of Section 14, T.3 N., R.20 W. Latitude—34 degrees, 44 minutes, 07 seconds N; Longitude—99 degrees, 16 minutes, 14 seconds W. USGS Quadrangle: Altus.

Additional Components

Devol: 7 percent
Grandfield: 3 percent

FraB—Frankirk loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 21 to 28 inches
Mean annual air temperature: 57 to 65 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Frankirk
Composition: 90 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Calcareous loamy alluvium
Slope: 1 to 3 percent

Runoff: Medium
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 9.2 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078CY056OK Loamy Prairie PE 32-44

Typical profile:
Ap—0 to 6 inches; loam
Bt1—6 to 18 inches; clay loam
Bt2—18 to 52 inches; clay loam
Bk—52 to 65 inches; loam
Ck—65 to 80 inches; loam

Representative profile location: Jackson County, Oklahoma; 250 feet south and 1,600 feet east of the northwest corner of Section 23, T.1 S., R.24 W. Latitude—34 degrees, 27 minutes, 50 seconds N; Longitude—99 degrees, 41 minutes, 07 seconds W. USGS Quadrangle: Eldorado.

Additional Components

Madge: 10 percent

FryB—Farry loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 82B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Long and narrow, 5 to 700 acres

Component Description

Farry
Composition: 92 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Loamy and gravelly alluvium
Slope: 1 to 3 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 10.4 inches

Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R082BY056OK Loamy Prairie PE 38-48

Typical profile:
Ap—0 to 7 inches; loam
Bt1—7 to 11 inches; clay loam
Bt2—11 to 50 inches; clay loam
Bt3—50 to 63 inches; loam
BCk—63 to 75 inches; loam
C—75 to 84 inches; loam

Representative profile location: Greer County, Oklahoma; 1,400 feet north and 1,150 feet east of the southwest corner of Section 8, T.5 N., R.20 W. Latitude—34 degrees, 55 minutes, 05.3 seconds N; Longitude—99 degrees, 20 minutes, 21.2 seconds W. USGS Quadrangle: Lake Altus.

Additional Components

Lawton: 5 percent
Arnett: 3 percent

GdfB—Grandfield fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Grandfield
Composition: 80 percent
Geomorphic setting: Sand sheet on stream terrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium and eolian deposits
Slope: 1 to 3 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 7.9 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 2e
Ecological site number and name: R078CY110TX Sandy Loam Prairie PE 31-44

Typical profile:
A—0 to 15 inches; fine sandy loam
Bt1—15 to 32 inches; sandy clay loam
Bt2—32 to 49 inches; sandy clay loam
BC—49 to 56 inches; fine sandy loam
C—56 to 80 inches; fine sandy loam

Representative profile location: Jackson County, Oklahoma; 100 feet north and 500 feet west of the southeast corner of Section 31, T.3 N., R.18 W. Latitude—34 degrees, 40 minutes, 55 seconds N; Longitude—99 degrees, 07 minutes, 30 seconds W. USGS Quadrangle: Headrick.

Additional Components

Devol: 10 percent
Ozark: 10 percent

GlGB—Grandmore and Grandfield loamy sands, 0 to 3 percent slopes

Map Unit Setting (fig. 9)

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 32 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 2,700 acres

Component Description

Grandmore (fig. 10)
Composition: 65 percent
Geomorphic setting: Sand sheet on stream terrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium over clayey alluvium
Slope: 0 to 3 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Moderately well drained
Available water capacity: About 7.8 inches
Depth to the top of the seasonal high water table: 3.3 to 5.0 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY105TX Loamy Sand Prairie PE 31-44

Figure 9.—Landscape of Alfalfa hay being grown on an area of Grandmore and Grandfield loamy sands, 0 to 3 percent slopes.

Typical profile:
A—0 to 18 inches; loamy sand
Bt1—18 to 38 inches; sandy clay loam
Bt2—38 to 46 inches; fine sandy loam
2Bt—46 to 61 inches; clay loam
2BC—61 to 80 inches; sandy clay loam

Representative profile location: Greer County, Oklahoma; 350 feet north and 1,600 feet west of the southeast corner of Section 8, T.7 N., R.21 W. Latitude—35 degrees, 5 minutes, 20.35 seconds N; Longitude—99 degrees, 26 minutes, 9.83 seconds W. USGS Quadrangle: Lake Creek.

Grandfield
Composition: 25 percent
Geomorphic setting: Sand sheet on stream terrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium and eolian deposits
Slope: 0 to 3 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 7.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

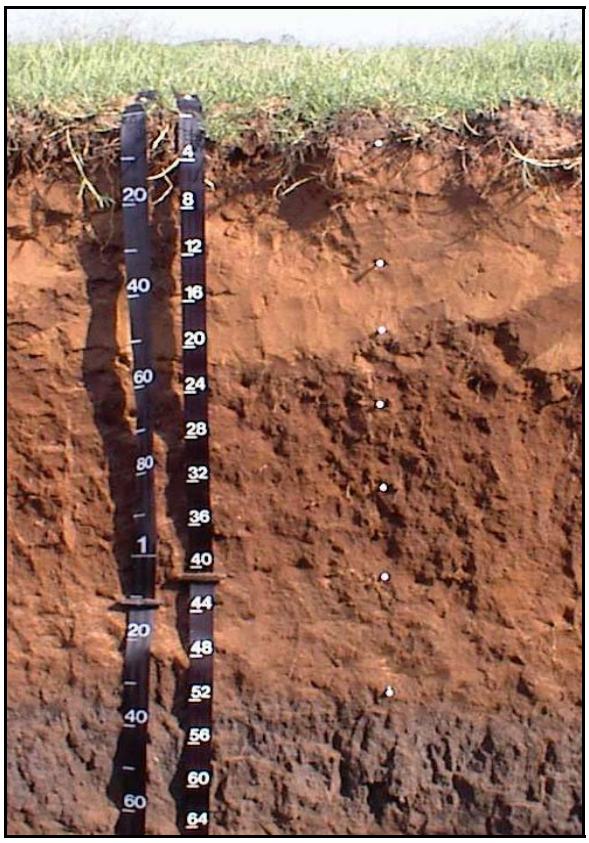

Figure 10.—Profile of Grandmore loamy sand, 0 to 3 percent. A lithologic discontinuity occurs at a depth of 52 inches. The scale on the left is in centimeters; scale on the right is in inches.

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY105TX Loamy Sand Prairie PE 31-44

Typical profile:

A—0 to 8 inches; loamy sand
Bt1—8 to 28 inches; sandy clay loam
Bt2—28 to 55 inches; sandy clay loam
BC—55 to 75 inches; fine sandy loam
C—75 to 80 inches; loamy sand

Representative profile location: Greer County, Oklahoma; 1,850 feet north and 1,600 feet west of the southeast corner of Section 8, T.7 N., R.21 W. Latitude—35 degrees, 5 minutes, 34.0 seconds N; Longitude—99 degrees, 26 minutes, 8.0 seconds W. USGS Quadrangle: Lake Creek.

Additional Components

Devol: 5 percent
Headrick: 5 percent

GlsB—Grandfield loamy sand, 0 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 500 acres

Component Description

Grandfield
Composition: 87 percent
Geomorphic setting: Sand sheet on stream terrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium and eolian deposits
Slope: 0 to 3 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 7.2 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY105TX Loamy Sand Prairie PE 31-44

Typical profile:
A—0 to 7 inches; loamy sand
Bt1—7 to 21 inches; sandy clay loam
Bt2—21 to 44 inches; fine sandy loam
BC—44 to 72 inches; fine sandy loam
C—72 to 80 inches; loamy sand

Representative profile location: Greer County, Oklahoma; 2,000 feet south and 120 feet west of the northeast corner of Section 23, T.5 N., R.22 W. Latitude—34 degrees, 53 minutes, 40 seconds N; Longitude—99 degrees, 29 minutes, 07 seconds W. USGS Quadrangle: Granite.

Additional Components

Devol: 10 percent
Ozark: 3 percent

GlsD—Grandfield loamy sand, 3 to 8 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 200 acres

Component Description

Grandfield
Composition: 87 percent
Geomorphic setting: Sand sheet on stream terrace on alluvial plain
Position on landform: Riser
Parent material: Loamy alluvium and eolian deposits
Slope: 3 to 8 percent
Runoff: Medium
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 7.0 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 4e
Land capability irrigated: 4e
Ecological site number and name: R078CY105TX Loamy Sand Prairie PE 31-44

Typical profile:
A—0 to 13 inches; loamy sand
Bt1—13 to 34 inches; sandy clay loam
Bt2—34 to 47 inches; fine sandy loam
BC—47 to 58 inches; fine sandy loam
C—58 to 80 inches; loamy sand

Representative profile location: Greer County, Oklahoma; 1,050 feet north and 900 feet east of the southwest corner of Section 15, T.4 N., R.24 W. Latitude—34 degrees, 43 minutes, 02 seconds N; Longitude—99 degrees, 48 minutes, 54 seconds W. USGS Quadrangle: Russell.

Additional Components

Devol: 8 percent
Mcknight: 3 percent
Heatly: 2 percent

GmuA—Gracemont fine sandy loam, saline, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 38 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 10 to 250 acres

Component Description

Gracemont
Composition: 90 percent
Geomorphic setting: Flood plain on valley
Parent material: Calcareous sandy and loamy alluvium
Slope: 0 to 1 percent
Runoff: High
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Somewhat poorly drained
Available water capacity: About 6.3 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Flooding: Occasional
Ponding: None
Salt affected: Saline within 30 inches

Interpretive Groups

Land capability nonirrigated: 4w
Ecological site number and name: R078CY097OK Subirrigated (saline) PE 32-44

Typical profile:
A—0 to 6 inches; fine sandy loam
C1—6 to 20 inches; loam
C2—20 to 80 inches; sandy loam

Representative profile location: Jackson County, Oklahoma; 1,400 feet north and 2,300 feet west of the southeast corner of Section 33, T.3 N., R.21 W. Latitude—34 degrees, 41 minutes, 06 seconds N; Longitude—99 degrees, 24 minutes, 36 seconds W. USGS Quadrangle: Martha.

Additional Components

Lincoln: 5 percent
Westola: 5 percent

GmwA—Gracemont fine sandy loam, saline, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 38 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 30 to 600 acres

Component Description

Gracemont
Composition: 89 percent
Geomorphic setting: Flood plain on valley
Parent material: Calcareous sandy and loamy alluvium
Slope: 0 to 1 percent
Runoff: High

Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Somewhat poorly drained
Available water capacity: About 7.5 inches
Depth to the top of the seasonal high water table: 0.5 to 1.5 feet
Flooding: Frequent
Ponding: None
Salt affected: Saline within 30 inches

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site number and name: R078CY097OK Subirrigated (saline) PE 32-44

Typical profile:
A—0 to 4 inches; fine sandy loam
C1—4 to 35 inches; fine sandy loam
C2—35 to 80 inches; loamy sand

Representative profile location: Jackson County, Oklahoma; 1,200 feet south and 3,850 feet west of the northeast corner of Section 28, T.3 N., R.21 W. Latitude—34 degrees, 42 minutes, 37 seconds N; Longitude—99 degrees, 24 minutes, 58 seconds W. USGS Quadrangle: Martha.

Additional Components

Ezell: 8 percent
Retrop: 3 percent

GrrA—Gracemore clay loam, saline, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 38 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Long and narrow, 10 to 400 acres

Component Description

Gracemore
Composition: 90 percent
Geomorphic setting: Backswamp on flood plain on valley
Parent material: Calcareous sandy alluvium
Slope: 0 to 1 percent
Runoff: High
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Somewhat poorly drained
Available water capacity: About 4.3 inches
Depth to the top of the seasonal high water table: 0.5 to 3.5 feet
Flooding: Occasional

Ponding: None
Salt affected: Saline within 30 inches

Interpretive Groups

Land capability nonirrigated: 4w
Ecological site number and name: R078CY097OK Subirrigated (saline) PE 32-44

Typical profile:
A—0 to 7 inches; clay loam
C1—7 to 17 inches; stratified loamy fine sand to fine sandy loam
C2—17 to 80 inches; sand

Representative profile location: Greer County, Oklahoma; 1,800 feet north and 700 feet east of the southwest corner of Section 12, T.4 N., R.22 W. Latitude—34 degrees, 49 minutes, 55 seconds N; Longitude—99 degrees, 28 minutes, 24 seconds W. USGS Quadrangle: Hester.

Additional Components

Ezell: 5 percent
Westola: 5 percent

GtbB—Gotebo loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 250 acres

Component Description

Gotebo (fig. 11)
Composition: 82 percent
Geomorphic setting: Knoll on upland
Position on hillslope: Shoulder
Parent material: Calcareous coarse-silty residuum weathered from sandstone and siltstone
Slope: 1 to 3 percent
Runoff: Low
Depth: Densic bedrock at 20 to 40 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 4.1 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3s
Land capability irrigated: 3e
Ecological site number and name: R078CY057OK Loamy Prairie (calcareous) PE 32-44

Figure 11.—Profile of Gotebo loam, 1 to 3 percent slopes. Shale and sandstone bedrock occur below a depth of 26 inches. The scale on the left is in centimeters; scale on the right is in inches.

Typical profile:

Ap—0 to 8 inches; loam
Bw—8 to 17 inches; loam
B/Ck—17 to 26 inches; loam
Cd—26 to 80 inches; loam

Representative profile location: Greer County, Oklahoma; 1,970 feet south and 850 feet west of the northeast corner of Section 17, T.6 N., R.22 W. Latitude—34 degrees, 59 minutes, 49 seconds N; Longitude—99 degrees, 32 minutes, 24 seconds W. USGS Quadrangle: Mangum North.

Additional Components

Spikebox: 13 percent
Burford: 5 percent

HdmB—Hardeman fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Hardeman
Composition: 90 percent
Geomorphic setting: Stream terrace on alluvial plain
Position on landform: Tread
Parent material: Coarse-loamy alluvium and eolian deposits
Slope: 1 to 3 percent
Runoff: Very low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately rapid
Slowest permeability class within 80 inches: Moderately rapid
Drainage class: Well drained
Available water capacity: About 7.7 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 2e
Ecological site number and name: R078CY110TX Sandy Loam Prairie PE 31-44

Typical profile:
A—0 to 6 inches; fine sandy loam
Bw—6 to 46 inches; loam
Bk—46 to 80 inches; fine sandy loam

Representative profile location: Jackson County, Oklahoma; 2,650 feet north and 1,500 feet west of the southeast corner of Section 31, T.3 N., R.18 W. Latitude—34 degrees, 41 minutes, 20 seconds N; Longitude—99 degrees, 07 minutes, 44 seconds W. USGS Quadrangle: Headrick.

Additional Components

Farry: 7 percent
Arnett: 3 percent

HdmC—Hardeman fine sandy loam, 3 to 5 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 5 to 100 acres

Component Description

Hardeman
Composition: 95 percent
Geomorphic setting: Stream terrace on alluvial plain
Position on landform: Riser
Parent material: Coarse-loamy alluvium and eolian deposits
Slope: 3 to 5 percent
Runoff: Very low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately rapid
Slowest permeability class within 80 inches: Moderately rapid
Drainage class: Well drained
Available water capacity: About 7.7 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY110TX Sandy Loam Prairie PE 31-44

Typical profile:
A—0 to 13 inches; fine sandy loam
Bw—13 to 35 inches; loam
Bk—35 to 62 inches; loam
BC—62 to 80 inches; fine sandy loam

Representative profile location: Jackson County, Oklahoma; 1,100 feet south and 1,800 feet west of the northeast corner of Section 31, T.3 N., R.18 W. Latitude—34 degrees, 41 minutes, 35 seconds N; Longitude—99 degrees, 07 minutes, 45 seconds W. USGS Quadrangle: Headrick.

Additional Components

Mcknight: 5 percent

HfkA—Hayfork silty clay loam, 0 to 1 percent slopes, rarely flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 10 to 150 acres

Component Description

Hayfork
Composition: 83 percent
Geomorphic setting: Flood-plain step on flood plain on valley
Parent material: Calcareous clayey and loamy alluvium

Slope: 0 to 1 percent
Runoff: Medium
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Very slow
Drainage class: Well drained
Available water capacity: About 9.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: Rare
Ponding: None
Salt affected: Saline within 30 inches

Interpretive Groups

Land capability nonirrigated: 1
Land capability irrigated: 1
Ecological site number and name: R078CY094TX Clayey Bottomland PE 31-44

Typical profile:
A—0 to 11 inches; silty clay loam
Bk—11 to 27 inches; silty clay
Bky1—27 to 41 inches; silty clay
Bky2—41 to 50 inches; silty clay loam
Cy—50 to 60 inches; silty clay loam

Representative profile location: Greer County, Oklahoma; 60 feet north and 1,340 feet east of the southwest corner of Section 5, T.7 N., R.23 W. Latitude—35 degrees, 06 minutes, 09 seconds N; Longitude—99 degrees, 39 minutes, 18 seconds W. USGS Quadrangle: Plainview.

Additional Components

Spur: 12 percent
Duke: 5 percent

HksA—Headrick loamy sand, 0 to 1 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 250 acres

Component Description

Headrick
Composition: 90 percent
Geomorphic setting: Sand sheet on stream terrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium over clayey alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderately slow

Drainage class: Somewhat poorly drained
Available water capacity: About 8.5 inches
Depth to the top of the seasonal high water table: 1.7 to 3.3 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY089OK Seep Meadow PE 32-44

Typical profile:
A—0 to 5 inches; loamy sand
Bt—5 to 32 inches; sandy clay loam
2Bt—32 to 66 inches; clay loam
2BCk—66 to 80 inches; sandy clay loam

Representative profile location: Jackson County, Oklahoma; 2,400 feet north and 2,250 feet west of the southeast corner of Section 4, T.2 N., R.18 W. Latitude—34 degrees, 40 minutes, 25 seconds N; Longitude—99 degrees, 05 minutes, 44 seconds W. USGS Quadrangle: Long Mountain.

Additional Components

Grandfield: 7 percent
Devol: 3 percent

HolA—Hollister silty clay loam, 0 to 1 percent slopes

Map Unit Setting (fig. 12)

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 23 to 30 inches
Mean annual air temperature: 57 to 65 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 20 to 2,000 acres

Component Description

Hollister
Composition: 91 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Calcareous clayey alluvium
Slope: 0 to 1 percent
Runoff: High
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Very slow
Drainage class: Well drained
Available water capacity: About 9.1 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Figure 12.—Landscape of an area of Hollister silty clay loam, 0 to 1 percent slopes.

Interpretive Groups

Land capability nonirrigated: 2s
Land capability irrigated: 2s
Ecological site number and name: R078CY096TX Clay Loam PE 31-44

Typical profile:
Ap—0 to 9 inches; silty clay loam
Bw—9 to 23 inches; silty clay
Bss—23 to 72 inches; silty clay
Bk—72 to 110 inches; clay
2C—110 to 138 inches; clay

Representative profile location: Jackson County, Oklahoma; 540 feet north and 2,470 feet east of the southwest corner of Section 30, T.1 N., R.21 W. Latitude—34 degrees, 31 minutes, 23 seconds N; Longitude—99 degrees, 26 minutes, 55 seconds W. USGS Quadrangle: Olustee.

Additional Components

Tillman: 9 percent

HrAC—Harmon-Aspermont complex, 1 to 5 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 5 to 100 acres

Component Description

Harmon
Composition: 50 percent
Geomorphic setting: Hillslope on hill on karst
Position on hillslope: Backslope
Parent material: Calcareous residuum weathered from dolomite over shale and siltstone
Slope: 1 to 5 percent
Runoff: Very high
Depth: Paralithic bedrock at 6 to 18 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 1.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 4s
Land capability irrigated: 4s
Ecological site number and name: R078BY091TX Very Shallow PE 25-36

Typical profile:
Ap—0 to 7 inches; gravelly silt loam
ACk—7 to 16 inches; very gravelly silt loam
Cr—16 to 40 inches; bedrock

Representative profile location: Jackson County, Oklahoma; 550 feet north and 1,350 feet east of the southwest corner of Section 22, T.2 N., R.23 W. Latitude—34 degrees, 37 minutes, 28 seconds N; Longitude—99 degrees, 36 minutes, 34 seconds W. USGS Quadrangle: Prairie Hill.

Aspermont
Composition: 44 percent
Geomorphic setting: Hill on karst
Position on landform: Side slope
Parent material: Fine-silty colluvium over silty and clayey residuum weathered from shale and siltstone
Slope: 1 to 5 percent
Runoff: Medium
Depth: Densic bedrock at 40 to 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 9.4 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078BY079TX Loamy PE 25-36

Typical profile:
Ap—0 to 5 inches; silt loam
Bk—5 to 40 inches; silty clay loam
BCk—40 to 50 inches; silty clay loam
Cd—50 to 80 inches; silty clay

Representative profile location: Jackson County, Oklahoma; 280 feet north and 1,300 feet east of the southwest corner of Section 22, T.2 N., R.23 W. Latitude—34 degrees, 37 minutes, 27 seconds N; Longitude—99 degrees, 36 minutes, 34 seconds W. USGS Quadrangle: Prairie Hill.

Additional Components

Knoco: 3 percent
La Casa: 3 percent

HSAF—Hardeman-Southside-Arnett complex, 3 to 20 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 5 to 600 acres
Note: Areas of this map unit have been mined for gravel that was used for roadbed material.

Component Description

Hardeman
Composition: 50 percent
Geomorphic setting: Stream terrace on valley
Position on landform: Riser
Parent material: Coarse-loamy alluvium and eolian deposits
Slope: 3 to 15 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately rapid
Slowest permeability class within 80 inches: Moderately rapid
Drainage class: Well drained
Available water capacity: About 7.2 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078CY110TX Sandy Loam Prairie PE 31-44

Typical profile:
A—0 to 14 inches; fine sandy loam
Bw—14 to 20 inches; fine sandy loam

Bk—20 to 46 inches; fine sandy loam
BCk—46 to 80 inches; loamy sand

Representative profile location: Greer County, OK; 2,250 feet north and 1,500 feet west of the southeast corner of Section 11, T.5 N., R.22 W. Latitude—34 degrees, 55 minutes, 15 seconds N; Longitude—99 degrees, 29 minutes, 23 seconds W. USGS Quadrangle: Granite.

Southside
Composition: 27 percent
Geomorphic setting: Stream terrace on valley
Position on landform: Riser
Parent material: Sandy and gravelly alluvium
Slope: 3 to 15 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately rapid
Slowest permeability class within 80 inches: Moderately rapid
Drainage class: Excessively drained
Available water capacity: About 3.1 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078CY107TX Sand Hills PE 31-44

Typical profile:
A—0 to 6 inches; sandy loam
C1—6 to 28 inches; gravelly loamy sand
C2—28 to 80 inches; sand

Representative profile location: Greer County, OK; 2,325 feet north and 1,900 feet west of the southeast corner of Section 11, T.5 N., R.22 W. Latitude—34 degrees, 55 minutes, 15 seconds N; Longitude—99 degrees, 29 minutes, 27 seconds W. USGS Quadrangle: Granite.

Arnett
Composition: 20 percent
Geomorphic setting: Stream terrace on valley
Position on landform: Riser
Parent material: Loamy alluvium over gravelly alluvium
Slope: 3 to 12 percent
Runoff: Medium
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 7.7 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078CY110TX Sandy Loam Prairie PE 31-44

Typical profile:
A—0 to 6 inches; sandy loam
Bt—6 to 21 inches; sandy clay loam
2Bt—21 to 30 inches; gravelly sandy clay loam
2BC—30 to 45 inches; gravelly coarse sandy loam
2C—45 to 80 inches; stratified loamy coarse sand to gravelly clay loam

Representative profile location: Greer County, Oklahoma; 2,300 feet north and 1,825 feet west of the southeast corner of Section 11, T.5 N., R.22 W. Latitude—34 degrees, 55 minutes, 15 seconds N; Longitude—99 degrees, 29 minutes, 26 seconds W. USGS Quadrangle: Granite.

Additional Components

Westola: 3 percent

JesC—Jester fine sand, 1 to 5 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Jester
Composition: 87 percent
Geomorphic setting: Dune on flood plain on valley
Parent material: Calcareous eolian sands
Slope: 1 to 5 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Rapid
Slowest permeability class within 80 inches: Rapid
Drainage class: Excessively drained
Available water capacity: About 3.1 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 4e
Land capability irrigated: 3e
Ecological site number and name: R078CY107TX Sand Hills PE 31-44

Typical profile:
A—0 to 7 inches; fine sand
C1—7 to 45 inches; fine sand
C2—45 to 80 inches; sand

Representative profile location: Jackson County, Oklahoma; 900 feet south and 1,800 feet west of the northeast corner of Section 3, T.4 N., R.19 W. Latitude—34 degrees, 51 minutes, 13 seconds N; Longitude—99 degrees, 11 minutes, 18 seconds W. USGS Quadrangle: Warren.

Additional Components

Lincoln: 13 percent

KcRG—Knoco soils and Rock outcrop, 12 to 40 percent slopes

Map Unit Setting (fig. 13)

MLRA: 78B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 5 to 2,300 acres

Component Description

Knoco
Composition: 45 percent
Geomorphic setting: Scarp on escarpment on upland
Position on landform: Side slope
Parent material: Calcareous clayey residuum weathered from shale
Slope: 12 to 40 percent
Runoff: Very high
Depth: Densic bedrock at 3 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 0.8 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 7e
Ecological site number and name: R078BY692TX Rocky Hill PE 25-36

Typical profile:
A—0 to 3 inches; silty clay
C—3 to 9 inches; silty clay
Cd—9 to 60 inches; clay
Representative profile location: Greer County, Oklahoma; 1,100 feet south and 150 feet west of the northeast corner of Section 15, T.4 N., R.22 W. Latitude—34 degrees, 49 minutes, 26 seconds N; Longitude—99 degrees, 29 minutes, 37 seconds W. USGS Quadrangle: Hester.

Rock outcrop
Composition: 20 percent
Geomorphic setting: Escarpment on upland
Position on landform: Side slope

Figure 13.—Landscape of Knoco soils and Rock outcrop, 12 to 40 percent slopes.

Parent material: Dolomite and gypsum
Slope: 12 to 40 percent
Runoff: Very high
Depth: Lithic bedrock at 0 to 3 inches
Slowest permeability class within 80 inches: Impermeable
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 8s

Typical profile:
R—0 to 60 inches; bedrock

Representative profile location: Greer County, Oklahoma; 1,100 feet south and 350 feet west of the northeast corner of Section 15, T.4 N., R.22 W. Latitude—34 degrees, 49 minutes, 26 seconds N; Longitude—99 degrees, 29 minutes, 39 seconds W. USGS Quadrangle: Hester.

Additional Components

Vernon: 12 percent
Badland: 10 percent
Talpa: 8 percent
Cottonwood: 5 percent

KoBE—Knoco-Badland complex, 1 to 12 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 32 inches
Mean annual air temperature: 57 to 64 degrees F

Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 20 to 2,000 acres

Component Description

Knoco
Composition: 45 percent
Geomorphic setting: Rock pediment on upland
Position on hillslope: Backslope
Parent material: Calcareous clayey residuum weathered from shale
Slope: 1 to 12 percent
Runoff: Very high
Depth: Densic bedrock at 3 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 1.4 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078BY092TX Very Shallow Clay PE 25-36

Typical profile:
A—0 to 6 inches; silty clay
C—6 to 16 inches; clay
Cd—16 to 60 inches; clay

Representative profile location: Jackson County, Oklahoma; 1,300 feet north and 500 feet west of the southeast corner of Section 21, T.1 S., R.22 W. Latitude—34 degrees, 27 minutes, 12 seconds N; Longitude—99 degrees, 30 minutes, 08 seconds W. USGS Quadrangle: Quanah NE.

Badland
Composition: 30 percent
Geomorphic setting: Rock pediment on upland
Position on landform: Side slope
Parent material: Clayey residuum weathered from clayey shale
Slope: 1 to 12 percent
Runoff: Very high
Depth: Densic bedrock at 0 to 3 inches
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 0.0 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None
Salt affected: Saline within 30 inches

Interpretive Groups

Land capability nonirrigated: 8

Typical profile:
Cd—0 to 60 inches; bedrock

Representative profile location: Jackson County, Oklahoma; 1,650 feet north and 800 feet west of the southeast corner of Section 21, T.1 S., R.22 W. Latitude—34 degrees, 27 minutes, 16 seconds N; Longitude—99 degrees, 30 minutes, 08 seconds W. USGS Quadrangle: Quanah NE.

Additional Components

Vernon: 10 percent
Beckman: 5 percent
Rock outcrop: 5 percent
Treadway: 5 percent

KRCF—Knoco, Rock outcrop, and Cottonwood soils, 2 to 20 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 5 to 1,000 acres

Component Description

Knoco
Composition: 33 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Backslope
Parent material: Residuum weathered from clayey shale
Slope: 2 to 20 percent
Runoff: Very high
Depth: Densic bedrock at 3 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 0.9 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078BY092TX Very Shallow Clay PE 25-36

Typical profile:
A—0 to 3 inches; silty clay
C—3 to 12 inches; silty clay
Cd—12 to 60 inches; clay

Representative profile location: Greer County, OK; 600 feet south and 1,450 feet east of the northwest corner of Section 31, T.5 N., R.22 W. Latitude—34 degrees, 52 minutes, 10.5 seconds N; Longitude—99 degrees, 34 minutes, 03.5 seconds W. NAD27. USGS Quadrangle: Mangum South, OK.

Rock outcrop
Composition: 21 percent
Geomorphic setting: Hill on upland
Position on landform: Side slope
Parent material: Gypsum and dolomite
Slope: 2 to 20 percent
Runoff: Very high
Depth: Lithic bedrock at 0 to 3 inches
Slowest permeability class within 80 inches: Very slow
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 8s

Typical profile:
R—0 to 60 inches; bedrock

Representative profile location: Greer County, OK; 800 feet south and 1,200 feet east of the northwest corner of Section 31, T.5 N., R.22 W. Latitude—34 degrees, 52 minutes, 08.75 seconds N; Longitude—99 degrees, 34 minutes, 06.5 seconds W. NAD27. USGS Quadrangle: Mangum South, OK.

Cottonwood
Composition: 17 percent
Geomorphic setting: Hillslope on hill on karst
Position on hillslope: Backslope
Parent material: Residuum weathered from gypsum
Slope: 2 to 12 percent
Runoff: Very high
Depth: Lithic bedrock at 3 to 14 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Very slow
Drainage class: Well drained
Available water capacity: About 0.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 7s
Ecological site number and name: R078BY076TX Gyp PE 25-36

Typical profile:
A—0 to 4 inches; silt loam
R—4 to 40 inches; bedrock

Representative profile location: Greer County, OK; 1,250 feet south and 600 feet east of the northwest corner of Section 31, T.5 N., R.22 W. Latitude—34 degrees, 52 minutes, 04 seconds N; Longitude—99 degrees, 34 minutes, 14 seconds W. NAD27. USGS Quadrangle: Mangum South, OK.

Additional Components

Aspermont: 10 percent
Vernon: 9 percent

La Casa: 5 percent
Talpa: 5 percent

LacB—La Casa silty clay loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 26 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

La Casa
Composition: 79 percent
Geomorphic setting: Hill on karst
Position on landform: Base slope
Parent material: Calcareous silty and clayey alluvium and colluvium over silty and clayey residuum weathered from shale and siltstone
Slope: 1 to 3 percent
Runoff: High
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Slow
Slowest permeability class within 80 inches: Slow
Drainage class: Well drained
Available water capacity: About 8.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078BY072TX Clay Loam PE 25-36

Typical profile:
Ap—0 to 6 inches; silty clay loam
Bt—6 to 12 inches; silty clay loam
Btk1—12 to 34 inches; silty clay
Btk2—34 to 64 inches; silty clay loam
BCk—64 to 81 inches; silty clay loam
C—81 to 91 inches; silty clay loam

Representative profile location: Jackson County, Oklahoma; 400 feet north and 500 feet east of the southwest corner of Section 22, T.2 N., R.23 W. Latitude—34 degrees, 36 minutes, 27 seconds N; Longitude—99 degrees, 36 minutes, 47 seconds W. USGS Quadrangle: Prairie Hill.

Additional Components

Nipsum: 11 percent
Aspermont: 7 percent
Harmon: 3 percent

LnuA—Lincoln loamy sand, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 38 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 10 to 250 acres

Component Description

Lincoln
Composition: 90 percent
Geomorphic setting: Flood plain on valley
Parent material: Calcareous sandy alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Rapid
Slowest permeability class within 80 inches: Rapid
Drainage class: Somewhat excessively drained
Available water capacity: About 3.2 inches
Depth to the top of the seasonal high water table: 5.0 to 6.7 feet
Flooding: Occasional
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY068OK Sandy Bottomland PE 32-44

Typical profile:
A—0 to 8 inches; loamy sand
C1—8 to 21 inches; fine sand
C2—21 to 80 inches; stratified sand to loam

Representative profile location: Jackson County, Oklahoma; 1,400 feet south and 800 feet west of the northeast corner of Section 3, T.4 N., R.19 W. Latitude—34 degrees, 51 minutes, 08 seconds N; Longitude—99 degrees, 10 minutes, 45 seconds W. USGS Quadrangle: Warren.

Additional Components

Gracemore: 5 percent
Westola: 5 percent

LnWA—Lincoln and Westola Soils, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 22 to 38 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 30 to 600 acres

Component Description

Lincoln
Composition: 65 percent
Geomorphic setting: Flood plain on valley
Parent material: Calcareous sandy alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Rapid
Slowest permeability class within 80 inches: Rapid
Drainage class: Somewhat excessively drained
Available water capacity: About 3.1 inches
Depth to the top of the seasonal high water table: 5.0 to 6.7 feet
Flooding: Frequent
Ponding: None

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site number and name: R078CY068OK Sandy Bottomland PE 32-44

Typical profile:
A—0 to 5 inches; loamy sand
C1—5 to 15 inches; loamy sand
C2—15 to 80 inches; stratified sand to loam

Representative profile location: Jackson County, Oklahoma; 200 feet north and 200 feet west of the southeast corner of Section 34, T.5 N., R.19 W. Latitude—34 degrees, 51 minutes, 24 seconds N; Longitude—99 degrees, 11 minutes, 05 seconds W. USGS Quadrangle: Warren.

Westola
Composition: 22 percent
Geomorphic setting: Flood plain on valley
Parent material: Calcareous loamy alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately rapid
Slowest permeability class within 80 inches: Moderately rapid
Drainage class: Well drained
Available water capacity: About 8.2 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: Frequent
Ponding: None

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site number and name: R078CY050OK Loamy Bottomland PE 32-44

Typical profile:
A—0 to 5 inches; fine sandy loam
C1—5 to 30 inches; fine sandy loam
C2—30 to 80 inches; stratified sand to sandy loam

Representative profile location: Jackson County, Oklahoma; 1,000 feet north and 2,400 feet east of the southwest corner of Section 10, T.1 N., R.21 W. Latitude—34 degrees, 34 minutes, 04 seconds N; Longitude—99 degrees, 23 minutes, 44 seconds W. USGS Quadrangle: Olustee.

Additional Components

Gracemont: 5 percent
Gracemore: 5 percent
Jester: 3 percent

LwtA—Lawton loam, 0 to 1 percent slopes

Map Unit Setting

MLRA: 82B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 15 to 1,000 acres
Note: The Lawton component of this map unit has a mollic epipedon more than 20 inches thick, which is more than is allowed for the series, but, use and management is not affected by this difference.

Component Description

Lawton
Composition: 87 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium over granitic outwash and loamy alluvium
Slope: 0 to 1 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 9.2 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 1
Land capability irrigated: 1
Ecological site number and name: R082BY056OK Loamy Prairie PE 38-48

Typical profile:
A—0 to 6 inches; loam
BA—6 to 9 inches; clay loam

Bt1—9 to 34 inches; clay loam
Bt2—34 to 75 inches; gravelly clay loam
BC—75 to 80 inches; gravelly clay loam

Representative profile location: Greer County, Oklahoma; 1,900 feet south and 300 feet east of the northwest corner of Section 34, T.6 N., R.21 W. Latitude—34 degrees, 57 minutes, 09 seconds N; Longitude—99 degrees, 24 minutes, 46 seconds W. USGS Quadrangle: Granite.

Additional Components

Tipton: 13 percent

LwtB—Lawton loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 82B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 5 to 750 acres
Note: The Lawton component of this map unit has a mollic epipedon more than 20 inches thick, which is more than is allowed for the series, but, use and management is not affected by this difference.

Component Description

Lawton
Composition: 87 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium over granitic outwash and loamy alluvium
Slope: 1 to 3 percent
Runoff: Medium
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 9.9 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R082BY056OK Loamy Prairie PE 38-48

Typical profile:
A—0 to 6 inches; loam
Bt1—6 to 28 inches; clay loam
Bt2—28 to 56 inches; clay loam
Bt3—56 to 75 inches; gravelly clay loam
BC—75 to 80 inches; gravelly clay loam

Representative profile location: Greer County, Oklahoma; 2,325 feet south and 2,000 feet east of the northwest corner of Section 3, T.5 N., R.21 W. Latitude—34 degrees, 56 minutes, 13 seconds N; Longitude—99 degrees, 24 minutes, 25 seconds W. USGS Quadrangle: Granite.

Additional Components

Farry: 13 percent

LwtC2—Lawton loam, 3 to 5 percent slopes, eroded

Map Unit Setting

MLRA: 82B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 15 to 350 acres
Note: This map unit has sustained moderate erosion because of cultivation. The forage production and species composition of native grasses that have been reseeded can vary widely from site to site. This is because of the degree of erosion and seed source of grasses that have been planted. For information about the original native vegetation, refer to the range site data for the map unit.

Component Description

Lawton
Composition: 77 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Riser
Parent material: Loamy alluvium over granitic outwash and loamy alluvium
Slope: 3 to 5 percent
Runoff: Medium
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 9.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R082BY856OK Eroded Loamy Prairie PE 38-48

Typical profile:
A—0 to 5 inches; loam
Bt1—5 to 45 inches; clay loam
Bt2—45 to 62 inches; clay loam
BC—62 to 80 inches; gravelly loam

Representative profile location: Greer County, Oklahoma; 2,200 feet south and 2,000 feet west of the northeast corner of Section 15, T.6 N., R.21 W. Latitude—34

degrees, 59 minutes, 44 seconds N; Longitude—99 degrees, 24 minutes, 08 seconds W. USGS Quadrangle: Granite.

Additional Components

Farry: 13 percent
Arnett: 10 percent

M-W—Miscellaneous Water

This map unit consists of areas of waste water. Examples include sewage lagoons and impoundments for industrial waste water.

MagB—Madge loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 750 acres

Component Description

Madge
Composition: 90 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium
Slope: 1 to 3 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 9.2 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078CY056OK Loamy Prairie PE 32-44

Typical profile:
Ap—0 to 13 inches; loam
Bt1—13 to 25 inches; clay loam
Bt2—25 to 41 inches; sandy clay loam
BC—41 to 57 inches; loam
C—57 to 80 inches; fine sandy loam

Representative profile location: Harmon County, Oklahoma; 200 feet north and 2,400 feet east of the southwest corner of Section 19, T.5 N., R.25 W. Latitude—34

degrees, 53 minutes, 11.5 seconds N; Longitude—99 degrees, 52 minutes, 47.5 seconds W. NAD 1927. USGS Quadrangle: Madge, OK.

Additional Components

Dodson: 5 percent
Shrewder: 5 percent

MdgB—Madge fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 5 to 500 acres

Component Description

Madge
Composition: 90 percent
Geomorphic setting: Stream terrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium
Slope: 1 to 3 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 9.0 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078CY056OK Loamy Prairie PE 32-44

Typical profile:
Ap—0 to 5 inches; fine sandy loam
Bt1—5 to 43 inches; sandy clay loam
Bt2—43 to 49 inches; fine sandy loam
BCk—49 to 56 inches; loamy sand
C—56 to 80 inches; sand

Representative profile location: Greer County, Oklahoma; 1,800 feet north and 1,500 feet west of the southeast corner of Section 11, T.5 N., R.22 W. Latitude—34 degrees, 55 minutes, 10.4 seconds N; Longitude—99 degrees, 29 minutes, 22.6 seconds W; NAD83. USGS Quadrangle: Granite, OK.

Additional Components

Farry: 5 percent
Tipton: 5 percent

MknB—Mcknight fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 100 acres

Component Description

Mcknight
Composition: 87 percent
Geomorphic setting: Sand sheet on stream terrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium over residuum weathered from sandstone and shale
Slope: 1 to 3 percent
Runoff: Medium
Depth: Densic bedrock at 40 to 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 6.8 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 2e
Ecological site number and name: R078CY110TX Sandy Loam Prairie PE 31-44

Typical profile:
A—0 to 7 inches; fine sandy loam
Bt—7 to 35 inches; sandy clay loam
2Btk—35 to 53 inches; clay
2Cd—53 to 80 inches; clay

Representative profile location: Harmon County, Oklahoma; 800 feet north and 1,900 feet west of the southeast corner of Section 30, T.3 N., R.26 W. Latitude—34 degrees, 41 minutes, 54 seconds N; Longitude—99 degrees, 58 minutes, 15 seconds W. (NAD 27) USGS Quadrangle: Hollis.

Additional Components

Devol: 5 percent
Grandfield: 5 percent
Aspermont: 3 percent

MktB—Mcknight loamy fine sand, 0 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 350 acres

Component Description

Mcknight
Composition: 85 percent
Geomorphic setting: Sand sheet on stream terrace on alluvial plain
Position on landform: Tread
Parent material: Loamy alluvium over residuum weathered from sandstone and shale
Slope: 0 to 3 percent
Runoff: Medium
Depth: Densic bedrock at 40 to 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 6.1 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY105TX Loamy Sand Prairie PE 31-44

Typical profile:
A—0 to 14 inches; loamy fine sand
Bt—14 to 29 inches; sandy clay loam
2Bt—29 to 36 inches; silty clay
2CBk—36 to 52 inches; clay
2Cd—52 to 80 inches; clay

Representative profile location: Harmon County, Oklahoma; 1,800 feet south and 1,350 feet west of the northeast corner of Section 3, T.3 N., R.26 W. Latitude—34 degrees, 45 minutes, 48.80 seconds N; Longitude—99 degrees, 55 minutes, 0.65 seconds W. (NAD 83) USGS Quadrangle: McKnight.

Additional Components

Grandfield: 10 percent
Devol: 5 percent

MktC2—Mcknight loamy fine sand, 3 to 5 percent slopes, eroded

Map Unit Setting

MLRA: 78C
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 250 acres
Note: This map unit has sustained moderate erosion because of cultivation. The forage production and species composition of native grasses that have been reseeded can vary widely from site to site. This is because of the degree of erosion and seed source of grasses that have been planted. For information about the original native vegetation, refer to the range site data for the map unit.

Component Description

Mcknight
Composition: 75 percent
Geomorphic setting: Sand sheet on stream terrace on alluvial plain
Position on landform: Riser
Parent material: Loamy alluvium over residuum weathered from sandstone and shale
Slope: 3 to 5 percent
Runoff: Medium
Depth: Densic bedrock at 40 to 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 6.3 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 4e
Land capability irrigated: 4e
Ecological site number and name: R078CY834OK Eroded Sandy Land PE 32-44

Typical profile:
A—0 to 7 inches; loamy fine sand
Bt—7 to 35 inches; sandy clay loam
2BCk—35 to 51 inches; clay loam
2Cd—51 to 80 inches; clay

Representative profile location: Harmon County, Oklahoma; 1,500 feet north and 2,220 feet east of the southwest corner of Section 34, T.4 N., R.26 W. Latitude—34 degrees, 46 minutes, 22.2 seconds N; Longitude—99 degrees, 55 minutes, 19.8 seconds W. (NAD 27) USGS Quadrangle: McKnight.

Additional Components

Devol: 10 percent
Grandfield: 10 percent
Aspermont: 3 percent
Knoco: 2 percent

NpsB—Nipsum silty clay loam, 0 to 2 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 5 to 550 acres

Component Description

Nipsum
Composition: 82 percent
Geomorphic setting: Escarpment on upland
Position on landform: Base slope
Parent material: Clayey alluvium and colluvium
Slope: 0 to 2 percent
Runoff: High
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Slow
Slowest permeability class within 80 inches: Slow
Drainage class: Well drained
Available water capacity: About 8.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078BY072TX Clay Loam PE 25-36

Typical profile:
A—0 to 20 inches; silty clay loam
Bk1—20 to 27 inches; silty clay
Bk2—27 to 40 inches; silty clay
Bky—40 to 62 inches; silty clay
BCky—62 to 80 inches; silty clay loam

Representative profile location: Greer County, Oklahoma; 180 feet south and 300 feet west of the northeast corner of Section 17, T.7 N., R.23 W. Latitude—35 degrees, 05 minutes, 13 seconds N; Longitude—99 degrees, 38 minutes, 35 seconds W. USGS Quadrangle: Plainview.

Additional Components

Quanah: 13 percent
Treadway: 5 percent

NstC—Nobscot sand, 2 to 5 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,400 to 2,200 feet
Mean annual precipitation: 20 to 32 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 10 to 800 acres

Component Description

Nobscot (fig. 14)
Composition: 85 percent
Geomorphic setting: Dune on sand sheet on stream terrace on alluvial plain
Parent material: Eolian sands over coarse-loamy eolian deposits
Slope: 2 to 5 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately rapid
Slowest permeability class within 80 inches: Moderately rapid
Drainage class: Well drained
Available water capacity: About 5.3 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 4e
Land capability irrigated: 3e
Ecological site number and name: R078CY017OK Deep Sand Savannah (west) PE 32-44

Typical profile:
A—0 to 5 inches; sand
E—5 to 23 inches; sand
Bt1—23 to 53 inches; sandy loam
Bt2—53 to 71 inches; loamy sand
BC—71 to 80 inches; sand

Representative profile location: Beckham County, Oklahoma; 80 feet north and 600 feet east of the southwest corner of Section 35, T.9 N., R.23 W. Latitude— 35 degrees, 12 minutes, 17.48 seconds N; Longitude— 99 degrees, 36 minutes, 34.99 seconds W. USGS Quadrangle: Carter West.

Additional Components

Delwin: 7 percent
Grandfield: 5 percent
Eda: 3 percent

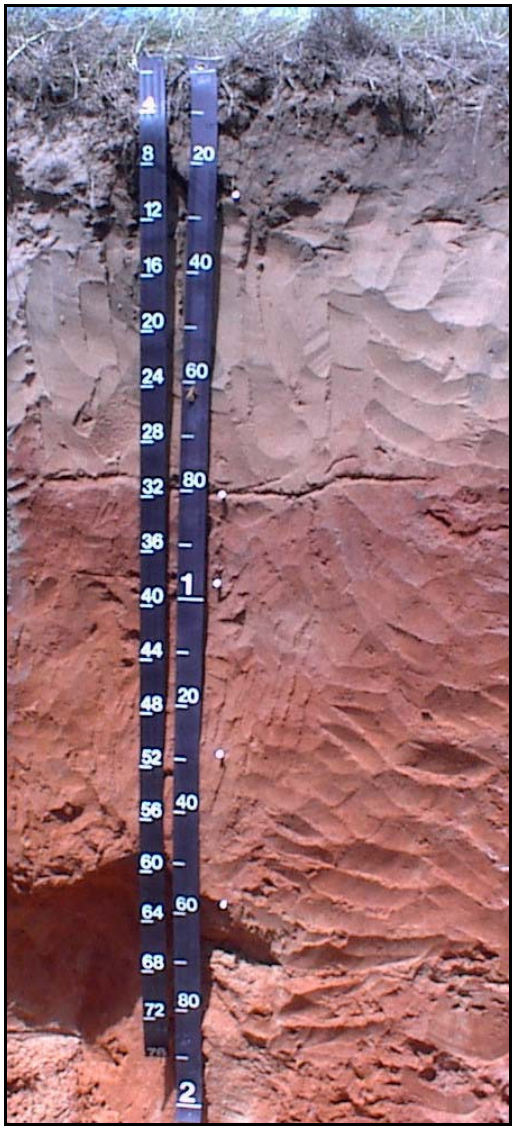

Figure 14.—Profile of Nobscot sand, 2 to 5 percent slopes. The surface layers are sand texture and are about 31 inches thick over the yellowish red sandy loam subsoils. The scale on the left is in inches; scale on the right is in centimeters.

OakA—Oakley loam, 0 to 1 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Oakley
Composition: 80 percent
Geomorphic setting: Stream terrace on alluvial plain
Position on landform: Tread
Parent material: Calcareous loamy alluvium
Slope: 0 to 1 percent
Runoff: Low
Depth: Densic bedrock at 61 to 80 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 10.6 inches
Depth to the top of the seasonal high water table: 5.0 to 8.0 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078CY057OK Loamy Prairie (calcareous) PE 32-44

Typical profile:
Ap—0 to 12 inches; loam
Bk1—12 to 43 inches; loam
Bk2—43 to 58 inches; loam
BC—58 to 85 inches; sandy clay loam
C—85 to 95 inches; gravelly sandy loam
2Cd—95 to 120 inches; clay

Representative profile location: Jackson County, Oklahoma; 450 feet north and 1,100 feet west of the southeast corner of Section 28, T.3 N., R.19 W. Latitude—34 degrees, 41 minutes, 51 seconds N; Longitude—99 degrees, 11 minutes, 51 seconds W. USGS Quadrangle: Headrick.

Additional Components

Roark: 10 percent
Ozark: 7 percent
Burford: 3 percent

OakB—Oakley loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Oakley
Composition: 85 percent

Geomorphic setting: Stream terrace on alluvial plain
Position on landform: Tread
Parent material: Calcareous loamy alluvium
Slope: 1 to 3 percent
Runoff: Medium
Depth: Densic bedrock at 61 to 80 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 10.3 inches
Depth to the top of the seasonal high water table: 5.0 to 8.0 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078CY057OK Loamy Prairie (calcareous) PE 32-44

Typical profile:
Ap—0 to 7 inches; loam
Bk1—7 to 41 inches; loam
Bk2—41 to 49 inches; clay loam
BCk—49 to 72 inches; clay loam
Ck—72 to 95 inches; loam
2Cd—95 to 120 inches; clay

Representative profile location: Jackson County, Oklahoma; 2,400 feet south and 1,150 feet east of the northwest corner of Section 25, T.1 S., R.24 W. Latitude—34 degrees, 26 minutes, 37 seconds N; Longitude—99 degrees, 40 minutes, 09 seconds W. USGS Quadrangle: Eldorado.

Additional Components

Burford: 5 percent
Ozark: 5 percent
Roark: 5 percent

OzkA—Ozark fine sandy loam, 0 to 1 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Ozark
Composition: 85 percent
Geomorphic setting: Flat on sand sheet on stream terrace on alluvial plain
Position on landform: Talf

Parent material: Loamy alluvium over silty and clayey residuum weathered from claystone
Slope: 0 to 1 percent
Runoff: Low
Depth: Densic bedrock at 61 to 80 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Moderately well drained
Available water capacity: About 8.5 inches
Depth to the top of the seasonal high water table: 3.5 to 5.0 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078CY110TX Sandy Loam Prairie PE 31-44

Typical profile:
Ap—0 to 11 inches; fine sandy loam
Bt—11 to 24 inches; sandy clay loam
Btk1—24 to 50 inches; clay loam
Btk2—50 to 59 inches; clay loam
BC—59 to 83 inches; sandy clay loam
2C—83 to 105 inches; clay loam
2Cd—105 to 120 inches; clay

Representative profile location: Jackson County, Oklahoma; 500 feet north and 2,000 feet west of the southeast corner of Section 29, T.3 N., R.19 W. Latitude—34 degrees, 41 minutes, 50 seconds N; Longitude—99 degrees, 13 minutes, 03 seconds W. USGS Quadrangle: Headrick.

Additional Components

Altus: 5 percent
Headrick: 5 percent
Mcknight: 5 percent

PIT—Pits

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 2 to 100 acres

Component Description

Pits
Composition: 100 percent
Geomorphic setting: Gravel pit and Quarry
Parent material: Granite and gravelly alluvium
Slope: 0 to 90 percent

Runoff: Very high
Depth: Paralithic bedrock at 0 to 3 inches
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: Not specified
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 8

Typical profile:
Cr—0 to 80 inches; bedrock

Representative profile location: Greer County, Oklahoma; 50 feet south and 3,000 feet east of the northwest corner of Section 17, T.5 N., R.20 W. Latitude—34 degrees, 54 minutes, 51 seconds N; Longitude—99 degrees, 19 minutes, 57 seconds W. USGS Quadrangle: Lake Altus.

QhTC—Quanah-Talpa complex, 1 to 5 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 5 to 50 acres

Component Description

Quanah
Composition: 50 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Toeslope
Parent material: Calcareous loamy colluvium
Slope: 1 to 5 percent
Runoff: Low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 8.8 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078BY079TX Loamy PE 25-36

Typical profile:
A—0 to 14 inches; silty clay loam
Bw—14 to 22 inches; silty clay loam

Bk1—22 to 36 inches; silty clay loam
Bk2—36 to 82 inches; silty clay loam

Representative profile location: Harmon County, Oklahoma; 100 feet north and 1,600 feet west of the southeast corner of Section 13, T.6 N., R.27 W. Latitude—34 degrees, 59 minutes, 16 seconds N; Longitude—99 degrees, 58 minutes, 59 seconds W. USGS Quadrangle: Madge.

Talpa
Composition: 20 percent
Geomorphic setting: Hill on upland
Position on landform: Side slope
Parent material: Residuum weathered from limestone and dolomite
Slope: 1 to 5 percent
Runoff: Very high
Depth: Lithic bedrock at 4 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 1.5 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 7s
Land capability irrigated: 7s
Ecological site number and name: R078BY091TX Very Shallow PE 25-36

Typical profile:
A—0 to 10 inches; loam
R—10 to 20 inches; bedrock

Representative profile location: Harmon County, Oklahoma; 100 feet north and 1,500 feet west of the southeast corner of Section 13, T.6 N., R.27 W. Latitude—34 degrees, 59 minutes, 16 seconds N; Longitude—99 degrees, 58 minutes, 58 seconds W. USGS Quadrangle: Madge.

Additional Components

Aspermont: 10 percent
La Casa: 10 percent
Cottonwood: 5 percent
Rock outcrop: 5 percent

QnRG—Quinlan-Rock outcrop complex, 12 to 45 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,000 to 2,200 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 65 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Long and narrow, 5 to 200 acres

Component Description

Quinlan
Composition: 50 percent
Geomorphic setting: Escarpment on upland
Position on landform: Side slope
Parent material: Loamy residuum weathered from sandstone
Slope: 12 to 45 percent
Runoff: Very high
Depth: Densic bedrock at 10 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 1.5 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 7e
Ecological site number and name: R078CY005OK Loamy Breaks PE 32-44

Typical profile:
A—0 to 5 inches; very fine sandy loam
Bk—5 to 11 inches; loam
Cd—11 to 40 inches; very fine sandy loam

Representative profile location: Harmon County, Oklahoma; 1,550 feet south and 400 feet east of the northwest corner of Section 7, T.5 N., R.26 W. Latitude—34 degrees, 55 minutes, 31 seconds N; Longitude—99 degrees, 51 minutes, 31 seconds W. USGS Quadrangle: Madge.

Rock outcrop
Composition: 25 percent
Geomorphic setting: Escarpment on upland
Position on landform: Side slope
Parent material: Sandstone
Slope: 12 to 45 percent
Runoff: Very high
Depth: Densic bedrock at 0 to 3 inches
Slowest permeability class within 80 inches: Moderately slow
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 8s

Typical profile:
Cd—0 to 62 inches; bedrock

Representative profile location: Harmon County, Oklahoma; 1,400 feet south and 400 feet east of the northwest corner of Section 7, T.5 N., R.26 W. Latitude—34 degrees, 55 minutes, 31 seconds N; Longitude—99 degrees, 51 minutes, 31 seconds W. USGS Quadrangle: Madge.

Additional Components

Deepwood: 10 percent
Woodward: 10 percent
Westola: 5 percent

RakA—Roark loam, 0 to 1 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 20 to 2,000 acres

Component Description

Roark (fig. 15)
Composition: 85 percent
Geomorphic setting: Stream terrace on alluvial plain

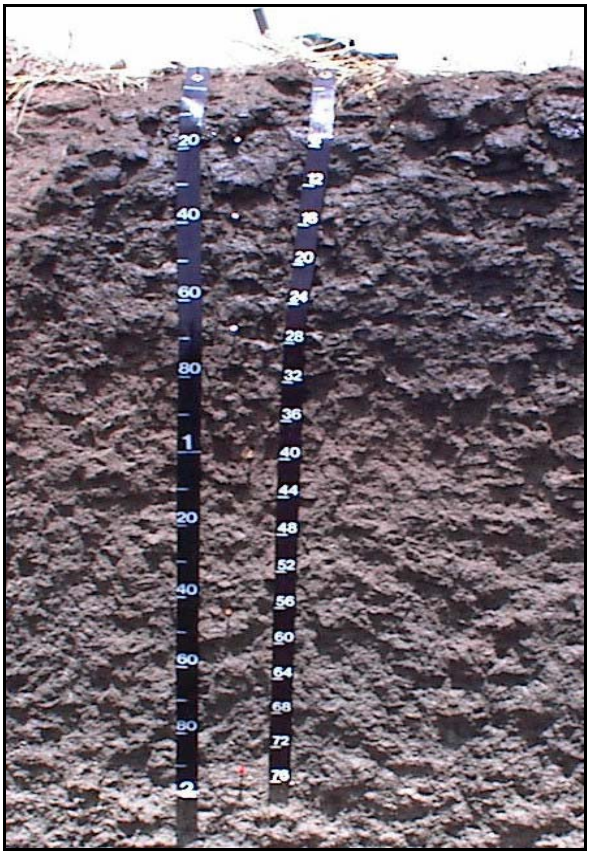

Figure 15.—Profile of Roark loam, 0 to 1 percent slopes. The dark mollic epipedon is about 27 inches thick. The scale on the left is in centimeters; the scale on the right is in inches.

Position on landform: Tread
Parent material: Calcareous loamy and clayey alluvium
Slope: 0 to 1 percent
Runoff: Medium
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Slow
Slowest permeability class within 80 inches: Slow
Drainage class: Well drained
Available water capacity: About 10.1 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 1
Land capability irrigated: 1
Ecological site number and name: R078CY056OK Loamy Prairie PE 32-44

Typical profile:
Ap—0 to 10 inches; loam
Bt—10 to 24 inches; clay loam
Btk1—24 to 34 inches; clay loam
Btk2—34 to 49 inches; clay loam
Btk3—49 to 67 inches; loam
2C—67 to 80 inches; clay loam

Representative profile location: Jackson County, Oklahoma; 50 feet south and 1,600 feet west of the northeast corner of Section 14, T.3 N., R.21 W. Latitude—34 degrees, 44 minutes, 22 seconds N; Longitude—99 degrees, 22 minutes, 28 seconds W. USGS Quadrangle: Altus.

Additional Components

Tipton: 10 percent
Ozark: 5 percent

RKBG—Rock outcrop-Brico complex, 8 to 50 percent slopes

Map Unit Setting

MLRA: 82B
Elevation: 1,000 to 2,490 feet
Mean annual precipitation: 27 to 33 inches
Mean annual air temperature: 58 to 61 degrees F
Frost-free period: 200 to 220 days
Shape and configuration: Irregular, 20 to 2,000 acres

Component Description

Rock outcrop
Composition: 60 percent
Geomorphic setting: Mountain slope on mountains
Position on landform: Mountain flank
Parent material: Granite
Slope: 8 to 50 percent
Runoff: Very high

Slowest permeability class within 80 inches: Impermeable
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 8s

Typical profile:
R—0 to 60 inches; bedrock

Representative profile location: Kiowa County, Oklahoma; 1,500 feet south and 2,500 feet east of the northwest corner of Section 2, T.3 N., R.16 W. Latitude—34 degrees, 45 minutes, 52 seconds N; Longitude—98 degrees, 51 minutes, 06 seconds W. USGS Quadrangle: Cooperton, OK.

Brico
Composition: 30 percent
Geomorphic setting: Mountain slope on mountains
Position on landform: Mountain flank
Parent material: Clayey colluvium derived from granite
Slope: 8 to 20 percent
Runoff: High
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 6.0 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R082BY004OK Boulder Ridge Savannah PE 38-48

Typical profile:
A—0 to 10 inches; cobbly loam
Bt—10 to 35 inches; very cobbly clay
BC—35 to 72 inches; extremely cobbly clay loam

Representative profile location: Kiowa County, Oklahoma; 2,400 feet north and 300 feet west of the southeast corner of Section 27, T.5 N., R.20 W. Latitude—34 degrees, 52 minutes, 39 seconds N; Longitude—99 degrees, 17 minutes, 26 seconds W. USGS Quadrangle: Lake Creek, OK.

Additional Components

Lawton: 10 percent

RKO—Rock outcrop, granite

Map Unit Setting

MLRA: 82B
Elevation: 1,000 to 2,490 feet
Mean annual precipitation: 27 to 33 inches

Mean annual air temperature: 58 to 61 degrees F
Frost-free period: 200 to 220 days
Shape and configuration: Irregular, 20 to 2,000 acres

Component Description

Rock outcrop
Composition: 100 percent
Geomorphic setting: Mountain slope on mountains
Position on landform: Mountain flank
Parent material: Granite
Slope: 20 to 45 percent
Runoff: Very high
Slowest permeability class within 80 inches: Impermeable
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 8s

Typical profile:
R—0 to 60 inches; bedrock

Representative profile location: Kiowa County, Oklahoma; 900 feet south and 2,400 feet west of the northeast corner of Section 35, T.4 N., R.16 W. Latitude—34 degrees, 46 minutes, 51 seconds N; Longitude—98 degrees, 51 minutes, 05 seconds W. USGS Quadrangle: Cooperton.

RuuA—Rups silty clay loam, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 32 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 10 to 250 acres

Component Description

Rups
Composition: 90 percent
Geomorphic setting: Flood plain on alluvial plain
Parent material: Saline silty and clayey alluvium
Slope: 0 to 1 percent
Runoff: Very high
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Slow
Drainage class: Somewhat poorly drained
Available water capacity: About 6.8 inches
Depth to the top of the seasonal high water table: 1.5 to 3.5 feet
Flooding: Occasional

Ponding: None
Salt affected: Saline within 30 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site number and name: R078CY046OK Clayey Saline Bottomland PE 32-44

Typical profile:
Ap—0 to 7 inches; silty clay loam
Bk—7 to 21 inches; silty clay loam
Bkz—21 to 43 inches; silty clay loam
Ckz—43 to 80 inches; silty clay loam

Representative profile location: Jackson County, Oklahoma; 325 feet south and 275 feet west of the northeast corner of Section 26, T.4 N., R.21 W. Latitude—34 degrees, 47 minutes, 50 seconds N; Longitude—99 degrees, 22 minutes, 16 seconds W. USGS Quadrangle: Blair.

Additional Components

Spur: 7 percent
Beckman: 3 percent

RuwA—Rups silty clay loam, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 32 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Long and narrow, 10 to 100 acres

Component Description

Rups
Composition: 82 percent
Geomorphic setting: Flood plain on alluvial plain
Parent material: Saline silty and clayey alluvium
Slope: 0 to 1 percent
Runoff: Very high
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Slow
Drainage class: Somewhat poorly drained
Available water capacity: About 7.1 inches
Depth to the top of the seasonal high water table: 1.5 to 3.5 feet
Flooding: Frequent
Ponding: None
Salt affected: Saline within 30 inches

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site number and name: R078CY046OK Clayey Saline Bottomland PE 32-44

Typical profile:
A—0 to 15 inches; silty clay loam
Bkz1—15 to 30 inches; clay loam
Bkz2—30 to 48 inches; clay loam
Ckz—48 to 80 inches; stratified silty clay loam to clay

Representative profile location: Jackson County, Oklahoma; 300 feet south and 2,450 feet east of the northwest corner of Section 14, T.1 N., R.20 W. Latitude—34 degrees, 33 minutes, 52 seconds N; Longitude—99 degrees, 16 minutes, 23 seconds W. USGS Quadrangle: Altus SE.

Additional Components

Spur: 10 percent
Retrop: 5 percent
Beckman: 3 percent

SKRG—Spikebox-Knoco-Rock outcrop complex, 12 to 40 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 1,800 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 300 acres

Component Description

Spikebox
Composition: 40 percent
Geomorphic setting: Escarpment on hill on upland
Position on landform: Side slope
Parent material: Loamy residuum weathered from sandstone and siltstone
Slope: 12 to 40 percent
Runoff: Very high
Depth: Paralithic bedrock at 8 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 1.8 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 7e
Ecological site number and name: R078CY005OK Loamy Breaks PE 32-44

Typical profile:
A—0 to 3 inches; loam
BC—3 to 12 inches; loam
Cr—12 to 40 inches; bedrock

Representative profile location: Greer County, OK; 1,500 feet north and 1,625 feet west of the southeast corner of Section 21, T.6 N., R.24 W. Latitude—34 degrees, 58 minutes, 38.5 seconds N; Longitude—99 degrees, 44 minutes, 10.0 seconds W. USGS Quadrangle: Reed.

Knoco
Composition: 23 percent
Geomorphic setting: Scarp on escarpment on upland
Position on landform: Side slope
Parent material: Residuum weathered from clayey shale
Slope: 12 to 40 percent
Runoff: Very high
Depth: Densic bedrock at 3 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 1.0 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 7e
Ecological site number and name: R078CY006OK Clayey Breaks PE 32-44

Typical profile:
A—0 to 5 inches; silty clay
C—5 to 11 inches; clay
Cd—11 to 80 inches; clay

Representative profile location: Greer County, OK; 1,400 feet north and 1,600 feet west of the southeast corner of Section 21, T.6 N., R.24 W. Latitude—34 degrees, 58 minutes, 36.5 seconds N; Longitude—99 degrees, 44 minutes, 9.5 seconds W. USGS Quadrangle: Reed.

Rock outcrop
Composition: 20 percent
Geomorphic setting: Escarpment on upland
Position on landform: Side slope
Parent material: Sandstone and shale
Slope: 12 to 40 percent
Runoff: Very high
Depth: Paralithic bedrock at 0 to 3 inches
Slowest permeability class within 80 inches: Very slow
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 8s

Typical profile:
Cr—0 to 62 inches; bedrock

Representative profile location: Greer County, OK; 1,700 feet north and 1,650 feet west of the southeast corner of Section 21, T.6 N., R.24 W. Latitude—34

degrees, 58 minutes, 39.1 seconds N; Longitude—99 degrees, 44 minutes, 10.4 seconds W. USGS Quadrangle: Reed.

Additional Components

Gotebo: 10 percent
Burford: 7 percent

SpDB—Springer and Devol loamy sands, 0 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 32 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 700 acres

Component Description

Springer
Composition: 70 percent
Geomorphic setting: Interdune on sand sheet on stream terrace on alluvial plain
Parent material: Coarse-loamy eolian sands over loamy alluvium
Slope: 0 to 3 percent
Runoff: Very low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately rapid
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 5.2 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY105TX Loamy Sand Prairie PE 31-44

Typical profile:
Ap—0 to 13 inches; loamy sand
Bt—13 to 42 inches; fine sandy loam
BC—42 to 57 inches; fine sand
Btb—57 to 80 inches; fine sandy loam

Representative profile location: Greer County, Oklahoma; 760 feet south and 1,900 feet west of the northeast corner of Section 3, T.7 N., R.22 W. Latitude—35 degrees, 6 minutes, 52 seconds N; Longitude—99 degrees, 30 minutes, 26 seconds W. USGS Quadrangle: Willow.

Devol
Composition: 22 percent
Geomorphic setting: Dune on sand sheet on stream terrace on alluvial plain

Parent material: Coarse-loamy alluvium and sandy eolian deposits
Slope: 0 to 3 percent
Runoff: Very low
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately rapid
Slowest permeability class within 80 inches: Moderately rapid
Drainage class: Well drained
Available water capacity: About 5.5 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY105TX Loamy Sand Prairie PE 31-44

Typical profile:
Ap—0 to 14 inches; loamy sand
Bt1—14 to 29 inches; fine sandy loam
Bt2—29 to 45 inches; fine sandy loam
BC—45 to 65 inches; loamy sand
C—65 to 80 inches; fine sand

Representative profile location: Greer County, Oklahoma; 100 feet north and 1,950 feet east of the southwest corner of Section 24, T.7 N., R.22 W. Latitude—35 degrees, 3 minutes, 33 seconds N; Longitude—99 degrees, 28 minutes, 21 seconds W. USGS Quadrangle: Lake Creek.

Additional Components

Grandfield: 5 percent
Eda: 3 percent

SplA—Spur loam, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 65 degrees F
Frost-free period: 180 to 240 days
Shape and configuration: Long and narrow, 5 to 350 acres

Component Description

Spur
Composition: 90 percent
Geomorphic setting: Flood plain on valley
Parent material: Calcareous loamy alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate

Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 9.7 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: Occasional
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2w
Land capability irrigated: 2w
Ecological site number and name: R078CY050OK Loamy Bottomland PE 32-44

Typical profile:
Ap—0 to 11 inches; loam
Bw—11 to 43 inches; loam
C1—43 to 75 inches; fine sandy loam
C2—75 to 90 inches; stratified fine sandy loam to clay loam

Representative profile location: Greer County, Oklahoma; 1,650 feet south and 1,100 feet east of the northwest corner of Section 7, T.5 N., R.21 W. Latitude—34 degrees, 55 minutes, 28.25 seconds N; Longitude—99 degrees, 27 minutes, 46.00 seconds W. USGS Quadrangle: Granite.

Additional Components

Westola: 7 percent
Clairemont: 3 percent

SurA—Spur clay loam, 0 to 1 percent slopes, rarely flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 20 to 500 acres

Component Description

Spur
Composition: 84 percent
Geomorphic setting: Flood-plain step on flood plain on valley
Parent material: Calcareous loamy alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 10.0 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: Rare
Ponding: None

Interpretive Groups

Land capability nonirrigated: 1
Land capability irrigated: 1
Ecological site number and name: R078CY050OK Loamy Bottomland PE 32-44

Typical profile:
Ap—0 to 14 inches; clay loam
Bw1—14 to 30 inches; clay loam
Bw2—30 to 51 inches; clay loam
C—51 to 80 inches; stratified fine sandy loam to clay loam

Representative profile location: Jackson County, Oklahoma; 1,600 feet south and 1,600 feet east of the northwest corner of Section 25, T.2 N., R.22 W. Latitude—34 degrees, 37 minutes, 08 seconds N; Longitude—99 degrees, 28 minutes, 06 seconds W. USGS Quadrangle: Olustee.

Additional Components

Hayfork: 8 percent
Westola: 8 percent

SuuA—Spur clay loam, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 10 to 250 acres

Component Description

Spur
Composition: 90 percent
Geomorphic setting: Flood plain on alluvial plain
Parent material: Calcareous loamy alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 10.0 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: Occasional
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2w
Land capability irrigated: 2w
Ecological site number and name: R078CY050OK Loamy Bottomland PE 32-44

Typical profile:
Ap—0 to 10 inches; clay loam

A—10 to 16 inches; loam
Bk—16 to 48 inches; clay loam
Cy—48 to 80 inches; clay loam

Representative profile location: Jackson County, Oklahoma; 200 feet south and 2,100 feet west of the northeast corner of Section 19, T.1 S., R.21 W. Latitude—34 degrees, 27 minutes, 49 seconds N; Longitude—99 degrees, 26 minutes, 12 seconds W. USGS Quadrangle: Ayers Island.

Additional Components

Westola: 7 percent
Rups: 3 percent

SuwA—Spur clay loam, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

MLRA: 78B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Long and narrow, 10 to 100 acres

Component Description

Spur
Composition: 87 percent
Geomorphic setting: Flood plain on alluvial plain
Parent material: Calcareous loamy alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 10.0 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: Frequent
Ponding: None

Interpretive Groups

Land capability nonirrigated: 5w
Ecological site number and name: R078BY080TX Loamy Bottomland PE 25-36

Typical profile:
Ap—0 to 8 inches; clay loam
Bw1—8 to 17 inches; clay loam
Bw2—17 to 35 inches; clay loam
Bk—35 to 49 inches; sandy clay loam
C—49 to 80 inches; stratified fine sandy loam to clay loam

Representative profile location: Jackson County, Oklahoma; 1,800 feet south and 400 feet west of the northeast corner of Section 15, T.1 S., R.24 W. Latitude—34

degrees, 28 minutes, 27 seconds N; Longitude—99 degrees, 41 minutes, 31 seconds W. USGS Quadrangle: Eldorado.

Additional Components

Westola: 8 percent
Rups: 5 percent

TARD—Talpa-Aspermont-Rock outcrop complex, 1 to 8 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Talpa
Composition: 46 percent
Geomorphic setting: Hill on karst
Position on landform: Side slope
Parent material: Loamy residuum weathered from limestone and dolomite
Slope: 1 to 8 percent
Runoff: Very high
Depth: Lithic bedrock at 4 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 1.1 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 7s
Ecological site number and name: R078BY091TX Very Shallow PE 25-36

Typical profile:
A—0 to 7 inches; loam
R—7 to 40 inches; bedrock

Representative profile location: Jackson County, Oklahoma; 2,275 feet south and 2,150 feet west of the northeast corner of Section 3, T.2 N., R.22 W. Latitude—34 degrees, 40 minutes, 30 seconds N; Longitude—99 degrees, 29 minutes, 55 seconds W. USGS Quadrangle: Martha.

Aspermont
Composition: 37 percent
Geomorphic setting: Hill on karst
Position on landform: Side slope
Parent material: Fine-silty colluvium over silty and clayey residuum weathered from shale and siltstone

Slope: 1 to 5 percent
Runoff: Medium
Depth: Densic bedrock at 40 to 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 7.5 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Ecological site number and name: R078BY079TX Loamy PE 25-36

Typical profile:
A—0 to 10 inches; silt loam
Bk—10 to 42 inches; silty clay loam
Cd—42 to 80 inches; silty clay

Representative profile location: Jackson County, Oklahoma; 2,200 feet south and 2,100 feet west of the northeast corner of Section 3, T.2 N., R.22 W. Latitude—34 degrees, 40 minutes, 31 seconds N; Longitude—99 degrees, 29 minutes, 54 seconds W. USGS Quadrangle: Martha.

Rock outcrop
Composition: 11 percent
Geomorphic setting: Hill on karst
Position on landform: Side slope
Parent material: Dolomite
Slope: 1 to 8 percent
Runoff: Very high
Depth: Lithic bedrock at 0 to 3 inches
Slowest permeability class within 80 inches: Impermeable
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 8s

Typical profile:
R—0 to 60 inches; bedrock

Representative profile location: Jackson County, Oklahoma; 2,400 feet south and 2,200 feet west of the northeast corner of Section 3, T.2 N., R.22 W. Latitude—34 degrees, 40 minutes, 28 seconds N; Longitude—99 degrees, 29 minutes, 56 seconds W. USGS Quadrangle: Martha.

Additional Components

Nipsum: 4 percent
Cottonwood: 2 percent

TilA—Tillman clay loam, 0 to 1 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 1,500 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 65 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 20 to 600 acres

Component Description

Tillman
Composition: 85 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Calcareous clayey and loamy alluvium derived from claystone
Slope: 0 to 1 percent
Runoff: Medium
Depth: Densic bedrock at 80 to 100 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Slow
Slowest permeability class within 80 inches: Very slow
Drainage class: Well drained
Available water capacity: About 8.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 1
Land capability irrigated: 1
Ecological site number and name: R078CY096TX Clay Loam PE 31-44

Typical profile:
Ap—0 to 8 inches; clay loam
Bt—8 to 15 inches; clay loam
Btk1—15 to 45 inches; clay
Btk2—45 to 62 inches; clay
2BC—62 to 78 inches; clay
2C—78 to 90 inches; silty clay
2Cd—90 to 100 inches; silty clay

Representative profile location: Jackson County, Oklahoma; 1,900 feet north and 2,100 feet east of the southwest corner of Section 26, T.2 N., R.20 W. Latitude—34 degrees, 36 minutes, 50 seconds N; Longitude—99 degrees, 16 minutes, 27 seconds W. USGS Quadrangle: Altus SE.

Additional Components

Hollister: 12 percent
Tilvern: 3 percent

TilB—Tillman clay loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 1,500 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 65 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 20 to 600 acres

Component Description

Tillman
Composition: 85 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Calcareous clayey and loamy alluvium derived from claystone
Slope: 1 to 3 percent
Runoff: High
Depth: Densic bedrock at 80 to 100 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Slow
Slowest permeability class within 80 inches: Slow
Drainage class: Well drained
Available water capacity: About 8.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078CY096TX Clay Loam PE 31-44

Typical profile:
Ap—0 to 6 inches; clay loam
Bt1—6 to 10 inches; clay loam
Bt2—10 to 25 inches; clay
Btk1—25 to 48 inches; clay
Btk2—48 to 60 inches; clay
BCk—60 to 82 inches; clay
2C—82 to 90 inches; silty clay
2Cd—90 to 100 inches; silty clay

Representative profile location: Jackson County, Oklahoma; 700 feet north and 100 feet east of the southwest corner of Section 4, T.1 N., R.20 W. Latitude—34 degrees, 34 minutes, 54 seconds N; Longitude—99 degrees, 18 minutes, 56 seconds W. USGS Quadrangle: Altus SE.

Additional Components

Hollister: 8 percent
Tilvern: 7 percent

TipA—Tipton loam, 0 to 1 percent slopes

Map Unit Setting (fig. 16)

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 20 to 2,000 acres
Note: This map unit has areas that have a thinner mollic epipedon than is allowed for the series, but, use and management is not affected by this difference.

Component Description

Tipton
Composition: 80 percent
Geomorphic setting: Stream terrace on alluvial plain
Position on landform: Tread
Parent material: Calcareous loamy and silty alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 10.4 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Figure 16.—Landscape of irrigated cotton on Tipton loam, 0 to 1 percent slopes.

Interpretive Groups

Land capability nonirrigated: 1
Land capability irrigated: 1
Ecological site number and name: R078CY056OK Loamy Prairie PE 32-44

Typical profile:
Ap—0 to 8 inches; loam
A—8 to 15 inches; loam
Bt—15 to 25 inches; clay loam
Btk—25 to 41 inches; clay loam
Bk—41 to 66 inches; clay loam
C—66 to 80 inches; loam

Representative profile location: Jackson County, Oklahoma; 1,000 feet south and 450 feet west of the northeast corner of Section 24, T.1 S., R.20 W. Latitude—34 degrees, 27 minutes, 42 seconds N; Longitude—99 degrees, 14 minutes, 18 seconds W. USGS Quadrangle: White Lake.

Additional Components

Roark: 10 percent
Devol: 5 percent
Ozark: 5 percent

TlvB—Tilvern clay loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Tilvern
Composition: 85 percent
Geomorphic setting: Hill on upland
Position on landform: Base slope
Parent material: Calcareous clayey residuum weathered from claystone
Slope: 1 to 3 percent
Runoff: Very high
Depth: Densic bedrock at 40 to 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 6.8 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3s
Land capability irrigated: 3s
Ecological site number and name: R078BY090TX Shallow Clay PE 25-36

Typical profile:
Ap—0 to 5 inches; clay loam
Bk—5 to 11 inches; silty clay
Bkss—11 to 31 inches; silty clay
Bky—31 to 44 inches; silty clay
BCky—44 to 51 inches; silty clay
Cd—51 to 80 inches; silty clay

Representative profile location: Jackson County, Oklahoma; 1,200 feet north and 2,200 feet east of the southwest corner of Section 24, T.1 N., R.23 W. Latitude—34 degrees, 32 minutes, 21 seconds N; Longitude—99 degrees, 34 minutes, 19 seconds W. USGS Quadrangle: Prairie Hill.

Additional Components

Westill: 12 percent
Knoco: 3 percent

TpfA—Tipton fine sandy loam, 0 to 1 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 20 to 2,000 acres

Component Description

Tipton
Composition: 90 percent
Geomorphic setting: Stream terrace on alluvial plain
Position on landform: Tread
Parent material: Calcareous loamy and silty alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained
Available water capacity: About 9.9 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078CY056OK Loamy Prairie PE 32-44

Typical profile:
Ap—0 to 7 inches; fine sandy loam
A—7 to 13 inches; fine sandy loam
BA—13 to 24 inches; loam
Bt—24 to 47 inches; clay loam

Btk—47 to 63 inches; sandy clay loam
BCk—63 to 80 inches; sandy loam

Representative profile location: Jackson County, Oklahoma; 450 feet south and 600 feet east of the northwest corner of Section 9, T.3 N., R.21 W. Latitude—34 degrees, 45 minutes, 11 seconds N; Longitude—99 degrees, 25 minutes, 15 seconds W. USGS Quadrangle: Hester.

Additional Components

Roark: 7 percent
Grandfield: 3 percent

TrwB—Treadway silty clay loam, 0 to 2 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,400 to 2,000 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 5 to 175 acres

Component Description

Treadway (fig. 17)
Composition: 87 percent
Geomorphic setting: Alluvial fan on pediment on upland
Position on landform: Base slope
Parent material: Calcareous, saline silty and clayey alluvium derived from clayey shale
Slope: 0 to 2 percent
Runoff: Very high
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Very slow
Drainage class: Well drained
Available water capacity: About 5.0 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None
Salt affected: Saline within 30 inches
Sodium affected: Sodic within 30 inches

Interpretive Groups

Land capability nonirrigated: 4s
Ecological site number and name: R078BY071TX Clay Flat PE 25-36

Typical profile:
Ap—0 to 13 inches; silty clay loam
Bkyz1—13 to 24 inches; silty clay loam
Bkyz2—24 to 80 inches; silty clay

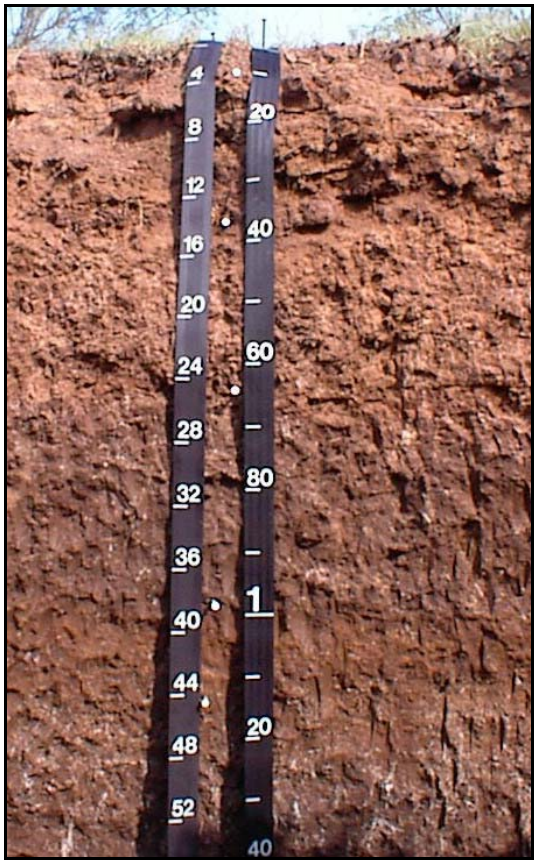

Figure 17.—Profile of Treadway silty clay loam, 0 to 2 percent slopes. The scale on the left is in inches; the scale on the right is in centimeters.

Representative profile location: Greer County, Oklahoma; 2,100 feet south and 400 feet east of the northwest corner of Section 1, T.7 N., R.24 W. Latitude—35 degrees, 6 minutes, 39 seconds N; Longitude—99 degrees, 41 minutes, 35 seconds W. USGS Quadrangle: Plainview.

Additional Components

Westill: 8 percent
Vernon: 5 percent

VeKE—Vernon-Knoco complex, 1 to 12 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 21 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 20 to 2,000 acres

Component Description

Vernon
Composition: 50 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Backslope
Parent material: Calcareous clayey residuum weathered from claystone
Slope: 1 to 12 percent
Runoff: Very high
Depth: Densic bedrock at 20 to 40 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 3.5 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078BY090TX Shallow Clay PE 25-36

Typical profile:
A—0 to 6 inches; clay loam
Bk—6 to 26 inches; clay
Cd—26 to 80 inches; clay

Representative profile location: Jackson County, Oklahoma; 750 feet north and 600 feet west of the southeast corner of Section 20, T.3 N., R.23 W. Latitude—34 degrees, 42 minutes, 44 seconds N; Longitude—99 degrees, 38 minutes, 02 seconds W. USGS Quadrangle: McQueen.

Knoco
Composition: 35 percent
Geomorphic setting: Hill on upland
Position on hillslope: Backslope
Parent material: Calcareous clayey residuum weathered from shale
Slope: 1 to 12 percent
Runoff: Very high
Depth: Densic bedrock at 3 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 1.4 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078BY092TX Very Shallow Clay PE 25-36

Typical profile:
A—0 to 6 inches; silty clay
C—6 to 16 inches; clay
Cd—16 to 60 inches; clay

Representative profile location: Jackson County, Oklahoma; 250 feet north and 600 feet west of the southeast corner of Section 20, T.3 N., R.23 W. Latitude—34 degrees, 42 minutes, 39 seconds N; Longitude—99 degrees, 38 minutes, 02 seconds W. USGS Quadrangle: McQueen.

Additional Components

Badland: 10 percent
Cottonwood: 3 percent
Rock outcrop: 2 percent

VerC—Vernon clay loam, 3 to 5 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 5 to 100 acres

Component Description

Vernon
Composition: 78 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Backslope
Parent material: Calcareous clayey residuum weathered from claystone
Slope: 3 to 5 percent
Runoff: Very high
Depth: Densic bedrock at 20 to 40 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 4.7 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 4e
Land capability irrigated: 3e
Ecological site number and name: R078BY090TX Shallow Clay PE 25-36

Typical profile:
Ap—0 to 6 inches; clay loam
Bk—6 to 26 inches; clay
BCk—26 to 35 inches; clay
Cd—35 to 80 inches; clay

Representative profile location: Jackson County, Oklahoma; 1,100 feet north and 2,100 feet west of the southeast corner of Section 20, T.1 S., R.22 W. Latitude—34 degrees, 31 minutes, 11 seconds N; Longitude—99 degrees, 31 minutes, 27 seconds W. USGS Quadrangle: Quanah NE.

Additional Components

Westill: 10 percent
Knoco: 8 percent
Burford: 4 percent

VeTE—Vernon-Talpa complex, 1 to 12 percent slopes, stony

Map Unit Setting

MLRA: 78B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 20 to 2,000 acres

Component Description

Vernon
Composition: 53 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Backslope
Parent material: Calcareous clayey residuum weathered from claystone
Slope: 1 to 12 percent
Runoff: Very high
Depth: Densic bedrock at 20 to 40 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 4.4 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078BY090TX Shallow Clay PE 25-36

Typical profile:
A—0 to 7 inches; clay loam
Bk1—7 to 16 inches; clay
Bk2—16 to 25 inches; clay
Ck—25 to 38 inches; clay
Cd—38 to 80 inches; clay

Representative profile location: Jackson County, Oklahoma; 250 feet north and 2,100 feet east of the southwest corner of Section 34, T.2 N., R.23 W. Latitude—34 degrees, 35 minutes, 42 seconds N; Longitude—99 degrees, 30 minutes, 07 seconds W. USGS Quadrangle: Prairie Hill.

Talpa
Composition: 25 percent
Geomorphic setting: Hill on upland
Position on landform: Side slope

Parent material: Loamy residuum weathered from limestone and dolomite
Slope: 1 to 12 percent
Runoff: Very high
Depth: Lithic bedrock at 4 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 1.4 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 7s
Ecological site number and name: R078BY091TX Very Shallow PE 25-36

Typical profile:
A—0 to 9 inches; loam
R—9 to 40 inches; bedrock

Representative profile location: Jackson County, Oklahoma; 400 feet north and 2,350 feet east of the southwest corner of Section 34, T.2 N., R.23 W. Latitude—34 degrees, 35 minutes, 43 seconds N; Longitude—99 degrees, 30 minutes, 04 seconds W. USGS Quadrangle: Prairie Hill.

Additional Components

Aspermont: 10 percent
Knoco: 10 percent
Rock outcrop: 2 percent

W—Water

This map unit consists of areas of fresh water, including ponds, lakes, and rivers.

WlwB—Willow loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78C
Elevation: 1,100 to 1,700 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 5 to 800 acres

Component Description

Willow
Composition: 85 percent
Geomorphic setting: Terrace on alluvial plain on pediment on upland
Position on landform: Tread
Parent material: Silty alluvium over silty residuum weathered from sandstone and siltstone
Slope: 1 to 3 percent
Runoff: Medium
Depth: Densic bedrock at 40 to 60 inches

Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately slow
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 8.8 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078CY056OK Loamy Prairie PE 32-44

Typical profile:
Ap—0 to 7 inches; loam
Bt—7 to 31 inches; clay loam
2Bk—31 to 39 inches; loam
2BCk—39 to 54 inches; loam
2Cd—54 to 80 inches; loam

Representative profile location: Greer County, Oklahoma; 600 feet south and 400 feet west of the northeast corner of Section 17, T.6 N., R.22 W. Latitude—35 degrees, 00 minutes, 01 seconds N; Longitude—99 degrees, 32 minutes, 17 seconds W. USGS Quadrangle: Willow.

Additional Components

Westill: 8 percent
Roark: 5 percent
Gotebo: 2 percent

WooB—Woodward loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,500 to 2,200 feet
Mean annual precipitation: 20 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 200 to 230 days
Shape and configuration: Irregular, 5 to 300 acres

Component Description

Woodward
Composition: 87 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Shoulder
Parent material: Coarse-silty residuum weathered from sandstone
Slope: 1 to 3 percent
Runoff: Low
Depth: Densic bedrock at 20 to 40 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 5.2 inches

Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3s
Land capability irrigated: 3e
Ecological site number and name: R078BY081TX Loamy Prairie PE 25-36

Typical profile:
A—0 to 15 inches; loam
Bw—15 to 32 inches; loam
BCk—32 to 38 inches; very fine sandy loam
Cd—38 to 80 inches; very fine sandy loam

Representative profile location: Harmon County, Oklahoma. 300 feet north and 2,500 feet east of the southwest corner of Section 15, T.5 N., R.26 W. Latitude—34 degrees, 54 minutes, 4.5 seconds N; Longitude—99 degrees, 55 minutes, 56.5 seconds W.(NAD 27) USGS Quadrangle: Madge, OK.

Additional Components

Carey: 8 percent
Quinlan: 5 percent

WooC—Woodward loam, 3 to 5 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,500 to 2,200 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 220 days
Shape and configuration: Irregular, 5 to 500 acres

Component Description

Woodward
Composition: 90 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Shoulder
Parent material: Coarse-silty residuum weathered from sandstone
Slope: 3 to 5 percent
Runoff: Low
Depth: Densic bedrock at 20 to 40 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 4.3 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e

Ecological site number and name: R078BY081TX Loamy Prairie PE 25-36

Typical profile:
A—0 to 7 inches; loam
Bk—7 to 19 inches; loam
BCk—19 to 28 inches; loam
Cd—28 to 80 inches; very fine sandy loam

Representative profile location: Harmon County, Oklahoma; 750 feet south and 3,050 feet west of the northeast corner of Section 20, T.5 N., R.26 W. Latitude—34 degrees, 53 minutes, 54 seconds N; Longitude—99 degrees, 58 minutes, 6 seconds W.(NAD 27) USGS Quadrangle: Madge, OK.

Additional Components

Quinlan: 5 percent
Shrewder: 5 percent

WoQE—Woodward-Quinlan complex, 5 to 12 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,500 to 2,200 feet
Mean annual precipitation: 20 to 30 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 220 days
Shape and configuration: Irregular, 5 to 500 acres

Component Description

Woodward
Composition: 50 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Backslope
Parent material: Coarse-silty residuum weathered from sandstone
Slope: 5 to 12 percent
Runoff: Medium
Depth: Densic bedrock at 20 to 40 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 3.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078BY081TX Loamy Prairie PE 25-36

Typical profile:
A—0 to 9 inches; loam
Bk—9 to 21 inches; loam
BCk—21 to 26 inches; loam
Cd—26 to 80 inches; very fine sandy loam

Representative profile location: Harmon County, Oklahoma; 3,100 feet south and 1,290 feet west of the northeast corner of Section 22, T.5 N., R.26 W. Latitude—34 degrees, 53 minutes, 31 seconds N; Longitude—99 degrees, 55 minutes, 38.5 seconds W.(NAD 27) USGS Quadrangle: Madge, OK.

Quinlan
Composition: 37 percent
Geomorphic setting: Hillslope on hill on upland
Position on hillslope: Backslope
Parent material: Loamy residuum weathered from sandstone
Slope: 5 to 12 percent
Runoff: High
Depth: Densic bedrock at 10 to 20 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderately slow
Drainage class: Well drained
Available water capacity: About 1.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 6e
Ecological site number and name: R078CY084OK Shallow Prairie (south) PE 32-44

Typical profile:
A—0 to 4 inches; loam
Bk—4 to 12 inches; loam
Cd—12 to 40 inches; very fine sandy loam

Representative profile location: Harmon County, Oklahoma; 3,100 feet south and 1,240 feet west of the northeast corner of Section 22, T.5 N., R.26 W. Latitude—34 degrees, 53 minutes, 31 seconds N; Longitude—99 degrees, 55 minutes, 38 seconds W.(NAD 27) USGS Quadrangle: Madge, OK.

Additional Components

Shrewder: 10 percent
Rock outcrop: 3 percent

WslA—Westola fine sandy loam, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 38 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 185 to 230 days
Shape and configuration: Irregular, 10 to 250 acres

Component Description

Westola
Composition: 90 percent
Geomorphic setting: Flood plain on valley

Parent material: Calcareous loamy alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderately rapid
Slowest permeability class within 80 inches: Moderately rapid
Drainage class: Well drained
Available water capacity: About 8.2 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: Occasional
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site number and name: R078CY050OK Loamy Bottomland PE 32-44

Typical profile:
A—0 to 12 inches; fine sandy loam
C1—12 to 50 inches; stratified fine sandy loam to loam
C2—50 to 80 inches; stratified sand to sandy loam

Representative profile location: Jackson County, Oklahoma; 1,200 feet north and 1,000 feet east of the southwest corner of Section 15, T.1 N., R.21 W. Latitude—34 degrees, 33 minutes, 15 seconds N; Longitude—99 degrees, 24 minutes, 03 seconds W. USGS Quadrangle: Olustee.

Additional Components

Lincoln: 6 percent
Gracemont: 4 percent

WstA—Westola fine sandy loam, 0 to 1 percent slopes, rarely flooded

Map Unit Setting

MLRA: 78C
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 28 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 180 to 230 days
Shape and configuration: Irregular, 20 to 500 acres

Component Description

Westola
Composition: 92 percent
Geomorphic setting: Flood-plain step on flood plain on valley
Parent material: Calcareous loamy alluvium
Slope: 0 to 1 percent
Runoff: Negligible
Depth: Greater than 60 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Moderate
Slowest permeability class within 80 inches: Moderate
Drainage class: Well drained

Available water capacity: About 8.6 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: Rare
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2e
Land capability irrigated: 2e
Ecological site number and name: R078CY050OK Loamy Bottomland PE 32-44

Typical profile:
Ap—0 to 8 inches; fine sandy loam
A—8 to 19 inches; loam
C1—19 to 30 inches; fine sandy loam
C2—30 to 80 inches; stratified fine sandy loam to loam

Representative profile location: Jackson County, Oklahoma; 2,500 feet south and 1,900 feet west of the northeast corner of Section 4, T.2 N., R.21 W. Latitude—34 degrees, 40 minutes, 28 seconds N; Longitude—99 degrees, 24 minutes, 36 seconds W. USGS Quadrangle: Martha.

Additional Components

Spur: 5 percent
Lincoln: 3 percent

WtlA—Westill clay loam, 0 to 1 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 58 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Westill
Composition: 85 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Calcareous clayey alluvium over silty and clayey residuum weathered from claystone
Slope: 0 to 1 percent
Runoff: High
Depth: Densic bedrock at 60 to 80 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 8.0 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 2s
Land capability irrigated: 2s
Ecological site number and name: R078BY072TX Clay Loam PE 25-36

Typical profile:
Ap—0 to 5 inches; clay loam
Bt1—5 to 15 inches; clay
Bt2—15 to 24 inches; clay
Btk—24 to 55 inches; clay
2C—55 to 70 inches; silty clay
2Cd—70 to 80 inches; silty clay

Representative profile location: Jackson County, Oklahoma; 2,150 feet north and 150 feet west of the southeast corner of Section 4, T.2 N., R.25 W. Latitude—34 degrees, 40 minutes, 25 seconds N; Longitude—99 degrees, 49 minutes, 29 seconds W. USGS Quadrangle: Gould.

Additional Components

Hollister: 12 percent
Tilvern: 3 percent

WtlB—Westill clay loam, 1 to 3 percent slopes

Map Unit Setting

MLRA: 78B
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 22 to 30 inches
Mean annual air temperature: 58 to 64 degrees F
Frost-free period: 190 to 230 days
Shape and configuration: Irregular, 10 to 300 acres

Component Description

Westill
Composition: 83 percent
Geomorphic setting: Paleoterrace on alluvial plain
Position on landform: Tread
Parent material: Calcareous clayey alluvium over silty and clayey residuum weathered from claystone
Slope: 1 to 3 percent
Runoff: Very high
Depth: Densic bedrock at 60 to 80 inches
Slowest permeability class of the soil to 60 inches or above a restrictive layer: Very slow
Slowest permeability class within 80 inches: Impermeable
Drainage class: Well drained
Available water capacity: About 7.7 inches
Depth to the top of the seasonal high water table: Greater than 6 feet
Flooding: None
Ponding: None

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 2e

Ecological site number and name: R078BY072TX Clay Loam PE 25-36

Typical profile:

Ap—0 to 9 inches; clay loam
Bt—9 to 16 inches; clay
Btk—16 to 47 inches; clay
2BCk—47 to 56 inches; clay
2C—56 to 68 inches; silty clay
2Cd—68 to 80 inches; silty clay

Representative profile location: Jackson County, Oklahoma; 350 feet north and 2,300 feet west of the southeast corner of Section 23, T.3 N., R.23 W. Latitude—34 degrees, 42 minutes, 40 seconds N; Longitude—99 degrees, 35 minutes, 12 seconds W. USGS Quadrangle: Duke.

Additional Components

Hollister: 10 percent
Tilvern: 7 percent

Use and Management of the Soils

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

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

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other 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 acquisition of 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 officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

The classification and extent of the soils in this survey area are shown in the tables, “Classification of the Soils” and “Acreage and Proportionate Extent of the Soils.”

Agronomy

General management concerns affecting crops, hay, and pasture are identified 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.

Land Capability Classification

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

In the capability system, as described in "Land Capability Classification" *(8)*, soils generally are grouped at three levels: capability class, subclass, and unit. These levels indicate the degree and kinds of limitations affecting mechanized farming systems that produce the more commonly grown field crops, such as corn, small grain, cotton, hay, and field-grown vegetables. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Arabic 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 Natural Resources Conservation Service or the Cooperative Extension Service can provide guidance on the use of these soils as cropland.

Areas in class 8 are generally not suitable for crops, pasture, rangeland, or woodland. 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 small letter, e, w, s, or c, to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless 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 shown in the tables, "Land Capability and Yields per Acre of Crops" and "Land Capability and Yields per Acre of Hay and Pasture."

Estimated Yields of Crops, Pasture, and Hay

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

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

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

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

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

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small.

Under good pasture 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 indicated 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 the tables, “Land Capability and Yields per Acre of Crops” and “Land Capability and Yields per Acre of Hay and Pasture.”

Land Capability and Yields per Acre of Crops

(Yields in the "N" columns are for nonirrigated areas; those in the "I" columns are for irrigated areas. 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		Alfalfa hay		Cotton lint		Grain sorghum		Peanuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Lbs	Lbs	Bu	Bu	Lbs	Lbs	Bu	Bu
AceB:												
Acme	3e	3e	2.50	4.50	325.00	750.00	30.00	85.00	---	---	25.00	---
ArHF:												
Arnett	4e	---	---	---	---	---	---	---	---	---	---	---
Hardeman	6e	---	---	---	---	---	---	---	---	---	---	---
ArnB:												
Arnett	2e	2e	2.50	---	250.00	---	30.00	---	---	---	28.00	---
ArnC:												
Arnett	3e	3e	2.00	---	200.00	---	25.00	---	---	---	20.00	---
AsmB:												
Aspermont	3e	3e	---	---	200.00	---	20.00	---	---	---	20.00	---
AsmC:												
Aspermont	3e	3e	---	---	150.00	---	---	---	---	---	15.00	---
BekA:												
Beckman	4w	---	---	---	100.00	---	10.00	---	---	---	10.00	---
BfdB:												
Burford	3e	2e	---	---	225.00	---	22.00	---	---	---	20.00	---
BfdC:												
Burford	3e	3e	---	---	175.00	---	---	---	---	---	15.00	---
BfSC2:												
Burford, moderately eroded	3e	3e	---	---	150.00	---	---	---	---	---	13.00	---
Spikebox, moderately eroded	4s	4s	---	---	---	---	---	---	---	---	8.00	---

Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability		Alfalfa hay		Cotton lint		Grain sorghum		Peanuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Lbs	Lbs	Bu	Bu	Lbs	Lbs	Bu	Bu
BfSE:												
Burford	6e	---	---	---	---	---	---	---	---	---	---	---
Spikebox	6e	---	---	---	---	---	---	---	---	---	---	---
BriE:												
Brico	6e	---	---	---	---	---	---	---	---	---	---	---
BukA:												
Bukreek	1	1	2.50	---	325.00	---	33.00	---	---	---	30.00	---
CarB:												
Carey	2e	2e	2.50	---	300.00	---	30.00	---	---	---	30.00	---
CawA:												
Carwile	5w	---	---	---	---	---	---	---	---	---	---	---
CVRD:												
Cottonwood	7s	---	---	---	---	---	---	---	---	---	---	---
Vinson	4e	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---	---	---	---	---	---
DAM:												
Dam	8	---	---	---	---	---	---	---	---	---	---	---
DeSD:												
Devol	4e	4e	2.00	---	175.00	---	20.00	---	1,000.00	2,500.00	18.00	---
Springer	4e	4e	2.20	---	225.00	---	25.00	---	1,000.00	2,500.00	22.00	---
DkuA:												
Duke	4w	---	---	---	225.00	---	25.00	---	---	---	20.00	---
DodA:												
Dodson	1	1	2.80	---	375.00	---	40.00	---	---	---	35.00	---
DodB:												
Dodson	2e	2e	2.50	---	350.00	---	35.00	---	---	---	35.00	---

Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability		Alfalfa hay		Cotton lint		Grain sorghum		Peanuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Lbs	Lbs	Bu	Bu	Lbs	Lbs	Bu	Bu
EatA:												
Eastall	5w	---	---	---	---	---	---	---	---	---	---	---
EdsB:												
Eda	3e	3e	2.00	---	150.00	---	20.00	---	1,000.00	2,500.00	18.00	---
EdsD:												
Eda	4e	4e	---	---	---	---	---	---	900.00	2,100.00	12.00	---
EdsF:												
Eda	6e	---	---	---	---	---	---	---	---	---	---	---
FraB:												
Frankirk	2e	2e	2.50	---	350.00	900.00	35.00	100.00	---	---	35.00	---
FryB:												
Farry	2e	2e	2.80	6.00	350.00	900.00	40.00	100.00	---	---	35.00	---
GdfB:												
Grandfield	3e	2e	3.00	5.50	300.00	750.00	30.00	85.00	1,100.00	3,100.00	28.00	---
GlGB:												
Grandmore	3e	3e	3.20	5.50	300.00	700.00	30.00	85.00	1,200.00	3,200.00	28.00	---
Grandfield	3e	3e	3.00	5.50	275.00	700.00	30.00	85.00	1,100.00	3,100.00	25.00	---
GlsB:												
Grandfield	3e	3e	3.00	5.50	275.00	700.00	30.00	85.00	1,100.00	3,100.00	25.00	---
GlsD:												
Grandfield	4e	4e	---	---	---	---	---	---	1,100.00	2,800.00	20.00	---
GmuA:												
Gracemont, saline	4w	---	---	---	---	---	---	---	---	---	15.00	---
GmwA:												
Gracemont, saline	5w	---	---	---	---	---	---	---	---	---	---	---
GrrA:												
Gracemore, saline	4w	---	---	---	---	---	---	---	---	---	15.00	---

Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability		Alfalfa hay		Cotton lint		Grain sorghum		Peanuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Lbs	Lbs	Bu	Bu	Lbs	Lbs	Bu	Bu
GtbB:												
Gotebo	3s	3e	2.50	---	275.00	---	23.00	---	---	---	20.00	---
HdmB:												
Hardeman	3e	2e	2.50	6.50	275.00	625.00	30.00	75.00	1,100.00	3,200.00	28.00	---
HdmC:												
Hardeman	3e	3e	2.20	---	225.00	---	25.00	---	900.00	---	22.00	---
HfkA:												
Hayfork	1	1	---	---	300.00	---	28.00	---	---	---	28.00	---
HksA:												
Headrick	3e	3e	2.00	---	275.00	---	30.00	---	1,100.00	3,100.00	25.00	---
HolA:												
Hollister	2s	2s	---	---	325.00	1,000.00	35.00	100.00	---	---	35.00	---
HrAC:												
Harmon	4s	4s	---	---	---	---	---	---	---	---	5.00	---
Aspermont	3e	3e	---	---	150.00	---	15.00	---	---	---	15.00	---
HSAF:												
Hardeman	6e	---	---	---	---	---	---	---	---	---	---	---
Southside	6e	---	---	---	---	---	---	---	---	---	---	---
Arnett	6e	---	---	---	---	---	---	---	---	---	---	---
JesC:												
Jester	4e	3e	---	---	---	---	---	---	---	---	12.00	---
KcRG:												
Knoco, bouldery	7e	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---	---	---	---	---	---

Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability		Alfalfa hay		Cotton lint		Grain sorghum		Peanuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Lbs	Lbs	Bu	Bu	Lbs	Lbs	Bu	Bu
KoBE:												
Knoco	6e	---	---	---	---	---	---	---	---	---	---	---
Badland	8	---	---	---	---	---	---	---	---	---	---	---
KRCF:												
Knoco	6e	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---	---	---	---	---	---
Cottonwood	7s	---	---	---	---	---	---	---	---	---	---	---
LacB:												
La Casa	2e	2e	---	---	250.00	850.00	30.00	---	---	---	28.00	---
LnuA:												
Lincoln	3e	3e	1.50	---	---	---	20.00	---	900.00	2,100.00	15.00	---
LnWA:												
Lincoln	5w	---	---	---	---	---	---	---	---	---	---	---
Westola	5w	---	---	---	---	---	---	---	---	---	---	---
LwtA:												
Lawton	1	1	3.00	6.50	400.00	1,000.00	40.00	110.00	---	---	40.00	---
LwtB:												
Lawton	2e	2e	2.75	---	350.00	900.00	35.00	100.00	---	---	35.00	---
LwtC2:												
Lawton, moderately eroded	3e	3e	---	---	175.00	---	---	---	---	---	15.00	---
M-W:												
Water, Miscellaneous	---	---	---	---	---	---	---	---	---	---	---	---
MagB:												
Madge	2e	2e	2.80	6.00	300.00	900.00	35.00	100.00	---	---	35.00	---

Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability		Alfalfa hay		Cotton lint		Grain sorghum		Peanuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Lbs	Lbs	Bu	Bu	Lbs	Lbs	Bu	Bu
MdgB:												
Madge	2e	2e	2.80	6.00	350.00	900.00	40.00	100.00	---	---	35.00	---
MknB:												
Mcknight	3e	2e	2.00	---	250.00	---	25.00	---	1,000.00	---	22.00	---
MktB:												
Mcknight	3e	3e	2.00	---	225.00	---	23.00	---	1,000.00	---	20.00	---
MktC2:												
Mcknight, moderately eroded	4e	4e	---	---	---	---	15.00	---	---	---	15.00	---
NpsB:												
Nipsum	2e	2e	---	---	250.00	---	25.00	---	---	---	24.00	---
NstC:												
Nobscot	4e	3e	2.00	---	175.00	---	25.00	---	1,000.00	2,500.00	15.00	---
OakA:												
Oakley	2e	2e	2.30	---	300.00	---	30.00	---	---	---	25.00	---
OakB:												
Oakley	2e	2e	2.00	---	275.00	---	25.00	---	---	---	22.00	---
OzkA:												
Ozark	2e	2e	3.50	6.00	375.00	900.00	40.00	100.00	1,200.00	3,500.00	35.00	---
PIT:												
Pits	8	---	---	---	---	---	---	---	---	---	---	---
QhTC:												
Quanah	3e	3e	---	---	150.00	---	20.00	---	---	---	15.00	---
Talpa	7s	7s	---	---	---	---	---	---	---	---	---	---
QnRG:												
Quinlan	7e	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---	---	---	---	---	---

Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability		Alfalfa hay		Cotton lint		Grain sorghum		Peanuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Lbs	Lbs	Bu	Bu	Lbs	Lbs	Bu	Bu
RakA:												
Roark	1	1	3.50	6.50	450.00	1,000.00	45.00	110.00	---	---	40.00	---
RKBG:												
Rock outcrop, granite	8s	---	---	---	---	---	---	---	---	---	---	---
Brico	6e	---	---	---	---	---	---	---	---	---	---	---
RKO:												
Rock outcrop, granite	8s	---	---	---	---	---	---	---	---	---	---	---
RuuA:												
Rups	4s	---	---	---	150.00	---	15.00	---	---	---	15.00	---
RuwA:												
Rups	5w	---	---	---	---	---	---	---	---	---	---	---
SKRG:												
Spikebox	7e	---	---	---	---	---	---	---	---	---	---	---
Knoco	7e	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---	---	---	---	---	---
SpDB:												
Springer	3e	3e	2.70	---	275.00	---	30.00	---	1,100.00	2,700.00	25.00	---
Devol	3e	3e	2.50	---	250.00	---	25.00	---	1,100.00	2,700.00	22.00	---
SplA:												
Spur	2w	2w	3.50	6.00	400.00	1,000.00	40.00	110.00	---	---	35.00	---
SurA:												
Spur	1	1	4.20	6.50	450.00	1,000.00	45.00	110.00	---	---	40.00	---
SuuA:												
Spur	2w	2w	3.50	6.00	400.00	1,000.00	40.00	110.00	---	---	35.00	---

Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability		Alfalfa hay		Cotton lint		Grain sorghum		Peanuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Lbs	Lbs	Bu	Bu	Lbs	Lbs	Bu	Bu
SuwA:												
Spur	5w	---	---	---	---	---	---	---	---	---	---	---
TARD:												
Talpa	7s	---	---	---	---	---	---	---	---	---	---	---
Aspermont	3e	---	---	---	---	---	---	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---	---	---	---	---	---
TilA:												
Tillman	1	1	---	---	300.00	900.00	35.00	95.00	---	---	30.00	---
TilB:												
Tillman	2e	2e	---	---	275.00	850.00	30.00	90.00	---	---	28.00	---
TipA:												
Tipton	1	1	4.00	6.50	450.00	1,000.00	45.00	110.00	---	---	40.00	---
TlvB:												
Tilvern	3s	3s	---	---	175.00	---	15.00	---	---	---	20.00	---
TpfA:												
Tipton	2e	2e	4.20	6.50	450.00	1,000.00	45.00	110.00	1,200.00	3,500.00	40.00	---
TrwB:												
Treadway	4s	---	---	---	---	---	10.00	---	---	---	10.00	---
VeKE:												
Vernon	6e	---	---	---	---	---	---	---	---	---	---	---
Knoco	6e	---	---	---	---	---	---	---	---	---	---	---
VerC:												
Vernon	4e	3e	---	---	125.00	---	10.00	---	---	---	13.00	---
VeTE:												
Vernon	6e	---	---	---	---	---	---	---	---	---	---	---
Talpa, stony	7s	---	---	---	---	---	---	---	---	---	---	---

Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability		Alfalfa hay		Cotton lint		Grain sorghum		Peanuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I
			Tons	Tons	Lbs	Lbs	Bu	Bu	Lbs	Lbs	Bu	Bu
W:												
Water	---	---	---	---	---	---	---	---	---	---	---	---
WlwB:												
Willow	2e	2e	2.50	---	325.00	---	33.00	---	---	---	30.00	---
WooB:												
Woodward	3s	3e	---	---	275.00	---	25.00	---	---	---	20.00	---
WooC:												
Woodward	3e	3e	---	---	250.00	---	23.00	---	---	---	15.00	---
WoQE:												
Woodward	6e	---	---	---	---	---	---	---	---	---	---	---
Quinlan	6e	---	---	---	---	---	---	---	---	---	---	---
WslA:												
Westola	3e	3e	4.20	6.50	375.00	750.00	35.00	100.00	1,100.00	3,200.00	30.00	---
WstA:												
Westola	2e	2e	4.50	6.50	400.00	900.00	35.00	100.00	1,100.00	3,200.00	35.00	---
WtlA:												
Westill	2s	2s	---	---	250.00	900.00	30.00	90.00	---	---	28.00	---
WtlB:												
Westill	3e	2e	---	---	225.00	850.00	25.00	85.00	---	---	25.00	---

Land Capability and Yields per Acre of Hay and Pasture

(Yields in the "N" columns are for nonirrigated areas; those in the "I" columns are for irrigated areas. 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		Improved bermudagrass		Introduced bluestem		Weeping lovegrass	
	N	I	N	I	N	I	N	I
			AUM	AUM	AUM	AUM	AUM	AUM
AceB:								
Acme	3e	3e	4.50	---	4.00	---	---	---
ArHF:								
Arnett	4e	---	3.50	---	3.90	---	4.00	---
Hardeman	6e	---	3.50	---	3.80	---	4.00	---
ArnB:								
Arnett	2e	2e	5.00	---	3.90	---	5.00	---
ArnC:								
Arnett	3e	3e	4.50	---	3.90	---	4.50	---
AsmB:								
Aspermont	3e	3e	---	---	3.20	---	---	---
AsmC:								
Aspermont	3e	3e	---	---	3.20	---	---	---
BekA:								
Beckman	4w	---	3.00	---	---	---	---	---
BfdB:								
Burford	3e	2e	3.50	---	3.20	---	---	---
BfdC:								
Burford	3e	3e	3.00	---	3.20	---	---	---
BfSC2:								
Burford, moderately eroded	3e	3e	2.50	---	3.00	---	---	---
Spikebox, moderately eroded	4s	4s	1.50	---	2.20	---	1.00	---
BfSE:								
Burford	6e	---	2.00	---	3.00	---	---	---
Spikebox	6e	---	1.50	---	2.50	---	---	---
BriE:								
Brico	6e	---	---	---	---	---	---	---
BukA:								
Bukreek	1	1	5.00	---	4.70	---	---	---
CarB:								
Carey	2e	2e	4.00	---	4.70	---	---	---
CawA:								
Carwile	5w	---	5.00	---	---	---	---	---
CVRD:								
Cottonwood	7s	---	---	---	---	---	---	---
Vinson	4e	---	---	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---	---

Land Capability and Yields per Acre of Hay and Pasture--Continued

Map symbol and soil name	Land capability		Improved bermudagrass		Introduced bluestem		Weeping lovegrass	
	N	I	N	I	N	I	N	I
			AUM	AUM	AUM	AUM	AUM	AUM
DAM:								
Dam	8	---	---	---	---	---	---	---
DeSD:								
Devol	4e	4e	4.50	---	---	---	5.00	---
Springer	4e	4e	4.75	---	---	---	5.00	---
DkuA:								
Duke	4w	---	3.50	---	3.00	---	---	---
DodA:								
Dodson	1	1	5.00	---	4.70	---	---	---
DodB:								
Dodson	2e	2e	5.00	---	4.70	---	---	---
EatA:								
Eastall	5w	---	4.00	---	---	---	---	---
EdsB:								
Eda	3e	3e	4.00	---	---	---	5.00	---
EdsD:								
Eda	4e	4e	3.50	---	---	---	4.50	---
EdsF:								
Eda	6e	---	---	---	---	---	3.50	---
FraB:								
Frankirk	2e	2e	5.00	---	4.70	---	---	---
FryB:								
Farry	2e	2e	5.50	---	4.70	---	---	---
GdfB:								
Grandfield	3e	2e	5.50	---	3.80	---	5.50	---
GlGB:								
Grandmore	3e	3e	6.00	---	---	---	6.00	---
Grandfield	3e	3e	5.50	---	---	---	6.00	---
GlsB:								
Grandfield	3e	3e	5.50	---	---	---	6.00	---
GlsD:								
Grandfield	4e	4e	5.00	---	---	---	5.50	---
GmuA:								
Gracemont, saline	4w	---	5.50	---	---	---	---	---
GmwA:								
Gracemont, saline	5w	---	5.50	---	---	---	---	---
GrrA:								
Gracemore, saline	4w	---	5.00	---	---	---	---	---
GtbB:								
Gotebo	3s	3e	4.50	---	3.20	---	4.50	---
HdmB:								
Hardeman	3e	2e	5.00	---	3.80	---	5.50	---

Land Capability and Yields per Acre of Hay and Pasture--Continued

Map symbol and soil name	Land capability		Improved bermudagrass		Introduced bluestem		Weeping lovegrass	
	N	I	N	I	N	I	N	I
			AUM	AUM	AUM	AUM	AUM	AUM
HdmC:								
Hardeman	3e	3e	4.50	---	3.80	---	5.00	---
HfkA:								
Hayfork	1	1	---	---	8.00	---	---	---
HksA:								
Headrick	3e	3e	6.50	---	---	---	---	---
HolA:								
Hollister	2s	2s	4.50	---	4.70	---	---	---
HrAC:								
Harmon	4s	4s	---	---	1.90	---	---	---
Aspermont	3e	3e	---	---	3.20	---	---	---
HSAF:								
Hardeman	6e	---	3.80	---	3.80	---	4.00	---
Southside	6e	---	2.00	---	---	---	2.00	---
Arnett	6e	---	3.50	---	3.90	---	4.00	---
JesC:								
Jester	4e	3e	3.00	---	---	---	3.50	---
KcRG:								
Knoco, bouldery	7e	---	---	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---	---
KoBE:								
Knoco	6e	---	---	---	---	---	---	---
Badland	8	---	---	---	---	---	---	---
KRCF:								
Knoco	6e	---	---	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---	---
Cottonwood	7s	---	---	---	---	---	---	---
LacB:								
La Casa	2e	2e	---	---	4.10	---	---	---
LnuA:								
Lincoln	3e	3e	4.50	---	---	---	4.00	---
LnWA:								
Lincoln	5w	---	4.50	---	---	---	4.50	---
Westola	5w	---	7.00	---	---	---	7.00	---
LwtA:								
Lawton	1	1	5.00	---	4.70	---	---	---
LwtB:								
Lawton	2e	2e	5.00	---	4.70	---	---	---
LwtC2:								
Lawton, moderately eroded	3e	3e	3.00	---	3.80	---	---	---

Land Capability and Yields per Acre of Hay and Pasture--Continued

Map symbol and soil name	Land capability		Improved bermudagrass		Introduced bluestem		Weeping lovegrass	
	N	I	N	I	N	I	N	I
			AUM	AUM	AUM	AUM	AUM	AUM
M-W:								
Water, Miscellaneous	8	---	---	---	---	---	---	---
MagB:								
Madge	2e	2e	5.00	---	4.70	---	---	---
MdgB:								
Madge	2e	2e	5.50	---	5.00	---	---	---
MknB:								
Mcknight	3e	2e	3.80	---	3.80	---	5.00	---
MktB:								
Mcknight	3e	3e	4.25	---	---	---	5.00	---
MktC2:								
Mcknight, moderately eroded	4e	4e	3.00	---	---	---	3.50	---
NpsB:								
Nipsum	2e	2e	---	---	4.60	---	---	---
NstC:								
Nobscot	4e	3e	4.00	---	---	---	5.00	---
OakA:								
Oakley	2e	2e	4.50	---	3.30	---	---	---
OakB:								
Oakley	2e	2e	4.00	---	3.30	---	---	---
OzkA:								
Ozark	2e	2e	6.00	---	5.00	---	6.00	---
PIT:								
Pits	8	---	---	---	---	---	---	---
QhTC:								
Quanah	3e	3e	---	---	3.70	---	---	---
Talpa	7s	7s	---	---	2.60	---	---	---
QnRG:								
Quinlan	7e	---	---	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---	---
RakA:								
Roark	1	1	5.50	---	4.70	---	---	---
RKBG:								
Rock outcrop, granite	8s	---	---	---	---	---	---	---
Brico	6e	---	---	---	---	---	---	---
RKO:								
Rock outcrop, granite	8s	---	---	---	---	---	---	---
RuuA:								
Rups	4s	---	5.00	---	---	---	---	---

Land Capability and Yields per Acre of Hay and Pasture--Continued

Map symbol and soil name	Land capability		Improved bermudagrass		Introduced bluestem		Weeping lovegrass	
	N	I	N	I	N	I	N	I
			AUM	AUM	AUM	AUM	AUM	AUM
RuwA:								
Rups	5w	---	4.00	---	---	---	---	---
SKRG:								
Spikebox	7e	---	---	---	---	---	---	---
Knoco	7e	---	---	---	---	---	---	---
Rock outcrop	8s	---	---	---	---	---	---	---
SpDB:								
Springer	3e	3e	5.25	---	---	---	5.50	---
Devol	3e	3e	5.00	---	---	---	5.50	---
SplA:								
Spur	2w	2w	6.00	---	8.00	---	---	---
SurA:								
Spur	1	1	6.50	---	8.00	---	---	---
SuuA:								
Spur	2w	2w	6.00	---	8.00	---	---	---
SuwA:								
Spur	5w	---	6.00	---	8.00	---	---	---
TARD:								
Talpa	7s	---	---	---	2.60	---	---	---
Aspermont	3e	---	---	---	3.20	---	---	---
Rock outcrop	8s	---	---	---	---	---	---	---
TilA:								
Tillman	1	1	---	---	4.60	---	---	---
TilB:								
Tillman	2e	2e	3.50	---	4.60	---	---	---
TipA:								
Tipton	1	1	6.00	---	4.70	---	---	---
TlvB:								
Tilvern	3s	3s	---	---	3.90	---	---	---
TpfA:								
Tipton	2e	2e	6.50	---	5.00	---	6.00	---
TrwB:								
Treadway	4s	---	---	---	1.70	---	---	---
VeKE:								
Vernon	6e	---	---	---	2.80	---	---	---
Knoco	6e	---	---	---	1.80	---	---	---
VerC:								
Vernon	4e	3e	---	---	2.80	---	---	---

Land Capability and Yields per Acre of Hay and Pasture--Continued

Map symbol and soil name	Land capability		Improved bermudagrass		Introduced bluestem		Weeping lovegrass	
	N	I	N	I	N	I	N	I
			AUM	AUM	AUM	AUM	AUM	AUM
VeTE:								
Vernon	6e	---	---	---	2.80	---	---	---
Talpa, stony	7s	---	---	---	2.60	---	---	---
W:								
Water	8	---	---	---	---	---	---	---
WlwB:								
Willow	2e	2e	5.00	---	4.70	---	---	---
WooB:								
Woodward	3s	3e	4.00	---	3.90	---	4.50	---
WooC:								
Woodward	3e	3e	3.50	---	3.40	---	4.00	---
WoQE:								
Woodward	6e	---	2.50	---	3.40	---	3.00	---
Quinlan	6e	---	1.50	---	2.50	---	1.50	---
WslA:								
Westola	3e	3e	7.00	---	5.00	---	7.50	---
WstA:								
Westola	2e	2e	7.00	---	5.00	---	7.50	---
WtlA:								
Westill	2s	2s	---	---	4.60	---	---	---
WtlB:								
Westill	3e	2e	---	---	4.60	---	---	---

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, rangeland, 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 from 0 to 8 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 172,000 acres, or about 42 percent of the survey area, meets the requirements for prime farmland. The map units in the survey area that meet the requirements for prime farmland are listed in the table, "Prime Farmland." 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 "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

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
ArnB	Arnett sandy loam, 1 to 3 percent slopes
ArnC	Arnett sandy loam, 3 to 5 percent slopes
AsmB	Aspermont silt loam, 1 to 3 percent slopes
AsmC	Aspermont silt loam, 3 to 5 percent slopes
BfdB	Burford loam, 1 to 3 percent slopes
BfdC	Burford loam, 3 to 5 percent slopes
BukA	Bukreek loam, 0 to 1 percent slopes
CarB	Carey loam, 1 to 3 percent slopes
DodA	Dodson loam, 0 to 1 percent slopes
DodB	Dodson loam, 1 to 3 percent slopes
FraB	Frankirk loam, 1 to 3 percent slopes
FryB	Farry loam, 1 to 3 percent slopes
GdfB	Grandfield fine sandy loam, 1 to 3 percent slopes
HdmB	Hardeman fine sandy loam, 1 to 3 percent slopes
HdmC	Hardeman fine sandy loam, 3 to 5 percent slopes
HolA	Hollister silty clay loam, 0 to 1 percent slopes
LacB	La casa silty clay loam, 1 to 3 percent slopes
LwtA	Lawton loam, 0 to 1 percent slopes
LwtB	Lawton loam, 1 to 3 percent slopes
MagB	Madge loam, 1 to 3 percent slopes
MdgB	Madge fine sandy loam, 1 to 3 percent slopes
MknB	Mcknight fine sandy loam, 1 to 3 percent slopes
NpsB	Nipsum silty clay loam, 0 to 2 percent slopes
OakA	Oakley loam, 0 to 1 percent slopes
OakB	Oakley loam, 1 to 3 percent slopes
OzkA	Ozark fine sandy loam, 0 to 1 percent slopes
QhTC	Quanah-talpa complex, 1 to 5 percent slopes
RakA	Roark loam, 0 to 1 percent slopes
SplA	Spur loam, 0 to 1 percent slopes, occasionally flooded
SurA	Spur clay loam, 0 to 1 percent slopes, rarely flooded
SuuA	Spur clay loam, 0 to 1 percent slopes, occasionally flooded
TilA	Tillman clay loam, 0 to 1 percent slopes
TilB	Tillman clay loam, 1 to 3 percent slopes
TipA	Tipton loam, 0 to 1 percent slopes
TpfA	Tipton fine sandy loam, 0 to 1 percent slopes
WlwB	Willow loam, 1 to 3 percent slopes
WooB	Woodward loam, 1 to 3 percent slopes
WooC	Woodward loam, 3 to 5 percent slopes
WslA	Westola fine sandy loam, 0 to 1 percent slopes, occasionally flooded
WstA	Westola fine sandy loam, 0 to 1 percent slopes, rarely flooded
WtlA	Westill clay loam, 0 to 1 percent slopes
WtlB	Westill clay loam, 1 to 3 percent slopes

Agricultural Waste Management

Soil properties are important considerations in areas where soils are used as sites for the treatment and disposal of organic waste and wastewater. Selection of soils with properties that favor waste management can help to prevent environmental damage.

The table, “Agricultural Waste Management, Parts I and II,” shows the degree and kind of soil limitations affecting the treatment of agricultural waste, including municipal and food-processing wastewater and effluent from lagoons or storage ponds. Municipal wastewater is the waste stream from a municipality. It contains domestic waste and may contain industrial waste. It may have received primary or secondary treatment. It is rarely untreated sewage. Food-processing wastewater results from the preparation of fruits, vegetables, milk, cheese, and meats for public consumption. In places it is high in content of sodium and chloride. In the context of these tables, the effluent in lagoons and storage ponds is from facilities used to treat or store food-processing wastewater or domestic or animal waste. Domestic and food-processing wastewater is very dilute, and the effluent from the facilities that treat or store it commonly is very low in content of carbonaceous and nitrogenous material; the content of nitrogen commonly ranges from 10 to 30 milligrams per liter. The wastewater from animal waste treatment lagoons or storage ponds, however, has much higher concentrations of these materials, mainly because the manure has not been diluted as much as the domestic waste. The content of nitrogen in this wastewater generally ranges from 50 to 2,000 milligrams per liter. When wastewater is applied, checks should be made to ensure that nitrogen, heavy metals, and salts are not added in excessive amounts.

The ratings in the tables are for waste management systems that not only dispose of and treat organic waste or wastewater but also are beneficial to crops (application of manure and food-processing waste, application of sewage sludge, and disposal of wastewater by irrigation) and for waste management systems that are designed only for the purpose of wastewater disposal and treatment (overland flow of wastewater, rapid infiltration of wastewater, and slow rate treatment of wastewater).

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

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

Application of manure and food-processing waste not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. Manure is the excrement of livestock and poultry, and food-processing waste is damaged fruit and vegetables and the peelings, stems, leaves, pits, and soil particles removed in food preparation. The manure and food-processing waste are solid, slurry, or liquid. Their nitrogen content varies. A high content of nitrogen limits the application rate. Toxic or otherwise dangerous wastes, such as those mixed with the lye used in food processing, are not considered in the ratings.

The ratings are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the waste is applied, and the method by

which the waste is applied. The properties that affect absorption include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, and available water capacity. The properties that affect plant growth and microbial activity include reaction, the sodium adsorption ratio, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Application of sewage sludge not only disposes of waste material but also can improve crop production by increasing the supply of nutrients in the soils where the material is applied. In the context of this table, sewage sludge is the residual product of the treatment of municipal sewage. The solid component consists mainly of cell mass, primarily bacteria cells that developed during secondary treatment and have incorporated soluble organics into their own bodies. The sludge has small amounts of sand, silt, and other solid debris. The content of nitrogen varies. Some sludge has constituents that are toxic to plants or hazardous to the food chain, such as heavy metals and exotic organic compounds, and should be analyzed chemically prior to use.

The content of water in the sludge ranges from about 98 percent to less than 40 percent. The sludge is considered liquid if it is more than about 90 percent water, slurry if it is about 50 to 90 percent water, and solid if it is less than about 50 percent water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, the rate at which the sludge is applied, and the method by which the sludge is applied. The properties that affect absorption, plant growth, and microbial activity include permeability, depth to a water table, ponding, the sodium adsorption ratio, depth to bedrock or a cemented pan, available water capacity, reaction, salinity, and bulk density. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood that wind erosion or water erosion will transport the waste material from the application site. Stones, cobbles, a water table, ponding, and flooding can hinder the application of sludge. Permanently frozen soils are unsuitable for waste treatment.

Disposal of wastewater by irrigation not only disposes of municipal wastewater and wastewater from food-processing plants, lagoons, and storage ponds but also can improve crop production by increasing the amount of water available to crops. The ratings in the table are based on the soil properties that affect the design, construction, management, and performance of the irrigation system. The properties that affect design and management include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, slope, and flooding. The properties that affect construction include stones, cobbles, depth to bedrock or a cemented pan, depth to a water table, and ponding. The properties that affect performance include depth to bedrock or a cemented pan, bulk density, the sodium adsorption ratio, salinity, reaction, and the cation-exchange capacity, which is used to estimate the capacity of a soil to adsorb heavy metals. Permanently frozen soils are not suitable for disposal of wastewater by irrigation.

Overland flow of wastewater is a process in which wastewater is applied to the upper reaches of sloped land and allowed to flow across vegetated surfaces, sometimes called terraces, to runoff-collection ditches. The length of the run generally is 150 to 300 feet. The application rate ranges from 2.5 to 16.0 inches per week. It commonly exceeds the rate needed for irrigation of cropland. The wastewater leaves solids and nutrients on the vegetated surfaces as it flows downslope in a thin film. Most of the water reaches the collection ditch, some is lost through evapotranspiration, and a small amount may percolate to the ground water.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, and the design and construction of the system. Reaction and

the cation-exchange capacity affect absorption. Reaction, salinity, and the sodium adsorption ratio affect plant growth and microbial activity. Slope, permeability, depth to a water table, ponding, flooding, depth to bedrock or a cemented pan, stones, and cobbles affect design and construction. Permanently frozen soils are unsuitable for waste treatment.

Rapid infiltration of wastewater is a process in which wastewater applied in a level basin at a rate of 4 to 120 inches per week percolates through the soil. The wastewater may eventually reach the ground water. The application rate commonly exceeds the rate needed for irrigation of cropland. Vegetation is not a necessary part of the treatment; hence, the basins may or may not be vegetated. The thickness of the soil material needed for proper treatment of the wastewater is more than 72 inches. As a result, geologic and hydrologic investigation is needed to ensure proper design and performance and to determine the risk of ground-water pollution.

The ratings in the table are based on the soil properties that affect the risk of pollution and the design, construction, and performance of the system. Depth to a water table, ponding, flooding, and depth to bedrock or a cemented pan affect the risk of pollution and the design and construction of the system. Slope, stones, and cobbles also affect design and construction. Permeability and reaction affect performance. Permanently frozen soils are unsuitable for waste treatment.

Slow rate treatment of wastewater is a process in which wastewater is applied to land at a rate normally between 0.5 inch and 4.0 inches per week. The application rate commonly exceeds the rate needed for irrigation of cropland. The applied wastewater is treated as it moves through the soil. Much of the treated water may percolate to the ground water, and some enters the atmosphere through evapotranspiration. The applied water generally is not allowed to run off the surface. Waterlogging is prevented either through control of the application rate or through the use of tile drains, or both.

The ratings in the table are based on the soil properties that affect absorption, plant growth, microbial activity, erodibility, and the application of waste. The properties that affect absorption include the sodium adsorption ratio, depth to a water table, ponding, available water capacity, permeability, depth to bedrock or a cemented pan, reaction, the cation-exchange capacity, and slope. Reaction, the sodium adsorption ratio, salinity, and bulk density affect plant growth and microbial activity. The wind erodibility group, the soil erodibility factor K, and slope are considered in estimating the likelihood of wind erosion or water erosion. Stones, cobbles, a water table, ponding, and flooding can hinder the application of waste. Permanently frozen soils are unsuitable for waste treatment.

Agricultural Waste Management, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AceB:							
Acme	85	Somewhat limited Sodium content	 0.02	Somewhat limited Sodium content	 0.02	Somewhat limited Sodium content	 0.02
ArHF:							
Arnett	45	Somewhat limited Filtering capacity	 0.01	Somewhat limited Filtering capacity	 0.01	Somewhat limited Too steep for surface application Filtering capacity	 0.32 0.01
Hardeman	40	Somewhat limited Slope Filtering capacity	 0.01 0.01	Somewhat limited Slope Filtering capacity	 0.01 0.01	Very limited Too steep for surface application Too steep for sprinkler application Filtering capacity	 1.00 0.15 0.01
ArnB:							
Arnett	85	Somewhat limited Filtering capacity	 0.01	Somewhat limited Filtering capacity	 0.01	Somewhat limited Filtering capacity	 0.01
ArnC:							
Arnett	83	Somewhat limited Filtering capacity	 0.01	Somewhat limited Filtering capacity	 0.01	Somewhat limited Too steep for surface application Filtering capacity	 0.08 0.01
AsmB:							
Aspermont	80	Very limited Slow water movement	 1.00	Very limited Slow water movement	 1.00	Very limited Slow water movement	 1.00
AsmC:							
Aspermont	81	Very limited Slow water movement	 1.00	Very limited Slow water movement	 1.00	Very limited Slow water movement Too steep for surface application	 1.00 0.08
BekA:							
Beckman	85	Very limited Slow water movement Sodium content Salinity Flooding Runoff	 1.00 1.00 0.65 0.60 0.40	Very limited Slow water movement Flooding Sodium content	 1.00 1.00 1.00	Very limited Slow water movement Sodium content Flooding	 1.00 1.00 0.60

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BfdB:							
Burford	90	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
BfdC:							
Burford	92	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
						Too steep for surface application	0.08
BfSC2:							
Burford, moderately eroded	50	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
						Too steep for surface application	0.08
Spikebox, moderately eroded	40	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Dense layer	1.00	Low adsorption	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	0.08
BfSE:							
Burford	50	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
						Too steep for surface application	0.68
Spikebox	40	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Dense layer	1.00	Low adsorption	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	1.00
		Slope	0.01	Slope	0.01	Too steep for sprinkler application	0.10
BriE:							
Brico	85	Somewhat limited		Somewhat limited		Very limited	
		Slow water movement	0.41	Slow water movement	0.31	Too steep for surface application	1.00
		Slope	0.16	Slope	0.16	Too steep for sprinkler application	0.40
		Cobble content	0.12	Cobble content	0.12	Slow water movement	0.31
						Cobble content	0.12

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BukA:							
Bukreek	92	Not limited		Not limited		Not limited	
CarB:							
Carey	90	Not limited		Not limited		Not limited	
CawA:							
Carwile	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Runoff	0.40	Filtering capacity	0.01	Filtering capacity	0.01
		Filtering capacity	0.01				
CVRD:							
Cottonwood	42	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Dense layer	1.00	Low adsorption	1.00	Too steep for surface application	0.08
Vinson	25	Very limited		Very limited		Somewhat limited	
		Dense layer	1.00	Low adsorption	1.00	Droughty	0.65
		Droughty	0.65	Droughty	0.65	Depth to bedrock	0.65
		Depth to bedrock	0.65	Depth to bedrock	0.65	Slow water movement	0.31
		Slow water movement	0.41	Slow water movement	0.31		
Rock outcrop	23	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	
DeSD:							
Devol	60	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
						Too steep for surface application	0.50
Springer	27	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Too acid	0.05	Too acid	0.21	Too steep for surface application	0.32
						Too acid	0.21
DkuA:							
Duke	80	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Sodium content	1.00	Flooding	1.00	Sodium content	1.00
		Flooding	0.60	Sodium content	1.00	Flooding	0.60
		Runoff	0.40				
		Salinity	0.13				

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DodA:							
Dodson	92	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
		Too acid	0.01	Too acid	0.03	Too acid	0.03
DodB:							
Dodson	87	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
		Too acid	0.01	Too acid	0.03	Too acid	0.03
EatA:							
Eastall	94	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Runoff	0.40				
EdsB:							
Eda	87	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Leaching	0.45	Droughty	0.27	Droughty	0.27
		Droughty	0.27				
EdsD:							
Eda	87	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Leaching	0.45	Droughty	0.23	Too steep for surface application	0.32
		Droughty	0.23			Droughty	0.23
EdsF:							
Eda	90	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Slope	0.63	Slope	0.63	Too steep for surface application	1.00
		Leaching	0.45	Droughty	0.36	Too steep for sprinkler application	0.78
		Droughty	0.36			Droughty	0.36
FraB:							
Frankirk	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
FryB:							
Farry	92	Not limited		Not limited		Not limited	
GdfB:							
Grandfield	80	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GlGB:							
Grandmore	65	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
		Depth to saturated zone	0.01	Depth to saturated zone	0.01	Depth to saturated zone	0.01
Grandfield	25	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
GlsB:							
Grandfield	87	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Dense layer	1.00				
GlsD:							
Grandfield	87	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
						Too steep for surface application	0.32
GmuA:							
Gracemont, saline	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	0.60	Flooding	1.00	Salinity	1.00
		Salinity	0.50	Salinity	1.00	Flooding	0.60
GmwA:							
Gracemont, saline	89	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Salinity	0.50	Salinity	1.00	Salinity	1.00
GrrA:							
Gracemore, saline	90	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Flooding	0.60	Flooding	1.00	Salinity	1.00
		Salinity	0.50	Salinity	1.00	Flooding	0.60
		Droughty	0.02	Droughty	0.02	Droughty	0.02
GtbB:							
Gotebo	82	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	0.80	Depth to bedrock	0.80	Depth to bedrock	0.80
		Shallow to densic materials	0.79	Shallow to densic materials	0.79	Slow water movement	0.31
		Slow water movement	0.41	Slow water movement	0.31	Droughty	0.14
		Droughty	0.14	Droughty	0.14		

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HdmB:							
Hardeman	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
HdmC:							
Hardeman	95	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.08
						Filtering capacity	0.01
HfkA:							
Hayfork	83	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
				Flooding	0.40		
HksA:							
Headrick	90	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Depth to saturated zone	0.75	Depth to saturated zone	0.75	Depth to saturated zone	0.75
		Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
HolA:							
Hollister	91	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40				
HrAC:							
Harmon	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Dense layer	1.00	Low adsorption	1.00	Too steep for surface application	0.02
		Runoff	0.40				
Aspermont	44	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
HSAF:							
Hardeman	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Too steep for surface application	1.00
		Filtering capacity	0.01	Filtering capacity	0.01	Too steep for sprinkler application	0.15
						Filtering capacity	0.01

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Southside	27	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Droughty	0.66	Droughty	0.66	Too steep for surface application	1.00
		Leaching	0.45	Slope	0.16	Droughty	0.66
		Slope	0.16			Too steep for sprinkler application	0.40
Arnett	20	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Too steep for surface application	0.92
						Too steep for sprinkler application	0.02
						Filtering capacity	0.01
JesC:							
Jester	87	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Droughty	0.68	Droughty	0.68	Droughty	0.68
		Leaching	0.45				
KcRG:							
Knoco, bouldery	45	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Slow water movement	1.00	Slow water movement	1.00
		Dense layer	1.00	Shallow to dense materials	1.00	Too steep for surface application	1.00
		Shallow to dense materials	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00	Too steep for sprinkler application	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
KoBE:							
Knoco	45	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Dense layer	1.00	Shallow to dense materials	1.00	Depth to bedrock	1.00
		Shallow to dense materials	1.00	Depth to bedrock	1.00	Droughty	1.00
		Depth to bedrock	1.00	Droughty	1.00		
		Droughty	1.00				
Badland	30	Not rated		Not rated		Not rated	

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KRCF:							
Knoco	33	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Slow water movement	1.00	Slow water movement	1.00
		Dense layer	1.00	Shallow to dense materials	1.00	Depth to bedrock	1.00
		Shallow to dense materials	1.00	Depth to bedrock	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Slope	0.16	Too steep for sprinkler application	0.40
Rock outcrop	21	Not rated		Not rated		Not rated	
Cottonwood	17	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Dense layer	1.00	Low adsorption	1.00	Too steep for surface application	1.00
		Slope	0.16	Slope	0.16	Too steep for sprinkler application	0.40
LacB:							
La Casa	79	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
LnuA:							
Lincoln	90	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Droughty	0.62	Flooding	1.00	Droughty	0.62
		Flooding	0.60	Droughty	0.62	Flooding	0.60
		Leaching	0.45				
LnWA:							
Lincoln	65	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Droughty	0.67	Droughty	0.67	Droughty	0.67
		Leaching	0.45				
Westola	22	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
LwtA:							
Lawton	87	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LwtB:							
Lawton	87	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
LwtC2:							
Lawton, moderately eroded	77	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
						Too steep for surface application	0.18
M-W:							
Water, Miscellaneous	100	Not rated		Not rated		Not rated	
MagB:							
Madge	90	Not limited		Not limited		Not limited	
MdgB:							
Madge	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
MknB:							
Mcknight	87	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
MktB:							
Mcknight	85	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Too acid	0.05	Too acid	0.21	Too acid	0.21
MktC2:							
Mcknight, moderately eroded	75	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
						Too steep for surface application	0.08
NpsB:							
Nipsum	82	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
NstC:							
Nobscot	85	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Leaching	0.45	Too acid	0.21	Too acid	0.21
		Too acid	0.05			Too steep for surface application	0.02
OakA:							
Oakley	80	Not limited		Not limited		Not limited	
OakB:							
Oakley	85	Not limited		Not limited		Not limited	
OzkA:							
Ozark	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
PIT:							
Pits	100	Not rated		Not rated		Not rated	
QhTC:							
Quanah	50	Not limited		Not limited		Not limited	
Talpa	20	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Dense layer	1.00	Low adsorption	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00		
		Runoff	0.40				
QnRG:							
Quinlan	50	Very limited		Very limited		Very limited	
		Dense layer	1.00	Shallow to densic materials	1.00	Too steep for surface application	1.00
		Shallow to densic materials	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Slope	1.00	Too steep for sprinkler application	1.00
		Slope	1.00	Slow water movement	0.31	Slow water movement	0.31
Rock outcrop	25	Not rated		Not rated		Not rated	
RakA:							
Roark	85	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
RKBG:							
Rock outcrop, granite	60	Not rated		Not rated		Not rated	

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Brico	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Too steep for surface application	1.00
		Slow water movement	0.41	Slow water movement	0.31	Too steep for sprinkler application	1.00
		Cobble content	0.12	Cobble content	0.12	Slow water movement	0.31
						Cobble content	0.12
RKO:							
Rock outcrop, granite	100	Not rated		Not rated		Not rated	
RuuA:							
Rups	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Salinity	1.00	Flooding	1.00	Slow water movement	0.72
		Slow water movement	0.85	Slow water movement	0.72	Flooding	0.60
		Flooding	0.60	Salinity	0.50	Salinity	0.50
		Sodium content	0.18	Sodium content	0.18	Sodium content	0.18
RuwA:							
Rups	82	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Salinity	1.00	Depth to saturated zone	0.86	Depth to saturated zone	0.86
		Depth to saturated zone	0.86	Slow water movement	0.72	Slow water movement	0.72
		Slow water movement	0.85	Salinity	0.50	Salinity	0.50
		Sodium content	0.18	Sodium content	0.18	Sodium content	0.18
SKRG:							
Spikebox	40	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Dense layer	1.00	Low adsorption	1.00	Too steep for surface application	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Too steep for sprinkler application	1.00
Knoco	23	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Dense layer	1.00	Shallow to densic materials	1.00	Too steep for surface application	1.00
		Shallow to densic materials	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Droughty	1.00	Droughty	1.00
		Droughty	1.00	Slope	1.00	Too steep for sprinkler application	1.00

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Rock outcrop	20	Not rated		Not rated		Not rated	
SpDB:							
Springer	70	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Too acid	0.05	Too acid	0.21	Too acid	0.21
Devol	22	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Filtering capacity	1.00
		Too acid	0.05	Too acid	0.21	Too acid	0.21
SplA:							
Spur	90	Somewhat limited		Very limited		Somewhat limited	
		Flooding	0.60	Flooding	1.00	Flooding	0.60
SurA:							
Spur	84	Not limited		Somewhat limited		Not limited	
				Flooding	0.40		
SuuA:							
Spur	90	Somewhat limited		Very limited		Somewhat limited	
		Flooding	0.60	Flooding	1.00	Flooding	0.60
SuwA:							
Spur	87	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
TARD:							
Talpa	46	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Dense layer	1.00	Low adsorption	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	0.02
		Runoff	0.40				
Aspermont	37	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
Rock outcrop	11	Not rated		Not rated		Not rated	
TilA:							
Tillman	85	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.18	Sodium content	0.18
		Sodium content	0.18				
TilB:							
Tillman	85	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40				
TipA:							
Tipton	80	Not limited		Not limited		Not limited	

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TlvB:							
Tilvern	85	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Sodium content	0.01	Sodium content	0.01
		Sodium content	0.01				
TpfA:							
Tipton	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
TrwB:							
Treadway	87	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40				
		Salinity	0.01				
VeKE:							
Vernon	50	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Depth to bedrock	0.80	Depth to bedrock	0.80	Depth to bedrock	0.80
		Shallow to dense materials	0.79	Shallow to dense materials	0.79	Droughty	0.41
		Droughty	0.41	Droughty	0.41	Too steep for surface application	0.08
		Runoff	0.40				
Knoco	35	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Dense layer	1.00	Shallow to dense materials	1.00	Depth to bedrock	1.00
		Shallow to dense materials	1.00	Depth to bedrock	1.00	Droughty	1.00
		Depth to bedrock	1.00	Droughty	1.00	Too steep for surface application	0.68
		Droughty	1.00				
VerC:							
Vernon	78	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Depth to bedrock	0.10	Depth to bedrock	0.10
		Depth to bedrock	0.10	Shallow to dense materials	0.10	Too steep for surface application	0.08
		Shallow to dense materials	0.10	Droughty	0.03	Droughty	0.03
		Droughty	0.03				

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
VeTE:							
Vernon	53	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40	Droughty	0.09	Too steep for surface application	0.32
		Droughty	0.09	Depth to bedrock	0.01	Droughty	0.09
		Depth to bedrock	0.01	Shallow to densic materials	0.01	Depth to bedrock	0.01
		Shallow to densic materials	0.01				
Talpa, stony	25	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Droughty	1.00
		Dense layer	1.00	Low adsorption	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	0.32
		Runoff	0.40				
W:							
Water	100	Not rated		Not rated		Not rated	
WlwB:							
Willow	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
WooB:							
Woodward	87	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.31	Slow water movement	0.31
		Depth to bedrock	0.01	Depth to bedrock	0.01	Depth to bedrock	0.01
		Shallow to densic materials	0.01	Shallow to densic materials	0.01		
WooC:							
Woodward	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	0.65	Depth to bedrock	0.65	Depth to bedrock	0.65
		Shallow to densic materials	0.64	Shallow to densic materials	0.64	Slow water movement	0.31
		Slow water movement	0.41	Slow water movement	0.31	Too steep for surface application	0.08
		Droughty	0.06	Droughty	0.06	Droughty	0.06
WoQE:							
Woodward	50	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.80	Depth to bedrock	0.80	Too steep for surface application	1.00
		Shallow to densic materials	0.79	Shallow to densic materials	0.79	Depth to bedrock	0.80
		Slow water movement	0.41	Droughty	0.37	Droughty	0.37
		Droughty	0.37	Slow water movement	0.31	Slow water movement	0.31
		Slope	0.04	Slope	0.04	Too steep for sprinkler application	0.22

Agricultural Waste Management, Part I--Continued

Map symbol and soil name	Pct. of map unit	Application of manure and food-processing waste		Application of sewage sludge		Disposal of wastewater by irrigation	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Quinlan	37	Very limited		Very limited		Very limited	
		Dense layer	1.00	Shallow to densic materials	1.00	Depth to bedrock	1.00
		Shallow to densic materials	1.00	Depth to bedrock	1.00	Droughty	1.00
		Depth to bedrock	1.00	Droughty	1.00	Too steep for surface application	1.00
		Droughty	1.00	Slow water movement	0.31	Slow water movement	0.31
		Slow water movement	0.41	Slope	0.04	Too steep for sprinkler application	0.22
WslA:							
Westola	90	Somewhat limited		Very limited		Somewhat limited	
		Flooding	0.60	Flooding	1.00	Flooding	0.60
		Filtering capacity	0.01	Filtering capacity	0.01	Filtering capacity	0.01
WstA:							
Westola	92	Somewhat limited		Somewhat limited		Somewhat limited	
		Filtering capacity	0.01	Flooding	0.40	Filtering capacity	0.01
				Filtering capacity	0.01		
WtlA:							
Westill	85	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40				
WtlB:							
Westill	83	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Slow water movement	1.00
		Runoff	0.40				

Agricultural Waste Management, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AceB:							
Acme	85	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Depth to saturated zone	1.00	Sodium content	0.02
		Too level	0.18	Slow water movement	1.00		
		Sodium content	0.02				
ArHF:							
Arnett	45	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Too steep for surface application	0.32
				Slope	0.12	Filtering capacity	0.01
Hardeman	40	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.35	Slow water movement	0.31	Too steep for sprinkler irrigation	0.35
						Filtering capacity	0.01
ArnB:							
Arnett	85	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	0.01
ArnC:							
Arnett	83	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Too steep for surface application	0.08
						Filtering capacity	0.01
AsmB:							
Aspermont	80	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	1.00
		Depth to bedrock	0.39	Depth to bedrock	1.00	Depth to bedrock	0.39
AsmC:							
Aspermont	81	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	1.00
		Depth to bedrock	0.42	Depth to bedrock	1.00	Depth to bedrock	0.42
						Too steep for surface application	0.08

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BekA:							
Beckman	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Slow water movement	1.00	Slow water movement	1.00
		Sodium content	1.00	Depth to saturated zone	1.00	Sodium content	1.00
		Too level	0.50	Flooding	0.60	Flooding	0.60
BfdB:							
Burford	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	1.00
		Depth to bedrock	0.94	Depth to bedrock	1.00	Depth to bedrock	0.94
BfdC:							
Burford	92	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Too steep for surface application	0.08
BfSC2:							
Burford, moderately eroded	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Too steep for surface application	0.08
Spikebox, moderately eroded	40	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00	Too steep for surface application	0.08
BfSE:							
Burford	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	1.00
		Depth to bedrock	0.02	Depth to bedrock	1.00	Too steep for surface application	0.68
				Slope	0.50	Depth to bedrock	0.02
Spikebox	40	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.22	Slope	1.00	Too steep for sprinkler irrigation	0.22

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BriE:							
Brico	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Too steep for surface application	1.00
		Cobble content	1.00	Slope	1.00	Too steep for sprinkler irrigation	0.78
		Too steep for surface application	0.78	Cobble content	1.00	Slow water movement	0.21
						Cobble content	0.12
BukA:							
Bukreek	92	Very limited		Very limited		Not limited	
		Seepage	1.00	Slow water movement	1.00		
		Too level	0.50				
CarB:							
Carey	90	Very limited		Very limited		Not limited	
		Seepage	1.00	Slow water movement	1.00		
				Depth to bedrock	1.00		
CawA:							
Carwile	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00	Ponding	1.00	Slow water movement	0.96
		Too level	0.50			Filtering capacity	0.01
CVRD:							
Cottonwood	42	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00	Too steep for surface application	0.08
Vinson	25	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slow water movement	0.21
Rock outcrop	23	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	
DeSD:							
Devol	60	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Slow water movement	0.31	Filtering capacity	1.00
				Slope	0.28	Too steep for surface application	0.50

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Springer	27	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Slow water movement	0.96	Filtering capacity	1.00
		Too acid	0.21	Slope	0.12	Too steep for surface application	0.32
						Too acid	0.21
DkuA:							
Duke	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Slow water movement	1.00	Sodium content	1.00
		Sodium content	1.00	Flooding	0.60	Slow water movement	1.00
		Too level	0.50			Flooding	0.60
		Seepage	0.39				
DodA:							
Dodson	92	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	0.21
		Too level	0.50			Too acid	0.03
		Too acid	0.03				
DodB:							
Dodson	87	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	0.21
		Too acid	0.03			Too acid	0.03
EatA:							
Eastall	94	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Slow water movement	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Depth to saturated zone	1.00	Slow water movement	1.00
		Too level	0.92	Ponding	1.00	Ponding	1.00
EdsB:							
Eda	87	Very limited		Not limited		Very limited	
		Seepage	1.00			Filtering capacity	1.00
EdsD:							
Eda	87	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Slope	0.12	Filtering capacity	1.00
						Too steep for surface application	0.32
EdsF:							
Eda	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Filtering capacity	1.00
		Too steep for surface application	1.00			Too steep for surface application	1.00
						Too steep for sprinkler irrigation	1.00

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
FraB:							
Frankirk	90	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	0.21
FryB:							
Farry	92	Very limited		Very limited		Not limited	
		Seepage	1.00	Slow water movement	1.00		
GdfB:							
Grandfield	80	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	0.01
GlGB:							
Grandmore	65	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	1.00
		Depth to saturated zone	0.01	Depth to saturated zone	0.01	Slow water movement	0.21
						Depth to saturated zone	0.01
Grandfield	25	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	1.00
GlsB:							
Grandfield	87	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	1.00
GlsD:							
Grandfield	87	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	1.00
				Slope	0.12	Too steep for surface application	0.32
GmuA:							
Gracemont, saline	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Slow water movement	0.61	Salinity	1.00
		Depth to saturated zone	1.00	Flooding	0.60	Flooding	0.60
		Too level	0.50				
		Salinity	0.13				
GmwA:							
Gracemont, saline	89	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Seepage	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Slow water movement	0.61	Salinity	1.00
		Too level	0.50				
		Salinity	0.13				

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GrrA:							
Gracemore, saline---	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Filtering capacity	1.00
		Seepage	1.00	Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Flooding	0.60	Salinity	1.00
		Too level	0.50			Flooding	0.60
		Salinity	0.13			Sodium content	0.02
GtbB:							
Gotebo---	82	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slow water movement	0.21
HdmB:							
Hardeman---	90	Very limited		Somewhat limited		Somewhat limited	
		Seepage	1.00	Slow water movement	0.31	Filtering capacity	0.01
HdmC:							
Hardeman---	95	Very limited		Somewhat limited		Somewhat limited	
		Seepage	1.00	Slow water movement	0.31	Too steep for surface application	0.08
						Filtering capacity	0.01
HfkA:							
Hayfork---	83	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.69	Slow water movement	1.00	Slow water movement	0.96
		Too level	0.50				
		Flooding	0.40				
HksA:							
Headrick---	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	1.00
		Depth to saturated zone	0.75	Depth to saturated zone	0.76	Depth to saturated zone	0.75
		Too level	0.50			Slow water movement	0.21
HolA:							
Hollister---	91	Somewhat limited		Very limited		Very limited	
		Too level	0.50	Slow water movement	1.00	Slow water movement	1.00
		Seepage	0.39				
HrAC:							
Harmon---	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00	Too steep for surface application	0.02

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Aspermont----------	44	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	1.00
		Depth to bedrock	0.42	Depth to bedrock	1.00	Depth to bedrock	0.42
HSAF:							
Hardeman----------	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.35	Slow water movement	0.31	Too steep for sprinkler irrigation	0.35
						Filtering capacity	0.01
Southside----------	27	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Filtering capacity	1.00
		Too steep for surface application	0.78	Slow water movement	0.31	Too steep for surface application	1.00
						Too steep for sprinkler irrigation	0.78
Arnett--------------	20	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Too steep for surface application	0.92
		Too steep for surface application	0.06	Slope	0.88	Too steep for sprinkler irrigation	0.06
						Filtering capacity	0.01
JesC:							
Jester--------------	87	Very limited		Not limited		Very limited	
		Seepage	1.00			Filtering capacity	1.00
KcRG:							
Knoco, bouldery-----	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Slow water movement	1.00	Too steep for surface application	1.00
				Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
						Slow water movement	1.00
Rock outcrop--------	20	Not rated		Not rated		Not rated	
KoBE:							
Knoco---------------	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Slow water movement	1.00	Depth to bedrock	1.00
				Depth to bedrock	1.00	Slow water movement	1.00

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Badland	30	Not rated		Not rated		Not rated	
KRCF:							
Knoco	33	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Slow water movement	1.00	Depth to bedrock	1.00
		Too steep for surface application	0.78	Depth to bedrock	1.00	Slow water movement	1.00
				Slope	1.00	Too steep for surface application	1.00
						Too steep for sprinkler irrigation	0.78
Rock outcrop	21	Not rated		Not rated		Not rated	
Cottonwood	17	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.78	Slope	1.00	Too steep for sprinkler irrigation	0.78
LacB:							
La Casa	79	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.69	Slow water movement	1.00	Slow water movement	0.96
LnuA:							
Lincoln	90	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.60	Filtering capacity	1.00
		Seepage	1.00			Flooding	0.60
		Too level	0.50				
LnWA:							
Lincoln	65	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Filtering capacity	1.00
		Seepage	1.00			Flooding	1.00
		Too level	0.50				
Westola	22	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Seepage	1.00	Slow water movement	0.31	Filtering capacity	0.01
		Too level	0.50				
LwtA:							
Lawton	87	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	0.21
		Too level	0.50				

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LwtB:							
Lawton	87	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	0.21
LwtC2:							
Lawton, moderately eroded	77	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	0.21
				Slope	0.03	Too steep for surface application	0.18
M-W:							
Water, Miscellaneous	100	Not rated		Not rated		Not rated	
MagB:							
Madge	90	Very limited		Very limited		Not limited	
		Seepage	1.00	Slow water movement	1.00		
MdgB:							
Madge	90	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	0.01
MknB:							
Mcknight	87	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	1.00
		Depth to bedrock	0.18	Depth to bedrock	1.00	Depth to bedrock	0.18
						Filtering capacity	0.01
MktB:							
Mcknight	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	1.00
		Depth to bedrock	0.23	Depth to bedrock	1.00	Slow water movement	1.00
		Too acid	0.21			Depth to bedrock	0.23
						Too acid	0.21
MktC2:							
Mcknight, moderately eroded	75	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	1.00
		Depth to bedrock	0.32	Depth to bedrock	1.00	Slow water movement	1.00
						Depth to bedrock	0.32
						Too steep for surface application	0.08
NpsB:							
Nipsum	82	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.04	Slow water movement	1.00	Slow water movement	0.96

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
NstC:							
Nobscot	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Slow water movement	0.31	Filtering capacity	1.00
		Too acid	0.21			Too acid	0.21
						Too steep for surface application	0.02
OakA:							
Oakley	80	Very limited		Very limited		Not limited	
		Seepage	1.00	Slow water movement	1.00		
		Too level	0.50				
OakB:							
Oakley	85	Very limited		Very limited		Not limited	
		Seepage	1.00	Slow water movement	1.00		
OzkA:							
Ozark	85	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	0.01
		Too level	0.50				
PIT:							
Pits	100	Not rated		Not rated		Not rated	
QhTC:							
Quanah	50	Very limited		Very limited		Not limited	
		Seepage	1.00	Slow water movement	1.00		
Talpa	20	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00		
QnRG:							
Quinlan	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
						Slow water movement	0.21
Rock outcrop	25	Not rated		Not rated		Not rated	
RakA:							
Roark	85	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	0.96
		Too level	0.50				

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RKBG:							
Rock outcrop, granite	60	Not rated		Not rated		Not rated	
Brico	30	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
		Cobble content	1.00	Cobble content	1.00	Slow water movement	0.21
						Cobble content	0.12
RKO:							
Rock outcrop, granite	100	Not rated		Not rated		Not rated	
RuuA:							
Rups	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Flooding	0.60
		Seepage	1.00	Flooding	0.60	Slow water movement	0.54
		Too level	0.50			Salinity	0.50
		Sodium content	0.18			Sodium content	0.18
RuwA:							
Rups	82	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Seepage	1.00	Slow water movement	1.00	Depth to saturated zone	0.86
		Depth to saturated zone	0.86	Depth to saturated zone	1.00	Slow water movement	0.54
		Too level	0.50			Salinity	0.50
		Sodium content	0.18			Sodium content	0.18
SKRG:							
Spikebox	40	Very limited		Very limited		Very limited	
		Seepage	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	1.00	Slow water movement	1.00	Too steep for sprinkler irrigation	1.00
Knoco	23	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Too steep for surface application	1.00	Slow water movement	1.00	Too steep for surface application	1.00
				Depth to bedrock	1.00	Too steep for sprinkler irrigation	1.00
						Slow water movement	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SpDB:							
Springer	70	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Slow water movement	0.96	Filtering capacity	1.00
		Too acid	0.21			Too acid	0.21
Devol	22	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Slow water movement	0.31	Filtering capacity	1.00
		Too acid	0.21			Too acid	0.21
SplA:							
Spur	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Slow water movement	1.00	Flooding	0.60
		Seepage	1.00	Flooding	0.60		
		Too level	0.50				
SurA:							
Spur	84	Very limited		Very limited		Not limited	
		Seepage	1.00	Slow water movement	1.00		
		Too level	0.50				
		Flooding	0.40				
SuuA:							
Spur	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Slow water movement	1.00	Flooding	0.60
		Seepage	1.00	Flooding	0.60		
		Too level	0.50				
SuwA:							
Spur	87	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Seepage	1.00	Slow water movement	1.00		
		Too level	0.50				
TARD:							
Talpa	46	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00	Too steep for surface application	0.02
Aspermont	37	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	1.00
		Depth to bedrock	0.96	Depth to bedrock	1.00	Depth to bedrock	0.96
Rock outcrop	11	Not rated		Not rated		Not rated	
TilA:							
Tillman	85	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.69	Slow water movement	1.00	Slow water movement	0.99
		Sodium content	0.18			Sodium content	0.18
		Too level	0.08				
TilB:							
Tillman	85	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.69	Slow water movement	1.00	Slow water movement	0.96

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TipA:							
Tipton	80	Very limited		Very limited		Not limited	
		Seepage	1.00	Slow water movement	1.00		
		Too level	0.50				
TlvB:							
Tilvern	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.69	Slow water movement	1.00	Slow water movement	1.00
		Depth to bedrock	0.32	Depth to bedrock	1.00	Depth to bedrock	0.32
		Sodium content	0.01			Sodium content	0.01
TpfA:							
Tipton	90	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	0.01
		Too level	0.50				
TrwB:							
Treadway	87	Not limited		Very limited		Very limited	
				Slow water movement	1.00	Slow water movement	1.00
VeKE:							
Vernon	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Slow water movement	1.00	Slow water movement	1.00
				Depth to bedrock	1.00	Depth to bedrock	1.00
						Too steep for surface application	0.08
Knoco	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Slow water movement	1.00	Depth to bedrock	1.00
				Depth to bedrock	1.00	Slow water movement	1.00
				Slope	0.50	Too steep for surface application	0.68
VerC:							
Vernon	78	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Slow water movement	1.00	Slow water movement	1.00
				Depth to bedrock	1.00	Depth to bedrock	1.00
						Too steep for surface application	0.08
VeTE:							
Vernon	53	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Slow water movement	1.00	Slow water movement	1.00
				Depth to bedrock	1.00	Depth to bedrock	1.00
				Slope	0.12	Too steep for surface application	0.32
Talpa, stony	25	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Slow water movement	1.00	Too steep for surface application	0.32
				Slope	0.12		

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
W:							
Water	100	Not rated		Not rated		Not rated	
WlwB:							
Willow	85	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Slow water movement	0.21
		Depth to bedrock	0.14	Depth to bedrock	1.00	Depth to bedrock	0.14
WooB:							
Woodward	87	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slow water movement	0.21
WooC:							
Woodward	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slow water movement	0.21
						Too steep for surface application	0.08
WoQE:							
Woodward	50	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.50	Slope	1.00	Too steep for sprinkler irrigation	0.50
						Slow water movement	0.21
Quinlan	37	Very limited		Very limited		Very limited	
		Seepage	1.00	Slow water movement	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too steep for surface application	1.00
		Too steep for surface application	0.50	Slope	1.00	Too steep for sprinkler irrigation	0.50
						Slow water movement	0.21
WslA:							
Westola	90	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Seepage	1.00	Slow water movement	0.31	Filtering capacity	0.01
		Too level	0.50				

Agricultural Waste Management, Part II--Continued

Map symbol and soil name	Pct. of map unit	Overland flow of wastewater		Rapid infiltration of wastewater		Slow rate treatment of wastewater	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WstA:							
Westola	92	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Slow water movement	1.00	Filtering capacity	0.01
		Too level	0.50				
		Flooding	0.40				
WtlA:							
Westill	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.69	Slow water movement	1.00	Slow water movement	1.00
		Too level	0.50	Depth to bedrock	1.00		
WtlB:							
Westill	83	Somewhat limited		Very limited		Very limited	
		Seepage	0.69	Slow water movement	1.00	Slow water movement	1.00
				Depth to bedrock	1.00		

Rangeland

Mark Moseley, Range Conservationist, Natural Resources Conservation Service, Stillwater, Oklahoma, helped prepare this section.

Range and native pasture provide forage for livestock in the survey area.

Range is defined as land on which the native vegetation (the climax, or natural potential, plant community) is predominantly grasses, grasslike plants, forbs, and shrubs suitable for grazing and browsing. Range includes natural grasslands, savannas, many wetlands, some deserts, tundra, and certain shrub and forb communities. Range receives no regular or frequent cultural treatment. The composition and production of the plant community are determined by soil, climate, topography, overstory canopy, and grazing management.

Native pasture is defined as land on which the potential (climax) vegetation is forest but which is used and managed primarily for the production of native forage plants. Native pasture includes cutover forestland and forestland that has been cleared and is managed for native or naturalized forage plants.

Rangeland makes up about 40 percent of the land in Greer County. There has been a recent trend to reseed many areas of marginal cropland with a mixture of native grass species. The range is used primarily for grazing by domestic cattle; however, its importance as wildlife habitat is becoming increasingly important as more landowners lease the hunting rights on their range as an additional source of income.

The rangeland in Greer County originally produced a wide variety of tall and mid-sized grasses interspersed with an abundance of forbs that evolved under the collective influence of ungulate grazing, fire, variable climatic events, insects, and rodents and other wildlife. Effective range management practices that mimic the historical management can help to maintain or re-establish these high quality plants.

Four types of rangeland exist in Greer County. The first type is in the east central and southeastern parts of the county where the soils formed in very deep, loamy, alluvial sediments. This area is typified by broad flats and gently sloping and sloping uplands. The soils support predominantly tall grasses, and potential productivity is high. The second type is in the northeastern and southern parts of the county along areas parallel to the North Fork of the Red River and the Salt Fork of the Red River. In these areas the soils formed in deep, sandy and loamy sediments. Hummocky sand dunes and flat depressions typify these areas, and wind erosion is a hazard if adequate cover is not maintained on the surface of the soil. Soils in these areas support tall and mid grasses with scattered woody shrubs, and potential productivity is moderate. The third type is in the central and northwestern parts of the county. The soils are loamy and are shallow to very deep over sandstone or alluvial sediment. These areas are typified by rolling hills and a few flat-topped ridges and canyons. The soils support a mixture of tall, mid, and short grasses, and potential productivity is moderate to high. The fourth type is in the south central and western parts of the county where the soils are loamy or clayey and are shallow to moderately deep over gypsum or shale. This area is typified by steep escarpments and gently sloping to sloping uplands. The soils support short and mid grasses. Potential productivity is low because of the shallow root zones.

Approximately 75 percent of the annual production of forage occurs from April through July following the rains in spring and early summer. A second, smaller growth period may occur in the fall if sufficient moisture is available.

The table, “Rangeland Productivity and Characteristic Plant Communities,” shows for each soil the ecological site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. Only those soils that are used as rangeland or are suited to use as rangeland are listed. Explanation of the column headings in this table follows.

An *ecological site* for rangeland is a distinctive kind of land and vegetation with specific physical characteristics that make it different from other kinds of land in its ability to produce a distinctive kind and amount of vegetation.

Many different ecological sites are in the survey area. Over time, the combination of plants best suited to a particular soil and climate has become dominant. If the soil is not excessively disturbed, this group of plants is the natural plant community for the site. Natural plant communities are not static but vary slightly from year to year and place to place.

The relationship between soils and vegetation was ascertained during this survey; thus, ecological sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table are also important. The “Field Office Technical Guide,” which is available at the local office of the Natural Resources Conservation Service and online the internet at **http://www.nrcs.usda.gov/technical/efotg/** can provide specific information about ecological sites.

Total dry-weight production is the amount of vegetation that can be expected to grow annually on well-managed range that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year’s growth of leaves, twigs, and fruit of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperature make growing conditions substantially better than average. In a normal year, growing conditions are near the historical monthly average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Figure 18 shows a typical growth curve that represents the percentage of total growth that occurs each month for native vegetation and other forage.

Dry weight is the total annual yield per acre. Yields are adjusted to a common percent of air-dry moisture content. The relationship of green weight to air-dry weight varies according to such factors as stage of maturity, exposure, amount of shade, recent rains, and unseasonable dry periods.

Characteristic vegetation consists of the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil. The plants are listed by common name. Rangeland composition lists the anticipated percentage of the total annual production for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Similarity Index

The similarity index indicates on a percentage basis the extent to which the present plant community resembles a specified vegetative state on an ecological site. NRCS uses similarity index two ways.

The first use compares the present vegetation on an ecological site to the presumed historic vegetation for that site. A similarity index of 70 would suggest that the present plant community contains 70 percent of the presumed historic plant community for that site. This comparison provides a basis for examining the extent and direction of changes that have taken place between current vegetation and historic vegetation.

The second use measures how near the current plant community is to the landowners goal for the land. The management goal for rangeland is not necessarily a similarity index of 100 as compared to the historic plant community. Therefore, the similarity index can represent the percentage of the plant community that resembles a desired plant community.

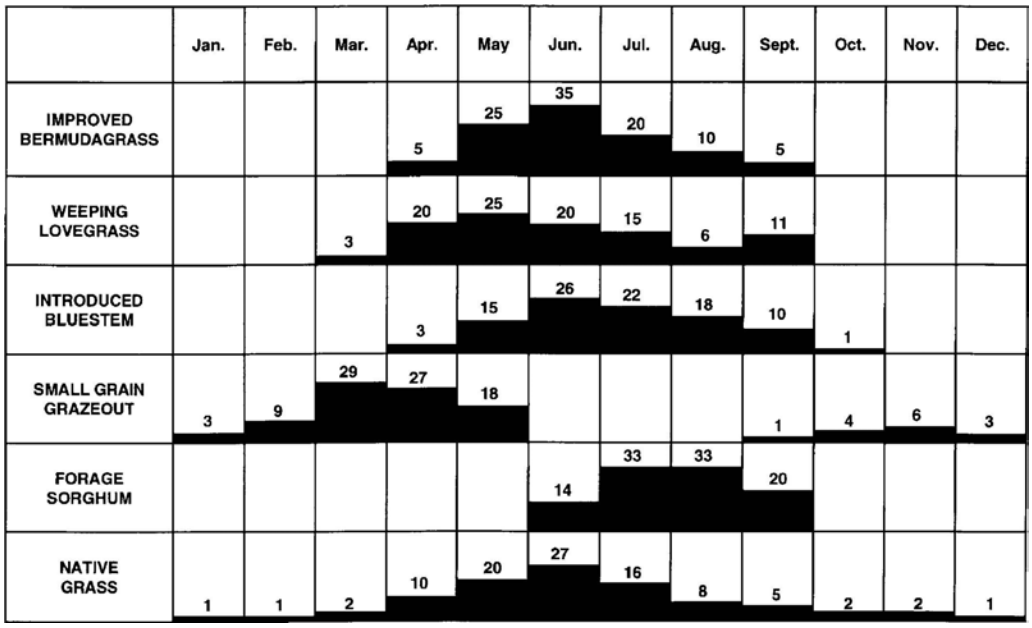

Figure 18.—Typical growth curves for various kinds of forage in Greer County. The growth curve for each kind of forage indicates the percentage of the total annual growth that occurs each month.

Abnormal disturbances that can change the natural plant community include repeated overuse by livestock, excessive burning, erosion, and cultivation. Grazing animals select the most palatable plants. These plants eventually die if they are continually grazed at a severity that does not allow for recovery. A very severe disturbance can completely destroy the natural community. Under such conditions, the abundance of less desirable plants, such as annuals and weed-like plants, can increase. If the plant community and the soils have not deteriorated significantly and proper range management is applied, the site eventually can return to predominantly natural plants.

Knowledge of the ecological site is necessary as a basis for planning and applying the management needed to maintain or improve the desired plant community for selected uses. Such information is needed to support management objectives, planned grazing systems, stocking rates, and wildlife management practices; to improve the potential of an area for recreational uses; and to improve the condition of watersheds.

Rangeland Management

Rangeland management requires knowledge of the kind of soils and of the potential natural plant community. It also requires an evaluation of the similarity index.

Effective range management conserves rainfall, enhances water quality, reduces the hazard of downstream Flooding, improves yields, provides forage for livestock and wildlife, enhances recreational opportunities, and protects the soil. The main management concern is recognizing important changes in the plant cover or the range trend. These changes takes place gradually and can be overlooked.

Each range manager should evaluate the type of plant community that best supports the ranch and then apply management and ecological principles to achieve the goals. The desired plant community should be within the capabilities of the land.

The range management practices used in Greer County include proper grazing use, deferred grazing, and planned grazing systems. They also include properly located stock-water developments and fences and a planned distribution of salt and feed. If undesirable plants become dominant, range seeding, brush management, or prescribed burning should be considered.

A pasture program is needed to provide the desired amount of forage during each month of the year. A study of the growth habits of the different plants is necessary to ensure adequate forage during each month. The months that various kinds of forage plants grow are indicated in figure 18. The percent growth that can be safely grazed each month without substantially reducing the total yield for each kind of plant is illustrated.

Range management includes four major considerations:

Grazing distribution which is achieved by managing livestock to graze all parts of the grazing unit equally.

Selective grazing which occurs because animals graze preferred plants to balance their diets. If selective grazing occurs repeatedly, the preferred plants are damaged.

Proper stocking rates which are achieved by balancing animal numbers with forage production.

Rest periods, during which grazed plants are given enough rest to recover and to maintain growth.

It is important to remember that forage production is controlled by rainfall while composition is determined by grazing management.

The setting of stocking rates is not an exact science because there are influences from grazing management, season of use, mix of livestock, and seasonal forage production. Some general rules, however, can be helpful. To maintain a nutritional cover of plants, about 50 percent of the annual growth of the most important grazing plants should remain at the end of the grazing season. Plants can be removed not only through grazing by livestock but also through grazing by rodents, insects, and wildlife and through deterioration caused by climatic variations. Because of these factors, a safe initial stocking rate should be calculated on the basis of 25 percent of the total annual growth, by weight, of the vegetation.

For example, production could be 2,800 pounds of air-dry grasses, forbs, and woody species for an average season on a Loamy Prairie ecological site with a similarity index above 70 to the historic plant community. Twenty-five percent of this production would be 700 pounds.

A 1,000-pound cow and her calf is equivalent to one animal unit (AU) and consume about 2.6 percent of her body weight (26 pounds) of forage per day. Therefore, in 1 month an animal unit would consume 790 pounds of native vegetation, depending on the quality and stage of growth of the plants (26 pounds per day times 365 days per year divided by 12 months per year).

Dividing 700 pounds (the forage allocation) by 26 pounds (the forage required per day for 1 animal unit) suggests that 1 acre of Loamy Prairie ecological site with a similarity index of 70 would feed one cow and calf for 27 days. To convert forage available from 1 acre to animal unit months (AUM), the available forage (700 pounds) is divided by the amount required to feed 1 animal unit for 1 month (790 pounds). One acre would provide 0.88 AUM of grazing. Therefore, 14 acres would feed one cow and calf for 12 months.

Another approach is to calculate the annual forage needs of an animal unit (790 pounds times 12 months equals 9,480 pounds). Dividing the 700 pounds of usable forage per acre into the 9,480 pounds needed by the cow and calf reveals that approximately 14 acres would be needed for one cow and calf annually. Stocking rate calculations should be adjusted for animal size, grazing system, and grazing season.

More information about planning a grazing program is available from the local office of the Natural Resources Conservation Service.

Ecological Site Descriptions

Forty ecological sites are recognized in Greer County. The ecological site identifier has eleven characters. The “R” indicates an ecological site. The next four characters identify the major land resource area, the sixth character identifies the major land resource unit subdivision, the next three characters identify the individual ecological site number, and the final two characters identify the State. The ecological site identifier is followed by the proper name for the ecological site. The following paragraphs

describe the ecological sites in Greer County and list the plants that are characteristic of each site. Detailed ecological site descriptions are available at the local office of the Natural Resources Conservation Service.

R078BY070TX, Clayey Bottomland PE 25-36. This site is in areas of nearly level soils on flood plains along major streams. The runoff rate is high. The historic climax vegetation includes vine mesquite, buffalograss, sideoats grama, blue grama, white tridens, alkali sacaton, Canada wildrye, bristlegrass, threeawn species, sand dropseed, fall witchgrass, Texas wintergrass, western wheatgrass, and sedges. Forbs include asters, croton species, gaillardia, false gaura, rushpea, skeletonplant, Texas nightshade, verbena, and western ragweed. Shrubs and vines include lotebush, jointfir, and Berlandier wolfberry. Trees include willow, mesquite, and hackberry.

R078BY071TX, Clay Flat PE 25-36. This site is on broad, alluvial plains or filled valleys. The historic climax vegetation includes tobosagrass, alkali sacaton, blue grama, buffalograss, white tridens, vine mesquite, dropseed, sand dropseed, Texas wintergrass, and little barley. Forbs include Texas croton, snow on the mountain, scarlet false gaura, curlycup gumweed, Indian rushpea, upright prairie coneflower, scarlet globemallow, and Baldwin's ironweed. Shrubs include lotebush, Berlandier wolfberry, cholla, pricklypear, four-wing saltbush, and saltbush. Trees include hackberry.

R078BY072TX, Clay Loam PE 25-36. This site is dominantly on nearly level to gently sloping upland plains, upland terraces, and broad divides. In places, it is in broad upland valleys. The historic climax vegetation includes blue grama, buffalograss, vine mesquite, curly-mesquite, sideoats grama, and tobosagrass. Forbs include western ragweed, white heath aster, Engelmann daisy, scarlet false gaura, and dotted gayfeather. Legumes include beebalm, slimflower scurfpea, upright prairie, and coneflower. Shrubs are only in a few areas but include pricklypear, lotebush, and Berlandier wolfberry. Trees include hackberry and honey mesquite.

R078BY076TX, Gyp PE 25-36. This site is on ridges, knobs, hilltops, and benches within the redbed geologic formations of the western rolling plains. The historic climax vegetation includes little bluestem, sideoats grama, Wright threeawn, sand dropseed, hairy grama, blue grama, tobosagrass, silver bluestem, Arizona cottontop, vine mesquite, bristlegrass species, and slim tridens. Also, big bluestem and indiangrass are on some of the sites that have more soil material. Forbs include gyp bluecurls, halfshrub sundrop, skullcap, longleaf buckwheat, gray goldenaster, and dotted gayfeather. Shrubs include fourwing saltbush, jointfir species, featherplume, yucca, skunkbush sumac, Berlandier wolfberry, plains pricklypear, small soapweed, and lotebush.

R078BY078TX, Lakebed PE 25-36. This site is on nearly level alluvial plains, in slightly depressed playas, or in waterways in the lower positions on the landscape. The historic climax vegetation includes vine mesquite, buffalograss, blue grama, white tridens, cane bluestem, western wheatgrass, sedges, flatsedge, spikerush, and bulrush. Forbs include arrowhead, cutleaf evening-primrose, dalea, cattail, goosefoot, knotweed, lambsquarters, plains coreopsis, plains ironweed, pondweed, bursage, sawtooth fogfruit, silverleaf nightshade, and snow on the mountain. Shrubs include buttonbush. Trees include willow.

R078BY079TX, Loamy PE 25-36. This site is in areas of gently sloping to moderately sloping soils on uplands. The historic climax vegetation includes sideoats grama, little bluestem, indiangrass, little bluestem, sand bluestem, blue grama, buffalograss, switchgrass, and tall dropseed. Forbs include dotted gayfeather, Engelmann daisy, halfshrub sundrop, broom snakeweed, heath aster, verbena, and catclaw sensitive-brier. Semiwoody species include yucca.

R078BY080TX, Loamy Bottomland PE 25-36. This site is on bottomlands on flood plains or stream terraces along major streams. The historic climax vegetation includes switchgrass, indiangrass, sideoats grama, sand bluestem, western wheatgrass, Canada wildrye, vine mesquite, silver bluestem, blue grama, inland saltgrass, buffalograss, tumble windmill grass, creeping muhly, white tridens, prairie cordgrass, alkali sacaton,

and eastern gamagrass. Forbs include Illinois bundleflower, Maximilian sunflower, western ragweed, Mexican white sagewort, white heath aster, Engelmann daisy, snow on the mountain, false gaura species, scurfpea, and Baldwin's ironweed. Shrubs include fragrant sumac, leadplant, indigobush, saltwater false willow, and sand plum. Trees include eastern cottonwood, hackberry, black willow, and western soapberry.

R078BY081TX, Loamy Prairie PE 25-36. This site is on rolling uplands that have moderate to steep slopes. The convex ridgetops support mid grasses, short grasses, some forbs, and a few shrubs. The draw bottoms support tall grasses. The historic climax vegetation includes little bluestem, indiangrass, switchgrass, sand bluestem, sideoats grama, blue grama, Canada wildrye, Texas bluegrass, Wright's threeawn, hairy grama, silver bluestem, hooded windmill grass, and dropseed species. Forbs include western ragweed, Mexican white sagewort, Engelmann daisy, false gaura species, scurfpea, halfshrub sundrop, purple prairie clover, annual wild buckwheat, ratany, dotted gayfeather, catclaw sensitive-briar, Fendler's penstemon, white milkwort, Drummond's skullcap, and stiff greenthread. Shrubs include leadplant, sand sagebrush, vine jointfir, mimosa, skunkbush, and small soapweed.

R078BY088TX, Sandy Loam PE 25-36. This site is on moderately sloping terrace pediments on uplands. The historic climax vegetation includes sideoats grama, little bluestem, blue grama, sand bluestem, indiangrass, vine mesquite, sand dropseed, hooded windmill grass, buffalograss, bristlegrass species, sand dropseed, Canada wildrye, Texas bluegrass, silver bluestem, tall dropseed, purple threeawn, signalgrass, and gummy lovegrass. Forbs include catclaw sensitive-briar, Engelmann daisy, prairie acacia, rushpea species, scarlet gaura, western ragweed, scarlet globemallow, halfshrub sundrop, dotted gayfeather, Mexican white sagewort, purple prairie clover, annual fleabane, Maximilian sunflower, false goldenaster, ratany, Fendler's penstemon, slimflower scurfpea, and blue sage. Shrubs include sand sagebrush, yucca, fragrant mimosa, honey mesquite, sand plum, small soapweed, and lotebush. Trees include hackberry and western soapberry.

R078BY090TX, Shallow Clay PE 25-36. This site is in areas of gently sloping to moderately sloping soils on uplands. The historic climax vegetation includes blue grama, sideoats grama, buffalograss, little bluestem, tobosagrass, big bluestem, indiangrass, slim tridens, sand dropseed, purple threeawn, hairy grama, silver bluestem, tumble windmill grass, ear muhly, Hall panicum, vine mesquite, bristlegrass, foxtail barley, and western wheatgrass. Forbs include Engelmann daisy, western ragweed, halfshrub sundrop, rose heath, dotted gayfeather, false goldenaster, ratany, rosering gaillardia, broom snakeweed, slimflower scurfpea, Drummond's skullcap, scarlet globemallow, stiff greenthread, and zinnia. Shrubs include lotebush, fourwing saltbush, jointfir species, Berlandier wolfberry, plains pricklypear, and honey mesquite. Trees include hackberry and redberry juniper.

R078BY091TX, Very Shallow PE 25-36. This site is on ridges, hills, and erosional slopes and in areas along escarpments. The historic climax vegetation includes little bluestem, sideoats grama, black grama, hairy grama, blue grama, big bluestem, indiangrass, sand dropseed, slim tridens, silver bluestem, and hairy tridens. Forbs include dotted gayfeather, ratany, halfshrub sundrop, Mexican white sagewort, rose heath, Texas croton, blacksamson, spurge, sandlilly, Lambert's crazyweed, slimflower scurfpea, stemmy four-nerve daisy, catnip noseburn, zinnia, featherplume, mimosa, plains pricklypear, and small soapweed. Trees include redberry juniper and shrubby hackberry.

R078BY092TX, Very Shallow Clay PE 25-36. This site is on ridges, side slopes, and foot slopes in the uplands. The historic climax vegetation includes sideoats grama, buffalograss, curly mesquite, blue grama, silver bluestem, alkali sacaton, sand dropseed, bristlegrass, vine mesquite, plains lovegrass, tall dropseed, meadow dropseed, threeawn species, hairy grama, fall witchgrass, tumble windmill grass, ear muhly, and slim tridens. Forbs include broom snakeweed, dotted gayfeather, Engelmann daisy, globemallow

species, gray goldenaster species, halfshrub sundrop, Indian rushpea, Mexican white sagewort, zinnia, slimflower scurfpea, ratany, and western ragweed. Shrubs and vines include Condalia species, fourwing saltbush, jointfir species, lotebush, plains pricklypear, tasajillo, and Berlandier wolfberry.

R078BY692TX, Rocky Hill PE 25-36. This site is in areas of stony, calcareous clays and shaley soils on steep hillsides. The historic climax vegetation includes little bluestem, sand bluestems, indiangrass, sideoats grama, Canada wildrye, vine mesquite, Texas wintergrass, tall dropseed, buffalograss, heath aster, bush sunflower, gayfeather, and daleas. Woody species include bumelia, hackberry, elm, skunkbush, sumacs, mesquite, tasajillo, lotebush, and pricklypear.

R078CY005OK, Loamy Breaks PE 32-44. This site is on bluffs or escarpments that have excessive drainage. The historic climax vegetation includes little bluestem, sideoats grama, blue grama, hairy grama, Scribner panicum, indiangrass, buffalograss, switchgrass, western wheatgrass, and dropseed species. Forbs include bigtop dalea, blacksamson, false gaura, goldenrod, cream milkvetch, dotted gayfeather, catclaw sensitive-briar, Illinois bundleflower, and heath aster. Shrubs include leadplant, ceanothus, grape, pricklypear, skunkbush, and plum.

R078CY006OK Clayey Breaks PE 32-44. These sites are escarpments and rough canyon like areas of redbeds that have narrow valley drainageways. These sites greatly restrict livestock travel. Historic climax grasses included little bluestem, sand bluestem, and sideoats grama. Forbs included Louisiana sagewort, nailwort, bluets, and compassplant. Legumes included catclaw sensitivebriar, Illinois bundleflower, prairieclover, and dalea species. Principal woody species was skunkbush.

R078CY017OK, Deep Sand Savannah (West) PE 32-44. This site is in rolling to dunelike areas. The soils are very deep, well drained, and sandy. This site has an overstory of oak trees. The historic climax vegetation includes little bluestem, sand bluestem, switchgrass, and indiangrass. Forbs include western ragweed. Legumes include lespedeza. Trees include about 10 percent shinnery oak.

R078CY046OK, Clayey Saline Bottomland PE 32-44. This site is in areas of level to slightly depressional, very deep, somewhat poorly drained soils that have a saline subsoil. This site is on flood plains. The historic climax vegetation includes switchgrass, knotroot bristlegrass, western wheatgrass, and wildrye.

R078CY050OK, Loamy Bottomland PE 32-44. This site is in level to gently sloping areas on bottomlands along larger drainageways. It is subject to occasional overflow from streams and runoff from hillsides. The historic climax vegetation includes sand bluestem, big bluestem, switchgrass, little bluestem, indiangrass, western wheatgrass, vine mesquite, tall dropseed, eastern gamagrass, tall dropseed, Canada wildrye, and sideoats grama.

R078CY056OK, Loamy Prairie PE 32-44. This site is in areas of deep or very deep, well drained, loamy soils on uplands. The historic climax vegetation includes little bluestem, sand bluestem, sideoats grama, blue grama, tall dropseed, switchgrass, indiangrass, and western wheatgrass. Legumes include leadplant, Illinois bundleflower, and scurfpea. Forbs include Maximilian sunflower, Louisiana sagewort, and heath aster.

R078CY057OK, Loamy Prairie (Calcareous) PE 32-44. This site is in areas of deep or very deep, well drained, loamy soils that have a high content of lime. The historic climax vegetation is dominantly little bluestem, sideoats grama, sand bluestem, and blue grama with lesser amounts of indiangrass, switchgrass, buffalograss, and other perennial grasses. Forbs include Engelmann daisy, heath aster, verbena, dotted gayfeather, and catclaw sensitive-brier.

R078CY068OK, Sandy Bottomland PE 32-44. This site is in areas of sandy soils on first and second bottoms. The historic climax vegetation includes sand bluestem, little bluestem, indiangrass, switchgrass, big sandreed, tall dropseed, sideoats grama, and Canada wildrye.

R078CY084OK, Shallow Prairie (South) PE 32-44. This site is in areas where dolomitic limestone beds are interbedded with red clays. The topography is smooth to rolling. The historic climax vegetation includes little bluestem, sideoats grama, hairy grama, composite dropseed, big bluestem, indiangrass, switchgrass, and Canada wildrye. Legumes include rushpea, prairie clover, prairie bundleflower, and catclaw sensitive-briar. Forbs include Maximilian sunflower, compassplant, purple coneflower, leadplant, and tall blazing star. Woody species include skunkbush sumac, roughleaf dogwood, and winged sumac.

R078CY089OK, Seep Meadow PE 32-44. This site is in areas of very deep, somewhat poorly drained, loamy and sandy soils that have a high water table for most of the year. The historic climax vegetation is dominantly switchgrass, sand bluestem, bushy bluestem, indiangrass, and sedges with lesser amounts of muhly, bundleflower, buttonbush, and other grasses and forbs. Trees include willow and cottonwood.

R078CY094TX, Clayey Bottomland PE 31-44. This site is in areas of clayey, well drained soils on bottomlands. The historic climax vegetation includes buffalograss, vine mesquite, western wheatgrass, sideoats grama, blue grama, silver bluestem, white tridens, alkali sacaton, and Canada wildrye.

R078CY096OK, Subirrigated (Moderately Saline) PE 32-44. This site is dominantly on flat bottomlands along major streams. Smaller areas are along smaller tributaries. The historic climax vegetation includes switchgrass, eastern gamagrass, inland saltgrass, alkali sacaton, alkali muhly, Canada wildrye, bluegrass, western wheatgrass, common reed, and prairie cordgrass. Woody species include willow and cottonwood.

R078CY096TX, Clay Loam PE 31-44. This site is in areas of deep or very deep, well drained, clayey soils that have a surface layer of clay loam. The historic climax vegetation includes blue grama, buffalograss, sideoats grama, Arizona cottontop, vine mesquite, western wheatgrass, Texas wintergrass, little bluestem, and sand bluestem. Forbs include asters, catclaw sensitive-brier, and Engelmann daisy. Shrubs include jointfir.

R078CY097OK, Subirrigated (Saline) PE 32-44. This site is on bottomlands. The soils are sandy and loamy, have a high water table, and have a slight to moderate content of salt. The soils favor the growth of more salt-tolerant species. The historic climax vegetation includes alkali sacaton, switchgrass, inland saltgrass, western wheatgrass, vine mesquite, little bluestem, tall dropseed, blue grama, and buffalograss. Woody species include willow and cottonwood.

R078CY098OK, Depressional Upland PE 32-44. This site is in drainage areas in depressions that are usually inundated. The dominant plants vary depending upon the degree of inundation. They include prairie cordgrass, vine mesquite, buffalograss, blue grama, western wheatgrass, sedges, bristlegrass, duckweed, sedges, and other forbs.

R078CY105TX, Loamy Sand Prairie PE 31-44. This site is in areas of very deep, moderately well drained or well drained, loamy soils that have a surface layer of loamy sand. The historic climax vegetation is dominantly sand bluestem, indiangrass, little bluestem, and switchgrass with lesser amounts of sideoats grama, blue grama, sand lovegrass, and Canada wildrye. Forbs include heath aster and sagewort. Woody species include sand sagebrush, hackberry, and plum.

R078CY107TX, Sand Hills PE 31-44. This site is in areas of very deep, excessively drained, sandy soils on hummocky dunes. The historic climax vegetation includes sand bluestem, little bluestem, giant sandreed, switchgrass, blue grama, sand dropseed, and sand paspalum. Forbs include primroses, false gauras, and daleas. Woody species include plum, skunkbush sumac, and sand sagebrush.

R078CY107TX, Sand Hills PE 32-44. This site is in areas of very deep, excessively drained, sandy soils on hummocky dunes. The historic climax vegetation includes sand bluestem, little bluestem, giant sandreed, switchgrass, blue grama, sand dropseed, and sand paspalum. Forbs include primroses, false gauras, and daleas. Woody species include plum, skunkbush sumac, and sand sagebrush.

R078CY110TX, Sandy Loam Prairie PE 31-44. This site is in areas of moderately deep to very deep, well drained, loamy soils that have a surface layer of sandy loam. The historic climax vegetation is dominantly little bluestem, sand bluestem, sideoats grama, and blue grama with lesser amounts of indiangrass, switchgrass, and sand lovegrass. Forbs include catclaw sensitive-brier, Engelmann daisy, gayfeather, and heath aster.

R078CY834OK, Eroded Sandy Land PE 32-44. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined.

R078CY856OK, Eroded Loamy Prairie PE 32-44. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R078CY056OK, Loamy Prairie PE 32-44, for the historic climax vegetation on the parent site.

R078CY865OK, Eroded Clay Prairie PE 32-44. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R078CY065OK, Clay Prairie (North) PE 32-44, for the historic climax vegetation on the parent site.

R078CY873OK, Eroded Sandy Prairie PE 32-44. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R078CY073OK, Sandy Prairie PE 32-44, for the historic climax vegetation on the parent site.

R078CY883OK, Eroded Shallow Prairie PE 32-44. This site is in areas where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R078CY083OK, Shallow Prairie (North) PE 32- 44, for the historic climax vegetation on the parent site.

R082BY004OK, Boulder Ridge PE 38-48. This site is on the lower slopes and ridges near the Wichita Mountains. The soils are deep, are gravelly, and have small rocks on or near the surface. The historic climax vegetation is dominantly big bluestem, indiangrass, switchgrass, and little bluestem with lesser amounts of sideoats grama, blue grama, hairy grama, wildrye, dropseed, and forbs. Some areas have a few woody species, including post oak and blackjack oak.

R082BY056OK, Loamy Prairie PE 38-48. This site is in areas of productive, deep, loamy soils on uplands. The historic climax vegetation includes little bluestem, sand bluestem, switchgrass, and indiangrass with an understory of sideoats grama, western wheatgrass, blue grama, and buffalograss. Legumes include leadplant, Illinois bundleflower, and scurfpea. Forbs include Maximilian sunflower, Louisiana sagewort, and heath aster.

R082BY856OK, Eroded Loamy Prairie PE 38-48. This site is on uplands in areas of nearly level to moderately steep, coarse textured soils where part or all of the A horizon has been removed by erosion. The soil integrity has been changed. Because of the past erosion and the probability of ongoing erosion, the plant community can be determined only by onsite inspection. The productivity of this site has not been determined. See R082BY056OK, Loamy Prairie PE 38-48, for the historic climax vegetation on the parent site.

Rangeland Productivity and Characteristic Plant Communities

(Only the soils that support rangeland vegetation suitable for grazing are rated.)

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
AceB:						
Acme	Loamy PE 25-36 R078BY079TX	3,000	2,250	1,500	little bluestem	30
					sideoats grama	15
					blue grama	10
					buffalograss	10
					sand bluestem	10
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					switchgrass	5
					tall dropseed	5
ArHF:						
Arnett	Sandy Loam Prairie PE 31-44 R078CY110TX	4,000	2,800	2,000	little bluestem	30
					sideoats grama	15
					blue grama	10
					sand bluestem	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					switchgrass	5
Hardeman	Sandy Loam Prairie PE 31-44 R078CY110TX	3,000	2,400	1,800	little bluestem	30
					sideoats grama	15
					blue grama	10
					sand bluestem	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					switchgrass	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
ArnB:						
Arnett	Sandy Loam Prairie PE 31-44 R078CY110TX	4,000	3,200	2,400	little bluestem	30
					sideoats grama	15
					blue grama	10
					sand bluestem	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					switchgrass	5
ArnC:						
Arnett	Sandy Loam Prairie PE 31-44 R078CY110TX	4,000	3,200	2,400	little bluestem	30
					sideoats grama	15
					blue grama	10
					sand bluestem	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					switchgrass	5
AsmB:						
Aspermont	Loamy PE 25-36 R078BY079TX	3,000	2,250	1,500	little bluestem	30
					sideoats grama	15
					blue grama	10
					buffalograss	10
					sand bluestem	10
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					switchgrass	5
					tall dropseed	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
AsmC:						
Aspermont	Loamy PE 25-36 R078BY079TX	3,000	2,250	1,500	little bluestem	30
					sideoats grama	15
					blue grama	10
					buffalograss	10
					sand bluestem	10
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					switchgrass	5
					tall dropseed	5
BekA:						
Beckman	Clayey Saline Bottomland PE 32-44 R078CY046OK	3,000	2,100	1,500	alkali sacaton	40
					miscellaneous perennial grasses	15
					inland saltgrass	10
					western wheatgrass	10
					Canada wildrye	5
					miscellaneous perennial forbs	5
					miscellaneous trees	5
					switchgrass	5
					vine mesquite	5
BfdB:						
Burford	Loamy Prairie (calcareous) PE 32-44 R078CY057OK	4,000	2,800	2,000	little bluestem	20
					sand bluestem	15
					blue grama	10
					buffalograss	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous trees	5
					switchgrass	5
					tall dropseed	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
BfdC:						
Burford	Loamy Prairie (calcareous) PE 32-44 R078CY057OK	4,000	2,800	2,000	little bluestem	20
					sand bluestem	15
					blue grama	10
					buffalograss	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous trees	5
					switchgrass	5
					tall dropseed	5
BfSC2:						
Burford, Eroded	Eroded Loamy Prairie PE 32-44 R078CY856OK	---	---	---	---	---
Spikebox, Eroded	Eroded Shallow Prairie PE 32-44 R078CY883OK	---	---	---	---	---
BfSE:						
Burford	Loamy Prairie (calcareous) PE 32-44 R078CY057OK	4,000	2,800	2,000	little bluestem	20
					sand bluestem	15
					blue grama	10
					buffalograss	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous trees	5
					switchgrass	5
					tall dropseed	5
Spikebox	Shallow Prairie (south) PE 32-44 R078CY084OK	2,500	1,800	1,300	little bluestem	25
					sideoats grama	20
					hairy grama	10
					sand bluestem	10
					indiangrass	5
					blue grama	5
					buffalograss	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					threeawn	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
BriE:						
Brico	Boulder Ridge Savannah PE 38-48 R082BY004OK	4,000	3,000	2,000	big bluestem	25
					little bluestem	20
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous trees	5
					purpletop tridens	5
					switchgrass	5
BukA:						
Bukreek	Loamy Prairie PE 25-36 R078BY081TX	3,500	3,000	2,350	little bluestem	40
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					miscellaneous shrubs	10
					indiangrass	5
					blue grama	5
					miscellaneous trees	5
					sand bluestem	5
					sideoats grama	5
					switchgrass	5
CarB:						
Carey	Loamy Prairie PE 25-36 R078BY081TX	3,500	3,000	2,350	little bluestem	40
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					miscellaneous shrubs	10
					indiangrass	5
					blue grama	5
					miscellaneous trees	5
					sand bluestem	5
					sideoats grama	5
					switchgrass	5
CawA:						
Carwile	Depressional Upland PE 32-44 R078CY098OK	5,000	4,000	3,000	switchgrass	20
					barnyardgrass	15
					miscellaneous perennial grasses	15
					prairie cordgrass	10
					indiangrass	8
					sedge	8
					miscellaneous perennial forbs	5
					smartweed	5
					miscellaneous shrubs	2
					miscellaneous trees	2

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
CVRD:						
Cottonwood	Gyp PE 25-36 R078BY076TX	500	450	300	little bluestem miscellaneous perennial forbs miscellaneous perennial grasses miscellaneous shrubs sideoats grama miscellaneous trees	50 15 10 10 10 5
Vinson	Loamy PE 25-36 R078BY079TX	3,000	2,250	1,500	little bluestem sideoats grama blue grama buffalograss sand bluestem indiangrass miscellaneous perennial forbs miscellaneous perennial grasses switchgrass tall dropseed	30 15 10 10 10 5 5 5 5 5
Rock outcrop	---	---	---	---	---	---
DAM:						
Dam	---	---	---	---	---	---
DeSD:						
Devol	Loamy Sand Prairie PE 31-44 R078CY105TX	4,500	3,500	2,500	sand bluestem little bluestem indiangrass switchgrass Canada wildrye blue grama miscellaneous perennial forbs miscellaneous perennial grasses miscellaneous shrubs sand lovegrass sideoats grama	25 20 10 10 5 5 5 5 5 5 5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
Springer	Loamy Sand Prairie PE-31-44 R078CY105TX	4,500	3,500	2,500	sand bluestem	25
					little bluestem	20
					indiangrass	10
					switchgrass	10
					Canada wildrye	5
					blue grama	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					sideoats grama	5
DkuA:						
Duke	Clayey Bottomland PE 25-36 R078BY070TX	3,500	2,750	2,000	miscellaneous perennial forbs	15
					miscellaneous shrubs	15
					miscellaneous perennial grasses	10
					alkali sacaton	5
					blue grama	5
					buffalograss	5
					cane bluestem	5
					fall witchgrass	5
					halls panicum	5
					plains bristlegrass	5
					sand dropseed	5
					sideoats grama	5
					threeawn	5
					vine mesquite	5
					white tridens	5
DodA:						
Dodson	Clay Loam PE 31-44 R078CY096TX	2,600	1,900	1,300	blue grama	20
					buffalograss	15
					Arizona cottontop	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					vine mesquite	10
					little bluestem	5
					miscellaneous perennial forbs	5
					sand bluestem	5
					silver bluestem	5
					western wheatgrass	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
DodB:						
Dodson	Clay Loam PE 31-44 R078CY096TX	2,600	1,900	1,300	blue grama	20
					buffalograss	15
					Arizona cottontop	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					vine mesquite	10
					little bluestem	5
					miscellaneous perennial forbs	5
					sand bluestem	5
					silver bluestem	5
					western wheatgrass	5
EatA:						
Eastall	Lakebed PE 25-36 R078BY078TX	5,000	2,750	500	vine mesquite	20
					miscellaneous perennial forbs	15
					miscellaneous perennial grasses	15
					blue grama	10
					buffalograss	10
					cane bluestem	10
					knotgrass	10
					white tridens	10
EdsB:						
Eda	Deep Sand Savannah (west) PE 32-44 R078CY017OK	5,000	4,000	3,000	miscellaneous trees	20
					little bluestem	15
					sand bluestem	15
					indiangrass	10
					miscellaneous perennial grasses	10
					switchgrass	10
					dropseed	5
					miscellaneous shrubs	5
					Scribner panicum	5
					miscellaneous perennial forbs	1
EdsD:						
Eda	Deep Sand Savannah (west) PE 32-44 R078CY017OK	5,000	4,000	3,000	miscellaneous trees	20
					little bluestem	15
					sand bluestem	15
					indiangrass	10
					miscellaneous perennial grasses	10
					switchgrass	10
					dropseed	5
					miscellaneous shrubs	5
					Scribner panicum	5
					miscellaneous perennial forbs	1

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
EdsF:						
Eda	Deep Sand Savannah (west) PE 32-44 R078CY017OK	5,000	4,000	3,000	miscellaneous trees	20
					little bluestem	15
					sand bluestem	15
					indiangrass	10
					miscellaneous perennial grasses	10
					switchgrass	10
					dropseed	5
					miscellaneous shrubs	5
					Scribner panicum	5
					miscellaneous perennial forbs	1
FraB:						
Frankirk	Loamy Prairie PE 32-44 R078CY056OK	5,800	4,200	3,500	miscellaneous perennial grasses	35
					little bluestem	15
					indiangrass	10
					miscellaneous perennial forbs	10
					sand bluestem	10
					sideoats grama	10
					miscellaneous shrubs	5
					switchgrass	5
FryB:						
Farry	Loamy Prairie PE 38-48 R082BY056OK	4,200	3,000	1,800	little bluestem	35
					sand bluestem	25
					indiangrass	10
					blue grama	5
					dropseed	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					sideoats grama	5
					switchgrass	5
GdfB:						
Grandfield	Sandy Loam Prairie PE 31-44 R078CY110TX	4,000	3,200	2,400	little bluestem	30
					sideoats grama	15
					blue grama	10
					sand bluestem	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					switchgrass	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
GlGB:						
Grandmore	Loamy Sand Prairie PE 31-44 R078CY105TX	4,500	3,500	2,500	sand bluestem	25
					little bluestem	20
					indiangrass	10
					switchgrass	10
					Canada wildrye	5
					blue grama	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					sideoats grama	5
Grandfield	Loamy Sand Prairie PE 31-44 R078CY105TX	4,500	3,500	2,500	sand bluestem	25
					little bluestem	20
					indiangrass	10
					switchgrass	10
					Canada wildrye	5
					blue grama	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					sideoats grama	5
GlsB:						
Grandfield	Loamy Sand Prairie PE 31-44 R078CY105TX	4,500	3,500	2,500	sand bluestem	25
					little bluestem	20
					indiangrass	10
					switchgrass	10
					Canada wildrye	5
					blue grama	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					sideoats grama	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
GlsD:						
Grandfield	Loamy Sand Prairie PE 31-44 R078CY105TX	4,500	3,500	2,500	sand bluestem	25
					little bluestem	20
					indiangrass	10
					switchgrass	10
					Canada wildrye	5
					blue grama	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					sideoats grama	5
GmuA:						
Gracemont, saline	Subirrigated (saline) PE 32-44 R078CY097OK	7,000	5,800	5,000	switchgrass	25
					indiangrass	15
					alkali sacaton	10
					alkali muhly	5
					inland saltgrass	5
					prairie cordgrass	5
					sedge	5
					sunflower	5
					western wheatgrass	5
GmwA:						
Gracemont, saline	Subirrigated (saline) PE 32-44 R078CY097OK	7,000	5,800	5,000	switchgrass	25
					indiangrass	15
					alkali sacaton	10
					alkali muhly	5
					inland saltgrass	5
					prairie cordgrass	5
					sedge	5
					sunflower	5
					western wheatgrass	5
GrrA:						
Gracemore, saline	Subirrigated (saline) PE 32-44 R078CY097OK	7,000	5,800	5,000	switchgrass	25
					indiangrass	15
					alkali sacaton	10
					alkali muhly	5
					inland saltgrass	5
					prairie cordgrass	5
					sedge	5
					sunflower	5
					western wheatgrass	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
GtbB:						
Gotebo	Loamy Prairie (calcareous) PE 32-44 R078CY057OK	4,000	2,800	2,000	little bluestem	20
					sand bluestem	15
					blue grama	10
					buffalograss	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous trees	5
					switchgrass	5
					tall dropseed	5
HdmB:						
Hardeman	Sandy Loam Prairie PE 31-44 R078CY110TX	3,700	2,950	2,200	little bluestem	30
					sideoats grama	15
					blue grama	10
					sand bluestem	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					switchgrass	5
HdmC:						
Hardeman	Sandy Loam Prairie PE 31-44 R078CY110TX	3,700	2,950	2,200	little bluestem	30
					sideoats grama	15
					blue grama	10
					sand bluestem	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					switchgrass	5
HfkA:						
Hayfork	Clayey Bottomland PE 31-44 R078CY094TX	6,500	4,500	2,500	sedge	40
					rush	25
					miscellaneous perennial grasses	10
					prairie cordgrass	10
					miscellaneous perennial forbs	5
					miscellaneous shrubs	5
					miscellaneous trees	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
HksA:						
Headrick	Seep Meadow PE 32-44 R078CY089OK	6,500	4,500	2,500	sedge	40
					rush	25
					prairie cordgrass	10
					miscellaneous perennial grasses	8
					miscellaneous perennial forbs	5
					switchgrass	5
					miscellaneous shrubs	3
					inland ceanothus	2
					miscellaneous trees	2
HolA:						
Hollister	Clay Loam PE 31-44 R078CY096TX	2,600	1,900	1,300	blue grama	20
					buffalograss	15
					Arizona cottontop	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					vine mesquite	10
					little bluestem	5
					miscellaneous perennial forbs	5
					sand bluestem	5
					silver bluestem	5
					western wheatgrass	5
HrAC:						
Harmon	Very Shallow PE 25-36 R078BY091TX	1,000	900	600	little bluestem	35
					sideoats grama	30
					black grama	10
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					miscellaneous trees	5
Aspermont	Loamy PE 25-36 R078BY079TX	3,000	2,250	1,500	little bluestem	30
					sideoats grama	15
					blue grama	10
					buffalograss	10
					sand bluestem	10
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					switchgrass	5
					tall dropseed	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
HSAF:						
Hardeman	Sandy Loam Prairie PE 31-44 R078CY110TX	3,500	2,700	2,000	little bluestem	30
					sideoats grama	15
					blue grama	10
					sand bluestem	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					switchgrass	5
Southside	Sand Hills PE 31-44 R078CY107TX	2,500	1,800	1,200	sand bluestem	20
					little bluestem	15
					giant sandreed	10
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					miscellaneous shrubs	10
					switchgrass	10
					Canada wildrye	5
					dropseed	5
					sand lovegrass	5
Arnett	Sandy Loam Prairie PE 31-44 R078CY110TX	4,000	2,800	2,000	little bluestem	30
					sideoats grama	15
					blue grama	10
					sand bluestem	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					switchgrass	5
JesC:						
Jester	Sand Hills PE 31-44 R078CY107TX	2,500	1,800	1,200	sand bluestem	20
					little bluestem	15
					giant sandreed	10
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					miscellaneous shrubs	10
					switchgrass	10
					Canada wildrye	5
					dropseed	5
					sand lovegrass	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
KcRG:						
Knoco, bouldery	Rocky Hill PE 25-36 R078BY692TX	3,500	2,500	1,500	little bluestem	25
					sand bluestem	20
					sideoats grama	20
					indiangrass	10
					miscellaneous shrubs	10
					Canada wildrye	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
Rock outcrop	---	---	---	---	---	---
KoBE:						
Knoco	Very Shallow Clay PE 25-36 R078BY092TX	1,200	800	400	sideoats grama	40
					miscellaneous perennial grasses	15
					blue grama	10
					buffalograss	10
					curlymesquite	10
					miscellaneous perennial forbs	10
					miscellaneous shrubs	5
Badland	---	---	---	---	---	---
KRCF:						
Knoco	Very Shallow Clay PE 25-36 R078BY092TX	1,200	800	400	sideoats grama	40
					miscellaneous perennial grasses	15
					blue grama	10
					buffalograss	10
					curlymesquite	10
					miscellaneous perennial forbs	10
					miscellaneous shrubs	5
Rock outcrop	---	---	---	---	---	---
Cottonwood	Gyp PE 25-36 R078BY076TX	500	450	300	little bluestem	50
					miscellaneous perennial forbs	15
					miscellaneous perennial grasses	10
					miscellaneous shrubs	10
					sideoats grama	10
					miscellaneous trees	5
LacB:						
La Casa	Clay Loam PE 25-36 R078BY072TX	2,000	1,500	1,000	blue grama	50
					buffalograss	20
					miscellaneous perennial forbs	15
					vine mesquite	10
					miscellaneous shrubs	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
LnuA:						
Lincoln	Sandy Bottomland PE 32-44 R078CY068OK	3,000	2,300	1,800	switchgrass	30
					indiangrass	15
					little bluestem	15
					miscellaneous perennial forbs	15
					sand bluestem	15
					Texas bluegrass	5
					miscellaneous perennial grasses	5
					miscellaneous trees	5
					threeawn	5
LnWA:						
Lincoln	Sandy Bottomland PE 32-44 R078CY068OK	3,000	2,300	1,800	switchgrass	30
					indiangrass	15
					little bluestem	15
					miscellaneous perennial forbs	15
					sand bluestem	15
					Texas bluegrass	5
					miscellaneous perennial grasses	5
					miscellaneous trees	5
					threeawn	5
Westola	Loamy Bottomland PE 32-44 R078CY050OK	14,000	11,000	8,000	big bluestem	25
					indiangrass	15
					switchgrass	15
					little bluestem	10
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					eastern gamagrass	5
					miscellaneous shrubs	5
					miscellaneous trees	5
LwtA:						
Lawton	Loamy Prairie PE 38-48 R082BY056OK	4,200	3,000	1,800	little bluestem	35
					sand bluestem	25
					indiangrass	10
					blue grama	5
					dropseed	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					sideoats grama	5
					switchgrass	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
LwtB:						
Lawton	Loamy Prairie PE 38-48 R082BY056OK	4,200	3,000	1,800	little bluestem	35
					sand bluestem	25
					indiangrass	10
					blue grama	5
					dropseed	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					sideoats grama	5
					switchgrass	5
LwtC2:						
Lawton, Eroded	Eroded Loamy Prairie PE 38-48 R082BY856OK	---	---	---	---	---
M-W:						
Water, Miscellaneous	---	---	---	---	---	---
MagB:						
Madge	Loamy Prairie PE 32-44 R078CY056OK	5,800	4,200	3,500	miscellaneous perennial grasses	35
					little bluestem	15
					indiangrass	10
					miscellaneous perennial forbs	10
					sand bluestem	10
					sideoats grama	10
					miscellaneous shrubs	5
					switchgrass	5
MdgB:						
Madge	Loamy Prairie PE 32-44 R078CY056OK	5,800	4,200	3,500	miscellaneous perennial grasses	35
					little bluestem	15
					indiangrass	10
					miscellaneous perennial forbs	10
					sand bluestem	10
					sideoats grama	10
					miscellaneous shrubs	5
					switchgrass	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
MknB:						
McKnight	Sandy Loam Prairie PE 31-44 R078CY110TX	4,000	2,800	2,000	little bluestem	30
					sideoats grama	15
					blue grama	10
					sand bluestem	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					switchgrass	5
MktB:						
McKnight	Loamy Sand Prairie PE 31-44 R078CY105TX	4,500	3,500	2,500	sand bluestem	25
					little bluestem	20
					indiangrass	10
					switchgrass	10
					Canada wildrye	5
					blue grama	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					sideoats grama	5
MktC2:						
McKnight, Eroded	Eroded Sandy Land PE 32-44 R078CY834OK	---	---	---	---	---
NpsB:						
Nipsum	Clay Loam PE 25-36 R078BY072TX	2,000	1,500	1,000	blue grama	50
					buffalograss	20
					miscellaneous perennial forbs	15
					vine mesquite	10
					miscellaneous shrubs	5
NstC:						
Nobscot	Deep Sand Savannah (west) PE 32-44 R078CY017OK	5,000	4,000	3,000	miscellaneous trees	20
					little bluestem	15
					sand bluestem	15
					indiangrass	10
					miscellaneous perennial grasses	10
					switchgrass	10
					dropseed	5
					miscellaneous shrubs	5
					Scribner panicum	5
					miscellaneous perennial forbs	1

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
OakA:						
Oakley	Loamy Prairie (calcareous) PE 32-44 R078CY057OK	4,000	2,800	2,000	little bluestem	20
					sand bluestem	15
					blue grama	10
					buffalograss	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous trees	5
					switchgrass	5
					tall dropseed	5
OakB:						
Oakley	Loamy Prairie (calcareous) PE 32-44 R078CY057OK	4,000	2,800	2,000	little bluestem	20
					sand bluestem	15
					blue grama	10
					buffalograss	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous trees	5
					switchgrass	5
					tall dropseed	5
OzkA:						
Ozark	Sandy Loam Prairie PE 31-44 R078CY110TX	5,000	4,000	3,000	little bluestem	30
					sideoats grama	15
					blue grama	10
					sand bluestem	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					switchgrass	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
PIT:						
Pits	---	---	---	---	---	---
QhTC:						
Quanah	Loamy PE 25-36 R078BY079TX	3,000	2,250	1,500	little bluestem	30
					sideoats grama	15
					blue grama	10
					buffalograss	10
					sand bluestem	10
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					switchgrass	5
					tall dropseed	5
Talpa	Very Shallow PE 25-36 R078BY091TX	1,000	900	600	little bluestem	35
					sideoats grama	30
					black grama	10
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					miscellaneous trees	5
QnRG:						
Quinlan	Loamy Breaks PE 32-44 R078CY005OK	2,000	1,500	1,000	little bluestem	25
					sideoats grama	20
					blue grama	10
					miscellaneous perennial forbs	10
					indiangrass	5
					buffalograss	5
					dropseed	5
					hairy grama	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					Scribner panicum	5
Rock outcrop	---	0	0	0	---	---
RakA:						
Roark	Loamy Prairie PE 32-44 R078CY056OK	5,800	4,200	3,500	miscellaneous perennial grasses	35
					little bluestem	15
					indiangrass	10
					miscellaneous perennial forbs	10
					sand bluestem	10
					sideoats grama	10
					miscellaneous shrubs	5
					switchgrass	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
RKBG:						
Rock outcrop, granite	---	0	0	0	---	---
Brico	Boulder Ridge Savannah PE 38-48 R082BY004OK	4,000	3,000	2,000	big bluestem	25
					little bluestem	20
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					Canada wildrye	5
					indiangrass	5
					miscellaneous trees	5
					purpletop tridens	5
					switchgrass	5
RKO:						
Rock outcrop, granite	---	---	---	---	---	---
RuuA:						
Rups	Clayey Saline Bottomland PE 32-44 R078CY046OK	3,000	2,100	1,500	alkali sacaton	40
					miscellaneous perennial grasses	15
					inland saltgrass	10
					western wheatgrass	10
					Canada wildrye	5
					miscellaneous perennial forbs	5
					miscellaneous trees	5
					switchgrass	5
					vine mesquite	5
RuwA:						
Rups	Clayey Saline Bottomland PE 32-44 R078CY046OK	3,000	2,100	1,500	alkali sacaton	40
					miscellaneous perennial grasses	15
					inland saltgrass	10
					western wheatgrass	10
					Canada wildrye	5
					miscellaneous perennial forbs	5
					miscellaneous trees	5
					switchgrass	5
					vine mesquite	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
SKRG:						
Spikebox	Loamy Breaks PE 32-44 R078CY005OK	2,000	1,500	1,000	little bluestem	25
					sideoats grama	20
					blue grama	10
					miscellaneous perennial forbs	10
					indiangrass	5
					buffalograss	5
					dropseed	5
					hairy grama	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					Scribner panicum	5
Knoco	Clayey Breaks PE 32-44 R078CY006OK	950	650	400	sideoats grama	25
					buffalograss	15
					alkali sacaton	10
					blue grama	10
					dropseed	5
					hairy grama	5
					little bluestem	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous trees	5
					silver bluestem	5
					vine mesquite	5
Rock outcrop	---	0	0	0	---	---
SpDB:						
Springer	Loamy Sand Prairie PE 31-44 R078CY105TX	4,500	3,500	2,500	sand bluestem	25
					little bluestem	20
					indiangrass	10
					switchgrass	10
					Canada wildrye	5
					blue grama	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					sideoats grama	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
Devol	Loamy Sand Prairie PE 31-44 R078CY105TX	4,500	3,500	2,500	sand bluestem	25
					little bluestem	20
					indiangrass	10
					switchgrass	10
					Canada wildrye	5
					blue grama	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					sand lovegrass	5
					sideoats grama	5
SplA:						
Spur	Loamy Bottomland PE 32-44 R078CY050OK	14,000	11,000	8,000	big bluestem	25
					indiangrass	15
					switchgrass	15
					little bluestem	10
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					eastern gamagrass	5
					miscellaneous shrubs	5
					miscellaneous trees	5
SurA:						
Spur	Loamy Bottomland PE 32-44 R078CY050OK	14,000	11,000	8,000	big bluestem	25
					indiangrass	15
					switchgrass	15
					little bluestem	10
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					eastern gamagrass	5
					miscellaneous shrubs	5
					miscellaneous trees	5
SuuA:						
Spur	Loamy Bottomland PE 32-44 R078CY050OK	14,000	11,000	8,000	big bluestem	25
					indiangrass	15
					switchgrass	15
					little bluestem	10
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					eastern gamagrass	5
					miscellaneous shrubs	5
					miscellaneous trees	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
SuwA:						
Spur	Loamy Bottomland PE 25-36 R078BY080TX	3,600	3,000	1,700	switchgrass	35
					indiangrass	20
					sideoats grama	15
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					miscellaneous shrubs	5
					miscellaneous trees	5
TARD:						
Talpa	Very Shallow PE 25-36 R078BY091TX	1,000	900	600	little bluestem	35
					sideoats grama	30
					black grama	10
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					miscellaneous trees	5
Aspermont	Loamy PE 25-36 R078BY079TX	3,000	2,250	1,500	little bluestem	30
					sideoats grama	15
					blue grama	10
					buffalograss	10
					sand bluestem	10
					indiangrass	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					switchgrass	5
					tall dropseed	5
Rock outcrop	---	---	---	---	---	---
TilA:						
Tillman	Clay Loam PE 31-44 R078CY096TX	2,600	1,900	1,300	blue grama	20
					buffalograss	15
					Arizona cottontop	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					vine mesquite	10
					little bluestem	5
					miscellaneous perennial forbs	5
					sand bluestem	5
					silver bluestem	5
					western wheatgrass	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
TilB:						
Tillman	Clay Loam PE 31-44 R078CY096TX	2,600	1,900	1,300	blue grama	20
					buffalograss	15
					Arizona cottontop	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					vine mesquite	10
					little bluestem	5
					miscellaneous perennial forbs	5
					sand bluestem	5
					silver bluestem	5
					western wheatgrass	5
TipA:						
Tipton	Loamy Prairie PE 32-44 R078CY056OK	5,800	4,200	3,500	miscellaneous perennial grasses	35
					little bluestem	15
					indiangrass	10
					miscellaneous perennial forbs	10
					sand bluestem	10
					sideoats grama	10
					miscellaneous shrubs	5
					switchgrass	5
TlvB:						
Tilvern	Shallow Clay PE 25-36 R078BY090TX	1,400	1,200	600	blue grama	20
					miscellaneous perennial forbs	15
					buffalograss	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					tobosagrass	10
					little bluestem	5
					miscellaneous shrubs	5
					miscellaneous trees	5
TpfA:						
Tipton	Loamy Prairie PE 32-44 R078CY056OK	5,800	4,200	3,500	miscellaneous perennial grasses	35
					little bluestem	15
					indiangrass	10
					miscellaneous perennial forbs	10
					sand bluestem	10
					sideoats grama	10
					miscellaneous shrubs	5
					switchgrass	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
TrwB:						
Treadway	Clay Flat PE 25-36 R078BY071TX	3,450	2,900	1,850	tobosagrass	70
					alkali sacaton	5
					blue grama	5
					buffalograss	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
VeKE:						
Vernon	Shallow Clay PE 25-36 R078BY090TX	1,400	1,200	600	blue grama	20
					miscellaneous perennial forbs	15
					buffalograss	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					tobosagrass	10
					little bluestem	5
					miscellaneous shrubs	5
					miscellaneous trees	5
Knoco	Very Shallow Clay PE 25-36 R078BY092TX	1,200	800	400	sideoats grama	40
					miscellaneous perennial grasses	15
					blue grama	10
					buffalograss	10
					curlymesquite	10
					miscellaneous perennial forbs	10
					miscellaneous shrubs	5
VerC:						
Vernon	Shallow Clay PE 25-36 R078BY090TX	1,400	1,200	600	blue grama	20
					miscellaneous perennial forbs	15
					buffalograss	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					tobosagrass	10
					little bluestem	5
					miscellaneous shrubs	5
					miscellaneous trees	5
VeTE:						
Vernon	Shallow Clay PE 25-36 R078BY090TX	1,400	1,200	600	blue grama	20
					miscellaneous perennial forbs	15
					buffalograss	10
					miscellaneous perennial grasses	10
					sideoats grama	10
					tobosagrass	10
					little bluestem	5
					miscellaneous shrubs	5
					miscellaneous trees	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
Talpa, stony	Very Shallow PE 25-36 R078BY091TX	1,000	900	600	little bluestem sideoats grama black grama miscellaneous perennial forbs miscellaneous perennial grasses miscellaneous trees	35 30 10 10 10 5
W:						
Water	---	---	---	---	---	---
WlwB:						
Willow	Loamy Prairie PE 32-44 R078CY056OK	5,800	4,200	3,500	miscellaneous perennial grasses little bluestem indiangrass miscellaneous perennial forbs sand bluestem sideoats grama miscellaneous shrubs switchgrass	35 15 10 10 10 10 5 5
WooB:						
Woodward	Loamy Prairie PE 25-36 R078BY081TX	3,500	3,000	2,350	little bluestem miscellaneous perennial forbs miscellaneous perennial grasses miscellaneous shrubs indiangrass blue grama miscellaneous trees sand bluestem sideoats grama switchgrass	40 10 10 10 5 5 5 5 5 5
WooC:						
Woodward	Loamy Prairie PE 25-36 R078BY081TX	3,500	3,000	2,350	little bluestem miscellaneous perennial forbs miscellaneous perennial grasses miscellaneous shrubs indiangrass blue grama miscellaneous trees sand bluestem sideoats grama switchgrass	40 10 10 10 5 5 5 5 5 5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
WoQE:						
Woodward	Loamy Prairie PE 25-36 R078BY081TX	3,500	3,000	2,350	little bluestem	40
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					miscellaneous shrubs	10
					indiangrass	5
					blue grama	5
					miscellaneous trees	5
					sand bluestem	5
					sideoats grama	5
					switchgrass	5
Quinlan	Shallow Prairie (south) PE 32-44 R078CY084OK	2,500	1,800	1,300	little bluestem	25
					sideoats grama	20
					hairy grama	10
					sand bluestem	10
					indiangrass	5
					blue grama	5
					buffalograss	5
					miscellaneous perennial forbs	5
					miscellaneous perennial grasses	5
					miscellaneous shrubs	5
					threeawn	5
WslA:						
Westola	Loamy Bottomland PE 32-44 R078CY050OK	14,000	11,000	8,000	big bluestem	25
					indiangrass	15
					switchgrass	15
					little bluestem	10
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					eastern gamagrass	5
					miscellaneous shrubs	5
					miscellaneous trees	5

Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		Lb/acre	Lb/acre	Lb/acre		Pct
WstA:						
Westola	Loamy Bottomland PE 32-44 R078CY050OK	14,000	11,000	8,000	big bluestem	25
					indiangrass	15
					switchgrass	15
					little bluestem	10
					miscellaneous perennial forbs	10
					miscellaneous perennial grasses	10
					eastern gamagrass	5
					miscellaneous shrubs	5
					miscellaneous trees	5
WtlA:						
Westill	Clay Loam PE 25-36 R078BY072TX	2,000	1,500	1,000	blue grama	50
					buffalograss	20
					miscellaneous perennial forbs	15
					vine mesquite	10
					miscellaneous shrubs	5
WtlB:						
Westill	Clay Loam PE 25-36 R078BY072TX	2,000	1,500	1,000	blue grama	50
					buffalograss	20
					miscellaneous perennial forbs	15
					vine mesquite	10
					miscellaneous shrubs	5

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 given climatic conditions. Accurate definitions of potential heights are necessary when a windbreak is planned and designed.

The table, “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.

Windbreaks and Environmental Plantings

[Absence of an entry indicates that trees generally do not grow to the given height]

Map symbol and soil name	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
AceB:					
Acme	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
ArHF:					
Arnett	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
Hardeman	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
ArnB:					
Arnett	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
ArnC:					
Arnett	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---

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
AsmB:					
Aspermont	American plum, Amur honeysuckle, common lilac	eastern redbud, oriental arborvitae	bur oak, ponderosa pine, osageorange, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
AsmC:					
Aspermont	American plum, Amur honeysuckle, common lilac	eastern redbud, oriental arborvitae	bur oak, ponderosa pine, osageorange, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
BekA:					
Beckman	---	---	---	---	---
BfdB:					
Burford	American plum	common lilac, Amur honeysuckle, eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
BfdC:					
Burford	American plum	common lilac, Amur honeysuckle, eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
BfSC2:					
Burford, moderately eroded	American plum, Amur honeysuckle, common lilac	eastern redbud, oriental arborvitae	bur oak, ponderosa pine, osageorange, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
Spikebox, moderately eroded	---	---	---	---	---

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
BfSE:					
Burford	American plum	common lilac, Amur honeysuckle, eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
Spikebox	---	---	---	---	---
BriE:					
Brico	Chickasaw plum	eastern redbud, oriental arborvitae	Austrian pine, Rocky Mountain juniper, bur oak, common hackberry, green ash, ponderosa pine, lacebark elm, osageorange	black locust, loblolly pine	---
BukA:					
Bukreek	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
CarB:					
Carey	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
CawA:					
Carwile	---	---	---	---	---
CVRD:					
Cottonwood	---	---	---	---	---

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
Vinson	Chickasaw plum	eastern redbud, oriental arborvitae, Rocky Mountain juniper	bur oak, common hackberry, lacebark elm, osageorange, ponderosa pine, green ash, black locust	---	---
Rock outcrop	---	---	---	---	---
DAM:					
Dam	---	---	---	---	---
DeSD:					
Devol	Chickasaw plum	eastern redbud, oriental arborvitae	Austrian pine, Rocky Mountain juniper, bur oak, common hackberry, green ash, ponderosa pine, lacebark elm, osageorange	black locust, loblolly pine	---
Springer	Chickasaw plum	eastern redbud, oriental arborvitae	Austrian pine, Rocky Mountain juniper, bur oak, common hackberry, green ash, ponderosa pine, lacebark elm, osageorange	black locust, loblolly pine	---
DkuA:					
Duke	American plum, Amur honeysuckle, common lilac	eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
DodA:					
Dodson	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---

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
DodB:					
Dodson	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
EatA:					
Eastall	---	---	---	---	---
EdsB:					
Eda	Chickasaw plum	---	Rocky Mountain juniper, bur oak, oriental arborvitae, ponderosa pine, Austrian pine, osageorange, common hackberry, green ash, lacebark elm, loblolly pine	black locust	---
EdsD:					
Eda	Chickasaw plum	---	Rocky Mountain juniper, bur oak, oriental arborvitae, ponderosa pine, Austrian pine, osageorange, common hackberry, green ash, lacebark elm, loblolly pine	black locust	---
EdsF:					
Eda	Chickasaw plum	---	Rocky Mountain juniper, bur oak, oriental arborvitae, ponderosa pine, Austrian pine, osageorange, common hackberry, green ash, lacebark elm, loblolly pine	black locust	---

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
FraB:					
Frankirk	American plum	common lilac, Amur honeysuckle, eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
FryB:					
Farry	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
GdfB:					
Grandfield	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
GlGB:					
Grandmore	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
Grandfield	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---

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
GlsB: Grandfield	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
GlsD: Grandfield	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
GmuA: Gracemont, saline	---	---	---	---	---
GmwA: Gracemont, saline	---	---	---	---	---
GrrA: Gracemore, saline	---	---	---	---	---
GtbB: Gotebo	Chickasaw plum	eastern redbud, oriental arborvitae, Rocky Mountain juniper	bur oak, common hackberry, lacebark elm, osageorange, ponderosa pine, green ash, black locust	---	---
HdmB: Hardeman	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---

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
HdmC:					
Hardeman	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
HfkA:					
Hayfork	American plum	common lilac, Amur honeysuckle, eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
HksA:					
Headrick	---	lespedeza	eastern redbud, oriental arborvitae, American plum, lacebark elm, osageorange, bur oak	green ash, red mulberry, baldcypress	American sycamore, eastern cottonwood
HolA:					
Hollister	American plum, Amur honeysuckle, common lilac	eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
HrAC:					
Harmon	---	---	---	---	---
Aspermont	American plum, Amur honeysuckle, common lilac	eastern redbud, oriental arborvitae	bur oak, ponderosa pine, osageorange, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---

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
HSAF:					
Hardeman	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
Southside	American plum	eastern redbud, oriental arborvitae, Rocky Mountain juniper	Austrian pine, common hackberry, lacebark elm, osageorange, ponderosa pine, red mulberry, green ash, bur oak, black locust	---	---
Arnett	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
JesC:					
Jester	Chickasaw plum	---	Rocky Mountain juniper, bur oak, oriental arborvitae, ponderosa pine, Austrian pine, osageorange, common hackberry, green ash, lacebark elm, loblolly pine	black locust	---
KcRG:					
Knoco, bouldery	---	---	---	---	---
Rock outcrop	---	---	---	---	---

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
KoBE:					
Knoco	---	---	---	---	---
Badland	---	---	---	---	---
KRCF:					
Knoco	---	---	---	---	---
Rock outcrop	---	---	---	---	---
Cottonwood	---	---	---	---	---
LacB:					
La Casa	American plum	common lilac, Amur honeysuckle, eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
LnuA:					
Lincoln	Sand Plum	---	Rocky Mountain juniper, bur oak, oriental arborvitae, ponderosa pine, Austrian pine, osageorange, common hackberry, green ash, lacebark elm, loblolly pine	black locust	---
LnWA:					
Lincoln	Sand Plum	---	Rocky Mountain juniper, bur oak, oriental arborvitae, ponderosa pine, Austrian pine, osageorange, common hackberry, green ash, lacebark elm, loblolly pine	black locust	---

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
Westola	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
LwtA:					
Lawton	American plum	common lilac, Amur honeysuckle, eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
LwtB:					
Lawton	American plum	common lilac, Amur honeysuckle, eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
LwtC2:					
Lawton, moderately eroded	American plum	common lilac, Amur honeysuckle, eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
M-W:					
Water, Miscellaneous	---	---	---	---	---
MagB:					
Madge	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---

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
MdgB:					
Madge	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
MknB:					
Mcknight	Chickasaw plum	eastern redbud, oriental arborvitae	Austrian pine, Rocky Mountain juniper, bur oak, common hackberry, green ash, ponderosa pine, lacebark elm, osageorange	black locust, loblolly pine	---
MktB:					
Mcknight	Chickasaw plum	eastern redbud, oriental arborvitae	Austrian pine, Rocky Mountain juniper, bur oak, common hackberry, green ash, ponderosa pine, lacebark elm, osageorange	black locust, loblolly pine	---
MktC2:					
Mcknight, moderately eroded	Chickasaw plum	eastern redbud, oriental arborvitae	Austrian pine, Rocky Mountain juniper, bur oak, common hackberry, green ash, ponderosa pine, lacebark elm, osageorange	black locust, loblolly pine	---
NpsB:					
Nipsum	American plum	common lilac, Amur honeysuckle, eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---

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
NstC:					
Nobscot	Chickasaw plum	eastern redbud, oriental arborvitae	Austrian pine, Rocky Mountain juniper, bur oak, common hackberry, green ash, ponderosa pine, lacebark elm, osageorange	black locust, loblolly pine	---
OakA:					
Oakley	American plum, Amur honeysuckle, common lilac	eastern redbud, oriental arborvitae	bur oak, ponderosa pine, osageorange, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
OakB:					
Oakley	American plum, Amur honeysuckle, common lilac	eastern redbud, oriental arborvitae	bur oak, ponderosa pine, osageorange, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
OzkA:					
Ozark	lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
PIT:					
Pits	---	---	---	---	---
QhTC:					
Quanah	eastern redbud	oriental arborvitae	Austrian pine, bur oak, lacebark elm, osageorange, ponderosa pine, black locust, green ash	---	---
Talpa	---	---	---	---	---

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
QnRG:					
Quinlan	---	---	---	---	---
Rock outcrop	---	---	---	---	---
RakA:					
Roark	---	American plum, Amur honeysuckle, common lilac, eastern redbud, oriental arborvitae	ponderosa pine, bur oak, red mulberry, osageorange, common hackberry, lacebark elm, loblolly pine	black locust	---
RKBG:					
Rock outcrop, granite	---	---	---	---	---
Brico	American plum	eastern redbud, oriental arborvitae, Rocky Mountain juniper	Austrian pine, bur oak, common hackberry, lacebark elm, ponderosa pine, green ash, black locust, loblolly pine	---	---
RKO:					
Rock outcrop, granite	---	---	---	---	---
RuuA:					
Rups	---	---	---	---	---
RuwA:					
Rups	---	---	---	---	---
SKRG:					
Spikebox	---	---	---	---	---
Knoco	---	---	---	---	---
Rock outcrop	---	---	---	---	---
SpDB:					
Springer	Chickasaw plum	eastern redbud, oriental arborvitae	Austrian pine, Rocky Mountain juniper, bur oak, common hackberry, green ash, ponderosa pine, lacebark elm, osageorange	black locust, loblolly pine	---

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
Devol	Chickasaw plum	eastern redbud, oriental arborvitae	Austrian pine, Rocky Mountain juniper, bur oak, common hackberry, green ash, ponderosa pine, lacebark elm, osageorange	black locust, loblolly pine	---
SplA:					
Spur	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
SurA:					
Spur	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
SuuA:					
Spur	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
SuwA:					
Spur	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---

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
TARD:					
Talpa	---	---	---	---	---
Aspermont	American plum, Amur honeysuckle, common lilac	eastern redbud, oriental arborvitae	bur oak, ponderosa pine, osageorange, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
Rock outcrop	---	---	---	---	---
TilA:					
Tillman	American plum	common lilac, Amur honeysuckle, eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
TilB:					
Tillman	American plum	common lilac, Amur honeysuckle, eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
TipA:					
Tipton	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
TlvB:					
Tilvern	American plum, Amur honeysuckle, common lilac	eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---

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
TpfA:					
Tipton	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
TrwB:					
Treadway	---	---	---	---	---
VeKE:					
Vernon	---	---	---	---	---
Knoco	---	---	---	---	---
VerC:					
Vernon	---	---	---	---	---
VeTE:					
Vernon	---	---	---	---	---
Talpa, stony	---	---	---	---	---
W:					
Water	---	---	---	---	---
WlwB:					
Willow	---	American plum, Amur honeysuckle, common lilac, eastern redbud, oriental arborvitae	ponderosa pine, bur oak, red mulberry, osageorange, common hackberry, lacebark elm, loblolly pine	black locust	---
WooB:					
Woodward	Chickasaw plum	eastern redbud, oriental arborvitae, Rocky Mountain juniper	common hackberry, lacebark elm, osageorange, ponderosa pine, bur oak, black locust, green ash	---	---
WooC:					
Woodward	Chickasaw plum	eastern redbud, oriental arborvitae, Rocky Mountain juniper	common hackberry, lacebark elm, osageorange, ponderosa pine, bur oak, black locust, green ash	---	---

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
WoQE:					
Woodward	Chickasaw plum	eastern redbud, oriental arborvitae, Rocky Mountain juniper	common hackberry, lacebark elm, osageorange, ponderosa pine, bur oak, black locust, green ash	---	---
Quinlan	---	---	---	---	---
WslA:					
Westola	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
WstA:					
Westola	shrub lespedeza	Amur honeysuckle, American plum	eastern redbud, Scotch pine, Rocky Mountain juniper, oriental arborvitae, red mulberry, Austrian pine, ponderosa pine	osageorange, bur oak, common hackberry, green ash, lacebark elm, black locust	---
WtlA:					
Westill	American plum, Amur honeysuckle, common lilac	eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---
WtlB:					
Westill	American plum, Amur honeysuckle, common lilac	eastern redbud, oriental arborvitae	bur oak, osageorange, ponderosa pine, red mulberry, black locust, common hackberry, lacebark elm	loblolly pine	---

Recreation

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

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

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to Flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to Flooding are limited for recreational uses by the duration and intensity of Flooding and the season when Flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

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

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, Ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that

affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

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

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

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

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Recreational Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AceB:							
Acme	85	Not limited		Not limited		Not limited	
ArHF:							
Arnett	45	Not limited		Not limited		Somewhat limited	
						Slope	0.88
Hardeman	40	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Slope	1.00
ArnB:							
Arnett	85	Not limited		Not limited		Somewhat limited	
						Gravel content	0.22
ArnC:							
Arnett	83	Not limited		Not limited		Somewhat limited	
						Slope	0.50
AsmB:							
Aspermont	80	Not limited		Not limited		Not limited	
AsmC:							
Aspermont	81	Not limited		Not limited		Somewhat limited	
						Slope	0.50
BekA:							
Beckman	85	Very limited		Very limited		Very limited	
		Flooding	1.00	Sodium content	1.00	Sodium content	1.00
		Sodium content	1.00	Too clayey	0.50	Flooding	0.60
		Too clayey	0.50	Slow water movement	0.45	Too clayey	0.50
		Slow water movement	0.45			Slow water movement	0.45
BfdB:							
Burford	90	Not limited		Not limited		Not limited	
BfdC:							
Burford	92	Not limited		Not limited		Somewhat limited	
						Slope	0.50
BfSC2:							
Burford, moderately eroded	50	Not limited		Not limited		Somewhat limited	
						Slope	0.50
Spikebox, moderately eroded	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.50
BfSE:							
Burford	50	Not limited		Not limited		Very limited	
						Slope	1.00

Recreational Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Spikebox	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.01	Slope	0.01	Slope	1.00
BriE:							
Brico	85	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Slope	1.00
						Gravel content	0.56
BukA:							
Bukreek	92	Not limited		Not limited		Not limited	
CarB:							
Carey	90	Not limited		Not limited		Not limited	
CawA:							
Carwile	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Slow water movement	0.96	Slow water movement	0.96	Slow water movement	0.96
CVRD:							
Cottonwood	42	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.50
Vinson	25	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
						Slope	0.12
Rock outcrop	23	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	
DeSD:							
Devol	60	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.88	Too sandy	0.88	Slope	0.97
						Too sandy	0.88
Springer	27	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.36	Too sandy	0.36	Slope	0.88
						Too sandy	0.36
DkuA:							
Duke	80	Very limited		Very limited		Very limited	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Too clayey	0.50	Flooding	0.60
		Too clayey	0.50	Slow water movement	0.45	Too clayey	0.50
		Slow water movement	0.45			Slow water movement	0.45
DodA:							
Dodson	92	Not limited		Not limited		Not limited	

Recreational Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DodB:							
Dodson	87	Not limited		Not limited		Not limited	
EatA:							
Eastall	94	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
EdsB:							
Eda	87	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
EdsD:							
Eda	87	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.88
EdsF:							
Eda	90	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Too sandy	1.00
FraB:							
Frankirk	90	Not limited		Not limited		Not limited	
FryB:							
Farry	92	Not limited		Not limited		Not limited	
GdfB:							
Grandfield	80	Not limited		Not limited		Not limited	
GlGB:							
Grandmore	65	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.30	Too sandy	0.30	Too sandy	0.30
Grandfield	25	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.30	Too sandy	0.30	Too sandy	0.30
GlsB:							
Grandfield	87	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.30	Too sandy	0.30	Too sandy	0.30
GlsD:							
Grandfield	87	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.30	Too sandy	0.30	Slope	0.88
						Too sandy	0.30
GmuA:							
Gracemont, saline	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Salinity	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Salinity	1.00
		Salinity	1.00			Flooding	0.60

Recreational Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GmwA:							
Gracemont, saline---	89	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Salinity	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Salinity	1.00	Flooding	0.40	Salinity	1.00
GrrA:							
Gracemore, saline---	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Salinity	1.00	Depth to saturated zone	1.00
		Flooding	1.00	Depth to saturated zone	0.83	Salinity	1.00
		Salinity	1.00			Flooding	0.60
GtbB:							
Gotebo----------	82	Not limited		Not limited		Not limited	
HdmB:							
Hardeman----------	90	Not limited		Not limited		Not limited	
HdmC:							
Hardeman----------	95	Not limited		Not limited		Somewhat limited	
						Slope	0.50
HfkA:							
Hayfork----------	83	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Slow water movement	0.41	Slow water movement	0.41
		Slow water movement	0.41				
HksA:							
Headrick----------	90	Not rated		Not rated		Not rated	
		Not rated; Unified		Not rated; Unified		Not rated; Unified	
		Too sandy	0.81	Too sandy	0.81	Too sandy	0.81
HolA:							
Hollister----------	91	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
HrAC:							
Harmon----------	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Gravel content	1.00
						Slope	0.28
Aspermont----------	44	Not limited		Not limited		Not limited	
HSAF:							
Hardeman----------	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Slope	1.00
Southside----------	27	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Slope	1.00
						Gravel content	0.04

Recreational Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Arnett	20	Not limited		Not limited		Very limited	
						Slope	1.00
JesC:							
Jester	87	Very limited		Very limited		Very limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	1.00
						Slope	0.12
KcRG:							
Knoco, bouldery	45	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Large stones content	0.76	Large stones content	0.76	Large stones content	0.76
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
Rock outcrop	20	Not rated		Not rated		Not rated	
KoBE:							
Knoco	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
Badland	30	Not rated		Not rated		Not rated	
KRCF:							
Knoco	33	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	0.50	Too clayey	0.50	Depth to bedrock	1.00
		Slow water movement	0.45	Slow water movement	0.45	Too clayey	0.50
		Slope	0.16	Slope	0.16	Slow water movement	0.45
Rock outcrop	21	Not rated		Not rated		Not rated	
Cottonwood	17	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.16	Slope	0.16	Slope	1.00
LacB:							
La Casa	79	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.41	Slow water movement	0.41
LnuA:							
Lincoln	90	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Too sandy	0.91	Too sandy	0.91
		Too sandy	0.91			Flooding	0.60
LnWA:							
Lincoln	65	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Too sandy	0.91	Flooding	1.00
		Too sandy	0.91	Flooding	0.40	Too sandy	0.91

Recreational Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Westola	22	Very limited Flooding	 1.00	Somewhat limited Flooding	 0.40	Very limited Flooding	 1.00
LwtA:							
Lawton	87	Not limited		Not limited		Not limited	
LwtB:							
Lawton	87	Not limited		Not limited		Not limited	
LwtC2:							
Lawton, moderately eroded	77	Not limited		Not limited		Somewhat limited Slope	 0.72
M-W:							
Water, Miscellaneous	100	Not rated		Not rated		Not rated	
MagB:							
Madge	90	Not limited		Not limited		Not limited	
MdgB:							
Madge	90	Somewhat limited Too sandy	 0.01	Somewhat limited Too sandy	 0.01	Somewhat limited Too sandy	 0.01
MknB:							
Mcknight	87	Somewhat limited Slow water movement	 0.29	Somewhat limited Slow water movement	 0.29	Somewhat limited Slow water movement	 0.29
MktB:							
Mcknight	85	Somewhat limited Too sandy Slow water movement	 0.76 0.29	Somewhat limited Too sandy Slow water movement	 0.76 0.29	Somewhat limited Too sandy Slow water movement	 0.76 0.29
MktC2:							
Mcknight, moderately eroded	75	Somewhat limited Too sandy Slow water movement	 0.76 0.29	Somewhat limited Too sandy Slow water movement	 0.76 0.29	Somewhat limited Too sandy Slope Slow water movement	 0.76 0.50 0.29
NpsB:							
Nipsum	82	Somewhat limited Slow water movement	 0.41	Somewhat limited Slow water movement	 0.41	Somewhat limited Slow water movement	 0.41
NstC:							
Nobscot	85	Very limited Too sandy	 1.00	Very limited Too sandy	 1.00	Very limited Too sandy Slope	 1.00 0.28
OakA:							
Oakley	80	Not limited		Not limited		Not limited	
OakB:							
Oakley	85	Not limited		Not limited		Not limited	

Recreational Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OzkA:							
Ozark	85	Not limited		Not limited		Not limited	
PIT:							
Pits	100	Not rated		Not rated		Not rated	
QhTC:							
Quanah	50	Not limited		Not limited		Somewhat limited	
						Slope	0.12
Talpa	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.12
QnRG:							
Quinlan	50	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Rock outcrop	25	Not rated		Not rated		Not rated	
RakA:							
Roark	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.41	Slow water movement	0.41
RKBG:							
Rock outcrop, granite	60	Not rated		Not rated		Not rated	
Brico	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.99
RKO:							
Rock outcrop, granite	100	Not rated		Not rated		Not rated	
RuuA:							
Rups	90	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Salinity	0.50	Depth to saturated zone	0.81
		Depth to saturated zone	0.81	Depth to saturated zone	0.48	Flooding	0.60
		Salinity	0.50			Salinity	0.50
RuwA:							
Rups	82	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Salinity	0.50	Flooding	1.00
		Salinity	0.50	Flooding	0.40	Salinity	0.50
SKRG:							
Spikebox	40	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00

Recreational Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Knoco	23	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
Rock outcrop	20	Not rated		Not rated		Not rated	
SpDB:							
Springer	70	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.36	Too sandy	0.36	Too sandy	0.36
Devol	22	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.88	Too sandy	0.88	Too sandy	0.88
SplA:							
Spur	90	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
SurA:							
Spur	84	Very limited		Not limited		Not limited	
		Flooding	1.00				
SuuA:							
Spur	90	Very limited		Not limited		Somewhat limited	
		Flooding	1.00			Flooding	0.60
SuwA:							
Spur	87	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.40	Flooding	1.00
TARD:							
Talpa	46	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.28
Aspermont	37	Not limited		Not limited		Somewhat limited	
						Slope	0.03
Rock outcrop	11	Not rated		Not rated		Not rated	
TilA:							
Tillman	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.41	Slow water movement	0.41
TilB:							
Tillman	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.41	Slow water movement	0.41	Slow water movement	0.41
TipA:							
Tipton	80	Not limited		Not limited		Not limited	
TlvB:							
Tilvern	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45

Recreational Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TpfA:							
Tipton	90	Not limited		Not limited		Not limited	
TrwB:							
Treadway	87	Very limited		Very limited		Very limited	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Slow water movement	0.45	Slow water movement	0.45	Slow water movement	0.45
VeKE:							
Vernon	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Depth to bedrock	0.80
						Slope	0.50
						Slow water movement	0.45
Knoco	35	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	0.50	Too clayey	0.50	Depth to bedrock	1.00
		Slow water movement	0.45	Slow water movement	0.45	Too clayey	0.50
						Slow water movement	0.45
VerC:							
Vernon	78	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slope	0.50
						Slow water movement	0.45
						Depth to bedrock	0.10
VeTE:							
Vernon	53	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.45	Slow water movement	0.45	Slope	0.88
						Slow water movement	0.45
						Depth to bedrock	0.01
Talpa, stony	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.88
W:							
Water	100	Not rated		Not rated		Not rated	
WlwB:							
Willow	85	Not limited		Not limited		Not limited	
WooB:							
Woodward	87	Not limited		Not limited		Not limited	
WooC:							
Woodward	90	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
						Slope	0.50

Recreational Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WoQE:							
Woodward	50	Somewhat limited Slope	 0.04	Somewhat limited Slope	 0.04	Very limited Slope Depth to bedrock	 1.00 0.80
Quinlan	37	Very limited Depth to bedrock Slope	 1.00 0.04	Very limited Depth to bedrock Slope	 1.00 0.04	Very limited Depth to bedrock Slope	 1.00 1.00
WslA:							
Westola	90	Very limited Flooding	 1.00	Not limited		Somewhat limited Flooding	 0.60
WstA:							
Westola	92	Very limited Flooding	 1.00	Not limited		Not limited	
WtlA:							
Westill	85	Somewhat limited Slow water movement	 0.45	Somewhat limited Slow water movement	 0.45	Somewhat limited Slow water movement	 0.45
WtlB:							
Westill	83	Somewhat limited Slow water movement	 0.45	Somewhat limited Slow water movement	 0.45	Somewhat limited Slow water movement	 0.45

Recreational Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AceB:							
Acme	85	Not limited		Not limited		Not limited	
ArHF:							
Arnett	45	Not limited		Not limited		Not limited	
Hardeman	40	Not limited		Not limited		Somewhat limited	
						Slope	0.01
ArnB:							
Arnett	85	Not limited		Not limited		Not limited	
ArnC:							
Arnett	83	Not limited		Not limited		Not limited	
AsmB:							
Aspermont	80	Not limited		Not limited		Not limited	
AsmC:							
Aspermont	81	Not limited		Not limited		Not limited	
BekA:							
Beckman	85	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
						Sodium content	1.00
						Flooding	0.60
BfdB:							
Burford	90	Not limited		Not limited		Not limited	
BfdC:							
Burford	92	Not limited		Not limited		Not limited	
BfSC2:							
Burford, moderately eroded	50	Not limited		Not limited		Not limited	
Spikebox, moderately eroded	40	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.96
BfSE:							
Burford	50	Not limited		Not limited		Not limited	
Spikebox	40	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	0.99
						Slope	0.01
BriE:							
Brico	85	Not limited		Not limited		Somewhat limited	
						Large stones content	0.68
						Slope	0.16

Recreational Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BukA:							
Bukreek	92	Not limited		Not limited		Not limited	
CarB:							
Carey	90	Not limited		Not limited		Not limited	
CawA:							
Carwile	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
CVRD:							
Cottonwood	42	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Droughty	1.00
Vinson	25	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
Rock outcrop	23	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	
DeSD:							
Devol	60	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.88	Too sandy	0.88		
Springer	27	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.36	Too sandy	0.36		
DkuA:							
Duke	80	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Sodium content	1.00
						Too clayey	1.00
						Flooding	0.60
DodA:							
Dodson	92	Not limited		Not limited		Not limited	
DodB:							
Dodson	87	Not limited		Not limited		Not limited	
EatA:							
Eastall	94	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Too clayey	1.00
		Too clayey	0.50	Too clayey	0.50	Ponding	1.00
EdsB:							
Eda	87	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.91
						Too sandy	0.50

Recreational Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EdsD:							
Eda	87	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Somewhat limited Droughty Too sandy	0.92 0.50
EdsF:							
Eda	90	Very limited Too sandy	1.00	Very limited Too sandy	1.00	Somewhat limited Droughty Slope Too sandy	0.97 0.63 0.50
FraB:							
Frankirk	90	Not limited		Not limited		Not limited	
FryB:							
Farry	92	Not limited		Not limited		Not limited	
GdfB:							
Grandfield	80	Not limited		Not limited		Not limited	
GlGB:							
Grandmore	65	Somewhat limited Too sandy	0.30	Somewhat limited Too sandy	0.30	Not limited	
Grandfield	25	Somewhat limited Too sandy	0.30	Somewhat limited Too sandy	0.30	Not limited	
GlsB:							
Grandfield	87	Somewhat limited Too sandy	0.30	Somewhat limited Too sandy	0.30	Not limited	
GlsD:							
Grandfield	87	Somewhat limited Too sandy	0.30	Somewhat limited Too sandy	0.30	Not limited	
GmuA:							
Gracemont, saline	90	Somewhat limited Depth to saturated zone	1.00	Somewhat limited Depth to saturated zone	1.00	Very limited Salinity Depth to saturated zone Flooding	1.00 1.00 0.60
GmwA:							
Gracemont, saline	89	Somewhat limited Depth to saturated zone Flooding	1.00 0.40	Somewhat limited Depth to saturated zone Flooding	1.00 0.40	Very limited Flooding Salinity Depth to saturated zone	1.00 1.00 1.00
GrrA:							
Gracemore, saline	90	Somewhat limited Depth to saturated zone	0.62	Somewhat limited Depth to saturated zone	0.62	Very limited Salinity Depth to saturated zone Flooding Droughty	1.00 0.83 0.60 0.34

Recreational Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GtbB:							
Gotebo	82	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.80
HdmB:							
Hardeman	90	Not limited		Not limited		Not limited	
HdmC:							
Hardeman	95	Not limited		Not limited		Not limited	
HfkA:							
Hayfork	83	Not limited		Not limited		Not limited	
HksA:							
Headrick	90	Not rated		Not rated		Not limited	
		Not rated; Unified		Not rated; Unified			
		Too sandy	0.81	Too sandy	0.81		
HolA:							
Hollister	91	Not limited		Not limited		Not limited	
HrAC:							
Harmon	50	Not limited		Not limited		Very limited	
						Depth to bedrock	1.00
						Carbonate content	1.00
						Droughty	1.00
Aspermont	44	Not limited		Not limited		Not limited	
HSAF:							
Hardeman	50	Not limited		Not limited		Somewhat limited	
						Slope	0.01
Southside	27	Not limited		Not limited		Somewhat limited	
						Droughty	0.98
						Slope	0.16
Arnett	20	Not limited		Not limited		Not limited	
JesC:							
Jester	87	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Droughty	0.99
KcRG:							
Knoco, bouldery	45	Somewhat limited		Somewhat limited		Very limited	
		Large stones content	0.76	Large stones content	0.76	Droughty	1.00
		Slope	0.50	Too clayey	0.50	Depth to bedrock	1.00
		Too clayey	0.50			Slope	1.00
						Too clayey	1.00
						Large stones content	0.16
Rock outcrop	20	Not rated		Not rated		Not rated	

Recreational Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KoBE:							
Knoco	45	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Depth to bedrock	1.00
						Droughty	1.00
						Too clayey	1.00
Badland	30	Not rated		Not rated		Not rated	
KRCF:							
Knoco	33	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Depth to bedrock	1.00
						Droughty	1.00
						Too clayey	1.00
						Slope	0.16
Rock outcrop	21	Not rated		Not rated		Not rated	
Cottonwood	17	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
						Droughty	1.00
						Slope	0.16
LacB:							
La Casa	79	Not limited		Not limited		Not limited	
LnuA:							
Lincoln	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.91	Too sandy	0.91	Droughty	0.97
						Flooding	0.60
LnWA:							
Lincoln	65	Somewhat limited		Somewhat limited		Very limited	
		Too sandy	0.91	Too sandy	0.91	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Droughty	0.99
Westola	22	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
LwtA:							
Lawton	87	Not limited		Not limited		Not limited	
LwtB:							
Lawton	87	Not limited		Not limited		Not limited	
LwtC2:							
Lawton, moderately eroded	77	Not limited		Not limited		Not limited	
M-W:							
Water, Miscellaneous	100	Not rated		Not rated		Not rated	
MagB:							
Madge	90	Not limited		Not limited		Not limited	
MdgB:							
Madge	90	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.01	Too sandy	0.01		

Recreational Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MknB:							
Mcknight	87	Not limited		Not limited		Not limited	
MktB:							
Mcknight	85	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.76	Too sandy	0.76		
MktC2:							
Mcknight, moderately eroded	75	Somewhat limited		Somewhat limited		Not limited	
		Too sandy	0.76	Too sandy	0.76		
NpsB:							
Nipsum	82	Not limited		Not limited		Not limited	
NstC:							
Nobscot	85	Very limited		Very limited		Somewhat limited	
		Too sandy	1.00	Too sandy	1.00	Too sandy	0.50
						Droughty	0.40
OakA:							
Oakley	80	Not limited		Not limited		Not limited	
OakB:							
Oakley	85	Not limited		Not limited		Not limited	
OzkA:							
Ozark	85	Not limited		Not limited		Not limited	
PIT:							
Pits	100	Not rated		Not rated		Not rated	
QhTC:							
Quanah	50	Not limited		Not limited		Not limited	
Talpa	20	Not limited		Not limited		Very limited	
						Droughty	1.00
						Depth to bedrock	1.00
QnRG:							
Quinlan	50	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	0.56	Slope	1.00
						Droughty	0.99
Rock outcrop	25	Not rated		Not rated		Not rated	
RakA:							
Roark	85	Not limited		Not limited		Not limited	
RKBG:							
Rock outcrop, granite	60	Not rated		Not rated		Not rated	
Brico	30	Somewhat limited		Not limited		Very limited	
		Slope	0.02			Slope	1.00
						Large stones content	0.68

Recreational Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RKO:							
Rock outcrop, granite	100	Not rated		Not rated		Not rated	
RuuA:							
Rups	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.11	Depth to saturated zone	0.11	Flooding	0.60
						Salinity	0.50
						Depth to saturated zone	0.48
RuwA:							
Rups	82	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
						Salinity	0.50
SKRG:							
Spikebox	40	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
		Slope	1.00			Droughty	1.00
						Slope	1.00
Knoco	23	Very limited		Somewhat limited		Very limited	
		Slope	1.00	Too clayey	0.50	Depth to bedrock	1.00
		Too clayey	0.50			Droughty	1.00
						Slope	1.00
						Too clayey	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
SpDB:							
Springer	70	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.36	Too sandy	0.36	Droughty	0.01
Devol	22	Somewhat limited		Somewhat limited		Somewhat limited	
		Too sandy	0.88	Too sandy	0.88	Droughty	0.01
SplA:							
Spur	90	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
SurA:							
Spur	84	Not limited		Not limited		Not limited	
SuuA:							
Spur	90	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
SuwA:							
Spur	87	Somewhat limited		Somewhat limited		Very limited	
		Flooding	0.40	Flooding	0.40	Flooding	1.00

Recreational Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TARD:							
Talpa	46	Not limited		Not limited		Very limited	
						Droughty	1.00
						Depth to bedrock	1.00
Aspermont	37	Not limited		Not limited		Not limited	
Rock outcrop	11	Not rated		Not rated		Not rated	
TilA:							
Tillman	85	Not limited		Not limited		Not limited	
TilB:							
Tillman	85	Not limited		Not limited		Not limited	
TipA:							
Tipton	80	Not limited		Not limited		Not limited	
TlvB:							
Tilvern	85	Not limited		Not limited		Not limited	
TpfA:							
Tipton	90	Not limited		Not limited		Not limited	
TrwB:							
Treadway	87	Not limited		Not limited		Very limited	
						Sodium content	1.00
						Droughty	0.16
VeKE:							
Vernon	50	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.80
						Droughty	0.02
Knoco	35	Somewhat limited		Somewhat limited		Very limited	
		Too clayey	0.50	Too clayey	0.50	Depth to bedrock	1.00
						Droughty	1.00
						Too clayey	1.00
VerC:							
Vernon	78	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.10
VeTE:							
Vernon	53	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.01
Talpa, stony	25	Not limited		Not limited		Very limited	
						Droughty	1.00
						Depth to bedrock	1.00
W:							
Water	100	Not rated		Not rated		Not rated	
WlwB:							
Willow	85	Not limited		Not limited		Not limited	

Recreational Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WooB:							
Woodward	87	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.01
WooC:							
Woodward	90	Not limited		Not limited		Somewhat limited	
						Depth to bedrock	0.65
WoQE:							
Woodward	50	Very limited		Very limited		Somewhat limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	0.80
						Slope	0.04
						Droughty	0.01
Quinlan	37	Very limited		Very limited		Very limited	
		Water erosion	1.00	Water erosion	1.00	Depth to bedrock	1.00
						Droughty	0.98
						Slope	0.04
WslA:							
Westola	90	Not limited		Not limited		Somewhat limited	
						Flooding	0.60
WstA:							
Westola	92	Not limited		Not limited		Not limited	
WtlA:							
Westill	85	Not limited		Not limited		Not limited	
WtlB:							
Westill	83	Not limited		Not limited		Not limited	

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the data in the tables described under the heading "Soil Properties."

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

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

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about particle-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 7 feet of the surface, soil wetness, depth to a water table, ponding, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds 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.

Sanitary Facilities

The table, “Sanitary Facilities, Parts I and II,” shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more

features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

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

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Considered in the ratings are slope, permeability, depth to a water table, ponding, depth to bedrock or a cemented pan, flooding, large stones, and content of organic matter.

Soil permeability is a critical property affecting the suitability for sewage lagoons. Most porous soils eventually become sealed when they are used as sites for sewage lagoons. Until sealing occurs, however, the hazard of pollution is severe. Soils that have a permeability rate of more than 2 inches per hour are too porous for the proper functioning of sewage lagoons. In these soils, seepage of the effluent can result in contamination of the ground water. Ground-water contamination is also a hazard if fractured bedrock is within a depth of 40 inches, if the water table is high enough to raise the level of sewage in the lagoon, or if floodwater overtops the lagoon.

A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor. If the lagoon is to be uniformly deep throughout, the slope must be gentle enough and the soil material must be thick enough over bedrock or a cemented pan to make land smoothing practical.

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

Hard, nonrippable bedrock, creviced bedrock, or highly permeable strata in or directly below the proposed trench bottom can affect the ease of excavation and the hazard of ground-water pollution. slope affects construction of the trenches and the movement of

surface water around the landfill. It also affects the construction and performance of roads in areas of the landfill.

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

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

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

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

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste. The ratings in the table also apply to the final cover for a landfill. They are based on the soil properties that affect workability, the ease of digging, and the ease of moving and spreading the material over the refuse daily during wet and dry periods. These properties include soil texture, depth to a water table, ponding, rock fragments, slope, depth to bedrock or a cemented pan, reaction, and content of salts, sodium, or lime. Loamy or silty soils that are free of large stones and excess gravel are the best cover for a landfill. Clayey soils may be sticky and difficult to spread; sandy soils are subject to wind erosion.

Slope affects the ease of excavation and of moving the cover material. Also, it can influence runoff, erosion, and reclamation of the borrow area. After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. It should not have excess sodium, salts, or lime and should not be too acid.

Sanitary Facilities, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AceB:					
Acme	85	Somewhat limited		Somewhat limited	
		Depth to saturated zone	0.78	Seepage	0.53
		Slow water movement	0.46	Depth to saturated zone	0.10
ArHF:					
Arnett	45	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	0.46	Slope	0.68
Hardeman	40	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slope	0.01	Slope	1.00
ArnB:					
Arnett	85	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	0.46		
ArnC:					
Arnett	83	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	0.46	Slope	0.32
AsmB:					
Aspermont	80	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to soft bedrock	0.38
		Depth to bedrock	0.77	Seepage	0.28
AsmC:					
Aspermont	81	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to soft bedrock	0.42
		Depth to bedrock	0.78	Slope	0.32
				Seepage	0.28
BekA:					
Beckman	85	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00	Depth to saturated zone	0.40
		Depth to saturated zone	0.94		

Sanitary Facilities, Part I--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
BfdB:					
Burford	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to soft bedrock	0.93
		Depth to bedrock	0.98	Seepage	0.01
BfdC:					
Burford	92	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.32
				Seepage	0.01
BfSC2:					
Burford, moderately eroded	50	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.32
				Seepage	0.01
Spikebox, moderately eroded	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
				Seepage	0.53
				Slope	0.32
BfSE:					
Burford	50	Very limited		Somewhat limited	
		Slow water movement	1.00	Slope	0.92
		Depth to bedrock	0.41	Depth to soft bedrock	0.02
				Seepage	0.01
Spikebox	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.01	Slope	1.00
				Seepage	0.53
BriE:					
Brico	85	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Large stones content	0.28	Large stones content	0.66
		Slope	0.16		
BukA:					
Bukreek	92	Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	0.53
		Slow water movement	0.46		

Sanitary Facilities, Part I--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
CarB:					
Carey	90	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	1.00		
		Depth to bedrock	0.09		
CawA:					
Carwile	90	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage, bottom layer	1.00	Ponding	1.00
		Ponding	1.00		
CVRD:					
Cottonwood	42	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Slope	0.32
Vinson	25	Very limited		Very limited	
		Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Seepage	0.53
				Slope	0.08
Rock outcrop	23	Not rated		Not rated	
DAM:					
Dam	100	Not rated		Not rated	
DeSD:					
Devol	60	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
				Slope	0.82
Springer	27	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
				Slope	0.68
DkuA:					
Duke	80	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	1.00	Seepage	0.01
DodA:					
Dodson	92	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.53

Sanitary Facilities, Part I--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
DodB:					
Dodson	87	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.28
EatA:					
Eastall	94	Very limited		Very limited	
		Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Ponding	1.00
		Ponding	1.00		
EdsB:					
Eda	87	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00		
EdsD:					
Eda	87	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Slope	0.68
EdsF:					
Eda	90	Very limited		Very limited	
		Filtering capacity	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
		Slope	0.63		
FraB:					
Frankirk	90	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.53
FryB:					
Farry	92	Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	0.53
		Slow water movement	0.46		
GdfB:					
Grandfield	80	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	0.46		
GlGB:					
Grandmore	65	Very limited		Very limited	
		Depth to saturated zone	1.00	Seepage	1.00
		Slow water movement	1.00		

Sanitary Facilities, Part I--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Grandfield----------	25	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	0.46		
GlsB:					
Grandfield----------	87	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	0.46		
GlsD:					
Grandfield----------	87	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	0.46	Slope	0.68
GmuA:					
Gracemont, saline---	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
GmwA:					
Gracemont, saline---	89	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
GrrA:					
Gracemore, saline---	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
		Seepage, bottom layer	1.00		
GtbB:					
Gotebo--------------	82	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Seepage	0.53
HdmB:					
Hardeman------------	90	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00

Sanitary Facilities, Part I--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
HdmC:					
Hardeman	95	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
				Slope	0.32
HfkA:					
Hayfork	83	Very limited		Somewhat limited	
		Slow water movement	1.00	Flooding	0.40
		Flooding	0.40		
HksA:					
Headrick	90	Very limited		Somewhat limited	
		Depth to saturated zone	1.00	Seepage	0.53
		Slow water movement	1.00	Depth to saturated zone	0.08
HolA:					
Hollister	91	Very limited		Not limited	
		Slow water movement	1.00		
HrAC:					
Harmon	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
				Seepage	0.53
				Slope	0.18
Aspermont	44	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to soft bedrock	0.42
		Depth to bedrock	0.78	Seepage	0.28
HSAF:					
Hardeman	50	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slope	0.01	Slope	1.00
Southside	27	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Slope	1.00
		Slope	0.16		
Arnett	20	Very limited		Very limited	
		Seepage, bottom layer	1.00	Slope	1.00
		Slow water movement	0.46	Seepage	1.00
JesC:					
Jester	87	Very limited		Very limited	
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Slope	0.08

Sanitary Facilities, Part I--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
KcRG:					
Knoco, bouldery	45	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop	20	Not rated		Not rated	
KoBE:					
Knoco	45	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00		
Badland	30	Not rated		Not rated	
KRCF:					
Knoco	33	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.16		
Rock outcrop	21	Not rated		Not rated	
Cottonwood	17	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.16	Slope	1.00
LacB:					
La Casa	79	Very limited		Not limited	
		Slow water movement	1.00		
LnuA:					
Lincoln	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00		
LnWA:					
Lincoln	65	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Seepage, bottom layer	1.00		
Westola	22	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
LwtA:					
Lawton	87	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.01

Sanitary Facilities, Part I--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
LwtB:					
Lawton	87	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.01
LwtC2:					
Lawton, moderately eroded	77	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.53
				Slope	0.50
M-W:					
Water, Miscellaneous	100	Not rated		Not rated	
MagB:					
Madge	90	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	0.46		
MdgB:					
Madge	90	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	0.46		
MknB:					
Mcknight	87	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.53
		Depth to bedrock	0.63	Depth to soft bedrock	0.18
MktB:					
Mcknight	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Depth to bedrock	0.68	Depth to soft bedrock	0.23
MktC2:					
Mcknight, moderately eroded	75	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.53
		Depth to bedrock	0.73	Slope	0.32
				Depth to soft bedrock	0.32
NpsB:					
Nipsum	82	Very limited		Not limited	
		Slow water movement	1.00		
NstC:					
Nobscot	85	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
				Slope	0.18

Sanitary Facilities, Part I--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
OakA:					
Oakley	80	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.53
		Seepage, bottom layer	1.00		
OakB:					
Oakley	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.53
OzkA:					
Ozark	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.01
		Depth to saturated zone	0.97		
PIT:					
Pits	100	Not rated		Not rated	
QhTC:					
Quanah	50	Somewhat limited		Somewhat limited	
		Slow water movement	0.46	Seepage	0.53
				Slope	0.08
Talpa	20	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Slope	0.08
QnRG:					
Quinlan	50	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop	25	Not rated		Not rated	
RakA:					
Roark	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Seepage	0.01
		Seepage, bottom layer	1.00		
RKBG:					
Rock outcrop, granite	60	Not rated		Not rated	
Brico	30	Very limited		Very limited	
		Slow water movement	1.00	Slope	1.00
		Slope	1.00	Large stones content	0.78
		Large stones content	0.39		

Sanitary Facilities, Part I--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
RKO:					
Rock outcrop, granite	100	Not rated		Not rated	
RuuA:					
Rups	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00		
RuwA:					
Rups	82	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Slow water movement	1.00	Seepage	0.01
SKRG:					
Spikebox	40	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
Knoco	23	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	1.00		
Rock outcrop	20	Not rated		Not rated	
SpDB:					
Springer	70	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
Devol	22	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
SplA:					
Spur	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.46	Seepage	1.00
SurA:					
Spur	84	Somewhat limited		Somewhat limited	
		Slow water movement	0.46	Seepage	0.53
		Flooding	0.40	Flooding	0.40
SuuA:					
Spur	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.46	Seepage	0.53

Sanitary Facilities, Part I--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
SuwA:					
Spur	87	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Slow water movement	0.46	Seepage	0.53
TARD:					
Talpa	46	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Slope	0.18
Aspermont	37	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to soft bedrock	0.96
		Depth to bedrock	0.99	Seepage	0.28
				Slope	0.02
Rock outcrop	11	Not rated		Not rated	
TilA:					
Tillman	85	Very limited		Not limited	
		Slow water movement	1.00		
TilB:					
Tillman	85	Very limited		Not limited	
		Slow water movement	1.00		
TipA:					
Tipton	80	Somewhat limited		Somewhat limited	
		Slow water movement	0.46	Seepage	0.53
TlvB:					
Tilvern	85	Very limited		Somewhat limited	
		Slow water movement	1.00	Depth to soft bedrock	0.32
		Depth to bedrock	0.73		
TpfA:					
Tipton	90	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Slow water movement	0.46		
TrwB:					
Treadway	87	Very limited		Not limited	
		Slow water movement	1.00		
VeKE:					
Vernon	50	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.32

Sanitary Facilities, Part I--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Knoco	35	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.92
VerC:					
Vernon	78	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.32
VeTE:					
Vernon	53	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	0.68
Talpa, stony	25	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Slope	0.68
W:					
Water	100	Not rated		Not rated	
WlwB:					
Willow	85	Very limited		Very limited	
		Slow water movement	1.00	Seepage	1.00
		Seepage, bottom layer	1.00	Depth to soft bedrock	0.13
		Depth to bedrock	0.59		
WooB:					
Woodward	87	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Seepage	0.53
WooC:					
Woodward	90	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Seepage	0.53
				Slope	0.32
WoQE:					
Woodward	50	Very limited		Very limited	
		Slow water movement	1.00	Depth to soft bedrock	1.00
		Depth to bedrock	1.00	Slope	1.00
		Slope	0.04	Seepage	0.53
Quinlan	37	Very limited		Very limited	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slow water movement	1.00	Slope	1.00
		Slope	0.04		

Sanitary Facilities, Part I--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields		Sewage lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value
WslA:					
Westola	90	Very limited		Very limited	
		Flooding	1.00	Flooding	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
WstA:					
Westola	92	Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00
		Flooding	0.40	Flooding	0.40
WtlA:					
Westill	85	Very limited		Not limited	
		Slow water movement	1.00		
		Depth to bedrock	0.01		
WtlB:					
Westill	83	Very limited		Not limited	
		Slow water movement	1.00		
		Depth to bedrock	0.02		

Sanitary Facilities, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AceB:							
Acme	85	Very limited Depth to saturated zone	1.00	Very limited Depth to saturated zone	1.00	Not limited	
ArHF:							
Arnett	45	Very limited Seepage, bottom layer	1.00	Not limited		Not limited	
Hardeman	40	Very limited Seepage, bottom layer Slope	1.00 0.01	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage Slope	0.52 0.01
ArnB:							
Arnett	85	Very limited Seepage, bottom layer	1.00	Very limited Seepage	1.00	Somewhat limited Seepage	0.22
ArnC:							
Arnett	83	Very limited Seepage, bottom layer Too sandy	1.00 0.50	Very limited Seepage	1.00	Somewhat limited Too sandy Seepage	0.50 0.22
AsmB:							
Aspermont	80	Very limited Depth to bedrock Too clayey	1.00 0.50	Somewhat limited Depth to bedrock	0.39	Somewhat limited Too clayey Depth to bedrock	0.50 0.39
AsmC:							
Aspermont	81	Very limited Depth to bedrock Too clayey	1.00 0.50	Somewhat limited Depth to bedrock	0.42	Somewhat limited Too clayey Depth to bedrock	0.50 0.42
BekA:							
Beckman	85	Very limited Flooding Depth to saturated zone Too clayey Excess sodium	1.00 1.00 1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Too clayey Hard to compact Sodium content	1.00 1.00 1.00
BfdB:							
Burford	90	Very limited Depth to bedrock Too clayey	1.00 1.00	Somewhat limited Depth to bedrock	0.94	Somewhat limited Depth to bedrock Too clayey	0.94 0.50
BfdC:							
Burford	92	Very limited Depth to bedrock Too clayey	1.00 1.00	Somewhat limited Depth to bedrock	1.00	Very limited Too clayey Depth to bedrock	1.00 1.00

Sanitary Facilities, Part II--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BfSC2:							
Burford, moderately eroded	50	Very limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Too clayey	0.50
Spikebox, moderately eroded	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
BfSE:							
Burford	50	Very limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	1.00	Depth to bedrock	0.02	Depth to bedrock	0.02
Spikebox	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.01	Slope	0.01	Slope	0.01
BriE:							
Brico	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Large stones content	0.75	Slope	0.16	Large stones content	0.75
		Too clayey	0.50			Too clayey	0.50
		Slope	0.16			Slope	0.16
BukA:							
Bukreek	92	Very limited		Not limited		Somewhat limited	
		Seepage, bottom layer	1.00			Too clayey	0.50
		Too clayey	0.50				
CarB:							
Carey	90	Very limited		Not limited		Somewhat limited	
		Depth to bedrock	1.00			Too clayey	0.50
		Seepage, bottom layer	1.00				
		Too clayey	0.50				
CawA:							
Carwile	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Seepage, bottom layer	1.00	Ponding	1.00	Hard to compact	1.00
		Ponding	1.00			Ponding	1.00
CVRD:							
Cottonwood	42	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Vinson	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too clayey	0.50			Too clayey	0.50
Rock outcrop	23	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	

Sanitary Facilities, Part II--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DeSD:							
Devol	60	Very limited Seepage, bottom layer	 1.00	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.88
Springer	27	Very limited Seepage, bottom layer	 1.00	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.52
DkuA:							
Duke	80	Very limited Flooding Too clayey Excess sodium	 1.00 1.00 1.00	Very limited Flooding	 1.00	Very limited Too clayey Hard to compact Sodium content	 1.00 1.00 1.00
DodA:							
Dodson	92	Somewhat limited Too clayey	 0.50	Not limited		Somewhat limited Too clayey	 0.50
DodB:							
Dodson	87	Somewhat limited Too clayey	 0.50	Not limited		Somewhat limited Too clayey	 0.50
EatA:							
Eastall	94	Very limited Depth to saturated zone Too clayey Ponding	 1.00 1.00 1.00	Very limited Depth to saturated zone Ponding	 1.00 1.00	Very limited Depth to saturated zone Too clayey Hard to compact Ponding	 1.00 1.00 1.00 1.00
EdsB:							
Eda	87	Very limited Seepage, bottom layer Too sandy	 1.00 1.00	Very limited Seepage	 1.00	Very limited Too sandy Seepage	 1.00 1.00
EdsD:							
Eda	87	Very limited Seepage, bottom layer Too sandy	 1.00 0.50	Very limited Seepage	 1.00	Very limited Seepage Too sandy	 1.00 0.50
EdsF:							
Eda	90	Very limited Seepage, bottom layer Too sandy Slope	 1.00 1.00 0.63	Very limited Seepage Slope	 1.00 0.63	Very limited Too sandy Seepage Slope	 1.00 1.00 0.63
FraB:							
Frankirk	90	Somewhat limited Too clayey	 0.50	Not limited		Somewhat limited Too clayey	 0.50
FryB:							
Farry	92	Very limited Seepage, bottom layer Too clayey	 1.00 0.50	Not limited		Somewhat limited Too clayey	 0.50

Sanitary Facilities, Part II--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GdfB:							
Grandfield	80	Very limited		Not limited		Somewhat limited	
		Seepage, bottom layer	1.00			Seepage	0.52
GlGB:							
Grandmore	65	Somewhat limited		Not limited		Not limited	
		Depth to saturated zone	0.01				
Grandfield	25	Very limited		Not limited		Not limited	
		Seepage, bottom layer	1.00				
GlsB:							
Grandfield	87	Very limited		Not limited		Very limited	
		Seepage, bottom layer	1.00			Seepage	1.00
GlsD:							
Grandfield	87	Very limited		Not limited		Very limited	
		Seepage, bottom layer	1.00			Seepage	1.00
GmuA:							
Gracemont, saline	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.22
		Seepage, bottom layer	1.00	Seepage	1.00		
GmwA:							
Gracemont, saline	89	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too sandy	0.50
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.22
		Too sandy	0.50				
GrrA:							
Gracemore, saline	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	1.00
		Too sandy	1.00				
GtbB:							
Gotebo	82	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
HdmB:							
Hardeman	90	Very limited		Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.52

Sanitary Facilities, Part II--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HdmC:							
Hardeman	95	Very limited		Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.52
HfkA:							
Hayfork	83	Very limited		Somewhat limited		Very limited	
		Too clayey	1.00	Flooding	0.40	Too clayey	1.00
		Flooding	0.40				
HksA:							
Headrick	90	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.76	Depth to saturated zone	0.08	Hard to compact	1.00
		Too clayey	0.50			Too clayey	0.50
						Depth to saturated zone	0.32
HolA:							
Hollister	91	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
HrAC:							
Harmon	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Carbonate content	1.00
Aspermont	44	Very limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	1.00	Depth to bedrock	0.42	Too clayey	0.50
		Too clayey	0.50			Depth to bedrock	0.42
HSAF:							
Hardeman	50	Very limited		Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	1.00
		Slope	0.01	Slope	0.01	Slope	0.01
Southside	27	Very limited		Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00	Slope	0.16	Seepage	1.00
		Slope	0.16			Slope	0.16
Arnett	20	Very limited		Not limited		Not limited	
		Seepage, bottom layer	1.00				
JesC:							
Jester	87	Very limited		Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
KcRG:							
Knoco, bouldery	45	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	

Sanitary Facilities, Part II--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KoBE:							
Knoco	45	Very limited Depth to bedrock	 1.00	Not limited		Very limited Depth to bedrock	 1.00
Badland	30	Not rated		Not rated		Not rated	
KRCF:							
Knoco	33	Very limited Depth to bedrock Slope	 1.00 0.16	Somewhat limited Slope	 0.16	Very limited Depth to bedrock Slope	 1.00 0.16
Rock outcrop	21	Not rated		Not rated		Not rated	
Cottonwood	17	Very limited Depth to bedrock Slope	 1.00 0.16	Very limited Depth to bedrock Slope	 1.00 0.16	Very limited Depth to bedrock Slope	 1.00 0.16
LacB:							
La Casa	79	Somewhat limited Too clayey	 0.50	Not limited		Somewhat limited Too clayey	 0.50
LnuA:							
Lincoln	90	Very limited Flooding Seepage, bottom layer Too sandy	 1.00 1.00 1.00	Very limited Flooding Seepage	 1.00 1.00	Very limited Too sandy Seepage	 1.00 1.00
LnWA:							
Lincoln	65	Very limited Flooding Seepage, bottom layer Too sandy	 1.00 1.00 1.00	Very limited Flooding Seepage	 1.00 1.00	Very limited Too sandy Seepage	 1.00 1.00
Westola	22	Very limited Flooding Seepage, bottom layer	 1.00 1.00	Very limited Flooding Seepage	 1.00 1.00	Somewhat limited Seepage	 0.88
LwtA:							
Lawton	87	Somewhat limited Too clayey	 0.50	Not limited		Somewhat limited Too clayey	 0.50
LwtB:							
Lawton	87	Somewhat limited Too clayey	 0.50	Not limited		Somewhat limited Too clayey	 0.50
LwtC2:							
Lawton, moderately eroded	77	Somewhat limited Too clayey	 0.50	Not limited		Somewhat limited Too clayey	 0.50
M-W:							
Water, Miscellaneous	100	Not rated		Not rated		Not rated	
MagB:							
Madge	90	Very limited Seepage, bottom layer	 1.00	Not limited		Somewhat limited Seepage	 0.22

Sanitary Facilities, Part II--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MdgB:							
Madge	90	Very limited Seepage, bottom layer	1.00	Not limited		Not limited	
MknB:							
Mcknight	87	Very limited Depth to bedrock	1.00	Somewhat limited Depth to bedrock	0.18	Somewhat limited Depth to bedrock	0.18
MktB:							
Mcknight	85	Very limited Depth to bedrock Too clayey	1.00 1.00	Somewhat limited Depth to bedrock	0.23	Very limited Too clayey Depth to bedrock	1.00 0.23
MktC2:							
Mcknight, moderately eroded	75	Very limited Depth to bedrock	1.00	Somewhat limited Depth to bedrock	0.32	Somewhat limited Depth to bedrock	0.32
NpsB:							
Nipsum	82	Very limited Too clayey	1.00	Not limited		Very limited Too clayey	1.00
NstC:							
Nobscot	85	Very limited Seepage, bottom layer	1.00	Very limited Seepage	1.00	Somewhat limited Seepage	0.52
OakA:							
Oakley	80	Very limited Seepage, bottom layer	1.00	Not limited		Not limited	
OakB:							
Oakley	85	Not limited		Not limited		Not limited	
OzkA:							
Ozark	85	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
PIT:							
Pits	100	Not rated		Not rated		Not rated	
QhTC:							
Quanah	50	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
Talpa	20	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
QnRG:							
Quinlan	50	Very limited Depth to bedrock Slope	1.00 1.00	Very limited Depth to bedrock Slope	1.00 1.00	Very limited Depth to bedrock Slope	1.00 1.00
Rock outcrop	25	Not rated		Not rated		Not rated	
RakA:							
Roark	85	Very limited Seepage, bottom layer	1.00	Not limited		Somewhat limited Too clayey	0.50

Sanitary Facilities, Part II--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RKBG:							
Rock outcrop, granite	60	Not rated		Not rated		Not rated	
Brico	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Too clayey	1.00
		Large stones content	0.81			Slope	1.00
		Too clayey	0.50			Large stones content	0.81
						Gravel content	0.01
RKO:							
Rock outcrop, granite	100	Not rated		Not rated		Not rated	
RuuA:							
Rups	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Depth to saturated zone	0.96
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too clayey	0.50
		Too clayey	0.50				
RuwA:							
Rups	82	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Too clayey	0.50
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.47
		Too clayey	1.00				
SKRG:							
Spikebox	40	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
Knoco	23	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
SpDB:							
Springer	70	Very limited		Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.52
Devol	22	Very limited		Very limited		Very limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	1.00
		Too sandy	0.50			Too sandy	0.50
SplA:							
Spur	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Seepage	0.22
SurA:							
Spur	84	Somewhat limited		Somewhat limited		Somewhat limited	
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				

Sanitary Facilities, Part II--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SuuA:							
Spur	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Too clayey	0.50
		Too clayey	0.50				
SuwA:							
Spur	87	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Too clayey	0.50
		Too clayey	0.50				
TARD:							
Talpa	46	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Aspermont	37	Very limited		Somewhat limited		Somewhat limited	
		Depth to bedrock	1.00	Depth to bedrock	0.96	Depth to bedrock	0.96
		Too clayey	0.50			Too clayey	0.50
Rock outcrop	11	Not rated		Not rated		Not rated	
TilA:							
Tillman	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
TilB:							
Tillman	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
						Hard to compact	1.00
TipA:							
Tipton	80	Somewhat limited		Not limited		Somewhat limited	
		Too clayey	0.50			Too clayey	0.50
TlvB:							
Tilvern	85	Very limited		Somewhat limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	0.32	Too clayey	1.00
		Too clayey	1.00			Hard to compact	1.00
						Depth to bedrock	0.32
TpfA:							
Tipton	90	Very limited		Not limited		Somewhat limited	
		Seepage, bottom layer	1.00			Too clayey	0.50
		Too clayey	0.50				
TrwB:							
Treadway	87	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
		Excess sodium	1.00			Hard to compact	1.00
						Sodium content	1.00
VeKE:							
Vernon	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too clayey	1.00
		Too clayey	1.00			Depth to bedrock	1.00
Knoco	35	Very limited		Not limited		Very limited	
		Depth to bedrock	1.00			Depth to bedrock	1.00

Sanitary Facilities, Part II--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
VerC:							
Vernon	78	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too clayey	1.00
		Too clayey	1.00			Depth to bedrock	1.00
VeTE:							
Vernon	53	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Too clayey	1.00
		Too clayey	1.00			Depth to bedrock	1.00
Talpa, stony	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
W:							
Water	100	Not rated		Not rated		Not rated	
WlwB:							
Willow	85	Very limited		Very limited		Somewhat limited	
		Depth to bedrock	1.00	Seepage	1.00	Too clayey	0.50
		Seepage, bottom layer	1.00	Depth to bedrock	0.14	Depth to bedrock	0.14
		Too clayey	0.50				
WooB:							
Woodward	87	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
WooC:							
Woodward	90	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
WoQE:							
Woodward	50	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.04	Slope	0.04	Slope	0.04
Quinlan	37	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	0.04	Slope	0.04	Slope	0.04
WslA:							
Westola	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Flooding	1.00	Seepage	0.52
		Seepage, bottom layer	1.00	Seepage	1.00		
WstA:							
Westola	92	Very limited		Very limited		Somewhat limited	
		Seepage, bottom layer	1.00	Seepage	1.00	Seepage	0.52
		Flooding	0.40	Flooding	0.40		
WtlA:							
Westill	85	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
		Depth to bedrock	1.00			Hard to compact	1.00

Sanitary Facilities, Part II--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WtlB:							
Westill	83	Very limited		Not limited		Very limited	
		Too clayey	1.00			Too clayey	1.00
		Depth to bedrock	1.00			Hard to compact	1.00

Building Site Development

Soil properties influence the development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. The table, “Building Site Development, Parts I and II,” shows the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

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

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

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

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

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that

affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

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

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

Building Site Development, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AceB:							
Acme	85	Not limited		Somewhat limited Depth to saturated zone	0.31	Not limited	
ArHF:							
Arnett	45	Somewhat limited Shrink-swell	0.22	Somewhat limited Shrink-swell	0.22	Somewhat limited Shrink-swell Slope	0.22 0.12
Hardeman	40	Somewhat limited Slope	0.01	Somewhat limited Slope	0.01	Very limited Slope	1.00
ArnB:							
Arnett	85	Somewhat limited Shrink-swell	0.22	Not limited		Somewhat limited Shrink-swell	0.22
ArnC:							
Arnett	83	Not limited		Not limited		Not limited	
AsmB:							
Aspermont	80	Somewhat limited Shrink-swell	0.22	Somewhat limited Shrink-swell	0.22	Somewhat limited Shrink-swell	0.22
AsmC:							
Aspermont	81	Somewhat limited Shrink-swell	0.22	Somewhat limited Shrink-swell	0.22	Somewhat limited Shrink-swell	0.22
BekA:							
Beckman	85	Very limited Flooding Shrink-swell	1.00 0.94	Very limited Flooding Shrink-swell Depth to saturated zone	1.00 0.94 0.47	Very limited Flooding Shrink-swell	1.00 0.94
BfdB:							
Burford	90	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Shrink-swell	0.50
BfdC:							
Burford	92	Very limited Shrink-swell	1.00	Not limited		Very limited Shrink-swell	1.00
BfSC2:							
Burford, moderately eroded	50	Somewhat limited Shrink-swell	0.50	Not limited		Somewhat limited Shrink-swell	0.50
Spikebox, moderately eroded	40	Somewhat limited Depth to soft bedrock	0.50	Very limited Depth to soft bedrock	1.00	Somewhat limited Depth to soft bedrock	1.00

Building Site Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BfSE:							
Burford	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.50
						Shrink-swell	0.50
Spikebox	40	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.01	Slope	0.01	Slope	1.00
BriE:							
Brico	85	Somewhat limited		Somewhat limited		Very limited	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Large stones content	0.28	Large stones content	0.28	Shrink-swell	0.50
		Slope	0.16	Slope	0.16	Large stones content	0.28
BukA:							
Bukreek	92	Somewhat limited		Not limited		Somewhat limited	
		Shrink-swell	0.22			Shrink-swell	0.22
CarB:							
Carey	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
CawA:							
Carwile	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Ponding	1.00	Ponding	1.00	Ponding	1.00
		Shrink-swell	0.94	Shrink-swell	0.50	Shrink-swell	0.94
CVRD:							
Cottonwood	42	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Vinson	25	Somewhat limited		Very limited		Somewhat limited	
		Depth to hard bedrock	0.64	Depth to hard bedrock	1.00	Depth to hard bedrock	0.64
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Rock outcrop	23	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	
DeSD:							
Devol	60	Not limited		Not limited		Somewhat limited	
						Slope	0.28
Springer	27	Not limited		Not limited		Somewhat limited	
						Slope	0.12
DkuA:							
Duke	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00

Building Site Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DodA:							
Dodson	92	Somewhat limited Shrink-swell	1.00	Somewhat limited Shrink-swell	1.00	Somewhat limited Shrink-swell	1.00
DodB:							
Dodson	87	Very limited Shrink-swell	1.00	Somewhat limited Shrink-swell	0.94	Very limited Shrink-swell	1.00
EatA:							
Eastall	94	Very limited Depth to saturated zone Shrink-swell Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Shrink-swell Ponding	1.00 1.00 1.00	Very limited Depth to saturated zone Shrink-swell Ponding	1.00 1.00 1.00
EdsB:							
Eda	87	Not limited		Not limited		Not limited	
EdsD:							
Eda	87	Not limited		Not limited		Somewhat limited Slope	0.12
EdsF:							
Eda	90	Somewhat limited Slope	0.63	Somewhat limited Slope	0.63	Very limited Slope	1.00
FraB:							
Frankirk	90	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
FryB:							
Farry	92	Somewhat limited Shrink-swell	0.06	Somewhat limited Shrink-swell	0.06	Somewhat limited Shrink-swell	0.06
GdfB:							
Grandfield	80	Not limited		Not limited		Not limited	
GlGB:							
Grandmore	65	Not limited		Somewhat limited Depth to saturated zone	0.69	Not limited	
Grandfield	25	Not limited		Not limited		Not limited	
GlsB:							
Grandfield	87	Not limited		Not limited		Not limited	
GlsD:							
Grandfield	87	Not limited		Not limited		Somewhat limited Slope	0.12
GmuA:							
Gracemont, saline	90	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00	Very limited Flooding Depth to saturated zone	1.00 1.00

Building Site Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GmwA:							
Gracemont, saline---	89	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
GrrA:							
Gracemore, saline---	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
GtbB:							
Gotebo----------	82	Not limited		Somewhat limited		Not limited	
				Depth to soft bedrock	0.79		
HdmB:							
Hardeman----------	90	Not limited		Not limited		Not limited	
HdmC:							
Hardeman----------	95	Not limited		Not limited		Not limited	
HfkA:							
Hayfork----------	83	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
HksA:							
Headrick----------	90	Not limited		Somewhat limited		Not limited	
				Depth to saturated zone	0.99		
				Shrink-swell	0.50		
HolA:							
Hollister----------	91	Very limited		Very limited		Very limited	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
HrAC:							
Harmon----------	50	Somewhat limited		Very limited		Somewhat limited	
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
Aspermont----------	44	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.22	Shrink-swell	0.22	Shrink-swell	0.22
HSAF:							
Hardeman----------	50	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.01	Slope	0.01	Slope	1.00
Southside----------	27	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.16	Slope	0.16	Slope	1.00
Arnett----------	20	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.22	Shrink-swell	0.22	Slope	0.88
						Shrink-swell	0.22
JesC:							
Jester----------	87	Not limited		Not limited		Not limited	

Building Site Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KcRG:							
Knoco, bouldery-----	45	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00	Slope	1.00
		Depth to soft bedrock	0.50	Slope	1.00	Depth to soft bedrock	1.00
Rock outcrop--------	20	Not rated		Not rated		Not rated	
KoBE:							
Knoco---------------	45	Somewhat limited		Very limited		Somewhat limited	
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
Badland-------------	30	Not rated		Not rated		Not rated	
KRCF:							
Knoco---------------	33	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	0.50	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.16	Slope	0.16	Slope	1.00
Rock outcrop--------	21	Not rated		Not rated		Not rated	
Cottonwood----------	17	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.16	Slope	0.16	Slope	1.00
LacB:							
La Casa-------------	79	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.94	Shrink-swell	0.22	Shrink-swell	0.94
LnuA:							
Lincoln-------------	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
LnWA:							
Lincoln-------------	65	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Westola-------------	22	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
LwtA:							
Lawton--------------	87	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.99	Shrink-swell	0.50	Shrink-swell	0.99
LwtB:							
Lawton--------------	87	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.94	Shrink-swell	0.99	Shrink-swell	0.94
LwtC2:							
Lawton, moderately eroded-------------	77	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.94	Shrink-swell	0.94	Shrink-swell	0.94
						Slope	0.03

Building Site Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
M-W:							
Water, Miscellaneous	100	Not rated		Not rated		Not rated	
MagB:							
Madge	90	Not limited		Not limited		Not limited	
MdgB:							
Madge	90	Not limited		Not limited		Not limited	
MknB:							
Mcknight	87	Not limited		Not limited		Not limited	
MktB:							
Mcknight	85	Not limited		Not limited		Not limited	
MktC2:							
Mcknight, moderately eroded	75	Not limited		Not limited		Not limited	
NpsB:							
Nipsum	82	Somewhat limited Shrink-swell	0.94	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.94
NstC:							
Nobscot	85	Not limited		Not limited		Not limited	
OakA:							
Oakley	80	Not limited		Not limited		Not limited	
OakB:							
Oakley	85	Not limited		Not limited		Not limited	
OzkA:							
Ozark	85	Somewhat limited Shrink-swell	0.22	Somewhat limited Depth to saturated zone Shrink-swell	0.53 0.22	Somewhat limited Shrink-swell	0.22
PIT:							
Pits	100	Not rated		Not rated		Not rated	
QhTC:							
Quanah	50	Not limited		Not limited		Not limited	
Talpa	20	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00
QnRG:							
Quinlan	50	Very limited Slope Depth to soft bedrock	1.00 0.50	Very limited Depth to soft bedrock Slope	1.00 1.00	Very limited Slope Depth to soft bedrock	1.00 1.00
Rock outcrop	25	Not rated		Not rated		Not rated	

Building Site Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RakA:							
Roark	85	Somewhat limited		Not limited		Somewhat limited	
		Shrink-swell	0.78			Shrink-swell	0.78
RKBG:							
Rock outcrop, granite	60	Not rated		Not rated		Not rated	
Brico	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
		Large stones content	0.39	Large stones content	0.39	Large stones content	0.39
RKO:							
Rock outcrop, granite	100	Not rated		Not rated		Not rated	
RuuA:							
Rups	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.81	Depth to saturated zone	1.00	Depth to saturated zone	0.81
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
RuwA:							
Rups	82	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Depth to saturated zone	1.00	Shrink-swell	0.50
				Shrink-swell	0.50		
SKRG:							
Spikebox	40	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00	Slope	1.00
		Depth to soft bedrock	0.50	Slope	1.00	Depth to soft bedrock	1.00
Knoco	23	Very limited		Very limited		Very limited	
		Slope	1.00	Depth to soft bedrock	1.00	Slope	1.00
		Depth to soft bedrock	0.50	Slope	1.00	Depth to soft bedrock	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
SpDB:							
Springer	70	Not limited		Not limited		Not limited	
Devol	22	Not limited		Not limited		Not limited	
SplA:							
Spur	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Flooding	1.00	Flooding	1.00

Building Site Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SurA:							
Spur	84	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
SuuA:							
Spur	90	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
SuwA:							
Spur	87	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
TARD:							
Talpa	46	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00
Aspermont	37	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
Rock outcrop	11	Not rated		Not rated		Not rated	
TilA:							
Tillman	85	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
TilB:							
Tillman	85	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
TipA:							
Tipton	80	Not limited		Not limited		Not limited	
TlvB:							
Tilvern	85	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
TpfA:							
Tipton	90	Not limited		Not limited		Not limited	
TrwB:							
Treadway	87	Somewhat limited Shrink-swell	0.78	Somewhat limited Shrink-swell	0.78	Somewhat limited Shrink-swell	0.78
VeKE:							
Vernon	50	Very limited Shrink-swell	1.00	Somewhat limited Depth to soft bedrock	0.79	Very limited Shrink-swell	1.00
Knoco	35	Somewhat limited Depth to soft bedrock	0.50	Very limited Depth to soft bedrock	1.00	Somewhat limited Depth to soft bedrock Slope	1.00 0.50
VerC:							
Vernon	78	Very limited Shrink-swell	1.00	Somewhat limited Depth to soft bedrock	0.10	Very limited Shrink-swell	1.00

Building Site Development, Part I--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
VeTE:							
Vernon	53	Very limited Shrink-swell	1.00	Somewhat limited Depth to soft bedrock	0.01	Very limited Shrink-swell Slope	1.00 0.12
Talpa, stony	25	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock Slope	1.00 0.12
W:							
Water	100	Not rated		Not rated		Not rated	
WlwB:							
Willow	85	Somewhat limited Shrink-swell	0.78	Somewhat limited Shrink-swell	0.78	Somewhat limited Shrink-swell	0.78
WooB:							
Woodward	87	Not limited		Somewhat limited Depth to soft bedrock	0.01	Not limited	
WooC:							
Woodward	90	Not limited		Somewhat limited Depth to soft bedrock	0.64	Not limited	
WoQE:							
Woodward	50	Somewhat limited Slope	0.04	Somewhat limited Depth to soft bedrock Slope	0.79 0.04	Very limited Slope	1.00
Quinlan	37	Somewhat limited Depth to soft bedrock Slope	0.50 0.04	Very limited Depth to soft bedrock Slope	1.00 0.04	Very limited Depth to soft bedrock Slope	1.00 1.00
WslA:							
Westola	90	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
WstA:							
Westola	92	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
WtlA:							
Westill	85	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
WtlB:							
Westill	83	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00

Building Site Development, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AceB:							
Acme	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Depth to saturated zone	0.31		
				Cutbanks cave	0.10		
ArHF:							
Arnett	45	Somewhat limited		Very limited		Not limited	
		Low strength	0.78	Cutbanks cave	1.00		
		Shrink-swell	0.22				
Hardeman	40	Somewhat limited		Somewhat limited		Somewhat limited	
		Slope	0.01	Cutbanks cave	0.10	Slope	0.01
				Slope	0.01		
ArnB:							
Arnett	85	Somewhat limited		Somewhat limited		Not limited	
		Low strength	0.78	Cutbanks cave	0.10		
		Shrink-swell	0.22				
ArnC:							
Arnett	83	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
AsmB:							
Aspermont	80	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Dense layer	0.50		
		Shrink-swell	0.22	Cutbanks cave	0.10		
				Too clayey	0.02		
AsmC:							
Aspermont	81	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Dense layer	0.50		
		Shrink-swell	0.22	Cutbanks cave	0.10		
				Too clayey	0.02		
BekA:							
Beckman	85	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.60	Too clayey	1.00
		Low strength	1.00	Depth to saturated zone	0.47	Sodium content	1.00
		Shrink-swell	0.94	Cutbanks cave	0.10	Flooding	0.60
BfdB:							
Burford	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Dense layer	0.50		
		Shrink-swell	0.50	Cutbanks cave	0.10		
				Too clayey	0.02		
BfdC:							
Burford	92	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Dense layer	0.50		
		Shrink-swell	1.00	Cutbanks cave	0.10		
				Too clayey	0.02		

Building Site Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BfSC2:							
Burford, moderately eroded	50	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Dense layer	0.50		
		Shrink-swell	0.50	Cutbanks cave	0.10		
Spikebox, moderately eroded	40	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
				Dense layer	0.50	Droughty	0.96
				Cutbanks cave	0.10		
BfSE:							
Burford	50	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Dense layer	0.50		
		Shrink-swell	0.50	Cutbanks cave	0.10		
Spikebox	40	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Slope	0.01	Dense layer	0.50	Droughty	0.99
				Cutbanks cave	0.10	Slope	0.01
				Slope	0.01		
BriE:							
Brico	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Shrink-swell	0.50	Large stones content	0.28	Large stones content	0.68
		Large stones content	0.28	Slope	0.16	Slope	0.16
		Slope	0.16	Too clayey	0.12		
				Cutbanks cave	0.10		
BukA:							
Bukreek	92	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.22				
CarB:							
Carey	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.22				
CawA:							
Carwile	90	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Low strength	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.94				
CVRD:							
Cottonwood	42	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
				Dense layer	0.50	Droughty	1.00
				Cutbanks cave	0.10		

Building Site Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Vinson	25	Very limited		Very limited		Somewhat limited	
		Low strength	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.65
		Depth to hard bedrock	0.64	Dense layer	0.50		
		Shrink-swell	0.50				
Rock outcrop	23	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	
DeSD:							
Devol	60	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
Springer	27	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
DkuA:							
Duke	80	Very limited		Very limited		Very limited	
		Flooding	1.00	Cutbanks cave	1.00	Sodium content	1.00
		Low strength	1.00	Flooding	0.60	Too clayey	1.00
		Shrink-swell	1.00	Too clayey	0.50	Flooding	0.60
DodA:							
Dodson	92	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
DodB:							
Dodson	87	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00	Too clayey	0.02		
EatA:							
Eastall	94	Very limited		Very limited		Very limited	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Depth to saturated zone	1.00
		Low strength	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Shrink-swell	1.00	Ponding	1.00	Ponding	1.00
		Ponding	1.00	Too clayey	0.32		
EdsB:							
Eda	87	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.91
						Too sandy	0.50
EdsD:							
Eda	87	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.92
						Too sandy	0.50

Building Site Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
EdsF:							
Eda	90	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.63	Cutbanks cave	1.00	Droughty	0.97
				Slope	0.63	Slope	0.63
						Too sandy	0.50
FraB:							
Frankirk	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
FryB:							
Farry	92	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.06				
GdfB:							
Grandfield	80	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
GlGB:							
Grandmore	65	Not limited		Somewhat limited		Not limited	
				Depth to saturated zone	0.69		
				Cutbanks cave	0.10		
Grandfield	25	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
GlsB:							
Grandfield	87	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
GlsD:							
Grandfield	87	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
GmuA:							
Gracemont, saline	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Salinity	1.00
		Depth to saturated zone	1.00	Flooding	0.60	Depth to saturated zone	1.00
				Cutbanks cave	0.10	Flooding	0.60
GmwA:							
Gracemont, saline	89	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Cutbanks cave	1.00	Salinity	1.00
				Flooding	0.80	Depth to saturated zone	1.00

Building Site Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GrrA:							
Gracemore, saline---	90	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Salinity	1.00
		Depth to saturated zone	0.83	Cutbanks cave	1.00	Depth to saturated zone	0.83
				Flooding	0.60	Flooding	0.60
						Droughty	0.34
GtbB:							
Gotebo----------	82	Not limited		Somewhat limited		Somewhat limited	
				Depth to soft bedrock	0.79	Depth to bedrock	0.80
				Dense layer	0.50		
				Cutbanks cave	0.10		
HdmB:							
Hardeman----------	90	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
HdmC:							
Hardeman----------	95	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
HfkA:							
Hayfork----------	83	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00	Too clayey	0.02		
		Flooding	0.40				
HksA:							
Headrick----------	90	Not limited		Somewhat limited		Not limited	
				Depth to saturated zone	0.99		
				Cutbanks cave	0.10		
HolA:							
Hollister----------	91	Very limited		Very limited		Not limited	
		Low strength	1.00	Cutbanks cave	1.00		
		Shrink-swell	1.00	Too clayey	0.03		
HrAC:							
Harmon----------	50	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
				Dense layer	0.50	Carbonate content	1.00
				Cutbanks cave	0.10	Droughty	1.00
Aspermont----------	44	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Dense layer	0.50		
		Shrink-swell	0.22	Cutbanks cave	0.10		
				Too clayey	0.02		
HSAF:							
Hardeman----------	50	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.01	Cutbanks cave	1.00	Slope	0.01
				Slope	0.01		

Building Site Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Southside	27	Somewhat limited		Very limited		Somewhat limited	
		Slope	0.16	Cutbanks cave	1.00	Droughty	0.98
				Slope	0.16	Slope	0.16
Arnett	20	Somewhat limited		Very limited		Not limited	
		Shrink-swell	0.22	Cutbanks cave	1.00		
JesC:							
Jester	87	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.99
KcRG:							
Knoco, bouldery	45	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Low strength	1.00	Too clayey	0.50	Slope	1.00
				Dense layer	0.50	Too clayey	1.00
				Cutbanks cave	0.10	Large stones content	0.16
Rock outcrop	20	Not rated		Not rated		Not rated	
KoBE:							
Knoco	45	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Low strength	1.00	Too clayey	0.50	Droughty	1.00
				Dense layer	0.50	Too clayey	1.00
				Cutbanks cave	0.10		
Badland	30	Not rated		Not rated		Not rated	
KRCF:							
Knoco	33	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Low strength	1.00	Too clayey	0.50	Droughty	1.00
		Slope	0.16	Dense layer	0.50	Too clayey	1.00
				Slope	0.16	Slope	0.16
				Cutbanks cave	0.10		
Rock outcrop	21	Not rated		Not rated		Not rated	
Cottonwood	17	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Low strength	0.22	Dense layer	0.50	Droughty	1.00
		Slope	0.16	Slope	0.16	Slope	0.16
				Cutbanks cave	0.10		
LacB:							
La Casa	79	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.94	Too clayey	0.02		

Building Site Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LnuA:							
Lincoln	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Cutbanks cave	1.00	Droughty	0.97
				Flooding	0.60	Flooding	0.60
LnWA:							
Lincoln	65	Very limited		Very limited		Very limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
				Flooding	0.80	Droughty	0.99
Westola	22	Very limited		Very limited		Very limited	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
				Flooding	0.80		
LwtA:							
Lawton	87	Very limited		Very limited		Not limited	
		Low strength	1.00	Cutbanks cave	1.00		
		Shrink-swell	0.99				
LwtB:							
Lawton	87	Very limited		Very limited		Not limited	
		Low strength	1.00	Cutbanks cave	1.00		
		Shrink-swell	0.94				
LwtC2:							
Lawton, moderately eroded	77	Very limited		Very limited		Not limited	
		Low strength	1.00	Cutbanks cave	1.00		
		Shrink-swell	0.94				
M-W:							
Water, Miscellaneous	100	Not rated		Not rated		Not rated	
MagB:							
Madge	90	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
MdgB:							
Madge	90	Not limited		Very limited		Not limited	
				Cutbanks cave	1.00		
MknB:							
Mcknight	87	Not limited		Somewhat limited		Not limited	
				Dense layer	0.50		
				Too clayey	0.12		
				Cutbanks cave	0.10		
MktB:							
Mcknight	85	Not limited		Somewhat limited		Not limited	
				Dense layer	0.50		
				Too clayey	0.12		
				Cutbanks cave	0.10		
MktC2:							
Mcknight, moderately eroded	75	Not limited		Somewhat limited		Not limited	
				Dense layer	0.50		
				Cutbanks cave	0.10		
				Too clayey	0.02		

Building Site Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
NpsB:							
Nipsum	82	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.94	Too clayey	0.02		
NstC:							
Nobscot	85	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Too sandy	0.50
						Droughty	0.40
OakA:							
Oakley	80	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
OakB:							
Oakley	85	Not limited		Somewhat limited		Not limited	
				Cutbanks cave	0.10		
OzkA:							
Ozark	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Depth to saturated zone	0.53		
		Shrink-swell	0.22	Cutbanks cave	0.10		
PIT:							
Pits	100	Not rated		Not rated		Not rated	
QhTC:							
Quanah	50	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
Talpa	20	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Droughty	1.00
				Dense layer	0.50	Depth to bedrock	1.00
				Cutbanks cave	0.10		
QnRG:							
Quinlan	50	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Dense layer	0.50	Droughty	0.99
				Cutbanks cave	0.10		
Rock outcrop	25	Not rated		Not rated		Not rated	
RakA:							
Roark	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.78				
RKBG:							
Rock outcrop, granite	60	Not rated		Not rated		Not rated	

Building Site Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Brico	30	Very limited		Very limited		Very limited	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	0.50	Large stones content	0.39	Large stones content	0.68
		Large stones content	0.39	Too clayey	0.12		
				Cutbanks cave	0.10		
RKO:							
Rock outcrop, granite	100	Not rated		Not rated		Not rated	
RuuA:							
Rups	90	Very limited		Very limited		Somewhat limited	
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	0.60
		Low strength	1.00	Flooding	0.60	Salinity	0.50
		Shrink-swell	0.50	Cutbanks cave	0.10	Depth to saturated zone	0.48
		Depth to saturated zone	0.48				
RuwA:							
Rups	82	Very limited		Very limited		Very limited	
		Flooding	1.00	Depth to saturated zone	1.00	Flooding	1.00
		Low strength	1.00	Flooding	0.80	Salinity	0.50
		Shrink-swell	0.50	Cutbanks cave	0.10		
SKRG:							
Spikebox	40	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
				Dense layer	0.50	Slope	1.00
				Cutbanks cave	0.10		
Knoco	23	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
		Low strength	1.00	Too clayey	0.50	Slope	1.00
				Dense layer	0.50	Too clayey	1.00
				Cutbanks cave	0.10		
Rock outcrop	20	Not rated		Not rated		Not rated	
SpDB:							
Springer	70	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.01
Devol	22	Not limited		Very limited		Somewhat limited	
				Cutbanks cave	1.00	Droughty	0.01
SplA:							
Spur	90	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Low strength	1.00	Cutbanks cave	0.10		

Building Site Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SurA:							
Spur	84	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Flooding	0.40				
SuuA:							
Spur	90	Very limited		Somewhat limited		Somewhat limited	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Low strength	1.00	Cutbanks cave	0.10		
SuwA:							
Spur	87	Very limited		Somewhat limited		Very limited	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
		Low strength	1.00	Cutbanks cave	0.10		
TARD:							
Talpa	46	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Droughty	1.00
		Low strength	0.22	Dense layer	0.50	Depth to bedrock	1.00
				Cutbanks cave	0.10		
Aspermont	37	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Dense layer	0.50		
		Shrink-swell	0.50	Cutbanks cave	0.10		
				Too clayey	0.02		
Rock outcrop	11	Not rated		Not rated		Not rated	
TilA:							
Tillman	85	Very limited		Somewhat limited		Not limited	
		Shrink-swell	1.00	Cutbanks cave	0.10		
		Low strength	1.00	Too clayey	0.03		
TilB:							
Tillman	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00	Too clayey	0.03		
TipA:							
Tipton	80	Somewhat limited		Somewhat limited		Not limited	
		Low strength	0.78	Cutbanks cave	0.10		
TlvB:							
Tilvern	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Too clayey	0.50		
		Shrink-swell	1.00	Dense layer	0.50		
				Cutbanks cave	0.10		
TpfA:							
Tipton	90	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
TrwB:							
Treadway	87	Very limited		Somewhat limited		Very limited	
		Low strength	1.00	Too clayey	0.12	Sodium content	1.00
		Shrink-swell	0.78	Cutbanks cave	0.10	Droughty	0.16

Building Site Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
VeKE:							
Vernon	50	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Depth to soft bedrock	0.79	Depth to bedrock	0.80
		Shrink-swell	1.00	Too clayey	0.50	Droughty	0.02
				Dense layer	0.50		
				Cutbanks cave	0.10		
Knoco	35	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Low strength	1.00	Too clayey	0.50	Droughty	1.00
				Dense layer	0.50	Too clayey	1.00
				Cutbanks cave	0.10		
VerC:							
Vernon	78	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.50	Depth to bedrock	0.10
		Shrink-swell	1.00	Dense layer	0.50		
				Cutbanks cave	0.10		
				Depth to soft bedrock	0.10		
VeTE:							
Vernon	53	Very limited		Somewhat limited		Somewhat limited	
		Low strength	1.00	Too clayey	0.50	Depth to bedrock	0.01
		Shrink-swell	1.00	Dense layer	0.50		
				Cutbanks cave	0.10		
				Depth to soft bedrock	0.01		
Talpa, stony	25	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Droughty	1.00
		Low strength	0.22	Dense layer	0.50	Depth to bedrock	1.00
				Cutbanks cave	0.10		
W:							
Water	100	Not rated		Not rated		Not rated	
WlwB:							
Willow	85	Very limited		Somewhat limited		Not limited	
		Low strength	1.00	Dense layer	0.50		
		Shrink-swell	0.78	Cutbanks cave	0.10		
WooB:							
Woodward	87	Not limited		Somewhat limited		Somewhat limited	
				Dense layer	0.50	Depth to bedrock	0.01
				Cutbanks cave	0.10		
				Depth to soft bedrock	0.01		
WooC:							
Woodward	90	Not limited		Somewhat limited		Somewhat limited	
				Depth to soft bedrock	0.64	Depth to bedrock	0.65
				Dense layer	0.50		
				Cutbanks cave	0.10		

Building Site Development, Part II--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets		Shallow excavations		Lawns and landscaping	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WoQE:							
Woodward	50	Somewhat limited Slope	0.04	Somewhat limited Depth to soft bedrock Dense layer Cutbanks cave Slope	0.79 0.50 0.10 0.04	Somewhat limited Depth to bedrock	0.80
Quinlan	37	Somewhat limited Depth to soft bedrock Slope	1.00 0.04	Very limited Depth to soft bedrock Dense layer Cutbanks cave Slope	1.00 0.50 0.10 0.04	Very limited Depth to bedrock Droughty Slope	1.00 0.98 0.04
WslA:							
Westola	90	Very limited Flooding	1.00	Very limited Cutbanks cave Flooding	1.00 0.60	Somewhat limited Flooding	0.60
WstA:							
Westola	92	Somewhat limited Flooding	0.40	Somewhat limited Cutbanks cave	0.10	Not limited	
WtlA:							
Westill	85	Very limited Shrink-swell Low strength	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.50 0.10	Not limited	
WtlB:							
Westill	83	Very limited Shrink-swell Low strength	1.00 1.00	Somewhat limited Too clayey Cutbanks cave	0.50 0.10	Not limited	

Construction Materials

The table, “Construction Materials, Parts I and II,” provides information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In this table, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor is factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

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

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

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

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

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

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

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Construction Materials, Part I

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer Or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
AceB:					
Acme	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
ArHF:					
Arnett	45	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.02
Hardeman	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
ArnB:					
Arnett	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.02
ArnC:					
Arnett	83	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.02
AsmB:					
Aspermont	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
AsmC:					
Aspermont	81	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BekA:					
Beckman	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BfdB:					
Burford	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BfdC:					
Burford	92	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Construction Materials, Part I--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
BfSC2:					
Burford, moderately eroded	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Spikebox, moderately eroded	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BfSE:					
Burford	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Spikebox	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
BriE:					
Brico	85	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
BukA:					
Bukreek	92	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CarB:					
Carey	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CawA:					
Carwile	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.01
CVRD:					
Cottonwood	42	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Vinson	25	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	23	Not rated		Not rated	
DAM:					
Dam	100	Not rated		Not rated	

Construction Materials, Part I--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
DeSD:					
Devol	60	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.04
		Thickest layer	0.00	Bottom layer	0.10
Springer	27	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.01
		Thickest layer	0.00	Bottom layer	0.10
DkuA:					
Duke	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
DodA:					
Dodson	92	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
DodB:					
Dodson	87	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
EatA:					
Eastall	94	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
EdsB:					
Eda	87	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.07
		Thickest layer	0.00	Bottom layer	0.26
EdsD:					
Eda	87	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.07
		Thickest layer	0.00	Bottom layer	0.26
EdsF:					
Eda	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.25
		Thickest layer	0.00	Bottom layer	0.26
FraB:					
Frankirk	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
FryB:					
Farry	92	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
GdfB:					
Grandfield	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Construction Materials, Part I--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
GlGB:					
Grandmore	65	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Grandfield	25	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.10
GlsB:					
Grandfield	87	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.07
GlsD:					
Grandfield	87	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.07
GmuA:					
Gracemont, saline	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.03
GmwA:					
Gracemont, saline	89	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.01
		Thickest layer	0.00	Bottom layer	0.10
GrrA:					
Gracemore, saline	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.02
		Thickest layer	0.00	Bottom layer	0.75
GtbB:					
Gotebo	82	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
HdmB:					
Hardeman	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
HdmC:					
Hardeman	95	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
HfkA:					
Hayfork	83	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
HksA:					
Headrick	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Construction Materials, Part I--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
HolA:					
Hollister	91	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
HrAC:					
Harmon	50	Not rated		Not rated	
		Bottom layer	0.00	Bottom layer	0.00
Aspermont	44	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
HSAF:					
Hardeman	50	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.01
		Thickest layer	0.00	Bottom layer	0.05
Southside	27	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.07
		Thickest layer	0.00	Bottom layer	0.79
Arnett	20	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.05
JesC:					
Jester	87	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.28
		Thickest layer	0.00	Bottom layer	0.72
KcRG:					
Knoco, bouldery	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	20	Not rated		Not rated	
KoBE:					
Knoco	45	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Badland	30	Not rated		Not rated	
KRCF:					
Knoco	33	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	21	Not rated		Not rated	
Cottonwood	17	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Construction Materials, Part I--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
LacB:					
La Casa	79	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LnuA:					
Lincoln	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.25
		Thickest layer	0.00	Bottom layer	0.75
LnWA:					
Lincoln	65	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.08
		Thickest layer	0.00	Bottom layer	0.38
Westola	22	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.10
LwtA:					
Lawton	87	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LwtB:					
Lawton	87	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LwtC2:					
Lawton, moderately eroded	77	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
M-W:					
Water, Miscellaneous	100	Not rated		Not rated	
MagB:					
Madge	90	Poor		Poor	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.00
MdgB:					
Madge	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.64
MknB:					
Mcknight	87	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
MktB:					
Mcknight	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Construction Materials, Part I--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
MktC2:					
Mcknight, moderately eroded	75	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
NpsB:					
Nipsum	82	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
NstC:					
Nobscot	85	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.02
		Thickest layer	0.00	Bottom layer	0.72
OakA:					
Oakley	80	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.04
OakB:					
Oakley	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
OzkA:					
Ozark	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
PIT:					
Pits	100	Not rated		Not rated	
QhTC:					
Quanah	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Talpa	20	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
QnRG:					
Quinlan	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	25	Not rated		Not rated	
RakA:					
Roark	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Construction Materials, Part I--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
RKBG:					
Rock outcrop, granite	60	Not rated		Not rated	
Brico	30	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
RKO:					
Rock outcrop, granite	100	Not rated		Not rated	
RuuA:					
Rups	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
RuwA:					
Rups	82	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
SKRG:					
Spikebox	40	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Knoco	23	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	20	Not rated		Not rated	
SpDB:					
Springer	70	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.01
Devol	22	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.11
		Thickest layer	0.00	Bottom layer	0.14
SplA:					
Spur	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
SurA:					
Spur	84	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
SuuA:					
Spur	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Construction Materials, Part I--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
SuwA:					
Spur	87	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
TARD:					
Talpa	46	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Aspermont	37	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Rock outcrop	11	Not rated		Not rated	
TilA:					
Tillman	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
TilB:					
Tillman	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
TipA:					
Tipton	80	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
TlvB:					
Tilvern	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
TpfA:					
Tipton	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.04
TrwB:					
Treadway	87	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
VeKE:					
Vernon	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Knoco	35	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
VerC:					
Vernon	78	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Construction Materials, Part I--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel		Potential source of sand	
		Rating class	Value	Rating class	Value
VeTE:					
Vernon	53	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Talpa, stony	25	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
W:					
Water	100	Not rated		Not rated	
WlwB:					
Willow	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WooB:					
Woodward	87	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WooC:					
Woodward	90	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WoQE:					
Woodward	50	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Quinlan	37	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WslA:					
Westola	90	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.02
WstA:					
Westola	92	Poor		Fair	
		Bottom layer	0.00	Bottom layer	0.01
		Thickest layer	0.00	Thickest layer	0.02
WtlA:					
Westill	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
WtlB:					
Westill	83	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00

Construction Materials, Part II

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AceB:							
Acme	85	Fair		Poor		Fair	
		Organic matter content low	0.50	Low strength	0.00	Sodium content	0.90
		Water erosion	0.99				
ArHF:							
Arnett	45	Fair		Fair		Fair	
		Organic matter content low	0.32	Low strength	0.22	Hard to reclaim (rock fragments)	0.92
Hardeman	40	Fair		Good		Fair	
		Organic matter content low	0.18			Slope	0.99
ArnB:							
Arnett	85	Fair		Good		Poor	
		Organic matter content low	0.08			Rock fragments	0.00
						Hard to reclaim (rock fragments)	0.92
ArnC:							
Arnett	83	Fair		Good		Poor	
		Organic matter content low	0.08			Rock fragments	0.00
AsmB:							
Aspermont	80	Fair		Poor		Good	
		Organic matter content low	0.12	Low strength	0.00		
		Carbonate content	0.68	Depth to bedrock	0.61		
		Water erosion	0.99	Shrink-swell	0.95		
AsmC:							
Aspermont	81	Fair		Poor		Good	
		Organic matter content low	0.12	Low strength	0.00		
		Carbonate content	0.68	Depth to bedrock	0.58		
		Water erosion	0.99	Shrink-swell	0.96		
BekA:							
Beckman	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Sodium content	0.00	Shrink-swell	0.63	Sodium content	0.00
		Salinity	0.28			Salinity	0.00
		Organic matter content low	0.50				
		Water erosion	0.99				

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BfdB:							
Burford	90	Fair		Poor		Fair	
		Organic matter content low	0.05	Low strength	0.00	Too clayey	0.53
		Too clayey	0.92	Depth to bedrock	0.07		
		Water erosion	0.99	Shrink-swell	0.91		
BfdC:							
Burford	92	Fair		Poor		Good	
		Organic matter content low	0.05	Low strength	0.00		
		Water erosion	0.99	Depth to bedrock	0.00		
				Shrink-swell	0.92		
BfSC2:							
Burford, Eroded	50	Fair		Poor		Fair	
		Organic matter content low	0.05	Low strength	0.00	Too clayey	0.53
		Too clayey	0.92	Depth to bedrock	0.00		
		Water erosion	0.99	Shrink-swell	0.97		
Spikebox, Eroded	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00				
		Organic matter content low	0.50				
		Water erosion	0.99				
BfSE:							
Burford	50	Fair		Poor		Good	
		Organic matter content low	0.12	Low strength	0.00		
		Water erosion	0.99	Shrink-swell	0.82		
				Depth to bedrock	0.98		
Spikebox	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00				
		Organic matter content low	0.50				
		Water erosion	0.99				
BriE:							
Brico	85	Fair		Poor		Poor	
		Too clayey	0.08	Cobble content	0.00	Hard to reclaim (rock fragments)	0.00
		Organic matter content low	0.12	Shrink-swell	0.89	Rock fragments	0.00
		Cobble content	0.25			Too clayey	0.06
						Slope	0.84
BukA:							
Bukreek	92	Fair		Poor		Fair	
		Carbonate content	0.32	Low strength	0.00	Too clayey	0.66
		Organic matter content low	0.32				
		Too clayey	0.92				
		Water erosion	0.99				

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CarB:							
Carey	90	Fair		Poor		Good	
		Organic matter content low	0.92	Low strength	0.00		
		Water erosion	0.99				
CawA:							
Carwile	90	Fair		Poor		Poor	
		Organic matter content low	0.12	Wetness depth	0.00	Wetness depth	0.00
		Water erosion	0.99	Low strength	0.22		
				Shrink-swell	0.90		
CVRD:							
Cottonwood	42	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00				
		Organic matter content low	0.88				
		Water erosion	0.99				
Vinson	25	Fair		Poor		Fair	
		Droughty	0.35	Depth to bedrock	0.00	Depth to bedrock	0.35
		Depth to bedrock	0.35	Low strength	0.00		
		Water erosion	0.99				
Rock outcrop	23	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	
DeSD:							
Devol	60	Poor		Good		Fair	
		Wind erosion	0.00			Too sandy	0.78
		Organic matter content low	0.24				
		Too sandy	0.78				
Springer	27	Poor		Good		Good	
		Wind erosion	0.00				
		Organic matter content low	0.18				
		Too acid	0.92				
DkuA:							
Duke	80	Poor		Poor		Poor	
		Sodium content	0.00	Low strength	0.00	Sodium content	0.00
		Too clayey	0.00	Shrink-swell	0.52	Too clayey	0.00
		Organic matter content low	0.50			Salinity	0.12
		Water erosion	0.99				
DodA:							
Dodson	92	Fair		Poor		Fair	
		Too clayey	0.08	Low strength	0.00	Too clayey	0.07
		Too acid	0.99	Shrink-swell	0.61		
		Water erosion	0.99				

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
DodB:							
Dodson	87	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.88	Shrink-swell	0.58		
		Too acid	0.99				
		Water erosion	0.99				
EatA:							
Eastall	94	Poor		Poor		Poor	
		Too clayey	0.00	Wetness depth	0.00	Too clayey	0.00
		Organic matter content low	0.60	Low strength	0.00	Wetness depth	0.00
		Water erosion	0.99	Shrink-swell	0.00		
EdsB:							
Eda	87	Poor		Good		Fair	
		Wind erosion	0.00			Too sandy	0.38
		Organic matter content low	0.12				
		Too sandy	0.38				
		Droughty	0.73				
EdsD:							
Eda	87	Poor		Good		Fair	
		Wind erosion	0.00			Too sandy	0.38
		Organic matter content low	0.12				
		Too sandy	0.38				
		Droughty	0.77				
EdsF:							
Eda	90	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00			Slope	0.37
		Organic matter content low	0.12				
		Droughty	0.64				
FraB:							
Frankirk	90	Fair		Poor		Fair	
		Too clayey	0.02	Low strength	0.00	Too clayey	0.01
		Organic matter content low	0.88	Shrink-swell	0.94		
		Water erosion	0.99				
FryB:							
Farry	92	Fair		Poor		Good	
		Organic matter content low	0.88	Low strength	0.00		
		Water erosion	0.99	Shrink-swell	0.99		
GdfB:							
Grandfield	80	Fair		Good		Good	
		Organic matter content low	0.50				

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GlGB:							
Grandmore	65	Poor		Good		Good	
		Wind erosion	0.00				
		Organic matter content low	0.82				
Grandfield	25	Poor		Good		Good	
		Wind erosion	0.00				
		Organic matter content low	0.50				
GlsB:							
Grandfield	87	Poor		Good		Good	
		Wind erosion	0.00				
		Organic matter content low	0.12				
GlsD:							
Grandfield	87	Poor		Good		Good	
		Wind erosion	0.00				
		Organic matter content low	0.50				
GmuA:							
Gracemont, saline	90	Fair		Poor		Poor	
		Organic matter content low	0.12	Wetness depth	0.00	Salinity	0.00
		Salinity	0.88			Wetness depth	0.00
GmwA:							
Gracemont, saline	89	Fair		Poor		Poor	
		Organic matter content low	0.12	Wetness depth	0.00	Salinity	0.00
		Salinity	0.88			Wetness depth	0.00
GrrA:							
Gracemore, saline	90	Poor		Fair		Poor	
		Too sandy	0.00	Wetness depth	0.09	Too sandy	0.00
		Organic matter content low	0.02			Wetness depth	0.09
		Salinity	0.88			Salinity	0.50
		Droughty	0.98				
GtbB:							
Gotebo	82	Fair		Poor		Fair	
		Organic matter content low	0.05	Depth to bedrock	0.00	Depth to bedrock	0.21
		Depth to bedrock	0.21				
		Droughty	0.86				
		Water erosion	0.99				
HdmB:							
Hardeman	90	Fair		Good		Good	
		Organic matter content low	0.18				

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HdmC:							
Hardeman	95	Fair		Good		Good	
		Organic matter content low	0.18				
HfkA:							
Hayfork	83	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Water erosion	0.99	Shrink-swell	0.47		
HksA:							
Headrick	90	Poor		Poor		Fair	
		Wind erosion	0.00	Low strength	0.00	Wetness depth	0.95
		Organic matter content low	0.50	Wetness depth	0.95		
				Shrink-swell	0.99		
HolA:							
Hollister	91	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.50	Shrink-swell	0.12		
		Water erosion	0.90				
HrAC:							
Harmon	50	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Carbonate content	0.00
		Carbonate content	0.00			Rock fragments	0.00
		Depth to bedrock	0.00			Depth to bedrock	0.00
		Organic matter content low	0.18				
Aspermont	44	Fair		Poor		Good	
		Organic matter content low	0.12	Low strength	0.00		
		Carbonate content	0.68	Depth to bedrock	0.58		
		Water erosion	0.99	Shrink-swell	0.96		
HSAF:							
Hardeman	50	Fair		Good		Fair	
		Organic matter content low	0.18			Slope	0.99
Southside	27	Fair		Good		Poor	
		Organic matter content low	0.02			Rock fragments	0.00
		Droughty	0.34			Too sandy	0.42
		Too sandy	0.42			Slope	0.84
Arnett	20	Fair		Good		Good	
		Organic matter content low	0.02				

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
JesC:							
Jester	87	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Organic matter content low	0.12				
		Droughty	0.32				
KcRG:							
Knoco, bouldery	45	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.00	Low strength	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Slope	0.50	Slope	0.00
		Organic matter content low	0.05				
Rock outcrop	20	Not rated		Not rated		Not rated	
KoBE:							
Knoco	45	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Depth to bedrock	0.00	Low strength	0.00	Depth to bedrock	0.00
		Droughty	0.00				
		Organic matter content low	0.05				
Badland	30	Not rated		Not rated		Not rated	
KRCF:							
Knoco	33	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Droughty	0.00	Low strength	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00			Slope	0.84
		Organic matter content low	0.05				
Rock outcrop	21	Not rated		Not rated		Not rated	
Cottonwood	17	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Low strength	0.78	Slope	0.84
		Organic matter content low	0.88				
		Water erosion	0.99				
LacB:							
La Casa	79	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.83		
		Carbonate content	0.68				
		Water erosion	0.99				

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LnuA:							
Lincoln	90	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Organic matter content low	0.12				
		Droughty	0.38				
LnWA:							
Lincoln	65	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Organic matter content low	0.12				
		Droughty	0.33				
Westola	22	Fair		Good		Good	
		Organic matter content low	0.12				
LwtA:							
Lawton	87	Fair		Poor		Fair	
		Too clayey	0.12	Low strength	0.00	Too clayey	0.11
		Organic matter content low	0.50	Shrink-swell	0.74	Hard to reclaim (rock fragments)	0.97
LwtB:							
Lawton	87	Fair		Poor		Fair	
		Too clayey	0.50	Low strength	0.00	Hard to reclaim (rock fragments)	0.32
		Organic matter content low	0.88	Shrink-swell	0.62	Too clayey	0.44
LwtC2:							
Lawton, Eroded	77	Fair		Poor		Fair	
		Too clayey	0.50	Low strength	0.00	Too clayey	0.36
		Organic matter content low	0.88	Shrink-swell	0.82	Hard to reclaim (rock fragments)	0.92
M-W:							
Water, Miscellaneous	100	Not rated		Not rated		Not rated	
MagB:							
Madge	90	Fair		Good		Good	
		Organic matter content low	0.50				
		Water erosion	0.99				
MdgB:							
Madge	90	Fair		Good		Good	
		Water erosion	0.99				
MknB:							
Mcknight	87	Fair		Poor		Good	
		Organic matter content low	0.68	Low strength	0.00		
		Water erosion	0.99	Depth to bedrock	0.82		
				Shrink-swell	0.95		

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MktB:							
Mcknight	85	Poor		Poor		Good	
		Wind erosion	0.00	Low strength	0.00		
		Organic matter content low	0.05	Depth to bedrock	0.77		
		Too acid	0.92	Shrink-swell	0.91		
		Water erosion	0.99				
MktC2:							
Mcknight, Eroded	75	Poor		Poor		Good	
		Wind erosion	0.00	Low strength	0.00		
		Organic matter content low	0.68	Depth to bedrock	0.68		
		Water erosion	0.99	Shrink-swell	0.96		
NpsB:							
Nipsum	82	Fair		Poor		Fair	
		Too clayey	0.08	Low strength	0.00	Too clayey	0.08
		Organic matter content low	0.50	Shrink-swell	0.77		
		Water erosion	0.99				
NstC:							
Nobscot	85	Poor		Good		Poor	
		Too sandy	0.00			Too sandy	0.00
		Wind erosion	0.00				
		Organic matter content low	0.32				
		Too acid	0.92				
OakA:							
Oakley	80	Poor		Good		Fair	
		Too alkaline	0.00			Carbonate content	0.94
		Organic matter content low	0.18				
		Carbonate content	0.68				
		Water erosion	0.99				
OakB:							
Oakley	85	Poor		Good		Fair	
		Too alkaline	0.00			Carbonate content	0.86
		Organic matter content low	0.18				
		Carbonate content	0.68				
		Water erosion	0.99				
OzkA:							
Ozark	85	Fair		Poor		Fair	
		Too clayey	0.50	Low strength	0.00	Too clayey	0.33
		Organic matter content low	0.50	Shrink-swell	0.99		
PIT:							
Pits	100	Not rated		Not rated		Not rated	

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
QhTC:							
Quanah	50	Fair		Poor		Good	
		Organic matter content low	0.18	Low strength	0.00		
		Carbonate content	0.32				
		Water erosion	0.99				
Talpa	20	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00			Carbonate content	0.68
		Carbonate content	0.68				
QnRG:							
Quinlan	50	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Droughty	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.05				
		Water erosion	0.99				
Rock outcrop	25	Not rated		Not rated		Not rated	
RakA:							
Roark	85	Fair		Fair		Fair	
		Too clayey	0.08	Shrink-swell	0.92	Too clayey	0.07
		Organic matter content low	0.50				
		Water erosion	0.90				
RKBG:							
Rock outcrop, granite	60	Not rated		Not rated		Not rated	
Brico	30	Poor		Poor		Poor	
		Too clayey	0.00	Cobble content	0.00	Hard to reclaim (rock fragments)	0.00
		Organic matter content low	0.12	Shrink-swell	0.87	Rock fragments	0.00
		Cobble content	0.19	Slope	0.98	Too clayey	0.00
						Slope	0.00
RKO:							
Rock outcrop, granite	100	Not rated		Not rated		Not rated	
RuuA:							
Rups	90	Poor		Poor		Poor	
		Salinity	0.00	Low strength	0.00	Salinity	0.00
		Organic matter content low	0.50	Wetness depth	0.29	Wetness depth	0.29
		Sodium content	0.90	Shrink-swell	0.87	Too clayey	0.60
		Too clayey	0.92			Sodium content	0.90

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RuwA:							
Rups	82	Poor		Poor		Fair	
		Salinity	0.00	Low strength	0.00	Salinity	0.50
		Organic matter content low	0.50	Shrink-swell	0.87	Too clayey	0.87
		Sodium content	0.90	Wetness depth	0.89	Wetness depth	0.89
		Too clayey	0.92				
SKRG:							
Spikebox	40	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.50				
		Water erosion	0.99				
Knoco	23	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Depth to bedrock	0.00	Low strength	0.00	Depth to bedrock	0.00
		Droughty	0.00	Slope	0.00	Slope	0.00
		Organic matter content low	0.05				
Rock outcrop	20	Not rated		Not rated		Not rated	
SpDB:							
Springer	70	Poor		Good		Good	
		Wind erosion	0.00				
		Organic matter content low	0.18				
		Too acid	0.92				
Devol	22	Poor		Good		Fair	
		Wind erosion	0.00			Too sandy	0.78
		Organic matter content low	0.02				
		Too sandy	0.78				
		Too acid	0.92				
SplA:							
Spur	90	Fair		Good		Good	
		Organic matter content low	0.88				
		Water erosion	0.99				
SurA:							
Spur	84	Fair		Fair		Good	
		Organic matter content low	0.88	Low strength	0.22		
SuuA:							
Spur	90	Fair		Poor		Good	
		Organic matter content low	0.88	Low strength	0.00		
		Water erosion	0.99				

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SuwA:							
Spur	87	Fair		Fair		Good	
		Organic matter content low	0.88	Low strength	0.22		
TARD:							
Talpa	46	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Low strength	0.78	Carbonate content	0.68
		Carbonate content	0.68				
Aspermont	37	Fair		Poor		Fair	
		Organic matter content low	0.12	Low strength	0.00	Carbonate content	0.91
		Carbonate content	0.68	Depth to bedrock	0.04		
		Water erosion	0.99	Shrink-swell	0.96		
Rock outcrop	11	Not rated		Not rated		Not rated	
TilA:							
Tillman	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.12	Sodium content	0.90
		Water erosion	0.90				
		Sodium content	0.90				
TilB:							
Tillman	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.12		
		Water erosion	0.90				
TipA:							
Tipton	80	Fair		Good		Good	
		Organic matter content low	0.50				
		Water erosion	0.99				
TlvB:							
Tilvern	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.12	Shrink-swell	0.29		
		Water erosion	0.90	Depth to bedrock	0.68		
TpfA:							
Tipton	90	Fair		Poor		Good	
		Water erosion	0.99	Low strength	0.00		
TrwB:							
Treadway	87	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.82	Sodium content	0.00
		Salinity	0.50			Salinity	0.00
		Water erosion	0.90				

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
VeKE:							
Vernon	50	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Organic matter content low	0.05	Low strength	0.00	Depth to bedrock	0.21
		Depth to bedrock	0.21	Shrink-swell	0.93		
		Droughty	0.59				
		Water erosion	0.90				
Knoco	35	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Depth to bedrock	0.00	Low strength	0.00	Depth to bedrock	0.00
		Droughty	0.00				
		Organic matter content low	0.05				
VerC:							
Vernon	78	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Organic matter content low	0.05	Low strength	0.00	Depth to bedrock	0.90
		Water erosion	0.90	Shrink-swell	0.76		
		Depth to bedrock	0.90				
		Droughty	0.97				
VeTE:							
Vernon	53	Poor		Poor		Poor	
		Too clayey	0.00	Depth to bedrock	0.00	Too clayey	0.00
		Organic matter content low	0.05	Low strength	0.00	Depth to bedrock	0.99
		Water erosion	0.90	Shrink-swell	0.69		
		Droughty	0.91				
		Depth to bedrock	0.99				
Talpa, stony	25	Poor		Poor		Poor	
		Droughty	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Low strength	0.78	Carbonate content	0.68
		Carbonate content	0.68				
W:							
Water	100	Not rated		Not rated		Not rated	
WlwB:							
Willow	85	Fair		Fair		Fair	
		Carbonate content	0.68	Depth to bedrock	0.87	Too clayey	0.62
		Too clayey	0.82				
		Organic matter content low	0.98				
		Water erosion	0.99				
WooB:							
Woodward	87	Fair		Poor		Fair	
		Organic matter content low	0.05	Depth to bedrock	0.00	Depth to bedrock	0.99
		Depth to bedrock	0.99				
		Water erosion	0.99				

Construction Materials, Part II--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material		Potential source of roadfill		Potential source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
WooC:							
Woodward	90	Fair		Poor		Fair	
		Organic matter content low	0.05	Depth to bedrock	0.00	Depth to bedrock	0.35
		Depth to bedrock	0.35				
		Droughty	0.94				
		Water erosion	0.99				
WoQE:							
Woodward	50	Fair		Poor		Fair	
		Organic matter content low	0.05	Depth to bedrock	0.00	Depth to bedrock	0.21
		Depth to bedrock	0.21			Slope	0.96
		Droughty	0.63				
		Water erosion	0.99				
Quinlan	37	Poor		Poor		Poor	
		Depth to bedrock	0.00	Depth to bedrock	0.00	Depth to bedrock	0.00
		Droughty	0.00			Slope	0.96
		Organic matter content low	0.05				
		Water erosion	0.99				
WslA:							
Westola	90	Fair		Good		Good	
		Organic matter content low	0.12				
WstA:							
Westola	92	Fair		Good		Good	
		Organic matter content low	0.12				
WtlA:							
Westill	85	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.12		
		Water erosion	0.90				
WtlB:							
Westill	83	Poor		Poor		Poor	
		Too clayey	0.00	Low strength	0.00	Too clayey	0.00
		Organic matter content low	0.18	Shrink-swell	0.12		
		Water erosion	0.90				

Water Management

The table, “Water Management,” provides information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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

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

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. depth to bedrock and the content of large stones affect the ease of excavation.

Water Management

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AceB:							
Acme	85	Very limited		Very limited		Somewhat limited	
		Gypsum content	1.00	Piping	1.00	Depth to saturated zone	0.98
		Seepage	0.72			Slow refill	0.28
						Cutbanks cave	0.10
ArHF:							
Arnett	45	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.02	Depth to water	1.00
Hardeman	40	Very limited		Not limited		Very limited	
		Seepage	1.00			Depth to water	1.00
ArnB:							
Arnett	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.02	Depth to water	1.00
ArnC:							
Arnett	83	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.02	Depth to water	1.00
AsmB:							
Aspermont	80	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.54	Piping	0.07	Depth to water	1.00
		Depth to bedrock	0.01				
AsmC:							
Aspermont	81	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.54	Piping	0.09	Depth to water	1.00
		Depth to bedrock	0.01				
BekA:							
Beckman	85	Not limited		Very limited		Very limited	
				Piping	1.00	Slow refill	1.00
				Salinity	0.72	Depth to saturated zone	0.90
						Salinity and saturated zone	0.88
						Cutbanks cave	0.10
BfdB:							
Burford	90	Somewhat limited		Not limited		Very limited	
		Seepage	0.12			Depth to water	1.00
		Depth to bedrock	0.01				
BfdC:							
Burford	92	Somewhat limited		Not limited		Very limited	
		Seepage	0.12			Depth to water	1.00
		Depth to bedrock	0.01				

Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BfSC2:							
Burford, moderately eroded	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.12	Piping	0.01	Depth to water	1.00
		Depth to bedrock	0.01				
Spikebox, moderately eroded	40	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.66	Thin layer	1.00	Depth to water	1.00
		Seepage	0.04	Piping	1.00		
BfSE:							
Burford	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.12	Piping	0.02	Depth to water	1.00
		Depth to bedrock	0.01				
Spikebox	40	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.69	Thin layer	1.00	Depth to water	1.00
		Seepage	0.04	Piping	1.00		
BriE:							
Brico	85	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.04	Large stones content	0.28	Depth to water	1.00
BukA:							
Bukreek	92	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.81	Depth to water	1.00
CarB:							
Carey	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	0.99	Depth to water	1.00
CawA:							
Carwile	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Depth to water	1.00
				Ponding	1.00		
				Piping	1.00		
				Seepage	0.01		
CVRD:							
Cottonwood	42	Very limited		Very limited		Very limited	
		Gypsum content	1.00	Piping	1.00	Depth to water	1.00
		Depth to bedrock	1.00	Thin layer	1.00		
Vinson	25	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.91	Piping	0.99	Depth to water	1.00
		Seepage	0.72	Thin layer	0.91		
Rock outcrop	23	Not rated		Not rated		Not rated	
DAM:							
Dam	100	Not rated		Not rated		Not rated	
DeSD:							
Devol	60	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.10	Depth to water	1.00

Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Springer	27	Very limited Seepage	1.00	Somewhat limited Seepage	0.10	Very limited Depth to water	1.00
DkuA:							
Duke	80	Somewhat limited Seepage	0.12	Very limited Piping	1.00	Very limited Depth to water	1.00
DodA:							
Dodson	92	Somewhat limited Seepage	0.72	Somewhat limited Piping Seepage	0.15 0.03	Very limited Depth to water	1.00
DodB:							
Dodson	87	Somewhat limited Seepage	0.54	Somewhat limited Piping	0.08	Very limited Depth to water	1.00
EatA:							
Eastall	94	Not limited		Very limited Depth to saturated zone Hard to pack Ponding	1.00 1.00 1.00	Very limited Depth to water	1.00
EdsB:							
Eda	87	Very limited Seepage	1.00	Somewhat limited Seepage	0.26	Very limited Depth to water	1.00
EdsD:							
Eda	87	Very limited Seepage	1.00	Somewhat limited Seepage	0.26	Very limited Depth to water	1.00
EdsF:							
Eda	90	Very limited Seepage Slope	1.00 0.01	Somewhat limited Seepage	0.26	Very limited Depth to water	1.00
FraB:							
Frankirk	90	Somewhat limited Seepage	0.72	Somewhat limited Piping	0.01	Very limited Depth to water	1.00
FryB:							
Farry	92	Very limited Seepage	1.00	Somewhat limited Piping	0.92	Very limited Depth to water	1.00
GdfB:							
Grandfield	80	Very limited Seepage	1.00	Not limited		Very limited Depth to water	1.00
GlGB:							
Grandmore	65	Somewhat limited Seepage	0.72	Very limited Piping Depth to saturated zone	1.00 0.01	Very limited Depth to water	1.00
Grandfield	25	Very limited Seepage	1.00	Somewhat limited Seepage	0.10	Very limited Depth to water	1.00

Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
GlsB:							
Grandfield	87	Very limited Seepage	1.00	Somewhat limited Seepage	0.07	Very limited Depth to water	1.00
GlsD:							
Grandfield	87	Very limited Seepage	1.00	Somewhat limited Seepage	0.07	Very limited Depth to water	1.00
GmuA:							
Gracemont, saline	90	Very limited Seepage	1.00	Very limited Depth to saturated zone Salinity Seepage	1.00 0.12 0.03	Somewhat limited Salinity and saturated zone Cutbanks cave	0.50 0.10
GmwA:							
Gracemont, saline	89	Very limited Seepage	1.00	Very limited Depth to saturated zone Salinity Seepage	1.00 0.12 0.10	Very limited Cutbanks cave Salinity and saturated zone	1.00 0.50
GrrA:							
Gracemore, saline	90	Very limited Seepage	1.00	Very limited Depth to saturated zone Seepage Salinity	1.00 0.75 0.12	Very limited Cutbanks cave Salinity and saturated zone	1.00 0.22
GtbB:							
Gotebo	82	Somewhat limited Seepage Depth to bedrock	0.72 0.23	Very limited Piping	1.00	Very limited Depth to water	1.00
HdmB:							
Hardeman	90	Very limited Seepage	1.00	Not limited		Very limited Depth to water	1.00
HdmC:							
Hardeman	95	Very limited Seepage	1.00	Not limited		Very limited Depth to water	1.00
HfkA:							
Hayfork	83	Somewhat limited Seepage	0.01	Not limited		Very limited Depth to water	1.00
HksA:							
Headrick	90	Somewhat limited Seepage	0.72	Somewhat limited Depth to saturated zone Piping	0.75 0.29	Very limited Depth to water	1.00
HolA:							
Hollister	91	Not limited		Somewhat limited Hard to pack	0.23	Very limited Depth to water	1.00

Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HrAC:							
Harmon	50	Somewhat limited Depth to bedrock	 0.61	Very limited Thin layer	 1.00	Very limited Depth to water	 1.00
Aspermont	44	Somewhat limited Seepage Depth to bedrock	 0.54 0.01	Somewhat limited Piping	 0.09	Very limited Depth to water	 1.00
HSAF:							
Hardeman	50	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.05	Very limited Depth to water	 1.00
Southside	27	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.79	Very limited Depth to water	 1.00
Arnett	20	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.05	Very limited Depth to water	 1.00
JesC:							
Jester	87	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.72	Very limited Depth to water	 1.00
KcRG:							
Knoco, bouldery	45	Somewhat limited Depth to bedrock Slope	 0.87 0.12	Somewhat limited Piping	 0.01	Very limited Depth to water	 1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
KoBE:							
Knoco	45	Somewhat limited Depth to bedrock	 0.61	Not limited		Very limited Depth to water	 1.00
Badland	30	Not rated		Not rated		Not rated	
KRCF:							
Knoco	33	Somewhat limited Depth to bedrock	 0.78	Somewhat limited Piping	 0.01	Very limited Depth to water	 1.00
Rock outcrop	21	Not rated		Not rated		Not rated	
Cottonwood	17	Very limited Depth to bedrock	 1.00	Very limited Thin layer Piping	 1.00 0.99	Very limited Depth to water	 1.00
LacB:							
La Casa	79	Somewhat limited Seepage	 0.01	Not limited		Very limited Depth to water	 1.00
LnuA:							
Lincoln	90	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.75	Very limited Depth to water	 1.00
LnWA:							
Lincoln	65	Very limited Seepage	 1.00	Somewhat limited Seepage	 0.38	Very limited Depth to water	 1.00

Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Westola	22	Very limited Seepage	1.00	Very limited Piping Seepage	1.00 0.10	Very limited Depth to water	1.00
LwtA: Lawton	87	Somewhat limited Seepage	0.12	Somewhat limited Piping	0.05	Very limited Depth to water	1.00
LwtB: Lawton	87	Somewhat limited Seepage	0.12	Somewhat limited Piping	0.10	Very limited Depth to water	1.00
LwtC2: Lawton, moderately eroded	77	Somewhat limited Seepage	0.72	Somewhat limited Piping	0.61	Very limited Depth to water	1.00
M-W: Water, Miscellaneous	100	Not rated		Not rated		Not rated	
MagB: Madge	90	Very limited Seepage	1.00	Very limited Piping Seepage	1.00 0.01	Very limited Depth to water	1.00
MdgB: Madge	90	Very limited Seepage	1.00	Somewhat limited Seepage	0.64	Very limited Depth to water	1.00
MknB: Mcknight	87	Somewhat limited Seepage Depth to bedrock	0.72 0.01	Somewhat limited Piping	0.05	Very limited Depth to water	1.00
MktB: Mcknight	85	Somewhat limited Seepage Depth to bedrock	0.72 0.01	Somewhat limited Piping	0.08	Very limited Depth to water	1.00
MktC2: Mcknight, moderately eroded	75	Somewhat limited Seepage Depth to bedrock	0.72 0.01	Somewhat limited Piping	0.07	Very limited Depth to water	1.00
NpsB: Nipsum	82	Somewhat limited Seepage	0.01	Somewhat limited Piping	0.13	Very limited Depth to water	1.00
NstC: Nobscot	85	Very limited Seepage	1.00	Somewhat limited Seepage	0.72	Very limited Depth to water	1.00
OakA: Oakley	80	Somewhat limited Seepage	0.72	Very limited Piping Seepage	1.00 0.04	Very limited Depth to water	1.00

Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
OakB:							
Oakley	85	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Piping	1.00	Depth to water	1.00
OzkA:							
Ozark	85	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
PIT:							
Pits	100	Not rated		Not rated		Not rated	
QhTC:							
Quanah	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.50	Depth to water	1.00
Talpa	20	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
				Piping	0.08		
QnRG:							
Quinlan	50	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.80	Piping	1.00	Depth to water	1.00
		Slope	0.64				
		Seepage	0.04				
Rock outcrop	25	Not rated		Not rated		Not rated	
RakA:							
Roark	85	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.43	Depth to water	1.00
RKBG:							
Rock outcrop, granite	60	Not rated		Not rated		Not rated	
Brico	30	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.04	Large stones content	0.39	Depth to water	1.00
		Seepage	0.04				
RKO:							
Rock outcrop, granite	100	Not rated		Not rated		Not rated	
RuuA:							
Rups	90	Somewhat limited		Very limited		Very limited	
		Seepage	0.04	Depth to saturated zone	1.00	Salinity and saturated zone	1.00
				Salinity	1.00	Slow refill	0.96
				Piping	0.42	Cutbanks cave	0.10
RuwA:							
Rups	82	Somewhat limited		Very limited		Very limited	
		Seepage	0.04	Salinity	1.00	Salinity and saturated zone	1.00
				Depth to saturated zone	0.86	Slow refill	0.96
				Piping	0.42	Cutbanks cave	0.10
						Depth to saturated zone	0.06

Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SKRG:							
Spikebox	40	Somewhat limited		Very limited		Very limited	
		Depth to bedrock	0.78	Thin layer	1.00	Depth to water	1.00
		Slope	0.28	Piping	1.00		
		Seepage	0.04				
Knoco	23	Somewhat limited		Somewhat limited		Very limited	
		Depth to bedrock	0.80	Piping	0.01	Depth to water	1.00
		Slope	0.28				
Rock outcrop	20	Not rated		Not rated		Not rated	
SpDB:							
Springer	70	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.01	Depth to water	1.00
Devol	22	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.14	Depth to water	1.00
SplA:							
Spur	90	Very limited		Very limited		Very limited	
		Seepage	1.00	Piping	1.00	Depth to water	1.00
SurA:							
Spur	84	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.87	Depth to water	1.00
SuuA:							
Spur	90	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.72	Depth to water	1.00
SuwA:							
Spur	87	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.72	Piping	0.91	Depth to water	1.00
TARD:							
Talpa	46	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Thin layer	1.00	Depth to water	1.00
				Piping	0.99		
Aspermont	37	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.54	Piping	0.03	Depth to water	1.00
		Depth to bedrock	0.01				
Rock outcrop	11	Not rated		Not rated		Not rated	
TilA:							
Tillman	85	Not limited		Somewhat limited		Very limited	
				Piping	0.40	Depth to water	1.00
TilB:							
Tillman	85	Not limited		Somewhat limited		Very limited	
				Piping	0.40	Depth to water	1.00
TipA:							
Tipton	80	Somewhat limited		Very limited		Very limited	
		Seepage	0.72	Piping	1.00	Depth to water	1.00

Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TlvB:							
Tilvern	85	Somewhat limited Depth to bedrock	 0.01	Somewhat limited Piping	 0.22	Very limited Depth to water	 1.00
TpfA:							
Tipton	90	Very limited Seepage	 1.00	Very limited Piping Seepage	 1.00 0.04	Very limited Depth to water	 1.00
TrwB:							
Treadway	87	Not limited		Very limited Piping Salinity	 1.00 0.50	Very limited Depth to water	 1.00
VeKE:							
Vernon	50	Somewhat limited Depth to bedrock	 0.23	Not limited		Very limited Depth to water	 1.00
Knoco	35	Somewhat limited Depth to bedrock	 0.61	Somewhat limited Piping	 0.01	Very limited Depth to water	 1.00
VerC:							
Vernon	78	Somewhat limited Depth to bedrock	 0.04	Not limited		Very limited Depth to water	 1.00
VeTE:							
Vernon	53	Somewhat limited Depth to bedrock	 0.02	Not limited		Very limited Depth to water	 1.00
Talpa, stony	25	Very limited Depth to bedrock	 1.00	Very limited Thin layer Piping	 1.00 0.99	Very limited Depth to water	 1.00
W:							
Water	100	Not rated		Not rated		Not rated	
WlwB:							
Willow	85	Very limited Seepage Depth to bedrock	 1.00 0.01	Very limited Piping	 1.00	Very limited Depth to water	 1.00
WooB:							
Woodward	87	Somewhat limited Seepage Depth to bedrock	 0.72 0.02	Very limited Piping	 1.00	Very limited Depth to water	 1.00
WooC:							
Woodward	90	Somewhat limited Seepage Depth to bedrock	 0.72 0.17	Very limited Piping	 1.00	Very limited Depth to water	 1.00
WoQE:							
Woodward	50	Somewhat limited Seepage Depth to bedrock	 0.72 0.23	Very limited Piping	 1.00	Very limited Depth to water	 1.00

Water Management--Continued

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Quinlan	37	Somewhat limited Depth to bedrock Seepage	 0.78 0.04	Very limited Piping	 1.00	Very limited Depth to water	 1.00
WslA:							
Westola	90	Very limited Seepage	 1.00	Very limited Piping Seepage	 1.00 0.02	Very limited Depth to water	 1.00
WstA:							
Westola	92	Very limited Seepage	 1.00	Very limited Piping Seepage	 1.00 0.02	Very limited Depth to water	 1.00
WtlA:							
Westill	85	Not limited		Not limited		Very limited Depth to water	 1.00
WtlB:							
Westill	83	Not limited		Not limited		Very limited Depth to water	 1.00

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 particle-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

The table, “Engineering Index Properties,” shows estimates of the engineering classifications 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 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 across. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the 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 across and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches across 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 across and 3 to 10 inches across 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 across based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

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

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is generally omitted in the table.

Engineering Index Properties

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
AceB:												
Acme	0-12	Silt loam	CL	A-4, A-6	0	0	98-100	95-100	85-100	60-95	30-37	8-13
	12-24	Silty clay loam, silt loam, loam, clay loam	CL	A-4, A-6	0	0	98-100	95-100	85-100	60-95	30-42	8-19
	24-44	Gypsiferous loam, gypsiferous clay loam, gypsiferous silt loam, gypsiferous silty clay loam	CL, ML, CL-ML	A-6, A-4	0	0	98-100	95-100	85-100	60-95	22-42	2-19
	44-55	Gypsiferous loam, gypsiferous clay loam, gypsiferous silt loam, gypsiferous silty clay loam	CL-ML, CL, ML	A-4, A-6	0	0	98-100	95-100	85-100	60-95	22-42	2-19
	55-80	Gypsiferous loam, gypsiferous clay loam, gypsiferous silt loam, gypsiferous silty clay loam	ML, CL, CL-ML	A-4, A-6	0	0	95-100	90-100	80-100	60-95	22-42	2-19
Arnett	0-15	Sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	85-98	75-92	50-80	25-60	14-26	NP-7
	15-40	Sandy clay loam, clay loam	SC, CL	A-4, A-6	0	0	85-98	75-92	60-85	30-80	25-40	7-18
	40-58	Gravelly sandy clay loam, gravelly clay loam	CL, SC	A-4, A-6, A-2-6, A-2-4	0	0-5	65-95	55-85	40-75	20-60	25-40	7-18
	58-80	Gravelly coarse sandy loam, gravelly sandy clay loam, gravelly clay loam	CL, ML, SC, SM, CL-ML	A-4, A-6, A-2-6, A-2-4	0	0-5	65-95	55-85	40-75	20-60	14-40	NP-18
ArHF:												
Hardeman	0-7	Fine sandy loam	ML, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	93-100	85-100	75-96	30-60	14-25	NP-7
	7-40	Fine sandy loam, very fine sandy loam, loam	SC-SM, CL-ML, ML, SM	A-2-4, A-4	0	0	93-100	85-100	75-90	30-60	14-29	NP-7
	40-60	Fine sandy loam, very fine sandy loam, loam	SM, CL-ML, ML, SC-SM	A-2-4, A-4	0	0	93-100	85-100	75-90	30-60	14-29	NP-7
	60-80	Fine sandy loam, very fine sandy loam, loam, loamy fine sand	SC-SM, SM, CL-ML, ML	A-2-4, A-4	0	0	93-100	85-100	75-90	25-60	0-26	NP-7

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	
ArnB:												
Arnett	0-4	Sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	76-100	75-92	72-92	28-55	14-25	NP-4
	4-21	Sandy clay loam, clay loam	CL, SC	A-4, A-6	0	0	78-100	77-92	73-92	29-83	25-40	7-18
	21-50	Gravelly sandy clay loam, gravelly clay loam	CL, SC	A-4, A-6, A-2-6, A-2-4	0	0-5	49-86	47-82	42-82	17-69	25-40	7-18
	50-67	Gravelly clay loam, gravelly sandy clay loam, gravelly coarse sandy loam	CL-ML, CL, SC-SM, SM, SC, ML	A-4, A-6, A-2-6, A-2-4	0	0-5	49-87	46-82	42-82	17-69	14-40	NP-18
ArnC:												
Arnett	0-7	Sandy loam	SM, CL-ML, ML, SC-SM	A-4	0	0	85-98	75-92	50-80	25-60	14-26	NP-7
	7-17	Clay loam, sandy clay loam	CL, SC	A-4, A-6	0	0	85-98	75-92	60-85	30-80	25-40	7-18
	17-31	Gravelly sandy clay loam, gravelly clay loam	CL, SC	A-4, A-6, A-2-6, A-2-4	0	0-5	65-95	55-85	40-75	20-60	25-40	7-18
	31-44	Gravelly coarse sandy loam, gravelly sandy clay loam, gravelly clay loam	SC, CL-ML, SM, ML, CL, SC-SM	A-4, A-6, A-2-6, A-2-4	0	0-5	65-95	55-85	40-75	20-60	14-40	NP-18
	44-57	Stratified loamy coarse sand to gravelly clay loam	SW-SM, CL, ML, SC, SM, CL-ML	A-4, A-2-4, A-6, A-2-6	0	0-5	60-95	50-85	30-85	8-70	0-40	NP-18
	57-80	Stratified loamy coarse sand to clay loam	ML, SC, SM, CL-ML, CL	A-4, A-2-4, A-6, A-2-6	0	0-2	89-100	79-100	57-100	28-64	0-40	NP-18
AsmB:												
Aspermont	0-6	Silt loam	CL	A-4, A-6	0	0	98-100	90-100	80-100	65-90	30-37	8-14
	6-34	Silty clay loam, clay loam, silt loam, loam	CL	A-6, A-7	0	0	98-100	90-100	85-100	65-98	30-43	8-20
	34-43	Silty clay loam, clay loam, silt loam, loam	CL	A-6, A-7	0	0	98-100	90-100	85-100	65-95	30-43	8-20
	43-50	Silty clay loam, clay loam, silt loam, loam	CL	A-6, A-7	0	0	95-100	85-100	85-100	65-95	30-50	8-26
	50-80	Clay, silty clay loam, silty clay, clay loam	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-100	65-100	30-60	12-38
AsmC:												
Aspermont	0-8	Silt loam	CL	A-4, A-6	0	0	98-100	90-100	80-100	65-90	30-37	8-14
	8-35	Silty clay loam, clay loam, silt loam, loam	CL	A-6, A-7	0	0	98-100	90-100	85-100	65-98	30-43	8-20
	35-50	Silty clay loam, silt loam, clay loam, loam	CL	A-6, A-7	0	0	98-100	90-100	85-100	65-95	30-43	8-20
	50-80	Clay loam, clay, silty clay, silty clay loam	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	65-100	30-60	12-38

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	
BekA:												
Beckman	0-4	Silty clay	CH, CL	A-7	0	0	95-100	93-100	93-100	90-95	45-60	19-34
	4-14	Clay, silty clay, silty clay loam, clay loam	CL, CH	A-7, A-6	0	0	95-100	93-100	93-100	90-95	37-60	15-34
	14-41	Clay, silty clay, silty clay loam, clay loam	CL, CH	A-7, A-6	0	0	95-100	93-100	93-100	90-95	35-60	14-34
	41-80	Clay, silty clay, silty clay loam, clay loam	CH, CL	A-7, A-6	0	0	95-100	93-100	93-100	90-95	35-60	14-34
BfdB:												
Burford	0-5	Loam	CL	A-4, A-6	0	0	98-100	96-100	80-100	65-95	30-37	8-14
	5-12	Loam, clay loam, silt loam, silty clay loam	CL	A-6, A-7	0	0	98-100	96-100	90-100	75-98	30-43	8-20
	12-30	Clay loam, silty clay loam, loam, silt loam	CL	A-6, A-7	0	0	98-100	96-100	90-100	75-98	30-43	8-20
	30-43	Silty clay loam, silty clay, clay loam	CL, CH	A-6, A-7	0	0	98-100	96-100	90-100	70-95	33-53	12-34
	43-80	Silty clay, silty clay loam, clay, clay loam	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	70-100	30-60	12-38
BfdC:												
Burford	0-6	Loam	CL	A-4, A-6	0	0	98-100	96-100	80-100	65-95	30-37	8-14
	6-24	Clay loam, silty clay loam, loam, silt loam	CL	A-7, A-6	0	0	98-100	96-100	90-100	75-98	30-43	8-20
	24-40	Silty clay, clay, loam, silty clay loam	CL, CH	A-6, A-7	0	0	98-100	96-100	90-100	70-95	33-53	12-34
	40-80	Clay loam, silty clay, silty clay loam, clay	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-100	70-100	30-60	12-38
BfSC2:												
Burford, Eroded	0-6	Loam	CL	A-4, A-6	0	0	98-100	95-100	80-100	65-95	30-37	8-14
	6-35	Loam, clay loam, silty clay loam, silt loam	CL	A-6, A-7	0	0	98-100	95-100	90-100	75-98	30-43	8-20
	35-40	Silty clay, silty clay loam, clay, clay	CL	A-6, A-7	0	0	98-100	95-100	90-100	75-98	33-53	12-34
	40-80	Silty clay loam, clay, silty clay, clay loam	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	65-100	30-60	12-38
Spikebox, Eroded	0-7	Loam	CL-ML, ML	A-4	0	0	90-100	85-100	85-100	58-85	22-29	2-7
	7-15	Loam, fine sandy loam, very fine sandy loam	SC-SM, CL-ML, ML, SM	A-4	0	0	90-100	85-100	80-100	35-85	14-29	NP-7
	15-40	Bedrock			---	---	---	---	---	---	---	---

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	
BfSE:												
Burford	0-10	Loam	CL	A-4, A-6	0	0	98-100	95-100	80-100	65-95	30-37	8-14
	10-29	Loam, clay loam, silt loam, silty clay loam	CL	A-6, A-7	0	0	98-100	95-100	90-100	75-98	30-43	8-20
	29-44	Clay loam, silty clay loam, silt loam, loam	CL	A-6, A-7	0	0	98-100	95-100	90-100	75-98	30-43	8-20
	44-57	Silty clay loam, clay, silty clay, clay loam	CL, CH	A-6, A-7	0	0	98-100	95-100	90-100	70-95	33-53	12-34
	57-80	Silty clay loam, silty clay, clay, clay loam	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-100	65-100	30-60	12-38
Spikebox	0-6	Loam	ML, CL-ML	A-4	0	0	90-100	85-100	85-100	58-85	22-29	2-7
	6-14	Loam, fine sandy loam, very fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	90-100	85-100	80-100	35-85	14-29	NP-7
	14-40	Bedrock			---	---	---	---	---	---	---	---
BriE:												
Brico	0-11	Cobbly loam	CL, GC, SC	A-4, A-6	0	15-30	70-95	65-90	50-70	40-60	30-36	9-15
	11-24	Very cobbly clay, very cobbly clay loam, cobbly clay, cobbly clay loam	GC, SC	A-2, A-6, A-7	0	15-60	40-85	40-85	30-60	30-50	37-65	16-37
	24-40	Very cobbly clay loam, very cobbly clay, cobbly clay loam, cobbly clay	SC, GC	A-2, A-6, A-7	0	15-60	40-85	40-85	30-60	30-50	37-65	16-37
	40-72	Extremely cobbly clay loam, very cobbly clay loam, cobbly clay loam	SC, GC	A-2, A-6, A-7	0	15-60	30-85	20-85	15-60	15-50	33-49	13-25
BukA:												
Bukreek	0-11	Loam	CL	A-4, A-6	0	0	100	98-100	95-100	65-85	30-35	8-13
	11-18	Loam, clay loam, sandy clay loam	CL	A-6	0	0	100	98-100	90-100	50-90	25-40	10-18
	18-30	Loam, clay loam, sandy clay loam	CL	A-6	0	0	100	98-100	90-100	50-90	25-40	10-18
	30-74	Loam, clay loam, sandy clay loam	CL, SC	A-4, A-6	0	0	90-100	85-100	80-100	36-90	25-40	7-18
	74-80	Loam, sandy clay loam, fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	95-100	90-100	80-100	36-85	20-35	4-15
CarB:												
Carey	0-15	Loam	CL-ML, ML, CL	A-4, A-6	0	0	100	98-100	94-100	65-85	20-32	3-12
	15-42	Silty clay loam, clay loam, loam	CL	A-4, A-6	0	0	100	98-100	94-100	65-95	30-43	8-20
	42-65	Silt loam, loam, very fine sandy loam	CL, CL-ML, ML, SM	A-4, A-6	0	0	97-100	90-100	83-100	44-95	14-37	2-14
	65-80	Silt loam, loam, very fine sandy loam	CL, CL-ML, SM, ML	A-4, A-6	0	0-2	90-100	75-100	75-100	40-95	14-37	2-14

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	
CawA:												
Carwile	0-15	Fine sandy loam	CL-ML, SM, SC-SM, ML	A-4	0	0	100	98-100	90-100	36-60	14-26	NP-7
	15-27	Clay loam, sandy clay, clay	SC, CL, CH	A-6, A-7	0	0	100	98-100	90-100	40-95	31-52	10-30
	27-57	Sandy clay loam, clay loam, sandy clay, clay	SC, CL, CH	A-4, A-6, A-7	0	0	100	98-100	90-100	36-95	25-52	7-30
	57-80	Fine sandy loam, sandy loam, sandy clay loam	CL, SC, SM, CL-ML, SC-SM, ML	A-4, A-6	0	0	100	98-100	90-100	36-60	14-32	NP-13
CVRD:												
Cottonwood	0-5	Silt loam	CL, CL-ML	A-4, A-6	0	0	98-100	95-100	80-100	55-85	25-37	4-13
	5-8	Gypsiferous silt loam, gypsiferous loam, gypsiferous clay loam, gypsiferous silty clay loam	CL, CL-ML	A-4, A-6, A-7, A-5	0	0	95-100	90-100	80-100	55-85	25-43	4-19
	8-15	Gypsiferous bedrock			---	---	---	---	---	---	---	---
	15-20	Gypsiferous bedrock			---	---	---	---	---	---	---	---
Vinson	0-4	Silt loam	CL	A-4, A-6	0	0	100	100	96-100	65-97	30-37	8-14
	4-15	Silty clay loam, silt loam, loam, clay loam	CL	A-4, A-6, A-7	0	0	100	100	96-100	65-98	30-43	8-20
	15-22	Silty clay loam, silt loam, loam, clay loam	CL	A-4, A-6, A-7	0	0	100	100	96-100	65-98	30-43	8-20
	22-28	Bedrock			---	---	---	---	---	---	---	---
	28-60	Bedrock			---	---	---	---	---	---	---	---
Rock outcrop	0-60	Bedrock			---	---	---	---	---	---	---	---
DAM:												
Dam	0-80	Variable			---	---	---	---	---	---	---	---
DeSD:												
Devol	0-8	Loamy sand	SM	A-2	0	0	99-100	98-100	85-100	15-35	0-14	NP
	8-28	Fine sandy loam, loamy fine sand	SM, SC-SM, CL-ML, ML	A-2, A-4	0	0	99-100	98-100	90-100	15-60	0-26	NP-7
	28-47	Fine sandy loam, loamy fine sand	ML, SC-SM, SM, CL-ML	A-2, A-4	0	0	99-100	98-100	90-100	15-60	0-26	NP-7
	47-62	Loamy sand, fine sand, fine sandy loam, loamy fine sand	SM, SC-SM	A-2, A-4	0	0	99-100	98-100	80-100	5-50	0-26	NP-7
	62-80	Loamy sand, loamy fine sand, fine sand, fine sand, sandy loam	SC-SM, SM	A-2, A-4	0	0	99-100	98-100	50-100	5-50	0-26	NP-7

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	
Springer--------	0-15	Loamy sand	SP-SM, SM	A-2-4	0	0	98-100	95-100	70-96	10-25	0-14	NP-4
	15-41	Fine sandy loam, sandy loam, loamy sand, loamy fine sand	SC-SM, SM, CL-ML, ML	A-4, A-2-4	0	0	98-100	95-100	75-99	11-60	14-26	NP-7
	41-52	Fine sand, loamy sand, loamy fine sand, sandy loam	SW-SM, SM	A-2-4, A-3	0	0	98-100	95-100	70-96	8-25	0-14	NP-4
	52-70	Fine sandy loam, sandy clay loam	CL, SC, SC-SM, SM, CL-ML, ML	A-2-4, A-4	0	0	98-100	95-100	75-99	11-60	14-30	2-10
	70-80	Loamy sand, loamy fine sand, fine sandy loam, fine sand	SM, SC-SM, SP-SM	A-2, A-4	0	0	98-100	95-100	50-99	5-50	0-26	NP-7
DkuA:												
Duke------------	0-5	Silty clay	CH, CL	A-7-6	0	0	99-100	97-100	95-100	90-99	41-60	18-35
	5-12	Silty clay, silty clay loam, clay loam, clay	CH, CL	A-7-6, A-6	0	0	99-100	97-100	95-100	85-99	35-60	15-35
	12-44	Silty clay, silty clay loam, clay loam, clay	CL, CH	A-7-6, A-6	0	0	99-100	97-100	95-100	85-99	35-60	15-35
	44-80	Silty clay, silty clay loam, clay loam, clay, stratified silt loam to clay	CL, CH	A-6, A-7-6, A-4	0	0	99-100	97-100	95-100	75-99	25-60	7-35
DodA:												
Dodson----------	0-7	Loam	CL, CL-ML	A-4, A-6	0	0	100	98-100	90-100	60-90	25-35	5-15
	7-37	Silty clay loam, clay loam, silty clay, clay	CL	A-6, A-7	0	0	98-100	95-100	90-100	75-98	35-50	13-28
	37-56	Silty clay loam, clay loam, loam, silt loam	CL	A-4, A-6, A-7	0	0	98-100	95-100	90-100	65-98	30-50	8-26
	56-72	Silty clay loam, clay loam, sandy clay loam, loam, silt loam	CL, SC	A-4, A-6, A-7	0	0	98-100	95-100	90-100	40-98	25-42	7-20
	72-80	Silty clay loam, clay loam, sandy clay loam, sandy loam, loam, silt loam	SC-SM, CL, CL-ML, SC	A-4, A-6, A-7	0	0	95-100	90-100	85-100	35-90	20-42	4-20

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	
DodB:												
Dodson	0-6	Loam	CL-ML, CL	A-4, A-6	0	0	100	98-100	90-100	60-90	25-35	5-15
	6-26	Silty clay loam, clay loam, silty clay, clay	CL	A-6, A-7	0	0	98-100	95-100	90-100	75-98	35-50	13-28
	26-56	Silty clay loam, clay loam, loam, silt loam	CL	A-4, A-6, A-7	0	0	98-100	95-100	90-100	65-98	30-50	8-26
	56-83	Silty clay loam, clay loam, sandy clay loam, loam, silt loam	SC, CL	A-4, A-6, A-7	0	0	98-100	95-100	90-100	40-98	25-42	7-20
	83-91	Clay, clay loam, silty clay, silty clay loam, silt loam, very fine sandy loam, loam	SC, ML, CL-ML, CL	A-4, A-6, A-7	0	0	95-100	90-100	85-100	35-98	14-50	NP-28
EatA:												
Eastall	0-12	Silty clay	CH	A-7-6	0	0	100	100	95-100	85-98	55-76	33-50
	12-19	Clay, silty clay	CH	A-7-6	0	0	100	100	95-100	85-98	55-76	33-50
	19-56	Clay, silty clay	CH	A-7-6	0	0	100	98-100	90-100	80-95	55-76	33-50
	56-76	Silty clay, clay	CH	A-7-6	0	0	100	98-100	90-100	80-95	55-76	33-50
	76-95	Silty clay, clay, clay loam, silty clay loam	CH, CL	A-7-6	0	0	100	98-100	90-100	70-95	40-76	20-50
EdsB:												
Eda	0-11	Sand	SM, SP-SM	A-2, A-3	0	0	100	100	82-100	5-35	0-7	NP
	11-35	Loamy sand, loamy fine sand, fine sand, sand	SP-SM, SM	A-2, A-3	0	0	100	100	82-100	3-35	0-14	NP
	35-80	Loamy sand, loamy fine sand, fine sand, sand	SM, SP-SM	A-2, A-3	0	0	100	100	82-100	5-35	0-14	NP
EdsD:												
Eda	0-13	Sand	SM, SP-SM	A-2, A-3	0	0	100	100	82-100	5-35	0-7	NP
	13-50	Loamy sand, loamy fine sand, fine sand, sand	SM, SP-SM	A-2, A-3	0	0	100	100	82-100	3-35	0-14	NP
	50-80	Loamy sand, loamy fine sand, fine sand, sand	SM, SP-SM	A-2, A-3	0	0	100	100	82-100	5-35	0-14	NP
EdsF:												
Eda	0-18	Sand	SM, SP-SM	A-2, A-3	0	0	100	100	82-100	5-35	0-7	NP
	18-40	Loamy sand, loamy fine sand, fine sand, sand	SM, SP-SM	A-2, A-3	0	0	100	100	82-100	3-35	0-14	NP
	40-80	Loamy sand, loamy fine sand, fine sand, sand	SM, SP-SM	A-2, A-3	0	0	100	100	82-100	3-35	0-14	NP

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	
FraB:												
Frankirk	0-6	Loam	CL	A-4, A-6	0	0	98-100	96-100	85-95	55-75	30-35	9-13
	6-18	Clay loam, sandy clay loam, clay	CL	A-6, A-7-6	0	0	98-100	96-100	90-100	65-80	35-60	14-34
	18-52	Clay loam, sandy clay, clay	CL	A-6, A-7-6	0	0	98-100	96-100	90-100	65-80	35-60	14-34
	52-65	Clay loam, sandy clay loam, loam	CL	A-6	0	0	95-100	90-100	85-98	55-75	25-40	7-18
	65-80	Sandy clay loam, loam, clay loam	CL	A-6	0	0	95-100	90-100	85-98	55-75	25-38	7-18
FryB:												
Farry	0-7	Loam	CL-ML, CL, ML	A-4	0	0	95-100	93-100	91-100	60-85	22-30	2-8
	7-11	Clay loam, loam, sandy clay loam	CL, SC	A-4, A-6	0	0	85-99	77-95	70-95	30-85	25-38	7-16
	11-50	Loam, sandy clay loam, clay loam	CL, SC	A-4, A-6	0	0	85-99	77-95	70-95	30-85	25-38	7-16
	50-63	Sandy clay loam, sandy loam, loam	CL-ML, SC-SM, CL, SC	A-4, A-6	0	0	85-99	77-95	70-95	30-85	15-35	2-13
	63-75	Loamy sand, loam, sandy loam, sandy clay loam	SC-SM, SM, CL-ML, SC, CL, ML	A-4, A-6, A-2	0	0	80-99	70-95	60-95	10-80	5-35	NP-11
	75-84	Loam, sandy loam, very fine sandy loam, loamy sand, sand	CL-ML, SM, CL, SC-SM, SP-SM, ML, SC	A-4, A-2	0	0	75-99	63-95	50-95	5-80	0-32	NP-10
GdfB:												
Grandfield	0-15	Fine sandy loam	CL-ML, SM, ML, SC-SM	A-4	0	0	100	98-100	94-100	36-60	14-26	NP-7
	15-32	Sandy clay loam, fine sandy loam	SC, CL, CL-ML, SC-SM	A-4, A-6	0	0	100	98-100	90-100	36-65	20-37	6-16
	32-49	Sandy clay loam, fine sandy loam	ML, CL-ML, SC-SM, CL, SM, SC	A-4, A-6	0	0	100	98-100	90-100	36-65	20-37	3-16
	49-56	Sandy clay loam, fine sandy loam, loamy sand	SC-SM, CL, ML, SC, SM, CL-ML	A-4, A-2	0	0	100	98-100	90-100	15-60	14-30	NP-10
	56-80	Fine sandy loam, loamy sand, sand	SC-SM, CL-ML, SM, ML	A-2, A-4	0	0	100	98-100	82-100	5-60	0-26	NP-7
GlGB:												
Grandmore	0-18	Loamy sand	SM	A-2	0	0	100	98-100	60-95	15-35	0-14	NP
	18-38	Sandy clay loam, fine sandy loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	98-100	85-100	36-65	24-37	6-16
	38-46	Fine sandy loam, sandy clay loam	CL-ML, ML, SC, SM, CL, SC-SM	A-4, A-6	0	0	100	98-100	85-100	36-65	20-37	3-16
	46-61	Clay, clay loam	CH, CL	A-6, A-7	0	0	100	98-100	90-100	70-95	31-60	11-34
	61-80	Clay loam, clay, sandy clay loam, fine sandy loam	SM, CH, SC, SC-SM, CL, ML, CL-ML	A-4, A-6, A-7	0	0	100	98-100	90-100	36-95	14-60	NP-34

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	
Grandfield------	0-8	Loamy sand	SM	A-2	0	0	100	98-100	90-100	15-35	0-14	NP
	8-28	Fine sandy loam, sandy clay loam	SC, CL-ML, CL, SC-SM	A-4, A-6	0	0	100	98-100	90-100	36-65	20-35	6-16
	28-55	Fine sandy loam, sandy clay loam	SC, CL-ML, SM, ML, CL, SC-SM	A-4, A-6	0	0	100	98-100	90-100	36-65	20-35	3-16
	55-75	Fine sandy loam, sandy clay loam	SC-SM, CL-ML, CL, SM, SC, ML	A-4, A-2	0	0	100	98-100	90-100	15-60	14-30	NP-10
	75-80	Fine sandy loam, loamy sand, sand	ML, SM, CL-ML, SC-SM	A-4, A-2	0	0	100	98-100	82-100	5-60	0-26	NP-7
GlsB:												
Grandfield------	0-7	Loamy sand	SM	A-2	0	0	100	98-100	90-100	15-35	0-14	NP
	7-21	Sandy clay loam, fine sandy loam	SC-SM, SC, CL, CL-ML	A-4, A-6	0	0	100	98-100	90-100	36-65	20-35	6-16
	21-44	Sandy clay loam, fine sandy loam	CL, ML, SC, SM, SC-SM, CL-ML	A-4, A-6	0	0	100	98-100	90-100	36-65	20-35	3-16
	44-72	Sandy clay loam, fine sandy loam, loamy sand	CL-ML, SM, SC-SM, CL, ML, SC	A-4, A-2	0	0	100	98-100	90-100	15-60	7-30	NP-10
	72-80	Fine sandy loam, loamy sand, sand	SC-SM, CL-ML, SM, ML	A-4, A-2	0	0	100	98-100	82-100	5-60	0-26	NP-7
GlsD:												
Grandfield------	0-13	Loamy sand	SM	A-2	0	0	100	98-100	90-100	15-35	0-14	NP
	13-34	Sandy clay loam, fine sandy loam	CL-ML, SC-SM, SC, CL	A-4, A-6	0	0	100	98-100	90-100	36-65	20-35	6-16
	34-47	Sandy clay loam, fine sandy loam	CL, ML, SC, SM, CL-ML, SC-SM	A-4, A-6	0	0	100	98-100	90-100	36-65	20-35	3-16
	47-58	Loamy sand, sandy clay loam, fine sandy loam	ML, CL-ML, CL, SC-SM, SM, SC	A-4, A-2	0	0	100	98-100	90-100	15-60	7-30	NP-10
	58-80	Loamy sand, fine sandy loam, sand	ML, SM, CL-ML, SC-SM	A-4, A-2	0	0	100	98-100	82-100	5-60	0-26	NP-7
GmuA:												
Gracemont, saline---------	0-6	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	100	98-100	94-100	36-90	15-26	NP-7
	6-20	Loam, fine sandy loam, stratified fine sandy loam to loam	ML, SC-SM, SM, CL-ML	A-4	0	0	100	98-100	94-100	36-90	14-29	NP-7
	20-80	Sandy loam, fine sandy loam, loamy sand, loam, clay loam, stratified loamy sand to clay loam	ML, SC-SM, SM, CL, CL-ML	A-2-4, A-4, A-6	0	0	100	98-100	94-100	27-85	0-40	NP-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	
GmwA:												
Gracemont, saline	0-4	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4	0	0	100	98-100	94-100	36-90	15-26	NP-7
	4-35	Fine sandy loam, loam, stratified fine sandy loam to loam	ML, SC-SM, SM, CL-ML	A-4	0	0	100	98-100	94-100	36-90	14-29	NP-7
	35-80	Loamy sand, fine sandy loam, loam, clay loam, stratified loamy sand to clay loam	CL, CL-ML, SM, SC-SM, ML	A-2-4, A-4, A-6	0	0	100	98-100	90-100	15-85	0-40	NP-18
GrrA:												
Gracemore, saline	0-7	Clay loam	CL	A-6	0	0	100	100	96-100	75-98	31-40	10-18
	7-17	Loamy fine sand, stratified loamy fine sand to fine sandy loam, fine sand, sand	SM, SP-SM	A-2-4, A-3	0	0	90-100	85-100	82-100	5-35	0-14	NP
	17-80	Loamy fine sand, sand, fine sand, coarse sand, loamy sand	SM, SP-SM	A-2-4, A-3	0	0	90-100	85-100	82-100	5-35	0-7	NP
GtbB:												
Gotebo	0-8	Loam	ML, CL-ML, CL	A-4	0	0	100	100	96-100	65-97	22-31	2-10
	8-17	Loam, silt loam	ML, CL-ML, CL	A-4	0	0	100	100	96-100	65-97	22-31	2-10
	17-26	Very fine sandy loam, loam, silt loam	CL-ML, ML, CL	A-4	0	0	100	100	96-100	65-97	14-31	NP-10
	26-80	Silt loam, loam, very fine sandy loam	ML, CL, SM, CL-ML	A-4	0	0-2	90-100	85-100	75-100	40-95	14-31	NP-10
HdmB:												
Hardeman	0-6	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	93-100	85-100	75-96	30-60	14-25	NP-7
	6-46	Fine sandy loam, very fine sandy loam, loam	ML, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	93-100	85-100	75-90	30-60	14-29	NP-7
	46-80	Fine sandy loam, very fine sandy loam, loam	CL-ML, SC-SM, SM, ML	A-2-4, A-4	0	0	93-100	85-100	75-90	30-60	14-29	NP-7
HdmC:												
Hardeman	0-13	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	93-100	85-100	75-96	30-60	14-25	NP-7
	13-35	Fine sandy loam, very fine sandy loam, loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	93-100	85-100	75-90	30-60	14-29	NP-7
	35-62	Fine sandy loam, very fine sandy loam, loam	SC-SM, ML, CL-ML, SM	A-2-4, A-4	0	0	93-100	85-100	75-90	30-60	14-29	NP-7
	62-80	Fine sandy loam, very fine sandy loam, loam, loamy fine sand	SM, SC-SM, CL-ML, ML	A-2-4, A-4	0	0	93-100	85-100	75-90	25-60	0-26	NP-7

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	
HfkA:												
Hayfork	0-11	Silty clay loam	CL	A-6, A-7-6	0	0	100	99-100	98-100	85-100	35-50	12-25
	11-27	Silty clay loam, silty clay, clay loam, clay	CL	A-6, A-7-6	0	0	100	99-100	95-100	80-100	37-50	15-30
	27-41	Silty clay loam, silty clay, clay loam, clay	CL	A-6, A-7-6	0	0	100	99-100	95-100	80-100	35-50	12-30
	41-50	Silty clay loam, silty clay, clay loam, clay	CL	A-6, A-7-6	0	0	100	99-100	95-100	80-100	35-50	12-30
	50-60	Silty clay loam, silty clay, clay loam, clay	CL	A-6, A-7-6	0	0	100	99-100	95-100	80-100	35-50	12-30
HksA:												
Headrick	0-5	Loamy sand	SC, SM, ML, CL	A-4, A-6	0	0	100	98-100	60-95	15-35	0-14	NP
	5-32	Sandy clay loam, fine sandy loam			0	0	100	98-100	85-100	36-65	20-37	3-16
	32-66	Clay loam, clay	CH, CL	A-6, A-7	0	0	98-100	95-100	90-100	70-95	31-60	11-34
	66-80	Sandy clay loam, clay loam, silty clay loam, silty clay, clay	CH, SC, CL	A-6, A-7	0	0	98-100	95-100	90-100	36-98	30-60	10-34
HolA:												
Hollister	0-9	Silty clay loam	CL	A-6, A-7-6	0	0	100	95-100	90-100	75-95	35-50	17-30
	9-23	Clay, silty clay, clay loam, silty clay loam	CL, CH	A-7-6	0	0	98-100	96-100	90-100	75-96	41-60	20-35
	23-72	Clay, silty clay loam, clay loam, silty clay	CL, CH	A-7-6	0	0	98-100	96-100	90-100	75-96	41-60	20-35
	72-110	Silty clay, clay loam, silty clay loam, clay	CL, CH	A-7-6	0	0	98-100	96-100	85-99	75-96	41-55	20-32
	110-138	Silty clay loam, clay, silty clay, clay loam	CH, CL	A-7-6	0	0	98-100	96-100	85-99	75-96	41-55	20-32
HrAC:												
Harmon	0-7	Gravelly silt loam	CL, CL-ML, ML	A-4, A-6	0	0-5	70-95	65-85	60-85	40-80	22-35	2-12
	7-16	Gravelly silt loam, very gravelly silt loam, extremely gravelly silt loam	CL, ML, CL-ML, GC, GC-GM, GM	A-2-4, A-4, A-6	---	0-5	20-70	10-65	9-65	7-60	22-35	2-12
	16-40	Bedrock			---	---	---	---	---	---	---	---
Aspermont	0-5	Silt loam	CL	A-4, A-6	0	0	98-100	90-100	80-100	65-90	30-37	8-14
	5-40	Silty clay loam, clay loam, loam, silt loam	CL	A-6, A-7	0	0	98-100	90-100	85-100	65-98	30-43	8-20
	40-50	Silty clay loam, clay loam, loam, silt loam	CL	A-6, A-7	0	0	95-100	85-100	85-100	65-95	30-50	8-26
	50-80	Clay loam, silty clay loam, clay, silty clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	65-100	30-60	12-38

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	
HSAF:												
Hardeman	0-14	Fine sandy loam	SM, CL-ML, ML, SC-SM	A-2-4, A-4	0	0	93-100	85-100	75-96	30-60	14-25	NP-7
	14-20	Fine sandy loam, very fine sandy loam, loam	SM, SC-SM, ML, CL-ML	A-2-4, A-4	0	0	93-100	85-100	75-90	30-60	14-29	NP-7
	20-46	Fine sandy loam, very fine sandy loam, loam	SM, ML, CL-ML, SC-SM	A-2-4, A-4	0	0	93-100	85-100	75-90	30-60	14-29	NP-7
	46-80	Fine sandy loam, very fine sandy loam, loam, loamy sand	SM, ML, SC-SM, CL-ML	A-2-4, A-4	0	0	93-100	85-100	75-90	15-60	0-26	NP-7
Southside	0-6	Sandy loam	SM, ML	A-2-4, A-4	0	0	80-100	70-99	65-96	25-60	14-25	NP-4
	6-28	Gravelly sand, gravelly loamy sand, loamy sand, sand	SW-SM, SW, SP, SP-SM	A-2-4, A-3	0	0-1	60-100	50-92	40-90	2-30	0-14	NP-2
	28-80	Sand, loamy sand, gravelly loamy sand, gravelly sand	SW, SP, SP-SM, SW-SM	A-2-4, A-3	0	0-1	60-100	50-92	40-90	2-30	0-14	NP-2
Arnett	0-6	Sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	76-99	75-92	72-92	28-55	14-25	NP-4
	6-21	Sandy clay loam, clay loam	CL, SC	A-4, A-6	0	0	78-99	77-92	73-92	29-83	25-40	7-18
	21-30	Gravelly sandy clay loam, gravelly clay loam	CL, SC	A-4, A-6, A-2-6, A-2-4	0	0-5	49-86	47-82	42-82	17-69	25-40	7-18
	30-45	Gravelly coarse sandy loam, gravelly sandy clay loam, gravelly clay loam	CL, ML, SC, CL-ML, SC-SM, SM	A-4, A-6, A-2-6, A-2-4	0	0-5	65-95	55-85	42-82	17-69	14-40	NP-18
	45-80	Stratified loamy coarse sand to gravelly clay loam	ML, CL, SC, SM, SW-SM, CL-ML	A-4, A-2-4, A-6, A-2-6	0	0-5	49-100	46-98	42-97	6-88	0-40	NP-18
JesC:												
Jester	0-7	Fine sand	SM, SP-SM	A-2, A-3	0	0	100	100	82-100	3-35	0-14	NP-3
	7-45	Loamy fine sand, fine sand, sand	SP-SM, SM	A-2, A-3	0	0	100	100	82-100	3-35	0-14	NP-3
	45-80	Loamy fine sand, fine sand, sand	SM, SP-SM	A-2, A-3	0	0	100	98-100	82-100	3-35	0-14	NP-3
KcRG:												
Knoco, bouldery-	0-3	Silty clay	CH, CL	A-6, A-7-6	2-5	5-10	90-100	85-100	85-100	80-98	30-60	12-38
	3-9	Silty clay, clay	CL, CH	A-6, A-7-6	0-2	0-2	90-100	85-100	75-100	70-100	30-60	12-38
	9-60	Clay, silty clay	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-100	70-100	30-60	12-38
Rock outcrop	0-60	Bedrock			---	---	---	---	---	---	---	---
KoBE:												
Knoco	0-6	Silty clay	CH, CL	A-6, A-7-6	0	0-2	90-100	80-100	75-100	60-90	30-60	12-38
	6-16	Clay, silty clay	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	75-100	70-100	30-60	12-38
	16-60	Clay, silty clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	70-100	30-60	12-38
Badland	0-60	Bedrock			0	0	---	---	---	---	---	---

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	
KRCF:												
Knoco	0-3	Silty clay	CH, CL	A-6, A-7-6	0	0-2	90-100	80-100	75-100	60-90	30-60	12-38
	3-12	Silty clay, clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	75-100	70-100	30-60	12-38
	12-60	Clay, silty clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	70-100	30-60	12-38
Rock outcrop	0-60	Bedrock			---	---	---	---	---	---	---	---
Cottonwood	0-4	Silt loam	CL	A-4, A-6	0	0	98-100	95-100	80-100	55-85	28-37	5-14
	4-40	Bedrock			---	---	---	---	---	---	---	---
LacB:												
La Casa	0-6	Silty clay loam	CL	A-6	0	0	98-100	95-100	90-100	70-95	33-42	12-19
	6-12	Silty clay loam, silty clay, clay loam, clay	CH, CL	A-6, A-7-6	0	0	98-100	95-100	90-98	70-98	37-55	15-30
	12-34	Silty clay, silty clay loam, clay, clay loam	CH, CL	A-6, A-7-6	0	0	98-100	95-100	90-98	70-98	37-55	15-30
	34-64	Silty clay loam, silty clay, clay, clay loam	CL, CH	A-6, A-7-6	0	0	98-100	93-100	85-98	65-95	33-55	13-30
	64-81	Silty clay loam, clay loam, silty clay, clay	CL, CH	A-6, A-7-6	0	0-5	90-100	75-100	70-97	60-90	33-55	13-30
	81-91	Silty clay loam, clay loam, silty clay, clay	CL, CH	A-7-6, A-6	0	0-5	85-100	70-100	50-97	50-90	33-55	13-32
LnuA:												
Lincoln	0-8	Loamy sand	SM	A-2-4	0	0	95-100	85-100	75-100	15-35	0-14	NP-4
	8-21	Fine sand, sand, loamy sand, stratified sand to loam	SM, SP-SM	A-2-4, A-3	0	0	95-100	85-100	82-100	3-35	0-14	NP-4
	21-80	Stratified sand to loam, sand, loamy sand	SP-SM, SM	A-2-4, A-3	0	0	95-100	85-100	82-100	5-35	0-14	NP-4
LnWA:												
Lincoln	0-5	Loamy sand	SM	A-2-4	0	0	95-100	85-100	75-100	15-35	0-14	NP-4
	5-15	Loamy sand, sand, stratified sand to loam	SM, SP-SM	A-2-4, A-3	0	0	95-100	85-100	82-100	5-35	0-14	NP-4
	15-80	Stratified sand to loam, sand, loamy sand	SM, SP-SM	A-2-4, A-3	0	0	95-100	85-100	82-100	5-35	0-14	NP-4
Westola	0-5	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	100	95-100	90-100	36-60	15-26	NP-7
	5-30	Fine sandy loam, very fine sandy loam, loam, stratified fine sandy loam to loam	ML, SM, CL-ML, SC-SM	A-4	0	0	100	95-100	90-100	36-85	15-30	NP-8
	30-80	Stratified sand to sandy loam, stratified loamy fine sand to loam	ML, SC-SM, SM, CL-ML	A-2-4, A-4	0	0	100	95-100	90-100	15-85	10-30	NP-8

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	
LwtA:												
Lawton----------	0-6	Loam	CL	A-4, A-6	0	0-5	90-100	85-99	80-98	55-85	25-35	8-13
	6-9	Loam, clay loam	CL	A-4, A-6	0	0	90-100	85-99	80-98	60-90	25-40	8-18
	9-34	Clay loam	CL	A-6, A-7	0	0	90-100	85-99	80-98	65-90	35-50	15-25
	34-75	Loam, clay loam, clay, gravelly loam, gravelly clay loam, gravelly clay	CL, GC	A-2, A-4, A-6, A-7	0	0	65-99	50-98	45-95	35-90	25-50	4-25
	75-80	Loam, clay loam, sandy clay loam, gravelly sandy clay loam, gravelly clay loam, gravelly loam	GC, CL, SC	A-2, A-4, A-6	0	0	65-99	50-98	45-95	25-90	22-40	4-18
LwtB:												
Lawton----------	0-6	Loam	CL	A-4, A-6	0	0-5	90-100	85-99	80-98	55-85	25-35	8-13
	6-28	Clay loam	CL	A-6, A-7	0	0	90-100	85-99	80-98	65-90	35-50	15-25
	28-56	Clay loam	CL	A-6, A-7	0	0	90-100	85-99	80-98	65-90	35-50	15-25
	56-75	Loam, clay loam, clay, gravelly loam, gravelly clay loam, gravelly clay	GC, CL	A-2, A-4, A-6, A-7	0	0	65-99	50-98	45-95	25-90	25-50	4-25
	75-80	Loam, clay loam, sandy clay loam, gravelly sandy clay loam, gravelly clay loam, gravelly loam	SC, CL, GC	A-2, A-4, A-6	0	0	65-99	50-98	45-95	10-90	22-40	4-18
LwtC2:												
Lawton, Eroded--	0-5	Loam	CL	A-4, A-6	0	0-5	90-100	85-99	80-98	55-85	25-35	8-13
	5-45	Clay loam	CL	A-6, A-7	0	0	90-100	85-99	80-98	65-90	35-50	15-25
	45-62	Loam, clay loam, clay, gravelly loam, gravelly clay loam, gravelly clay	CL, GC	A-2, A-4, A-6, A-7	0	0	65-99	50-98	45-95	35-90	25-50	4-25
	62-80	Loam, clay loam, sandy clay loam, gravelly sandy clay loam, gravelly clay loam, gravelly loam	CL, GC, SC	A-2, A-4, A-6	0	0	65-99	50-98	45-95	25-90	22-40	4-18
M-W:												
Water, Miscellaneous--	0-80	Water			---	---	---	---	---	---	---	---
MagB:												
Madge----------	0-13	Loam	ML, CL, CL-ML	A-4	0	0	100	98-100	95-100	65-85	22-32	2-11
	13-25	Clay loam, sandy clay loam, loam	SC, CL	A-4, A-6	0	0	98-100	95-100	89-100	40-90	25-40	7-18
	25-41	Clay loam, sandy clay loam, loam, fine sandy loam	CL-ML, SC-SM, SC, CL	A-4, A-6	0	0	98-100	95-100	89-100	36-90	15-40	4-18
	41-57	Loam, very fine sandy loam, fine sandy loam, loamy sand	CL-ML, SC-SM, SC, ML, CL, SM	A-4, A-6, A-2	0	0	98-100	95-100	89-100	15-85	5-35	NP-11

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
	57-80	Loam, very fine sandy loam, fine sandy loam, loamy sand, sand	SM, CL, SP-SM, SC-SM, CL-ML, ML, SC	A-4, A-2	0	0	97-100	93-100	80-100	5-85	0-32	NP-10
MdgB:												
Madge	0-5	Fine sandy loam	SM, ML, CL-ML, SC-SM	A-2-4, A-4	0	0	100	98-100	95-100	35-60	14-26	NP-7
	5-43	Sandy clay loam, clay loam, loam	CL, SC	A-4, A-6	0	0	98-100	95-100	89-100	40-90	25-40	7-18
	43-49	Fine sandy loam, clay loam, sandy clay loam, loam	SC-SM, CL, SC, CL-ML	A-4, A-6	0	0	98-100	95-100	89-100	36-90	15-40	4-18
	49-56	Loamy sand, fine sandy loam, loam, very fine sandy loam	CL, ML, SC, SM, SC-SM, CL-ML	A-4, A-6, A-2	0	0	98-100	95-100	89-100	15-85	5-35	NP-11
	56-80	Sand, loamy sand, fine sandy loam, very fine sandy loam, loam	SM, SC, CL, SP-SM, SC-SM, CL-ML, ML	A-4, A-2	0	0	97-100	93-100	80-100	5-85	0-32	NP-10
MknB:												
Mcknight	0-7	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	97-100	95-100	90-100	36-60	14-26	NP-7
	7-35	Sandy clay loam, fine sandy loam	CL, SC	A-4, A-6	0	0	95-100	92-100	85-100	36-65	20-37	5-16
	35-53	Clay, clay loam, silty clay loam, silty clay	CH, CL	A-6, A-7	0	0-1	90-100	85-100	80-100	70-98	37-60	15-34
	53-80	Silty clay, silty clay loam, clay loam, clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	65-100	30-60	12-38
MktB:												
Mcknight	0-14	Loamy fine sand	SM	A-2	0	0	97-100	95-100	85-100	15-35	0-14	NP
	14-29	Sandy clay loam, fine sandy loam	SC, CL	A-4, A-6	0	0	95-100	92-100	85-100	36-65	20-37	5-16
	29-36	Clay, clay loam, silty clay loam, silty clay	CH, CL	A-6, A-7	0	0-1	90-100	85-100	80-100	70-98	37-60	15-34
	36-52	Clay, clay loam, silty clay loam, silty clay	CL, CH	A-6, A-7	0	0-1	90-100	85-100	80-100	70-98	37-60	15-34
	52-80	Clay, clay loam, silty clay, silty clay loam	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	65-100	30-60	12-38
MktC2:												
Mcknight, Eroded	0-7	Loamy fine sand	SM	A-2	0	0	97-100	95-100	85-100	15-35	0-14	NP
	7-35	Sandy clay loam, fine sandy loam	CL, SC	A-4, A-6	0	0	95-100	92-100	85-100	36-65	20-37	5-16
	35-51	Clay, clay loam, silty clay loam, silty clay	CH, CL	A-6, A-7	0	0-1	90-100	85-100	80-100	70-98	37-60	15-34
	51-80	Clay, silty clay, silty clay loam, clay loam	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-100	65-100	30-60	12-38

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	
NpsB:												
Nipsum	0-20	Silty clay loam	CL	A-6, A-7-6	0	0-2	97-100	90-100	90-100	80-98	37-50	15-25
	20-27	Silty clay, clay loam, silty clay loam	CH, CL	A-6, A-7-6	0	0-2	97-100	90-100	90-100	75-98	37-60	15-30
	27-40	Silty clay, clay loam, silty clay loam	CH, CL	A-7-6	0	0	97-100	90-100	90-100	75-98	37-60	15-30
	40-62	Silty clay, clay loam, silty clay loam	CL, CH	A-7-6	0	0	97-100	90-100	90-100	75-98	33-60	12-30
	62-80	Silty clay, clay loam, silty clay loam	CH, CL	A-6, A-7-6	0	0	97-100	90-100	90-100	75-98	33-60	12-30
NstC:												
Nobscot	0-5	Sand	SM, SP-SM	A-2-4, A-3	0	0	100	95-100	70-98	3-25	0-0	NP
	5-23	Sand, fine sand, loamy fine sand, loamy sand	SM, SP-SM	A-2-4, A-3	0	0	100	95-100	70-100	3-35	0-14	NP
	23-53	Sandy loam, fine sandy loam	CL-ML, ML, SC-SM, SM	A-2-4, A-4	0	0	100	95-100	70-100	20-60	14-26	NP-7
	53-71	Sandy loam, loamy fine sand, loamy fine sand, fine sand	ML, SC-SM, SM, SP-SM, CL-ML	A-4, A-2-4, A-3	0	0	100	95-100	70-100	3-60	0-26	NP-7
	71-80	Sand, fine sand, loamy fine sand, loamy sand	SP-SM, SM	A-2-4, A-3	0	0	100	95-100	70-100	3-35	0-14	NP
OakA:												
Oakley	0-12	Loam	CL	A-4, A-6	0	0	95-100	90-100	80-95	55-80	25-35	7-13
	12-43	Loam, sandy clay loam, clay loam	CL, CL-ML, SC, SC-SM	A-6, A-4	0	0	85-100	75-98	65-95	30-80	25-40	7-18
	43-58	Sandy clay loam, loam, clay loam	SC-SM, SC, CL-ML, CL	A-6, A-4	0	0	85-100	75-98	65-95	30-80	25-40	7-18
	58-85	Clay loam, sandy clay loam, loam, sandy loam	CL, CL-ML, ML, SM, SC-SM, SC	A-4, A-6	0	0	85-100	75-98	50-95	25-75	15-40	2-18
	85-95	Gravelly sandy loam, loam, stratified gravelly loamy sand to clay loam	SC, CL, CL-ML, ML, SM, SC-SM	A-6, A-4	0	0	75-100	62-98	50-95	25-75	15-40	2-18
	95-120	Clay, silty clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	65-100	30-60	12-38
OakB:												
Oakley	0-7	Loam	CL	A-4, A-6	0	0	95-100	90-100	80-95	55-80	25-35	7-13
	7-41	Clay loam, loam, sandy clay loam	CL-ML, SC, SC-SM, CL	A-6, A-4	0	0	85-100	75-98	65-95	30-80	25-40	7-18
	41-49	Sandy clay loam, clay loam, loam	CL, SC-SM, SC, CL-ML	A-6, A-4	0	0	85-100	75-98	65-95	30-80	25-40	7-18
	49-72	Sandy loam, loam, sandy clay loam, clay loam	SM, SC-SM, ML, CL-ML, CL, SC	A-6, A-4	0	0	85-100	75-98	50-95	25-75	15-40	2-18

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	
	72-95	Loam, gravelly sandy loam, stratified gravelly loamy sand to clay loam	CL-ML, ML, SM, SC-SM, CL, SC	A-6, A-4	0	0	75-100	62-98	50-95	25-75	15-40	2-18
	95-120	Clay, silty clay	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-100	65-100	30-60	12-38
OzkA:												
Ozark	0-11	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	100	98-100	70-100	36-60	15-26	NP-7
	11-24	Clay loam, sandy clay loam	SC, CL	A-4, A-6	0	0	100	98-100	80-100	36-85	25-40	7-18
	24-50	Loam, clay loam, sandy clay loam, sandy clay, clay	CL, SC	A-4, A-6, A-7	0	0	100	98-100	80-100	36-85	25-50	7-25
	50-59	Loam, clay loam, sandy clay loam, sandy clay, clay	CL, SC	A-4, A-6, A-7	0	0	100	98-100	80-100	36-85	25-50	7-25
	59-83	Fine sandy loam, clay loam, sandy clay loam, loam	SM, CL, CL-ML, SC, ML, SC-SM	A-4, A-6	0	0	100	98-100	70-100	36-85	15-40	2-18
	83-105	Clay, silty clay, clay loam, silty clay loam	CH, CL	A-6, A-7	0	0	98-100	95-100	90-100	36-95	33-60	12-34
	105-120	Clay, silty clay	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-100	65-100	30-60	12-38
PIT:												
Pits	0-80	Bedrock			---	---	---	---	---	---	---	---
QhTC:												
Quanah	0-14	Silty clay loam	CL	A-6	0	0	95-100	92-100	90-100	65-95	33-40	11-20
	14-22	Silty clay loam, clay loam, loam, silt loam	CL	A-4, A-6, A-7	0	0	95-100	92-100	85-100	55-95	25-45	8-20
	22-36	Silty clay loam, clay loam, loam, silt loam	CL	A-4, A-6, A-7	0	0	90-100	85-100	85-98	55-95	25-45	8-20
	36-82	Silty clay loam, clay loam, loam, silt loam	CL	A-4, A-6, A-7	0	0	90-100	85-100	85-98	55-95	25-45	8-20
Talpa	0-10	Loam	CL	A-7, A-6	0	0-5	85-100	75-92	70-92	55-85	30-45	11-25
	10-20	Bedrock			---	---	---	---	---	---	---	---
QnRG:												
Quinlan	0-5	Very fine sandy loam	CL-ML, ML	A-4	0	0	100	100	94-100	51-75	14-28	NP-7
	5-11	Loam, silt loam, very fine sandy loam, fine sandy loam	ML, SM, CL, CL-ML	A-4, A-6	0	0	97-100	95-100	90-100	36-98	14-37	NP-14
	11-40	Silt loam, loam, very fine sandy loam	SM, CL, CL-ML, ML	A-4, A-6	0	0-2	90-100	85-100	75-100	40-95	14-37	NP-14
Rock outcrop	0-62	Bedrock			---	---	---	---	---	---	---	---

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	
RakA:												
Roark	0-10	Loam	CL, CL-ML	A-4, A-6	0	0	98-100	97-100	90-100	57-85	25-35	4-13
	10-24	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0	98-100	97-100	90-100	65-95	35-50	16-26
	24-34	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0	98-100	95-100	90-100	60-95	35-50	16-26
	34-49	Clay loam, silty clay loam, clay	CL	A-6, A-7	0	0	98-100	95-100	90-100	60-95	35-50	16-26
	49-67	Loam, silty clay loam, clay loam, sandy clay loam, fine sandy loam	CL-ML, SC, SC-SM, CL	A-4, A-6, A-7	0	0	98-100	95-100	80-98	35-95	15-43	4-20
	67-80	Clay loam, loam, sandy clay loam, fine sandy loam, loamy sand	SC-SM, CL, SM, SC, CL-ML, ML	A-4, A-6, A-2	0	0	95-100	90-100	80-98	15-85	0-50	NP-23
RKBG:												
Rock outcrop, granite	0-60	Bedrock			---	---	---	---	---	---	---	---
Brico	0-10	Cobbly loam	SC, GC, CL	A-4, A-6	0	15-30	70-95	65-90	50-70	40-60	30-36	9-15
	10-35	Very cobbly clay, very cobbly clay loam, cobbly clay, cobbly clay loam	SC, GC	A-2, A-6, A-7	0	20-60	40-85	40-85	30-60	30-50	37-65	16-37
	35-72	Extremely cobbly clay loam, very cobbly clay loam, cobbly clay loam	SC, GC	A-2, A-6, A-7	0	20-60	30-85	20-85	15-60	15-50	33-49	13-25
RKO:												
Rock outcrop, granite	0-60	Bedrock			---	---	---	---	---	---	---	---
RuuA:												
Rups	0-7	Silty clay loam	CL	A-6, A-7-6	0	0	100	98-100	95-100	75-90	33-42	12-19
	7-21	Clay loam, silty clay loam, silt loam	CL	A-6, A-7	0	0	100	98-100	95-100	70-90	30-43	8-20
	21-43	Silty clay loam, clay loam, silt loam	CL	A-6, A-7	0	0	100	98-100	95-100	70-90	30-43	8-20
	43-80	Silty clay loam, clay loam, silty clay, clay, stratified silty clay loam to clay	CL	A-6, A-7	0	0	95-100	90-100	85-100	65-90	30-50	8-23
RuwA:												
Rups	0-15	Silty clay loam	CL	A-6, A-7-6	0	0	100	98-100	95-100	75-90	33-42	12-19
	15-30	Silty clay loam, clay loam, silt loam	CL	A-6, A-7	0	0	100	98-100	95-100	70-90	30-43	8-20
	30-48	Silt loam, silty clay loam, clay loam	CL	A-6, A-7	0	0	100	98-100	95-100	70-90	30-43	8-20

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	
	48-80	Stratified silty clay loam to clay, clay loam, silty clay loam, silty clay	CL	A-6, A-7	0	0	95-100	90-100	85-100	65-90	30-50	8-23
SKRG:												
Spikebox	0-3	Loam	CL-ML, ML	A-4	0	0	90-100	85-100	85-100	58-85	22-29	2-7
	3-12	Loam, fine sandy loam, very fine sandy loam	SM, SC-SM, CL-ML, ML	A-4	0	0	90-100	85-100	80-100	35-85	14-29	NP-7
	12-40	Bedrock			---	---	---	---	---	---	---	---
Knoco	0-5	Silty clay	CH, CL	A-6, A-7-6	0	0-2	90-100	80-100	75-100	60-90	30-60	12-38
	5-11	Clay, silty clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	75-100	70-100	30-60	12-38
	11-80	Clay, silty clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	70-100	30-60	12-38
Rock outcrop	0-62	Bedrock			---	---	---	---	---	---	---	---
SpDB:												
Springer	0-13	Loamy sand	SM, SP-SM	A-2-4	0	0	98-100	95-100	70-96	10-25	0-14	NP-4
	13-42	Fine sandy loam, sandy loam, loamy sand, loamy fine sand	ML, CL-ML, SM, SC-SM	A-4, A-2-4	0	0	98-100	95-100	75-99	11-60	14-26	NP-7
	42-57	Fine sand, loamy sand, loamy fine sand, sandy loam	SM, SW-SM	A-2-4, A-3	0	0	98-100	95-100	70-96	8-25	0-14	NP-4
	57-80	Fine sandy loam, sandy loam, sandy clay loam	SC-SM, SM, CL-ML, CL, ML, SC	A-2-4, A-4	0	0	98-100	95-100	75-99	11-60	14-30	2-10
SpDB:												
Devol	0-14	Loamy sand	SM	A-2	0	0	99-100	98-100	85-100	15-35	0-14	NP
	14-29	Fine sandy loam, loamy fine sand	SM, SC-SM, CL-ML, ML	A-2, A-4	0	0	99-100	98-100	90-100	15-60	0-26	NP-7
	29-45	Fine sandy loam, loamy fine sand	SC-SM, ML, CL-ML, SM	A-2, A-4	0	0	99-100	98-100	90-100	15-60	0-26	NP-7
	45-65	Loamy sand, fine sand, loamy fine sand, fine sandy loam	SM, SC-SM	A-2, A-4	0	0	99-100	98-100	80-100	5-50	0-26	NP-7
	65-80	Fine sand, loamy sand, loamy fine sand, fine sandy loam	SM, SC-SM	A-2, A-4	0	0	99-100	98-100	50-100	5-50	0-26	NP-7
SplA:												
Spur	0-11	Loam	ML, CL-ML	A-4	0	0	100	98-100	96-100	65-85	22-29	2-7
	11-43	Loam, clay loam, sandy clay loam	CL, SC	A-6, A-4	0	0	100	98-100	90-100	36-90	25-40	7-18
	43-75	Loam, clay loam, sandy clay loam, fine sandy loam, stratified fine sandy loam to clay loam	CL, CL-ML, SC-SM, SM, ML, SC	A-6, A-4	0	0	100	98-100	90-100	36-90	14-40	2-18

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	
	75-90	Loam, clay loam, sandy clay loam, fine sandy loam, stratified fine sandy loam to clay loam	SM, SC, ML, CL, CL-ML, SC-SM	A-6, A-4	0	0	100	98-100	90-100	36-90	14-40	2-18
SurA:												
Spur	0-14	Clay loam	CL	A-6	0	0	100	98-100	96-100	75-90	31-40	10-18
	14-30	Loam, clay loam, sandy clay loam	CL, CL-ML, SC, SC-SM	A-6, A-4	0	0	100	98-100	90-100	36-90	25-40	7-18
	30-51	Loam, clay loam, sandy clay loam	SC-SM, CL, SC, CL-ML	A-6, A-4	0	0	100	98-100	90-100	36-90	25-40	7-18
	51-80	Stratified fine sandy loam to clay loam, fine sandy loam, loam, sandy clay loam, clay loam	CL, SC, SC-SM, CL-ML	A-6, A-4	0	0	100	98-100	90-100	36-90	20-40	4-18
SuuA:												
Spur	0-10	Clay loam	CL	A-6	0	0	100	98-100	96-100	75-90	31-40	10-18
	10-16	Clay loam, loam	CL	A-6	0	0	100	98-100	96-100	75-90	30-40	8-18
	16-48	Sandy clay loam, loam, clay loam	SC-SM, SC, CL-ML, CL	A-6, A-4	0	0	100	98-100	90-100	36-90	25-40	7-18
	48-80	Clay loam, sandy clay loam, loam, fine sandy loam, stratified fine sandy loam to clay loam	SC-SM, CL-ML, SC, CL	A-6, A-4	0	0	100	98-100	90-100	36-90	20-40	4-18
SuwA:												
Spur	0-8	Clay loam	CL	A-6	0	0	100	98-100	96-100	75-90	31-40	10-18
	8-17	Sandy clay loam, clay loam, loam	SC-SM, SC, CL-ML, CL	A-6, A-4	0	0	100	98-100	90-100	36-90	25-40	7-18
	17-35	Loam, sandy clay loam, clay loam	CL-ML, SC, SC-SM, CL	A-6, A-4	0	0	100	98-100	90-100	36-90	25-40	7-18
	35-49	Sandy clay loam, clay loam, loam	CL-ML, SC, SC-SM, CL	A-6, A-4	0	0	100	98-100	90-100	36-90	25-40	7-18
	49-80	Stratified fine sandy loam to clay loam, fine sandy loam, loam, sandy clay loam, clay loam	CL-ML, SC-SM, SC, CL	A-6, A-4	0	0	100	98-100	90-100	36-90	20-40	4-18
TARD:												
Talpa	0-7	Loam	ML, CL	A-6, A-4	0	0-5	85-100	75-92	70-92	55-85	30-35	7-13
	7-40	Bedrock			---	---	---	---	---	---	---	---
Aspermont	0-10	Silt loam	ML, CL	A-4, A-6	0	0	95-100	90-100	80-100	65-90	30-37	7-14
	10-42	Silty clay loam, clay loam, loam, silt loam	ML, CL	A-6, A-7, A-4	0	0	90-100	85-100	85-100	65-95	30-43	7-20

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	
	42-80	Silty clay loam, clay, clay loam, silty clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	65-100	30-60	12-38
Rock outcrop----	0-60	Bedrock	---	---	---	---	---	---	---	---	---	---
TilA:												
Tillman---------	0-8	Clay loam	CL	A-6	0	0-1	97-100	95-100	95-100	70-90	30-43	11-20
	8-15	Clay, silty clay, silty clay loam, clay loam	CL, CH	A-6, A-7-6	0	0-1	95-100	92-100	90-98	70-95	37-55	15-35
	15-45	Clay, clay loam, silty clay loam, silty clay	CL, CH	A-6, A-7-6	0	0-1	95-100	92-100	80-97	60-90	37-55	15-35
	45-62	Silty clay loam, silty clay, clay, clay loam	CL, CH	A-6, A-7-6	0	0-1	95-100	92-100	80-97	60-90	37-55	15-35
	62-78	Clay loam, silty clay, silty clay loam, clay	CL, CH	A-6, A-7-6	0	0-3	95-100	90-100	80-97	60-90	37-60	15-35
	78-90	Silty clay, clay	CL, CH	A-6, A-7-6	0	0-3	95-100	90-100	80-97	60-90	40-60	18-35
	90-100	Silty clay, clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	60-100	30-60	12-38
TilB:												
Tillman---------	0-6	Clay loam	CL	A-6	0	0-1	97-100	95-100	95-100	70-90	30-43	11-20
	6-10	Clay, clay loam, silty clay, silty clay loam	CH, CL	A-6, A-7-6	0	0-1	95-100	92-100	90-98	70-95	37-55	15-35
	10-25	Silty clay, silty clay loam, clay, clay loam	CL, CH	A-6, A-7-6	0	0-1	95-100	92-100	90-98	70-95	37-55	15-35
	25-48	Silty clay loam, silty clay, clay loam, clay	CL, CH	A-6, A-7-6	0	0-1	95-100	92-100	80-97	60-90	37-55	15-35
	48-60	Silty clay loam, clay, clay loam, silty clay	CH, CL	A-6, A-7-6	0	0-1	95-100	92-100	80-97	60-90	37-55	15-35
	60-82	Clay loam, silty clay, silty clay loam, clay	CH, CL	A-6, A-7-6	0	0-3	95-100	90-100	80-97	60-90	37-60	15-35
	82-90	Silty clay, clay	CL, CH	A-6, A-7-6	0	0-3	95-100	90-100	80-97	60-90	40-60	18-35
	90-100	Silty clay, clay	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-100	60-100	30-60	12-38
TipA:												
Tipton----------	0-8	Loam	CL-ML, CL	A-4	0	0	100	99-100	95-100	65-85	25-33	4-12
	8-15	Loam	CL, CL-ML	A-4	0	0	100	99-100	95-100	65-85	25-33	4-12
	15-25	Loam, sandy clay loam, clay loam	CL, CL-ML, SC-SM, SC	A-4, A-6	0	0	100	97-100	90-100	36-85	25-40	7-18
	25-41	Clay loam, loam, sandy clay loam	CL, CL-ML, SC-SM, SC	A-4, A-6	0	0	95-100	93-100	85-100	36-85	25-40	7-18
	41-66	Loam, clay loam, sandy clay loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	95-100	93-100	85-100	36-85	25-40	7-18
	66-80	Sandy clay loam, sandy loam, clay loam, loam	ML, SC, CL-ML, SC-SM, SM, CL	A-2-4, A-4, A-6	0	0	95-100	93-100	80-100	30-85	20-40	2-18

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	
TlvB:												
Tilvern	0-5	Clay loam	CL	A-6, A-7-6	0	0-1	95-100	90-100	90-100	70-95	35-50	15-26
	5-11	Silty clay, clay, clay loam	CH, CL	A-6, A-7-6	0	0-1	95-100	90-100	90-100	70-97	35-60	16-35
	11-31	Silty clay, clay	CL, CH	A-6, A-7-6	0	0-1	95-100	90-100	90-100	80-97	38-60	18-35
	31-44	Silty clay, clay, clay loam	CH, CL	A-6, A-7-6	0	0-1	95-100	90-100	90-100	70-95	35-60	16-35
	44-51	Silty clay, clay, clay loam	CH, CL	A-6, A-7-6	0	0-1	95-100	90-100	90-100	70-95	35-60	16-35
	51-80	Silty clay, clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	70-100	30-60	12-38
TpfA:												
Tipton	0-7	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	100	95-100	80-100	36-60	15-26	NP-7
	7-13	Fine sandy loam	CL-ML, ML, SC-SM, SM	A-4	0	0	100	95-100	80-100	36-60	15-26	NP-7
	13-24	Loam, sandy clay loam	SC, SM, CL, ML, CL-ML	A-4, A-6	0	0	100	97-100	90-100	36-85	22-34	2-12
	24-47	Clay loam, sandy clay loam, loam	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0	100	97-100	90-100	36-85	25-40	7-18
	47-63	Sandy clay loam, loam, clay loam	CL, CL-ML, SC-SM, SC	A-4, A-6	0	0	95-100	93-100	85-100	36-85	25-40	7-18
	63-80	Sandy loam, loam, sandy clay loam, clay loam	ML, SC-SM, SM, CL, SC, CL-ML	A-4, A-6, A-2-4	0	0	95-100	93-100	70-100	30-85	20-40	2-18
TrwB:												
Treadway	0-13	Silty clay loam	CL	A-6, A-7	0	0	95-100	92-100	85-100	80-98	35-50	12-25
	13-24	Silty clay loam, silty clay, clay, clay loam	CL, CH	A-7, A-6	0	0	90-100	75-100	70-100	60-98	35-60	15-34
	24-80	Silty clay, clay, silty clay loam, clay loam, stratified silty clay loam to clay	CH, CL	A-7, A-6	0	0	85-100	75-100	70-97	60-95	35-60	15-34
VeKE:												
Vernon	0-6	Clay loam	CL	A-6, A-7-6	0	0-1	95-100	90-100	90-100	70-95	35-50	16-26
	6-26	Clay, silty clay	CL, CH	A-6, A-7-6	0	0-1	95-100	90-100	90-100	80-98	38-60	18-40
	26-80	Clay, silty clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	70-100	30-60	12-38
Knoco	0-6	Silty clay	CL, CH	A-6, A-7-6	0	0-2	90-100	80-100	75-100	60-90	30-60	12-38
	6-16	Clay, silty clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	75-100	70-100	30-60	12-38
	16-60	Clay, silty clay	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-100	70-100	30-60	12-38
VerC:												
Vernon	0-6	Clay loam	CL	A-6, A-7-6	0	0-1	95-100	90-100	90-100	70-95	35-50	16-26
	6-26	Clay, silty clay	CH, CL	A-6, A-7-6	0	0-1	95-100	90-100	90-100	80-98	38-60	18-40
	26-35	Clay, silty clay	CH, CL	A-6, A-7-6	0	0-1	95-100	90-100	90-100	80-98	38-60	18-40
	35-80	Clay, silty clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	70-100	30-60	12-38
VeTE:												
Vernon	0-7	Clay loam	CL	A-6, A-7-6	0	0-1	95-100	90-100	90-100	70-95	35-50	16-26
	7-16	Clay, silty clay	CL, CH	A-6, A-7-6	0	0-1	95-100	90-100	90-100	80-98	38-60	18-40
	16-25	Clay, silty clay	CL, CH	A-6, A-7-6	0	0-1	95-100	90-100	90-100	80-98	38-60	18-40
	25-38	Clay, silty clay	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-100	70-98	38-60	18-40
	38-80	Clay, silty clay	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-100	70-100	30-60	12-38

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	
Talpa, stony----	0-9	Loam	CL, ML	A-6, A-4	0	0-5	85-100	75-92	70-92	55-85	30-35	7-13
	9-40	Bedrock			---	---	---	---	---	---	---	---
W:												
Water----------	0-80	Water			---	---	---	---	---	---	---	---
WlwB:												
Willow----------	0-7	Loam	CL	A-4, A-6	0	0	98-100	97-100	95-100	65-90	30-37	8-14
	7-31	Silty clay loam, clay loam, loam, silt loam	CL	A-6	0	0	98-100	97-100	95-100	65-98	33-45	12-22
	31-39	Silt loam, clay loam, loam	CL, ML	A-4, A-6	0	0	97-100	92-100	85-100	55-98	30-37	5-15
	39-54	Silt loam, loam, very fine sandy loam	CL-ML, CL, ML	A-4	0	0	90-100	80-100	75-100	50-97	14-33	NP-10
	54-80	Silt loam, loam, very fine sandy loam	CL, CL-ML, ML, SM	A-4	0	0-2	90-100	75-100	75-100	40-95	14-33	NP-10
WooB:												
Woodward--------	0-15	Loam	ML, CL-ML, CL	A-4	0	0	100	100	96-100	65-97	22-31	2-10
	15-32	Loam, silt loam, very fine sandy loam	CL-ML, CL, ML	A-4	0	0	100	100	94-100	51-97	15-31	NP-10
	32-38	Loam, silt loam, very fine sandy loam	SM, ML, CL-ML, CL	A-4	0	0	90-100	85-100	80-100	40-97	15-31	NP-10
	38-80	Loam, silt loam, very fine sandy loam	CL, ML, SM, CL-ML	A-4	0	0-2	90-100	85-100	75-100	40-95	14-31	NP-10
WooC:												
Woodward--------	0-7	Loam	CL, ML, CL-ML	A-4	0	0	100	100	96-100	65-97	22-31	2-10
	7-19	Loam, silt loam, very fine sandy loam	CL, ML, CL-ML	A-4	0	0	100	100	94-100	51-97	15-31	NP-10
	19-28	Loam, silt loam, very fine sandy loam	ML, CL, CL-ML, SM	A-4	0	0	90-100	85-100	80-100	40-97	15-31	NP-10
	28-80	Loam, silt loam, very fine sandy loam	SM, ML, CL, CL-ML	A-4	0	0-2	90-100	85-100	75-100	40-95	14-31	NP-10
WoQE:												
Woodward--------	0-9	Loam	CL, CL-ML, ML	A-4	0	0	100	100	96-100	65-85	22-31	2-10
	9-21	Loam, silt loam, very fine sandy loam	CL-ML, ML, CL	A-4	0	0	100	100	94-100	51-97	15-31	NP-10
	21-26	Loam, silt loam, very fine sandy loam	SM, CL, CL-ML, ML	A-4	0	0	90-100	85-100	80-100	40-97	15-31	NP-10
	26-80	Loam, silt loam, very fine sandy loam	CL, SM, ML, CL-ML	A-4	0	0-2	90-100	85-100	75-100	40-95	14-31	NP-10

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	
Quinlan---	0-4	Loam	ML, CL-ML, CL	A-4	0	0	100	100	96-100	65-85	22-31	2-10
	4-12	Loam, silt loam, very fine sandy loam, fine sandy loam	CL, CL-ML, ML, SM	A-4, A-6	0	0	97-100	95-100	90-100	36-98	14-37	NP-14
	12-40	Silt loam, loam, very fine sandy loam	SM, ML, CL-ML, CL	A-4, A-6	0	0-2	90-100	85-100	75-100	40-95	14-37	NP-14
WslA:												
Westola---	0-12	Fine sandy loam	SM, CL-ML, SC-SM, ML	A-4	0	0	100	95-100	90-100	36-60	15-26	NP-7
	12-50	Stratified fine sandy loam to loam, fine sandy loam, very fine sandy loam, loam	CL-ML, SC-SM, ML, SM	A-4	0	0	100	95-100	90-100	36-85	15-30	NP-8
	50-80	Stratified sand to sandy loam, stratified loamy fine sand to loam	SM, CL-ML, ML, SC-SM	A-2-4, A-4	0	0	100	95-100	90-100	15-85	10-30	NP-8
WstA:												
Westola---	0-8	Fine sandy loam	CL-ML, SM, SC-SM, ML	A-4	0	0	100	95-100	90-100	36-60	15-26	NP-7
	8-19	Loam	ML, CL-ML	A-4	0	0	100	95-100	90-100	60-85	22-29	2-7
	19-30	Fine sandy loam, very fine sandy loam, loam, stratified fine sandy loam to loam	CL-ML, SM, ML, SC-SM	A-4	0	0	100	95-100	90-100	36-85	15-30	NP-8
	30-80	Stratified fine sandy loam to loam, fine sandy loam, very fine sandy loam, loam, stratified sand to sandy loam	SC-SM, CL-ML, SM, ML	A-4, A-2-4	0	0	100	95-100	90-100	15-85	15-30	NP-8
WtlA:												
Westill---	0-5	Clay loam	CL	A-6	0	0-1	97-100	95-100	90-100	70-90	30-43	11-20
	5-15	Clay, clay loam, silty clay, silty clay loam	CL, CH	A-6, A-7-6	0	0-1	95-100	90-100	90-98	70-95	37-55	15-35
	15-24	Clay, clay loam, silty clay, silty clay loam	CH, CL	A-6, A-7-6	0	0-1	95-100	90-100	90-98	70-95	37-55	15-35
	24-55	Clay, clay loam, silty clay, silty clay loam	CH, CL	A-6, A-7-6	0	0-1	95-100	90-100	80-97	60-90	37-60	15-35
	55-70	Silty clay, clay	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-97	60-90	40-60	18-35
	70-80	Silty clay, clay	CL, CH	A-6, A-7-6	0	0-2	90-100	85-100	70-100	60-100	30-60	12-38

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	
WtlB:												
Westill	0-9	Clay loam	CL	A-6	0	0-1	97-100	95-100	90-100	70-90	30-43	11-20
	9-16	Clay, clay loam, silty clay, silty clay loam	CL, CH	A-6, A-7-6	0	0-1	95-100	90-100	90-98	70-95	37-55	15-35
	16-47	Clay, clay loam, silty clay, silty clay loam	CL, CH	A-6, A-7-6	0	0-1	95-100	90-100	80-97	60-90	37-60	15-35
	47-56	Clay, clay loam, silty clay, silty clay loam	CL, CH	A-6, A-7-6	0	0-1	95-100	90-100	80-97	60-90	37-60	15-35
	56-68	Silty clay, clay	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-97	45-90	40-60	18-35
	68-80	Silty clay, clay	CH, CL	A-6, A-7-6	0	0-2	90-100	85-100	70-100	60-100	30-60	12-38

Physical Soil Properties

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

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.

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

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. The estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

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

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

The amount and kind of clay 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 (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, 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.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3 bar or 1/10 bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

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

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, 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 has a positive effect on available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of several factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

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

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

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups.—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.

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 to soil blowing. Soils are grouped according to the following distinctions:

WEG 1. Very fine sand, fine sand, sand, and coarse sand.

WEG 2. Loamy very fine sand, loamy fine sand, loamy sand, loamy coarse sand, ash and sapric organic soil material.

WEG 3. Very fine sandy loam, fine sandy loam, sandy loam, and coarse sandy loam.

WEG 4L. Calcareous loam, silt loam, clay loam, and silty clay loam characterized by a strongly or violently effervescent reaction to cold dilute (1N) HCI.

WEG 5. Noncalcareous loam and silt loam with less than 20 percent clay and sandy clay loam, sandy clay, and hemic soil material.

WEG 6. Noncalcareous loam and silt loam with more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

WEG 7. Silt, noncalcareous silty clay loam with less than 35 percent clay, and fibric organic soil material.

WEG 8. Soils that are not susceptible to soil blowing because of rock fragments on the surface or because of surface wetness.

Wind erodibility index is a numerical value indicating the susceptibility of soil to 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.

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

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Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" Apply only to the surface layer. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
AceB:														
Acme	0-12	0-30	50-80	18-27	1.25-1.55	0.6-2	0.14-0.20	0.0-2.9	1.0-2.0	.37	.37	3	4L	86
	12-24	0-45	30-80	18-35	1.30-1.70	0.6-2	0.10-0.18	0.0-2.9	0.5-1.2	.37	.37			
	24-44	0-45	30-80	12-35	1.30-1.70	0.6-2	0.10-0.18	0.0-2.9	0.2-0.8	.37	.37			
	44-55	0-45	30-80	12-35	1.30-1.70	0.6-2	0.10-0.18	0.0-2.9	0.2-0.8	.37	.37			
	55-80	0-45	30-80	12-35	1.30-1.85	0.6-2	0.07-0.15	0.0-2.9	0.0-0.5	.37	.37			
ArHF:														
Arnett	0-15	43-85	0-50	10-20	1.40-1.65	2-6	0.10-0.15	0.0-3.0	0.5-1.0	.24	.24	5	3	86
	15-40	20-80	0-53	18-35	1.30-1.70	0.6-2	0.12-0.20	2.0-6.0	0.1-0.7	.28	.32			
	40-58	20-80	0-53	18-35	1.30-1.70	0.6-2	0.09-0.17	0.0-3.0	0.1-0.5	.20	.32			
	58-80	20-85	0-53	10-30	1.30-1.70	0.6-6	0.05-0.17	0.0-3.0	0.0-0.5	.20	.32			
Hardeman	0-7	43-85	0-50	10-18	1.35-1.55	2-6	0.10-0.15	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	7-40	32-85	0-50	12-18	1.35-1.55	2-6	0.10-0.15	0.0-2.9	0.1-0.5	.28	.28			
	40-60	32-85	0-50	12-18	1.35-1.55	2-6	0.10-0.15	0.0-2.9	0.1-0.5	.28	.28			
	60-80	32-90	0-50	5-18	1.35-1.55	2-20	0.07-0.15	0.0-2.9	0.1-0.5	.28	.28			
ArnB:														
Arnett	0-7	43-85	0-50	10-20	1.40-1.65	2-6	0.10-0.15	0.0-3.0	0.5-1.0	.24	.24	5	3	86
	7-26	20-80	0-53	18-35	1.30-1.70	0.6-2	0.12-0.20	2.0-6.0	0.1-0.7	.28	.32			
	26-46	20-85	0-53	10-30	1.30-1.70	0.6-6	0.05-0.17	0.0-3.0	0.0-0.5	.20	.32			
	46-80	20-90	0-53	7-35	1.30-1.70	0.6-6	0.04-0.18	0.0-3.0	0.0-0.5	.20	.28			
ArnC:														
Arnett	0-7	43-85	0-50	10-20	1.40-1.65	2-6	0.10-0.15	0.0-3.0	0.5-1.0	.24	.24	5	3	86
	7-17	20-80	0-53	18-35	1.30-1.70	0.6-2	0.12-0.20	2.0-6.0	0.1-0.7	.28	.32			
	17-31	20-80	0-53	18-35	1.30-1.70	0.6-2	0.09-0.17	0.0-3.0	0.1-0.5	.20	.32			
	31-44	20-85	0-53	10-30	1.30-1.70	0.6-6	0.05-0.17	0.0-3.0	0.0-0.5	.20	.32			
	44-80	20-90	0-53	7-35	1.30-1.70	0.6-6	0.04-0.18	0.0-3.0	0.0-0.5	.20	.28			
AsmB:														
Aspermont	0-6	0-32	50-82	18-27	1.25-1.55	0.6-2	0.15-0.24	1.0-5.9	0.5-2.0	.37	.37	4	4L	86
	6-34	0-53	20-82	18-35	1.30-1.70	0.2-2	0.15-0.22	3.0-5.9	0.0-0.5	.37	.37			
	34-43	0-53	20-82	18-35	1.30-1.70	0.2-2	0.12-0.22	3.0-5.9	0.0-0.5	.37	.37			
	43-50	0-53	15-82	18-40	1.30-1.70	0.2-2	0.12-0.22	3.0-5.9	0.0-0.5	.37	.37			
	50-80	0-45	0-73	27-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
AsmC:														
Aspermont	0-8	0-32	50-82	18-27	1.25-1.55	0.6-2	0.15-0.24	1.0-5.9	0.5-2.0	.37	.37	4	4L	86
	8-35	0-53	20-82	18-35	1.30-1.70	0.2-2	0.15-0.22	3.0-5.9	0.0-0.5	.37	.37			
	35-50	0-53	20-82	18-35	1.30-1.70	0.2-2	0.12-0.22	3.0-5.9	0.0-0.5	.37	.37			
	50-80	0-45	0-73	27-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
BekA:														
Beckman	0-4	0-45	0-60	40-65	1.25-1.45	0.0015-0.06	0.12-0.18	6.0-8.9	0.5-3.0	.37	.37	5	4	86
	4-14	0-45	0-65	35-60	1.25-1.45	0.0015-0.06	0.10-0.18	6.0-8.9	0.5-3.0	.37	.37			
	14-41	0-45	0-65	30-60	1.35-1.60	0.0015-0.2	0.08-0.12	4.0-8.9	0.0-1.0	.37	.37			
	41-80	0-45	0-65	30-60	1.35-1.60	0.0015-0.2	0.08-0.12	4.0-8.9	0.0-1.0	.37	.37			
BfdB:														
Burford	0-5	23-53	27-50	18-27	1.40-1.55	0.6-2	0.15-0.24	0.0-2.9	0.5-2.0	.37	.37	4	6	48
	5-12	0-53	15-82	20-35	1.40-1.60	0.2-2	0.15-0.22	3.0-5.9	0.0-0.5	.37	.37			
	12-30	0-53	15-82	20-35	1.40-1.60	0.2-2	0.15-0.22	3.0-5.9	0.0-0.5	.37	.37			
	30-43	0-45	0-73	27-50	1.35-1.70	0.06-0.6	0.12-0.22	3.0-8.9	0.0-0.5	.37	.37			
	43-80	0-45	0-73	27-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
BfdC:														
Burford	0-6	23-53	27-50	18-27	1.40-1.55	0.6-2	0.15-0.24	0.0-2.9	0.5-2.0	.37	.37	4	6	48
	6-24	0-53	15-82	20-35	1.40-1.60	0.2-2	0.15-0.22	3.0-5.9	0.0-0.5	.37	.37			
	24-40	0-45	0-73	27-50	1.35-1.70	0.06-0.6	0.12-0.22	3.0-8.9	0.0-0.5	.37	.37			
	40-80	0-45	0-73	27-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
BfSC2:														
Burford, moderately eroded	0-6	23-53	27-50	18-27	1.40-1.55	0.6-2	0.15-0.24	0.0-2.9	0.5-1.0	.37	.37	4	4L	86
	6-35	0-53	20-73	20-35	1.40-1.60	0.2-2	0.15-0.22	3.0-5.9	0.0-0.5	.37	.37			
	35-40	0-45	15-73	27-50	1.35-1.70	0.06-0.6	0.12-0.22	3.0-5.9	0.0-0.5	.37	.37			
	40-80	0-45	15-73	27-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
Spikebox, moderately eroded	0-7	15-70	10-77	8-20	1.30-1.55	0.6-2	0.13-0.19	0.0-2.9	0.2-0.8	.37	.37	1	4L	86
	7-15	15-70	10-77	8-20	1.30-1.70	0.6-6	0.10-0.19	0.0-2.9	0.2-0.8	.32	.37			
	15-40	---	---	---	1.85-2.35	0.2-0.6	---	---	---	---	---			
BfSE:														
Burford	0-10	23-53	27-50	18-27	1.40-1.55	0.6-2	0.15-0.24	0.0-2.9	0.5-2.0	.37	.37	4	6	48
	10-29	0-53	20-73	20-35	1.40-1.60	0.2-2	0.15-0.22	3.0-5.9	0.0-0.5	.37	.37			
	29-44	0-53	20-73	20-35	1.40-1.60	0.2-2	0.15-0.22	3.0-5.9	0.0-0.5	.37	.37			
	44-57	0-45	15-73	27-50	1.35-1.70	0.06-0.6	0.12-0.22	3.0-8.9	0.0-0.5	.37	.37			
	57-80	0-45	15-73	27-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
Spikebox	0-6	15-70	10-77	8-20	1.30-1.55	0.6-2	0.13-0.19	0.0-2.9	0.2-1.0	.37	.37	1	5	56
	6-14	15-70	10-77	8-20	1.30-1.70	0.6-6	0.10-0.19	0.0-2.9	0.2-0.8	.32	.37			
	14-40	---	---	---	1.85-2.35	0.2-0.6	---	---	---	---	---			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
BriE:														
Brico	0-11	23-53	27-50	15-27	1.30-1.55	0.6-2	0.11-0.20	0.0-2.9	1.0-3.0	.15	.37	4	8	0
	11-24	0-45	0-45	35-60	1.35-1.60	0.2-0.6	0.04-0.13	3.0-5.9	0.5-1.0	.24	.32			
	24-40	0-45	0-45	35-60	1.35-1.60	0.2-0.6	0.04-0.13	3.0-5.9	0.5-1.0	.24	.32			
	40-72	20-45	15-53	27-35	1.45-1.70	0.2-0.6	0.04-0.13	3.0-5.9	0.0-0.5	.28	.32			
BukA:														
Bukreek	0-11	23-55	27-50	18-27	1.30-1.55	0.6-2	0.13-0.20	0.0-2.9	1.0-3.0	.37	.37	4	6	48
	11-18	20-80	0-50	25-35	1.30-1.70	0.6-2	0.13-0.20	2.0-5.9	0.8-2.0	.32	.32			
	18-30	20-80	0-50	25-35	1.30-1.70	0.6-2	0.13-0.20	2.0-5.9	0.5-1.0	.32	.32			
	30-74	20-80	0-50	25-35	1.30-1.70	0.6-2	0.13-0.17	0.0-2.9	0.1-0.7	.32	.32			
	74-80	23-85	0-50	15-30	1.35-1.70	0.6-6	0.10-0.18	0.0-2.9	0.1-0.5	.32	.32			
CarB:														
Carey	0-15	25-53	27-50	10-25	1.30-1.55	0.6-2	0.13-0.20	0.0-2.9	1.0-3.0	.37	.37	5	5	56
	15-42	10-50	20-70	20-35	1.30-1.70	0.6-2	0.13-0.20	2.0-5.9	0.5-1.2	.32	.32			
	42-65	10-80	10-80	10-27	1.30-1.65	0.6-6	0.10-0.18	0.0-2.9	0.1-0.5	.37	.37			
	65-80	10-80	10-80	10-27	1.70-2.25	0.2-2	0.05-0.15	0.0-2.9	0.0-0.3	.37	.37			
CawA:														
Carwile	0-15	43-85	0-40	5-18	1.40-1.65	2-6	0.10-0.16	0.0-2.9	1.0-3.0	.32	.32	5	3	86
	15-27	30-80	0-45	25-50	1.35-1.70	0.06-0.2	0.12-0.20	3.0-8.9	0.5-1.0	.37	.32			
	27-57	30-80	0-50	20-50	1.35-1.70	0.06-2	0.12-0.20	3.0-8.9	0.0-0.5	.37	.32			
	57-80	43-85	0-47	10-30	1.40-1.70	0.6-6	0.10-0.19	0.0-5.9	0.0-0.5	.32	.28			
CVRD:														
Cottonwood	0-5	0-32	50-82	18-27	1.30-1.50	0.6-2	0.11-0.18	0.0-2.9	0.5-1.0	.37	.37	1	4L	86
	5-8	0-53	15-82	18-35	1.30-1.70	0.6-2	0.11-0.18	0.0-2.9	0.1-0.5	.37	.37			
	8-40	---	---	---	1.85-2.35	0.0015-0.06	---	---	---	---	---			
Vinson	0-4	0-50	50-88	15-27	1.25-1.50	0.6-2	0.15-0.22	0.0-2.9	1.0-2.0	.37	.37	3	4L	86
	4-15	0-53	15-82	18-30	1.30-1.75	0.6-2	0.15-0.22	3.0-5.9	0.5-1.5	.32	.32			
	15-22	0-53	15-82	18-30	1.30-1.75	0.6-2	0.15-0.22	3.0-5.9	0.0-0.5	.32	.32			
	22-28	---	---	---	1.85-2.00	0.2-0.6	---	---	---	---	---			
	28-60	---	---	---	1.85-2.35	0.0015-0.06	---	---	---	---	---			
Rock outcrop	0-60	---	---	---	1.85-2.35	0.0015-0.06	---	---	---	---	---	--	---	---
DAM:														
Dam	0-80	---	---	---	---	0.06-2	---	---	---	---	---	--	---	---

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
DeSD:														
Devol	0-8	70-90	0-30	2-8	1.45-1.70	6-20	0.06-0.10	0.0-2.9	0.2-1.0	.17	.17	5	2	134
	8-28	43-90	0-50	8-18	1.40-1.70	2-6	0.07-0.15	0.0-2.9	0.0-0.5	.20	.20			
	28-47	43-90	0-50	2-18	1.40-1.70	2-20	0.07-0.15	0.0-2.9	0.0-0.5	.20	.20			
	47-62	43-100	0-50	2-10	1.50-1.75	2-20	0.05-0.12	0.0-2.9	0.0-0.2	.20	.20			
	62-80	43-100	0-50	2-10	1.50-1.75	2-20	0.05-0.12	0.0-2.9	0.0-0.2	.17	.17			
Springer	0-15	70-90	0-30	2-10	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.2-1.0	.17	.17	5	2	134
	15-41	43-90	0-50	6-18	1.40-1.70	2-6	0.07-0.15	0.0-2.9	0.1-0.5	.20	.20			
	41-52	43-100	0-50	2-12	1.50-1.75	6-20	0.02-0.10	0.0-2.9	0.1-0.5	.20	.20			
	52-70	43-85	0-50	10-25	1.40-1.70	0.6-6	0.10-0.16	0.0-2.9	0.1-0.5	.24	.24			
	70-80	43-100	0-50	2-12	1.50-1.75	2-20	0.05-0.12	0.0-2.9	0.0-0.2	.20	.20			
DkuA:														
Duke	0-5	0-20	40-60	40-60	1.30-1.50	0.2-0.6	0.12-0.18	6.0-8.9	1.0-3.0	.37	.37	5	4	86
	5-12	0-45	20-65	35-65	1.30-1.70	0.0015-0.06	0.08-0.18	6.0-8.9	0.3-1.5	.37	.37			
	12-44	0-45	20-65	35-65	1.30-1.70	0.0015-0.06	0.08-0.18	6.0-8.9	0.3-0.8	.37	.37			
	44-80	0-45	20-80	15-60	1.30-1.70	0.0015-2	0.10-0.20	2.0-8.9	0.1-0.8	.37	.37			
DodA:														
Dodson	0-7	23-53	27-50	18-27	1.30-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.37	.37	5	6	48
	7-37	0-45	10-65	30-45	1.30-1.70	0.2-0.6	0.14-0.20	3.0-8.9	1.0-2.0	.32	.32			
	37-56	0-53	15-80	20-40	1.30-1.70	0.2-2	0.14-0.20	3.0-5.9	0.5-1.0	.32	.32			
	56-72	0-80	0-80	15-35	1.30-1.70	0.2-2	0.14-0.20	3.0-5.9	0.2-0.8	.32	.32			
	72-80	0-85	0-85	10-35	1.30-1.70	0.2-6	0.10-0.20	1.0-5.9	0.1-0.5	.32	.32			
DodB:														
Dodson	0-6	23-53	27-50	18-27	1.30-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.37	.37	5	6	48
	6-26	0-45	10-65	30-45	1.30-1.70	0.2-0.6	0.14-0.20	3.0-8.9	1.0-2.0	.32	.32			
	26-56	0-53	15-80	20-40	1.30-1.70	0.2-2	0.14-0.20	3.0-5.9	0.5-1.0	.32	.32			
	56-83	0-80	0-80	15-35	1.30-1.70	0.2-2	0.14-0.20	3.0-5.9	0.2-0.8	.32	.32			
	83-91	0-85	0-85	10-45	1.30-1.70	0.2-6	0.07-0.20	0.0-8.9	0.1-0.5	.32	.32			
EatA:														
Eastall	0-12	0-20	40-60	40-60	1.25-1.45	0.0015-0.06	0.12-0.18	6.0-15.0	0.5-2.0	.37	.37	5	4	86
	12-19	0-45	0-60	40-60	1.30-1.55	0.0015-0.06	0.12-0.18	6.0-15.0	0.1-1.0	.37	.37			
	19-56	0-45	0-60	40-60	1.30-1.60	0.0015-0.06	0.12-0.18	6.0-15.0	0.1-1.0	.37	.37			
	56-76	0-45	0-60	40-60	1.30-1.60	0.0015-0.06	0.12-0.18	6.0-15.0	0.1-1.0	.37	.37			
	76-95	0-45	0-73	30-60	1.30-1.70	0.06-0.2	0.12-0.22	6.0-15.0	0.1-0.5	.37	.37			
EdsB:														
Eda	0-11	86-100	0-14	1-7	1.50-1.65	6-20	0.02-0.06	0.0-2.9	0.5-1.0	.10	.10	5	1	220
	11-35	70-100	0-30	1-8	1.50-1.75	6-20	0.02-0.11	0.0-2.9	0.0-0.5	.15	.15			
	35-80	70-100	0-30	1-8	1.50-1.75	6-20	0.02-0.11	0.0-2.9	0.0-0.5	.15	.15			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
EdsD:														
Eda	0-13	86-100	0-14	1-7	1.50-1.65	6-20	0.02-0.06	0.0-2.9	0.5-1.0	.10	.10	5	1	220
	13-50	70-100	0-30	1-8	1.50-1.75	6-20	0.02-0.11	0.0-2.9	0.0-0.5	.15	.15			
	50-80	70-100	0-30	1-8	1.50-1.75	6-20	0.02-0.11	0.0-2.9	0.0-0.5	.15	.15			
EdsF:														
Eda	0-18	86-100	0-14	1-7	1.50-1.65	6-20	0.02-0.06	0.0-2.9	0.5-1.0	.10	.10	5	1	220
	18-40	70-100	0-30	1-8	1.50-1.75	6-20	0.02-0.11	0.0-2.9	0.0-0.5	.15	.15			
	40-80	70-100	0-30	1-8	1.50-1.75	6-20	0.02-0.11	0.0-2.9	0.0-0.5	.15	.15			
FraB:														
Frankirk	0-6	23-53	27-50	18-27	1.30-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.32	.32	5	6	48
	6-18	0-80	0-53	27-45	1.30-1.70	0.2-0.6	0.12-0.18	3.0-5.9	1.0-2.0	.37	.37			
	18-52	0-65	0-45	35-45	1.30-1.70	0.2-0.6	0.12-0.18	3.0-5.9	0.5-1.5	.37	.37			
	52-65	20-80	0-53	20-30	1.30-1.70	0.6-2	0.14-0.20	0.0-2.9	0.2-0.8	.37	.37			
	65-80	20-80	0-53	20-30	1.30-1.70	0.6-2	0.14-0.20	0.0-2.9	0.0-0.5	.37	.37			
FryB:														
Farry	0-7	30-53	27-50	10-22	1.30-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.37	.37	5	5	56
	7-11	20-70	10-50	18-32	1.30-1.70	0.6-2	0.12-0.20	0.0-5.9	0.5-2.0	.37	.37			
	11-50	20-70	10-50	18-32	1.30-1.70	0.6-2	0.12-0.20	0.0-5.9	0.5-1.0	.37	.37			
	50-63	30-80	5-50	18-27	1.30-1.70	0.6-6	0.10-0.20	0.0-3.9	0.2-0.8	.37	.37			
	63-75	30-90	0-50	5-27	1.35-1.70	0.6-20	0.06-0.20	0.0-2.9	0.0-0.5	.37	.37			
	75-84	30-95	0-50	3-20	1.35-1.70	0.6-20	0.02-0.18	0.0-2.9	0.0-0.5	.37	.37			
GdfB:														
Grandfield	0-15	43-85	0-50	10-18	1.40-1.65	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	15-32	45-80	0-27	18-30	1.45-1.70	0.6-2	0.11-0.17	0.0-2.9	0.3-0.7	.32	.32			
	32-49	45-85	0-35	13-30	1.40-1.70	0.6-2	0.11-0.17	0.0-2.9	0.3-0.7	.32	.32			
	49-56	43-90	0-50	5-25	1.40-1.70	0.6-6	0.11-0.15	0.0-2.9	0.0-0.5	.28	.28			
	56-80	43-95	0-50	3-20	1.40-1.70	2-20	0.02-0.15	0.0-2.9	0.0-0.2	.28	.28			
GlGB:														
Grandmore	0-18	70-90	0-30	3-10	1.40-1.65	6-20	0.06-0.10	0.0-2.9	0.5-1.0	.20	.20	5	2	134
	18-38	45-80	0-27	18-30	1.40-1.70	0.6-2	0.14-0.19	0.0-2.9	0.5-1.0	.32	.32			
	38-46	43-85	0-33	15-30	1.40-1.70	0.6-2	0.11-0.19	0.0-2.9	0.3-0.7	.32	.32			
	46-61	20-45	0-53	30-45	1.35-1.65	0.2-0.6	0.12-0.20	3.0-5.9	0.0-0.7	.32	.32			
	61-80	20-85	0-53	10-45	1.35-1.65	0.2-6	0.10-0.20	0.0-5.9	0.0-0.7	.32	.32			
Grandfield	0-8	70-90	0-30	3-10	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.5-1.0	.20	.20	5	2	134
	8-28	45-80	0-30	18-30	1.45-1.70	0.6-2	0.11-0.17	0.0-2.9	0.3-0.7	.32	.32			
	28-55	45-85	0-35	13-30	1.40-1.70	0.6-2	0.11-0.17	0.0-2.9	0.3-0.7	.32	.32			
	55-75	43-90	0-50	5-25	1.40-1.70	0.6-20	0.06-0.16	0.0-2.9	0.0-0.5	.28	.28			
	75-80	43-95	0-50	3-20	1.40-1.70	2-20	0.02-0.16	0.0-2.9	0.0-0.5	.28	.28			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
GlsB:														
Grandfield----------	0-7	75-90	0-30	3-10	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.5-1.0	.20	.20	5	2	134
	7-21	45-80	0-30	18-30	1.45-1.70	0.6-2	0.11-0.17	0.0-2.9	0.3-0.7	.32	.32			
	21-44	45-85	0-35	13-30	1.40-1.70	0.6-2	0.11-0.17	0.0-2.9	0.3-0.7	.32	.32			
	44-72	43-90	0-50	5-25	1.40-1.70	0.6-20	0.06-0.16	0.0-2.9	0.0-0.5	.28	.28			
	72-80	43-95	0-50	3-20	1.40-1.70	2-20	0.02-0.16	0.0-2.9	0.0-0.2	.20	.20			
GlsD:														
Grandfield----------	0-13	75-90	0-30	3-10	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.5-1.0	.20	.20	5	2	134
	13-34	45-80	0-30	18-30	1.45-1.70	0.6-2	0.11-0.17	0.0-2.9	0.3-0.7	.32	.32			
	34-47	45-85	0-35	13-30	1.40-1.70	0.6-2	0.11-0.17	0.0-2.9	0.3-0.7	.32	.32			
	47-58	43-90	0-50	5-25	1.40-1.70	0.6-20	0.06-0.16	0.0-2.9	0.0-0.5	.28	.28			
	58-80	43-95	0-50	3-20	1.40-1.70	2-20	0.02-0.16	0.0-2.9	0.0-0.2	.20	.20			
GmuA:														
Gracemont, saline---	0-6	43-85	0-50	10-18	1.40-1.65	0.6-6	0.13-0.19	0.0-2.9	0.0-0.5	.20	.20	5	3	86
	6-20	32-85	0-50	10-18	1.40-1.70	0.6-6	0.13-0.19	0.0-2.9	0.0-0.5	.20	.20			
	20-80	20-90	0-53	7-32	1.40-1.75	0.6-20	0.06-0.20	0.0-2.9	0.0-0.5	.20	.20			
GmwA:														
Gracemont, saline---	0-4	43-85	0-50	10-18	1.40-1.65	0.6-6	0.13-0.19	0.0-2.9	0.0-0.5	.20	.20	5	3	86
	4-35	32-85	0-50	10-18	1.40-1.70	0.6-6	0.13-0.19	0.0-2.9	0.0-0.5	.20	.20			
	35-80	20-90	0-53	5-32	1.40-1.75	0.6-20	0.06-0.20	0.0-2.9	0.0-0.5	.20	.20			
GrrA:														
Gracemore, saline---	0-7	20-45	20-50	27-35	1.30-1.60	0.6-2	0.15-0.20	3.0-5.9	0.5-1.0	.28	.28	5	4L	86
	7-17	70-100	0-30	2-10	1.50-1.70	2-20	0.03-0.10	0.0-2.9	0.0-0.5	.15	.15			
	17-80	70-100	0-30	1-10	1.50-1.70	6-20	0.03-0.10	0.0-2.9	0.0-0.2	.15	.15			
GtbB:														
Gotebo--------------	0-8	33-53	30-50	10-18	1.30-1.55	0.6-2	0.13-0.20	0.0-2.9	0.5-1.5	.37	.37	3	5	56
	8-17	0-53	30-88	10-18	1.30-1.65	0.6-2	0.13-0.20	0.0-2.9	0.2-1.0	.37	.37			
	17-26	0-53	30-88	10-18	1.30-1.65	0.6-2	0.13-0.20	0.0-2.9	0.1-0.5	.37	.37			
	26-80	0-80	10-88	5-18	1.70-2.25	0.2-0.6	0.01-0.03	0.0-2.9	0.0-0.3	.37	.37			
HdmB:														
Hardeman------------	0-6	43-85	0-50	10-18	1.35-1.55	2-6	0.10-0.15	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	6-46	32-85	0-50	12-18	1.35-1.55	2-6	0.10-0.15	0.0-2.9	0.1-0.5	.28	.28			
	46-80	32-85	0-50	12-18	1.35-1.55	2-6	0.10-0.15	0.0-2.9	0.1-0.5	.28	.28			
HdmC:														
Hardeman------------	0-13	43-85	0-50	10-18	1.35-1.55	2-6	0.10-0.15	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	13-35	32-85	0-50	12-18	1.35-1.55	2-6	0.10-0.15	0.0-2.9	0.1-0.5	.28	.28			
	35-62	32-85	0-50	12-18	1.35-1.55	2-6	0.10-0.15	0.0-2.9	0.1-0.5	.28	.28			
	62-80	32-90	0-50	5-18	1.35-1.55	2-20	0.07-0.15	0.0-2.9	0.1-0.5	.28	.28			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
HfkA:														
Hayfork	0-11	0-20	40-73	27-40	1.30-1.50	0.2-0.6	0.14-0.20	3.0-5.9	1.0-3.0	.37	.37	5	7	38
	11-27	0-35	25-65	35-50	1.30-1.70	0.06-0.2	0.14-0.20	3.0-7.9	1.0-2.0	.32	.32			
	27-41	0-35	25-73	27-50	1.30-1.70	0.06-0.2	0.10-0.20	3.0-7.9	1.0-2.0	.32	.32			
	41-50	0-35	25-73	27-50	1.30-1.70	0.06-0.6	0.10-0.20	3.0-7.9	0.2-1.0	.32	.32			
	50-60	0-35	25-73	27-50	1.30-1.70	0.06-0.6	0.10-0.20	3.0-7.9	0.0-1.0	.32	.32			
HksA:														
Headrick	0-5	70-90	0-30	3-10	1.40-1.65	6-20	0.06-0.10	0.0-2.9	0.5-1.0	.20	.20	5	2	134
	5-32	45-80	0-22	18-30	1.40-1.70	0.6-2	0.11-0.17	0.0-2.9	0.5-1.0	.32	.32			
	32-66	0-45	0-53	30-50	1.30-1.70	0.2-0.6	0.12-0.20	3.0-5.9	0.0-1.0	.32	.32			
	66-80	0-80	0-73	30-50	1.30-1.70	0.2-0.6	0.10-0.20	3.0-5.9	0.0-1.0	.32	.32			
HolA:														
Hollister	0-9	0-20	40-73	30-40	1.30-1.50	0.2-0.6	0.15-0.22	6.0-8.9	1.0-3.0	.43	.43	5	6	48
	9-23	0-45	0-65	35-50	1.30-1.65	0.0015-0.06	0.12-0.20	6.0-8.9	1.0-2.0	.32	.32			
	23-72	0-45	0-65	35-50	1.30-1.65	0.0015-0.06	0.12-0.20	6.0-8.9	0.1-0.8	.32	.32			
	72-110	0-45	0-65	35-50	1.30-1.65	0.0015-0.2	0.10-0.17	6.0-8.9	0.1-0.5	.32	.32			
	110-138	0-45	0-65	35-50	1.30-2.00	0.0000-0.2	0.10-0.17	6.0-8.9	0.0-0.2	.32	.32			
HrAC:														
Harmon	0-7	0-50	50-88	10-25	1.30-1.55	0.6-2	0.10-0.14	0.0-2.9	0.0-1.0	.20	.37	2	4L	86
	7-16	0-50	50-88	10-25	1.30-1.55	0.6-2	0.04-0.12	0.0-2.9	0.0-1.0	.10	.37			
	16-40	---	---	---	1.85-2.35	0.0000-0.2	---	---	---	---	---			
Aspermont	0-5	0-32	50-82	18-27	1.25-1.55	0.6-2	0.15-0.24	1.0-5.9	0.5-2.0	.37	.37	4	4L	86
	5-40	0-53	15-82	20-35	1.30-1.70	0.2-2	0.15-0.22	3.0-5.9	0.0-0.5	.37	.37			
	40-50	0-53	15-82	20-40	1.30-1.70	0.2-2	0.12-0.22	3.0-5.9	0.0-0.5	.37	.37			
	50-80	0-53	0-73	27-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
HSAF:														
Hardeman	0-14	43-85	0-50	10-18	1.35-1.65	2-6	0.10-0.15	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	14-20	32-85	0-50	12-18	1.35-1.70	2-6	0.10-0.15	0.0-2.9	0.1-0.5	.28	.28			
	20-46	32-85	0-50	12-18	1.35-1.70	2-6	0.10-0.15	0.0-2.9	0.1-0.5	.28	.28			
	46-80	32-90	0-50	5-18	1.35-1.70	2-20	0.07-0.15	0.0-2.9	0.0-0.3	.28	.28			
Southside	0-6	43-85	0-50	5-15	1.40-1.65	2-6	0.05-0.10	0.0-2.9	0.1-1.0	.15	.20	5	3	86
	6-28	70-100	0-30	1-10	1.50-1.75	6-20	0.03-0.08	0.0-2.9	0.1-0.5	.10	.15			
	28-80	70-100	0-30	1-10	1.50-1.75	6-20	0.03-0.08	0.0-2.9	0.1-0.5	.10	.15			
Arnett	0-5	43-85	0-50	10-20	1.40-1.65	2-6	0.10-0.19	0.0-3.0	0.5-1.0	.24	.24	5	3	86
	5-41	20-80	0-53	18-35	1.30-1.70	0.6-2	0.12-0.20	2.0-6.0	0.1-0.7	.28	.32			
	41-70	20-85	0-53	10-30	1.30-1.70	0.6-6	0.05-0.17	0.0-3.0	0.0-0.5	.20	.32			
	70-80	20-90	0-53	7-35	1.30-1.70	0.6-6	0.04-0.18	0.0-3.0	0.0-0.5	.20	.28			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
JesC:														
Jester	0-7	86-100	0-14	1-10	1.50-1.65	6-20	0.05-0.08	0.0-2.9	0.5-1.0	.15	.15	5	1	220
	7-45	70-100	0-30	1-10	1.50-1.75	6-20	0.02-0.08	0.0-2.9	0.0-0.5	.15	.15			
	45-80	70-100	0-30	1-10	1.50-1.75	6-20	0.02-0.08	0.0-2.9	0.0-0.5	.15	.15			
KcRG:														
Knoco, bouldery	0-3	0-20	40-60	40-60	1.25-1.55	0.0015-0.06	0.10-0.15	1.0-4.0	0.5-1.0	.32	.32	1	8	0
	3-9	0-45	0-60	40-60	1.45-1.70	0.0015-0.06	0.03-0.10	1.0-4.0	0.0-0.5	.32	.32			
	9-60	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
Rock outcrop	0-60	---	---	---	1.85-2.35	0.0000-0.06	---	---	---	---	---	--	---	---
KoBE:														
Knoco	0-6	0-20	40-60	40-60	1.25-1.55	0.0015-0.06	0.10-0.15	1.0-4.0	0.5-1.0	.32	.37	1	4	86
	6-16	0-45	0-60	40-60	1.45-1.70	0.0015-0.06	0.03-0.10	1.0-4.0	0.1-0.5	.32	.32			
	16-60	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
Badland	0-60	---	---	---	1.85-2.35	0.0000-0.2	0.01-0.03	---	---	---	---	--	---	---
KRCF:														
Knoco	0-3	0-20	40-60	40-60	1.35-1.55	0.0015-0.06	0.10-0.15	6.0-8.9	0.5-1.0	.32	.37	1	4	86
	3-12	0-45	0-60	40-60	1.45-1.70	0.0015-0.06	0.03-0.10	1.0-4.0	0.0-0.5	.32	.32			
	12-60	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
Rock outcrop	0-60	---	---	---	1.85-2.35	0.0015-0.06	---	---	---	---	---	--	8	0
Cottonwood	0-4	0-32	50-82	18-27	1.30-1.50	0.6-2	0.11-0.18	0.0-2.9	0.5-1.0	.37	.37	1	4L	86
	4-40	---	---	---	1.85-2.35	0.0015-0.06	---	---	---	---	---			
LacB:														
La Casa	0-6	0-20	40-73	27-35	1.30-1.55	0.2-0.6	0.15-0.22	3.0-5.9	1.0-3.0	.37	.37	5	6	48
	6-12	0-45	0-65	35-45	1.30-1.70	0.06-0.2	0.12-0.22	3.0-5.9	1.0-2.0	.37	.37			
	12-34	0-45	0-65	35-45	1.30-1.70	0.06-0.2	0.10-0.22	3.0-5.9	0.1-0.5	.32	.32			
	34-64	0-45	0-73	30-45	1.30-1.70	0.06-0.6	0.10-0.22	3.0-5.9	0.1-0.5	.37	.37			
	64-81	0-45	0-73	30-45	1.30-1.70	0.06-0.6	0.10-0.22	3.0-5.9	0.0-0.3	.37	.37			
	81-91	0-45	0-73	30-50	1.30-2.00	0.0000-0.6	0.06-0.15	6.0-8.9	0.0-0.1	.32	.32			
LnuA:														
Lincoln	0-8	70-90	0-30	1-15	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.0-0.5	.17	.17	5	2	134
	8-21	32-100	0-50	1-10	1.50-1.75	6-20	0.02-0.10	0.0-2.9	0.0-0.5	.17	.17			
	21-80	32-100	0-50	1-10	1.50-1.75	6-20	0.02-0.10	0.0-2.9	0.0-0.5	.17	.17			
LnWA:														
Lincoln	0-5	70-90	0-30	1-15	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.0-0.5	.17	.17	5	2	134
	5-15	32-100	0-50	1-10	1.50-1.75	6-20	0.02-0.10	0.0-2.9	0.0-0.5	.17	.17			
	15-80	32-100	0-50	1-10	1.50-1.75	6-20	0.02-0.10	0.0-2.9	0.0-0.5	.17	.17			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
Westola	0-5	43-85	0-50	10-18	1.40-1.65	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	5-30	32-85	0-50	5-18	1.30-1.70	2-6	0.10-0.20	0.0-2.9	0.0-0.5	.32	.32			
	30-80	32-100	0-50	5-18	1.30-1.70	2-6	0.07-0.20	0.0-2.9	0.0-0.5	.32	.32			
LwtA:														
Lawton	0-6	25-50	30-50	18-27	1.30-1.55	0.6-2	0.13-0.19	1.0-2.9	1.0-3.0	.32	.37	5	6	48
	6-9	20-50	20-50	20-35	1.30-1.70	0.2-2	0.14-0.20	1.0-5.9	1.0-3.0	.32	.37			
	9-34	20-45	20-45	35-40	1.30-1.70	0.2-0.6	0.14-0.20	3.0-7.0	0.5-3.0	.28	.32			
	34-75	20-45	20-50	25-50	1.30-1.70	0.2-2	0.08-0.18	1.0-7.0	0.2-1.0	.28	.37			
	75-80	20-70	10-50	20-40	1.30-1.70	0.6-2	0.08-0.18	1.0-5.9	0.0-1.0	.28	.37			
LwtB:														
Lawton	0-6	25-50	30-50	18-27	1.30-1.55	0.6-2	0.13-0.19	1.0-2.9	1.0-3.0	.32	.37	5	6	48
	6-28	20-45	20-50	35-40	1.30-1.70	0.2-0.6	0.14-0.20	3.0-7.0	0.5-3.0	.28	.32			
	28-56	20-45	20-50	35-40	1.30-1.70	0.2-0.6	0.14-0.20	3.0-7.0	0.5-1.0	.28	.32			
	56-75	20-45	20-50	25-50	1.30-1.70	0.2-2	0.08-0.18	1.0-7.0	0.2-1.0	.28	.37			
	75-80	20-70	10-50	20-40	1.30-1.70	0.6-2	0.08-0.18	1.0-5.9	0.0-1.0	.28	.37			
LwtC2:														
Lawton, moderately eroded	0-5	25-50	30-50	18-27	1.30-1.55	0.6-2	0.13-0.19	1.0-2.9	1.0-2.0	.32	.37	5	6	48
	5-45	20-45	20-50	35-40	1.30-1.70	0.2-0.6	0.14-0.20	3.0-7.0	0.5-3.0	.28	.32			
	45-62	20-45	20-50	25-50	1.30-1.70	0.2-2	0.08-0.18	1.0-7.0	0.2-1.0	.28	.37			
	62-80	20-70	10-50	20-35	1.30-1.70	0.6-2	0.08-0.18	1.0-5.9	0.0-1.0	.28	.37			
M-W:														
Water, Miscellaneous	0-80	---	---	---	---	---	---	---	---	---	---	--	---	---
MagB:														
Madge	0-13	22-53	27-50	15-25	1.30-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.37	.37	5	5	56
	13-25	20-80	10-50	18-35	1.30-1.70	0.6-2	0.12-0.20	2.0-5.9	0.5-2.0	.37	.37			
	25-41	20-80	5-50	10-35	1.30-1.70	0.6-6	0.10-0.20	1.0-5.9	0.2-0.8	.37	.37			
	41-57	30-90	0-50	5-27	1.35-1.70	0.6-6	0.06-0.20	0.0-2.9	0.0-0.5	.37	.37			
	57-80	30-95	0-50	3-25	1.35-1.70	0.6-20	0.02-0.18	0.0-2.9	0.0-0.5	.37	.37			
MdgB:														
Madge	0-5	52-80	2-60	8-18	1.40-1.65	2-6	0.10-0.15	0.0-2.9	1.0-2.0	.24	.24	5	3	86
	5-43	20-80	10-50	18-35	1.30-1.70	0.6-2	0.12-0.20	1.0-5.9	0.5-2.0	.37	.37			
	43-49	20-80	5-50	10-35	1.30-1.70	0.6-6	0.10-0.20	0.5-5.9	0.2-0.8	.37	.37			
	49-56	30-90	0-50	5-27	1.35-1.70	0.6-6	0.06-0.20	0.0-2.9	0.0-0.5	.37	.37			
	56-80	30-95	0-50	3-25	1.35-1.70	0.6-20	0.02-0.18	0.0-2.9	0.0-0.5	.37	.37			
MknB:														
Mcknight	0-7	43-85	0-50	10-18	1.40-1.65	2-6	0.10-0.15	0.0-2.9	0.5-1.0	.32	.32	4	3	86
	7-35	45-80	0-27	18-30	1.40-1.70	0.6-2	0.10-0.17	0.0-2.9	0.2-1.0	.37	.37			
	35-53	0-45	0-65	35-60	1.30-1.70	0.06-0.6	0.10-0.18	4.0-8.9	0.1-0.5	.32	.37			
	53-80	0-45	0-73	27-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
MktB:														
Mcknight	0-14	70-90	0-30	5-10	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.5-1.0	.24	.24	4	2	134
	14-29	45-80	0-27	18-30	1.40-1.70	0.6-2	0.10-0.17	0.0-2.9	0.2-1.0	.37	.37			
	29-36	0-45	0-65	35-60	1.30-1.70	0.06-0.6	0.10-0.18	4.0-8.9	0.1-0.5	.32	.37			
	36-52	0-45	0-65	35-60	1.30-1.85	0.06-0.6	0.10-0.15	4.0-8.9	0.1-0.5	.32	.37			
	52-80	0-45	0-73	27-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
MktC2:														
Mcknight, moderately eroded	0-7	70-90	0-30	5-10	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.2-0.8	.24	.24	4	2	134
	7-35	45-80	0-27	18-30	1.40-1.70	0.6-2	0.10-0.17	0.0-2.9	0.2-1.0	.37	.37			
	35-51	0-45	0-65	35-60	1.30-1.70	0.06-0.6	0.10-0.15	4.0-8.9	0.1-0.5	.32	.37			
	51-80	0-45	0-73	27-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
NpsB:														
Nipsum	0-20	0-20	40-65	35-40	1.25-1.50	0.06-0.6	0.13-0.20	3.0-5.9	1.0-3.0	.37	.37	5	4	86
	20-27	0-45	10-65	35-55	1.30-1.65	0.06-0.2	0.10-0.18	3.0-5.9	1.0-3.0	.32	.32			
	27-40	0-45	10-65	35-55	1.30-1.75	0.06-0.2	0.10-0.18	3.0-5.9	0.2-1.2	.32	.32			
	40-62	0-45	10-65	28-55	1.30-1.75	0.06-0.6	0.10-0.18	3.0-5.9	0.0-0.8	.32	.32			
	62-80	0-45	10-65	28-55	1.30-1.75	0.06-0.6	0.10-0.18	3.0-5.9	0.0-0.5	.32	.32			
NstC:														
Nobscot	0-5	86-100	0-14	1-8	1.50-1.65	6-20	0.02-0.06	0.0-1.0	0.2-1.0	.15	.15	5	1	220
	5-23	70-100	0-30	1-10	1.50-1.75	6-20	0.02-0.11	0.0-1.0	0.1-0.5	.15	.15			
	23-53	50-85	0-50	8-15	1.50-1.70	2-6	0.10-0.15	0.0-2.9	0.1-0.8	.20	.20			
	53-71	50-95	0-50	2-15	1.55-1.70	2-6	0.05-0.15	0.0-2.9	0.0-0.3	.17	.17			
	71-80	70-100	0-30	2-10	1.55-1.75	6-20	0.02-0.11	0.0-1.0	0.0-0.2	.15	.15			
OakA:														
Oakley	0-12	23-53	27-50	15-25	1.30-1.55	0.6-2	0.14-0.20	0.0-2.9	1.0-2.0	.37	.37	4	4L	86
	12-43	20-80	0-53	20-35	1.30-1.70	0.2-2	0.14-0.20	0.0-2.9	0.1-0.5	.32	.32			
	43-58	20-80	0-53	20-35	1.30-1.70	0.2-2	0.14-0.20	0.0-2.9	0.1-0.5	.32	.32			
	58-85	20-85	0-53	5-30	1.30-1.70	0.6-6	0.07-0.20	0.0-2.9	0.0-0.5	.32	.32			
	85-95	20-90	0-53	5-30	1.30-1.70	0.6-6	0.07-0.20	0.0-2.9	0.0-0.5	.32	.32			
	95-120	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
OakB:														
Oakley	0-7	25-53	27-50	15-25	1.30-1.55	0.6-2	0.14-0.20	0.0-2.9	1.0-2.0	.37	.37	4	4L	86
	7-41	20-80	0-53	20-35	1.30-1.70	0.2-2	0.14-0.20	0.0-2.9	0.1-0.5	.32	.32			
	41-49	20-80	0-53	20-35	1.30-1.70	0.2-2	0.14-0.20	0.0-2.9	0.1-0.5	.32	.32			
	49-72	20-85	0-53	5-30	1.30-1.70	0.6-6	0.07-0.20	0.0-2.9	0.0-0.5	.32	.32			
	72-95	20-90	0-53	5-30	1.30-1.70	0.6-6	0.07-0.20	0.0-2.9	0.0-0.5	.32	.32			
	95-120	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
OzkA:														
Ozark	0-11	43-85	0-50	8-20	1.40-1.65	2-6	0.10-0.15	0.0-2.9	1.0-2.0	.24	.24	5	3	86
	11-24	20-80	0-53	20-35	1.30-1.70	0.2-2	0.10-0.20	1.0-5.9	0.5-2.0	.32	.32			
	24-50	20-80	0-53	20-45	1.30-1.70	0.2-2	0.10-0.20	1.0-5.9	0.2-1.0	.32	.32			
	50-59	20-80	0-53	20-45	1.30-1.70	0.2-2	0.10-0.20	1.0-5.9	0.2-1.0	.32	.32			
	59-83	20-85	0-53	8-35	1.30-1.70	0.2-6	0.10-0.20	0.0-2.9	0.1-0.5	.32	.32			
	83-105	0-45	0-65	30-50	1.30-1.70	0.06-0.6	0.10-0.22	3.0-8.9	0.0-0.3	.32	.32			
	105-120	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
PIT:														
Pits	0-80	---	---	---	1.85-2.35	0.0000-0.2	---	---	---	---	---	--	---	---
QhTC:														
Quanah	0-14	0-20	40-73	27-35	1.30-1.50	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.37	.37	4	4L	86
	14-22	0-53	20-80	20-40	1.30-1.50	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.37	.37			
	22-36	0-53	20-80	20-40	1.35-1.55	0.6-2	0.10-0.16	0.0-2.9	0.1-0.5	.37	.37			
	36-82	0-53	20-80	20-40	1.35-1.55	0.6-2	0.10-0.16	0.0-2.9	0.1-0.5	.37	.37			
Talpa	0-10	23-53	27-50	20-27	1.30-1.45	0.6-2	0.12-0.18	0.0-2.9	1.0-3.0	.32	.32	1	4L	86
	10-20	---	---	---	1.85-2.35	0.0000-0.06	---	---	---	---	---			
QnRG:														
Quinlan	0-5	43-80	10-50	10-18	1.30-1.55	0.6-6	0.13-0.20	0.0-2.9	0.5-1.0	.37	.37	2	3	86
	5-11	10-80	10-80	10-27	1.30-1.70	0.6-6	0.07-0.22	0.0-2.9	0.2-1.0	.37	.37			
	11-40	10-80	10-80	5-27	1.70-2.25	0.2-0.6	0.01-0.03	0.0-2.9	0.0-0.3	.37	.37			
Rock outcrop	0-62	---	---	---	1.85-2.00	0.2-0.6	---	---	---	---	---	--	8	0
RakA:														
Roark	0-10	23-53	27-50	15-27	1.30-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.43	.43	5	6	48
	10-24	0-45	0-65	35-45	1.30-1.70	0.06-0.2	0.14-0.22	3.0-5.9	1.0-2.0	.37	.37			
	24-34	0-45	0-65	35-45	1.30-1.70	0.06-0.2	0.14-0.22	3.0-5.9	0.5-1.0	.37	.37			
	34-49	0-45	0-65	35-45	1.30-1.70	0.06-0.6	0.14-0.22	3.0-5.9	0.5-1.0	.37	.37			
	49-67	0-85	0-73	15-35	1.30-1.70	0.2-2	0.13-0.22	0.0-5.9	0.2-1.0	.32	.32			
	67-80	20-90	0-53	5-40	1.30-1.70	0.2-6	0.06-0.18	0.0-5.9	0.0-0.5	.32	.32			
RKBG:														
Rock outcrop, granite	0-60	---	---	---	1.85-2.35	0.0000-0.0015	---	---	---	---	---	--	---	---
Brico	0-10	23-53	27-50	15-27	1.30-1.55	0.6-2	0.11-0.20	0.0-2.9	1.0-3.0	.15	.37	4	8	0
	10-35	0-45	0-45	35-60	1.35-1.60	0.2-0.6	0.04-0.13	3.0-5.9	0.5-1.0	.24	.32			
	35-72	20-45	15-53	27-35	1.45-1.70	0.2-0.6	0.04-0.13	3.0-5.9	0.0-0.5	.28	.32			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
RKO:														
Rock outcrop, granite	0-60	---	---	---	1.85-2.35	0.0000-0.0015	---	---	---	---	---	--	---	---
RuuA:														
Rups	0-7	0-20	40-73	27-35	1.30-1.55	0.2-2	0.08-0.20	3.0-5.9	1.0-3.0	.32	.32	5	6	48
	7-21	0-45	15-82	25-35	1.30-1.70	0.2-2	0.02-0.18	3.0-5.9	0.1-1.0	.32	.32			
	21-43	0-45	15-82	25-35	1.30-1.70	0.2-2	0.02-0.18	3.0-5.9	0.1-1.0	.32	.32			
	43-80	0-45	0-73	27-45	1.30-1.70	0.06-0.6	0.02-0.18	3.0-5.9	0.1-1.0	.32	.32			
RuwA:														
Rups	0-15	0-20	40-73	27-35	1.30-1.55	0.2-2	0.08-0.20	3.0-5.9	1.0-3.0	.32	.32	5	6	48
	15-30	0-45	15-82	25-35	1.30-1.70	0.2-2	0.02-0.18	3.0-5.9	0.1-1.0	.32	.32			
	30-48	0-45	15-82	25-35	1.30-1.70	0.2-2	0.02-0.18	3.0-5.9	0.1-1.0	.32	.32			
	48-80	0-45	0-73	27-45	1.30-1.70	0.06-0.6	0.02-0.18	3.0-5.9	0.1-1.0	.32	.32			
SKRG:														
Spikebox	0-3	15-70	10-77	8-20	1.30-1.55	0.6-2	0.13-0.19	0.0-2.9	0.2-1.0	.37	.37	1	5	56
	3-12	15-70	10-77	8-20	1.30-1.70	0.6-6	0.10-0.19	0.0-2.9	0.2-0.8	.32	.37			
	12-40	---	---	---	1.85-2.35	0.2-0.6	---	---	---	---	---			
Knoco	0-5	0-20	40-60	40-60	1.25-1.55	0.0015-0.06	0.10-0.15	1.0-6.0	0.5-1.0	.32	.37	1	4	86
	5-11	0-30	20-60	40-60	1.45-1.70	0.0015-0.06	0.03-0.10	1.0-4.0	0.0-0.5	.32	.32			
	11-80	0-30	20-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
Rock outcrop	0-62	---	---	---	1.85-2.35	0.0015-2	---	---	---	---	---	--	8	0
SpDB:														
Springer	0-13	70-90	0-30	2-10	1.45-1.65	6-20	0.06-0.10	0.0-2.9	0.2-1.0	.17	.17	5	2	134
	13-42	43-90	0-50	6-18	1.40-1.70	2-6	0.07-0.15	0.0-2.9	0.1-0.5	.20	.20			
	42-57	70-100	0-50	2-12	1.50-1.75	6-20	0.02-0.10	0.0-2.9	0.1-0.5	.20	.20			
	57-80	43-85	0-50	10-25	1.40-1.70	0.6-6	0.10-0.16	0.0-2.9	0.1-0.5	.24	.24			
Devol	0-14	70-90	0-30	2-8	1.45-1.70	6-20	0.06-0.10	0.0-2.9	0.2-1.0	.17	.17	5	2	134
	14-29	43-90	0-50	8-18	1.40-1.70	2-6	0.07-0.15	0.0-2.9	0.0-0.5	.20	.20			
	29-45	43-90	0-50	2-18	1.40-1.70	2-20	0.07-0.15	0.0-2.9	0.0-0.5	.20	.20			
	45-65	43-100	0-50	2-10	1.50-1.75	2-20	0.05-0.12	0.0-2.9	0.0-0.2	.20	.20			
	65-80	43-100	0-50	2-10	1.50-1.75	2-20	0.05-0.12	0.0-2.9	0.0-0.2	.17	.17			
SplA:														
Spur	0-11	23-53	27-50	8-20	1.30-1.55	0.6-2	0.14-0.20	0.0-2.9	1.0-3.0	.37	.37	5	5	56
	11-43	20-80	0-53	20-35	1.30-1.70	0.6-2	0.14-0.20	1.0-5.9	0.5-1.0	.32	.32			
	43-75	20-85	0-53	10-35	1.30-1.70	0.6-6	0.11-0.20	0.0-5.0	0.5-1.0	.32	.32			
	75-90	20-85	0-53	10-35	1.30-1.70	0.6-6	0.11-0.20	0.0-5.0	0.5-1.0	.32	.32			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
SurA:														
Spur	0-14	20-45	20-53	27-35	1.30-1.55	0.6-2	0.14-0.20	0.0-2.9	1.0-3.0	.32	.32	5	6	48
	14-30	20-80	0-53	20-35	1.30-1.70	0.6-2	0.14-0.20	0.0-2.9	0.5-1.0	.32	.32			
	30-51	20-80	0-53	20-35	1.30-1.70	0.6-2	0.14-0.20	0.0-2.9	0.5-1.0	.32	.32			
	51-80	20-85	0-53	15-35	1.30-1.70	0.6-2	0.14-0.20	0.0-2.9	0.5-1.0	.32	.32			
SuuA:														
Spur	0-10	20-45	20-53	27-35	1.30-1.55	0.6-2	0.14-0.20	0.0-2.9	1.0-3.0	.32	.32	5	6	48
	10-16	20-53	20-53	20-35	1.30-1.55	0.6-2	0.14-0.20	0.0-2.9	1.0-3.0	.37	.37			
	16-48	20-80	0-53	20-35	1.30-1.70	0.6-2	0.14-0.20	0.0-2.9	0.5-1.0	.32	.32			
	48-80	20-85	0-53	15-35	1.30-1.70	0.6-2	0.14-0.20	0.0-2.9	0.5-1.0	.32	.32			
SuwA:														
Spur	0-8	20-45	20-53	27-35	1.30-1.55	0.6-2	0.14-0.20	0.0-2.9	1.0-3.0	.32	.32	5	6	48
	8-17	20-80	0-53	20-35	1.30-1.70	0.6-2	0.14-0.20	0.0-2.9	0.5-1.0	.32	.32			
	17-35	20-80	0-53	20-35	1.30-1.70	0.6-2	0.14-0.20	0.0-2.9	0.5-1.0	.32	.32			
	35-49	20-80	0-53	20-35	1.30-1.70	0.6-2	0.14-0.20	0.0-2.9	0.5-1.0	.32	.32			
	49-80	20-85	0-53	15-35	1.30-1.70	0.6-2	0.14-0.20	0.0-2.9	0.5-1.0	.32	.32			
TARD:														
Talpa	0-7	23-53	27-50	20-27	1.30-1.55	0.6-2	0.13-0.19	0.0-2.9	1.0-3.0	.32	.37	1	4L	86
	7-40	---	---	---	1.85-2.35	0.0000-0.06	---	---	---	---	---			
Aspermont	0-10	0-32	50-82	18-27	1.25-1.55	0.6-2	0.15-0.24	1.0-5.9	0.5-2.0	.37	.37	4	4L	86
	10-42	0-53	20-82	20-35	1.30-1.70	0.2-2	0.12-0.22	3.0-5.9	0.0-0.5	.37	.37			
	42-80	0-53	15-73	27-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
Rock outcrop	0-60	---	---	---	1.85-2.35	0.0000-0.06	---	---	---	---	---	--	---	---
TilA:														
Tillman	0-8	20-45	15-53	27-35	1.30-1.55	0.2-0.6	0.15-0.20	3.0-5.9	1.0-3.0	.43	.43	5	6	48
	8-15	0-45	0-65	35-50	1.30-1.65	0.06-0.2	0.12-0.20	6.0-8.9	1.0-2.0	.37	.37			
	15-45	0-45	0-65	35-50	1.30-1.70	0.06-0.2	0.10-0.17	6.0-8.9	0.1-0.5	.37	.37			
	45-62	0-45	0-65	35-50	1.30-1.70	0.06-0.2	0.10-0.17	6.0-8.9	0.1-0.5	.37	.37			
	62-78	0-45	0-65	35-60	1.30-1.70	0.0015-0.2	0.02-0.09	6.0-8.9	0.1-0.5	.37	.37			
	78-90	0-45	0-60	40-60	1.30-1.75	0.0015-0.2	0.02-0.09	6.0-8.9	0.0-0.3	.37	.37			
	90-100	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
TilB:														
Tillman	0-6	20-45	15-53	27-35	1.30-1.55	0.2-0.6	0.15-0.20	3.0-5.9	1.0-3.0	.43	.43	5	6	48
	6-10	0-43	0-65	35-50	1.30-1.65	0.06-0.2	0.12-0.20	6.0-8.9	1.0-2.0	.37	.37			
	10-25	0-45	0-65	35-50	1.30-1.70	0.06-0.2	0.12-0.20	6.0-8.9	0.1-0.5	.37	.37			
	25-48	0-45	0-65	35-50	1.30-1.70	0.06-0.2	0.10-0.17	6.0-8.9	0.1-0.5	.37	.37			
	48-60	0-45	0-65	35-50	1.30-1.70	0.06-0.2	0.10-0.17	6.0-8.9	0.1-0.5	.37	.37			
	60-82	0-45	0-65	35-60	1.30-1.70	0.06-0.2	0.02-0.09	6.0-8.9	0.1-0.5	.37	.37			
	82-90	0-45	0-60	40-60	1.30-1.75	0.0015-0.2	0.02-0.09	6.0-8.9	0.0-0.3	.37	.37			
	90-100	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
TipA:														
Tipton	0-8	23-53	27-50	15-25	1.30-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.37	.37	5	5	56
	8-15	23-53	27-50	15-25	1.30-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.37	.37			
	15-25	20-80	0-53	20-35	1.30-1.70	0.6-2	0.15-0.20	0.0-2.9	1.0-2.0	.32	.32			
	25-41	20-80	0-53	20-35	1.30-1.70	0.6-2	0.15-0.20	0.0-2.9	0.5-1.0	.32	.32			
	41-66	20-80	0-53	15-35	1.30-1.70	0.6-2	0.15-0.20	0.0-2.9	0.2-0.8	.32	.32			
	66-80	20-85	0-53	10-35	1.30-1.70	0.6-6	0.10-0.20	0.0-2.9	0.0-0.5	.32	.32			
TlvB:														
Tilvern	0-5	20-45	15-45	35-40	1.30-1.55	0.2-0.6	0.12-0.18	3.0-5.9	0.5-2.0	.43	.43	4	4	86
	5-11	0-45	0-60	35-55	1.30-1.65	0.06-0.2	0.10-0.18	6.0-8.9	0.5-1.0	.37	.37			
	11-31	0-45	0-60	40-55	1.30-1.65	0.0015-0.06	0.10-0.15	6.0-8.9	0.0-0.5	.37	.37			
	31-44	0-45	0-60	35-55	1.30-1.70	0.0015-0.2	0.10-0.15	6.0-8.9	0.0-0.5	.37	.37			
	44-51	0-45	0-60	35-55	1.30-1.70	0.0015-0.2	0.10-0.15	6.0-8.9	0.0-0.5	.37	.37			
	51-80	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
TpfA:														
Tipton	0-7	43-85	0-50	10-18	1.40-1.65	2-6	0.11-0.15	0.0-2.9	1.0-2.0	.24	.24	5	3	86
	7-13	43-85	0-50	10-18	1.40-1.65	2-6	0.11-0.15	0.0-2.9	1.0-2.0	.24	.24			
	13-24	23-80	0-50	15-25	1.30-1.60	0.6-2	0.15-0.20	0.0-2.9	1.0-2.0	.37	.37			
	24-47	20-80	0-53	20-35	1.30-1.70	0.6-2	0.15-0.20	0.0-2.9	0.5-1.5	.32	.32			
	47-63	20-80	0-53	20-35	1.30-1.70	0.6-2	0.14-0.20	0.0-2.9	0.2-1.0	.32	.32			
	63-80	20-85	0-53	10-35	1.35-1.70	0.6-6	0.10-0.20	0.0-2.9	0.0-0.5	.32	.32			
TrwB:														
Treadway	0-13	0-20	40-70	30-40	1.40-1.60	0.06-0.2	0.06-0.15	0.0-2.9	0.2-1.2	.43	.43	5	4L	86
	13-24	0-40	20-65	35-60	1.35-1.70	0.0015-0.06	0.05-0.15	3.0-7.0	0.1-0.8	.37	.37			
	24-80	0-40	20-65	35-60	1.35-1.70	0.0015-0.06	0.05-0.15	3.0-7.0	0.0-0.5	.37	.37			
VeKE:														
Vernon	0-6	20-45	15-45	35-40	1.30-1.55	0.06-0.2	0.12-0.18	6.0-8.9	0.5-1.5	.43	.43	3	4	86
	6-26	0-45	0-60	40-60	1.35-1.60	0.0015-0.06	0.10-0.15	6.0-8.9	0.1-1.0	.37	.37			
	26-80	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
Knoco	0-6	0-20	40-60	40-60	1.35-1.55	0.0015-0.06	0.10-0.15	1.0-4.0	0.5-1.0	.32	.37	1	4	86
	6-16	0-45	0-60	40-60	1.45-1.70	0.0015-0.06	0.03-0.10	1.0-4.0	0.0-0.5	.32	.32			
	16-60	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
VerC:														
Vernon	0-6	20-45	15-45	35-40	1.30-1.55	0.06-0.2	0.12-0.18	6.0-8.9	0.5-1.5	.43	.43	3	4	86
	6-26	0-45	0-60	40-60	1.35-1.60	0.0015-0.06	0.10-0.15	6.0-8.9	0.1-1.0	.37	.37			
	26-35	0-45	0-60	40-60	1.35-1.60	0.0015-0.06	0.10-0.15	6.0-8.9	0.0-0.8	.37	.37			
	35-80	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
VeTE:														
Vernon	0-7	20-45	15-45	35-40	1.30-1.55	0.06-0.2	0.12-0.18	6.0-8.9	0.5-1.5	.43	.43	3	4	86
	7-16	0-45	0-60	40-60	1.35-1.60	0.0015-0.06	0.10-0.15	6.0-8.9	0.1-1.0	.37	.37			
	16-25	0-45	0-60	40-60	1.35-1.60	0.0015-0.06	0.10-0.15	6.0-8.9	0.1-1.0	.37	.37			
	25-38	0-45	0-60	40-60	1.35-1.75	0.0015-0.06	0.06-0.10	6.0-8.9	0.0-0.5	.37	.37			
	38-80	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
Talpa, stony	0-9	23-53	27-50	20-27	1.30-1.55	0.6-2	0.13-0.19	0.0-2.9	1.0-3.0	.32	.37	1	4L	86
	9-40	---	---	---	1.85-2.35	0.0000-0.06	---	---	---	---	---			
W:														
Water	0-80	---	---	---	---	---	---	---	---	---	---	--	---	---
WlwB:														
Willow	0-7	20-50	30-62	18-27	1.25-1.55	0.6-2	0.15-0.20	0.0-2.9	1.0-3.0	.37	.37	4	6	48
	7-31	15-45	30-60	25-38	1.30-1.70	0.2-2	0.15-0.20	3.0-5.9	0.5-2.0	.32	.32			
	31-39	20-50	30-62	18-30	1.30-1.70	0.6-2	0.10-0.18	0.0-2.9	0.2-0.8	.37	.37			
	39-54	30-65	15-65	10-20	1.30-1.70	0.6-6	0.07-0.18	0.0-2.9	0.1-0.5	.37	.37			
	54-80	10-80	10-80	5-20	1.70-2.25	0.2-0.6	0.01-0.03	0.0-2.9	0.0-0.3	.37	.37			
WooB:														
Woodward	0-15	32-53	30-50	10-18	1.30-1.60	0.6-2	0.13-0.20	0.0-2.9	0.5-2.0	.37	.37	3	5	56
	15-32	10-80	10-80	10-18	1.40-1.65	0.6-2	0.10-0.20	0.0-2.9	0.0-0.5	.37	.37			
	32-38	10-80	10-80	10-18	1.40-1.65	0.6-2	0.10-0.20	0.0-2.9	0.0-0.5	.37	.37			
	38-80	10-80	10-80	5-18	1.70-2.25	0.2-0.6	0.01-0.03	0.0-2.9	0.0-0.3	.37	.37			
WooC:														
Woodward	0-7	32-53	30-50	10-18	1.30-1.60	0.6-2	0.13-0.20	0.0-2.9	0.5-2.0	.37	.37	3	5	56
	7-19	10-80	10-80	10-18	1.40-1.65	0.6-2	0.10-0.20	0.0-2.9	0.0-0.5	.37	.37			
	19-28	10-80	10-80	10-18	1.40-1.65	0.6-2	0.10-0.20	0.0-2.9	0.0-0.5	.37	.37			
	28-80	10-80	10-80	5-18	1.70-2.25	0.2-0.6	0.01-0.03	0.0-2.9	0.0-0.3	.37	.37			
WoQE:														
Woodward	0-9	32-53	30-50	10-18	1.30-1.55	0.6-2	0.13-0.20	0.0-2.9	0.5-2.0	.37	.37	3	5	56
	9-21	10-80	10-80	10-18	1.30-1.65	0.6-2	0.10-0.20	0.0-2.9	0.0-0.5	.37	.37			
	21-26	10-80	10-80	10-18	1.40-1.65	0.6-2	0.10-0.20	0.0-2.9	0.0-0.5	.37	.37			
	26-80	10-80	10-80	5-18	1.70-2.25	0.2-0.6	0.01-0.03	0.0-2.9	0.0-0.3	.37	.37			
Quinlan	0-4	30-53	27-50	10-20	1.30-1.55	0.6-2	0.13-0.20	0.0-2.9	0.5-1.0	.37	.37	2	5	56
	4-12	10-80	10-80	10-27	1.30-1.70	0.6-6	0.07-0.22	0.0-2.9	0.2-1.0	.37	.37			
	12-40	10-80	10-80	5-27	1.70-2.25	0.2-0.6	0.01-0.03	0.0-2.9	0.0-0.3	.37	.37			
WslA:														
Westola	0-12	43-85	0-50	10-18	1.40-1.65	2-6	0.10-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	12-50	32-85	0-50	5-18	1.30-1.70	2-6	0.10-0.20	0.0-2.9	0.0-0.5	.32	.32			
	50-80	32-100	0-50	5-18	1.30-1.70	2-6	0.07-0.20	0.0-2.9	0.0-0.5	.32	.32			

Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Permeability	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	In/hr	In/in	Pct	Pct					
WstA:														
Westola	0-8	43-85	0-50	10-18	1.40-1.65	2-6	0.10-0.15	0.0-2.9	0.5-1.0	.20	.20	5	3	86
	8-19	32-52	27-50	10-18	1.35-1.60	0.6-2	0.13-0.19	0.0-2.9	0.5-1.0	.32	.32			
	19-30	32-85	0-50	5-18	1.30-1.70	2-6	0.10-0.20	0.0-2.9	0.0-0.5	.28	.28			
	30-80	32-100	0-50	5-18	1.30-1.70	2-6	0.10-0.20	0.0-2.9	0.0-0.5	.28	.28			
WtlA:														
Westill	0-5	20-45	15-53	27-35	1.30-1.55	0.2-0.6	0.15-0.20	3.0-5.9	1.0-3.0	.43	.43	5	6	48
	5-15	0-45	0-65	35-50	1.30-1.65	0.0015-0.06	0.12-0.20	6.0-8.9	1.0-2.0	.37	.37			
	15-24	0-45	0-65	35-50	1.30-1.65	0.0015-0.06	0.12-0.20	6.0-8.9	0.2-1.0	.37	.37			
	24-55	0-45	0-65	35-60	1.30-1.70	0.0015-0.06	0.10-0.15	6.0-8.9	0.1-0.5	.37	.37			
	55-70	0-45	0-60	40-60	1.30-1.75	0.0000-0.06	0.02-0.15	6.0-8.9	0.0-0.3	.37	.37			
	70-80	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			
WtlB:														
Westill	0-9	20-45	15-53	27-35	1.30-1.55	0.2-0.6	0.15-0.20	3.0-5.9	1.0-3.0	.43	.43	5	6	48
	9-16	0-45	0-65	35-50	1.30-1.65	0.0015-0.06	0.12-0.20	6.0-8.9	1.0-2.0	.37	.37			
	16-47	0-45	0-65	35-60	1.30-1.70	0.0015-0.06	0.10-0.15	6.0-8.9	0.1-0.5	.37	.37			
	47-56	0-45	0-65	35-60	1.30-1.70	0.0015-0.06	0.02-0.15	6.0-8.9	0.1-0.5	.37	.37			
	56-68	0-45	0-60	40-60	1.30-1.75	0.0000-0.06	0.02-0.15	6.0-8.9	0.0-0.3	.37	.37			
	68-80	0-45	0-60	40-60	1.70-2.25	0.0000-0.06	0.01-0.03	1.0-4.0	0.0-0.3	.32	.32			

Physical Analyses of Selected Soils

The results of physical analysis of several typical pedons in the survey area are shown in the table, “Physical Analyses of Selected Soils.” The data are for soils sampled at carefully selected sites. The pedons are representative of the series described in this survey. Soil samples were analyzed by the National Soil Suvery Laboratory, Lincoln, Nebraska.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(6)*.

Clay—(fraction less than 0.002 millimeter) pipette extraction, weight percentages of all material less than 2 millimeters (3A1).

Silt—(0.002 to 0.05 millimeter fraction) pipette extraction, weight percentages of all material less than 2 millimeters (3A1).

Sand—(0.05 to 2.0 millimeters fraction) weight percentages of material less than 2 millimeters (3A1).

Bulk density—of less than 2 millimeters material, saran-coated clods field moist (4A1a), 1/3 bar (4A1d), ovendry (4A1h).

Water-retention difference—between 1/3 bar and 15 bars for whole soil (4C1).

Water retained—pressure extraction, percentage of ovendry weight of less than 2 millimeters material; 1/3 bar or 1/10 bar (4B1), 15 bars (4B2).

Linear extensibility—change in clod dimension based on whole soil (4D).

Physical Analyses of Selected Soils

(TR means trace. BDL means below detection limits. Dashes indicate that analyses were not made.)

Soil name and sample number*	Horizon	Depth	Particle-size distribution										Bulk density		Water retention difference	Water content		COLE
			Clay less than 0.002	Silt			Sand						1/3 bar	Oven-dry	1/3 bar - 15 bar	1/3 bar	15 bar	
				Total Silt (0.002-0.05mm)	Fine (0.002-0.02mm)	Coarse (0.02-0.05mm)	Total Sand (0.05-2.0mm)	Very fine (0.05-0.10mm)	Fine (0.10-0.25mm)	Medium (0.25-0.50mm)	Coarse (0.5-1mm)	Very coarse (2.0-1.0mm)						
		In	Percent										g/cm3	g/cm3	(cm/cm)	Percent		
Beckman (1)	A	0-4	71.7	27.4	23.6	3.8	0.9	0.4	0.1	0.1	0.1	0.2	1.41	1.77	0.05	29.3	25.5	0.079
S00OK-009-001	Bw	4-14	50.3	47.2	29.4	17.8	2.5	2.3	0.1	0.1	TR	BDL	1.58	1.77	0.04	21.3	18.7	0.039
	Bkyz1	14-24	42.4	50.0	24.4	25.6	7.6	6.5	0.4	0.3	0.3	0.1	1.48	1.70	0.12	24.7	16.5	0.047
	Bkyz2	24-41	32.6	56.4	18.0	38.4	11.0	10.0	0.4	0.3	0.2	0.1	1.60	1.68	0.10	18.1	12.0	0.016
	Cyz1	41-51	32.1	47.5	14.1	33.4	20.4	19.9	0.4	0.1	TR	BDL	1.65	1.75	0.05	15.9	13.0	0.020
	Cyz2	51-63	41.8	41.6	19.3	22.3	16.6	13.0	2.3	0.8	0.3	0.2	1.76	1.92	0.06	18.2	14.8	0.029
	Cyz3	63-72	47.4	39.3	24.5	14.8	13.3	9.2	1.5	0.2	0.9	1.5	---	---	---	---	17.2	---
	2Cr	72-80	61.5	36.6	29.3	7.3	1.9	TR	1.4	0.3	0.2	TR	---	---	---	---	21.8	---
Burford (2)	Ap	0-4	23.1	47.9	11.5	36.4	29.0	21.5	4.3	2.5	0.4	0.3	1.52	1.66	0.17	20.1	8.7	0.029
S01OK-055-002	Apd	0-7	23.4	45.2	12.5	32.7	31.4	23.8	4.1	2.1	0.6	0.8	1.56	1.72	0.16	19.3	8.8	0.033
	Bw1	7-12	34.1	47.1	15.2	31.9	18.8	15.6	2.1	1.0	0.1	TR	1.43	1.66	0.15	22.6	12.0	0.050
	Bw2	12-18	38.0	44.9	16.7	28.2	17.1	12.8	2.6	1.1	0.4	0.2	1.47	1.70	0.13	22.2	13.5	0.049
	2Bk1	18-28	28.4	60.3	29.3	31.0	11.3	6.4	2.3	1.7	0.7	0.2	1.55	1.74	0.10	17.9	10.7	0.035
	2Bk2	28-42	24.6	68.4	27.8	40.6	7.0	3.6	1.6	1.1	0.5	0.2	1.57	1.68	0.13	18.0	9.4	0.022
	2C/Bk	42-54	35.5	59.9	28.5	31.4	4.6	3.5	0.5	0.4	0.2	TR	1.68	1.85	0.10	18.3	12.5	0.032
	2Cd1	54-61	67.8	30.0	24.6	5.4	2.2	1.4	0.4	0.2	0.1	0.1	1.60	1.90	0.05	23.2	20.2	0.057
	2Cd2	61-71	58.7	37.3	29.2	8.1	4.0	2.7	0.6	0.5	0.2	BDL	1.66	1.89	0.05	21.8	18.6	0.043
Eda	A	0-10	3.4	6.7	1.3	5.4	89.9	11.9	45.5	29.9	2.6	TR	1.60	1.63	0.12	9.9	9.3	0.006
S02OK-055-003	E	10-18	3.6	2.9	0.4	2.5	93.5	11.5	49.5	30.1	2.4	TR	1.69	1.70	0.07	5.7	5.3	0.002
	E/Bt1	18-31	5.9	1.8	0.2	1.6	92.3	7.0	57.2	27.4	0.7	BDL	1.63	1.66	0.19	20.1	14.0	0.006
	E/Bt1	31-47	5.3	1.9	0.2	1.7	92.8	15.8	59.3	17.4	0.3	BDL	1.58	1.75	0.29	23.2	20.0	0.035
	E/Bt2	47-59	3.7	1.0	BDL	1.0	95.3	5.9	39.4	46.9	3.0	0.1	1.65	1.68	0.11	12.9	8.1	0.006
	C	59-203	5.2	3.5	1.1	2.4	91.3	20.5	57.4	12.9	0.5	BDL	1.49	1.54	0.23	22.4	17.5	0.011
Gotebo	Ap	0-8	20.0	42.2	8.3	33.9	37.8	35.1	1.8	0.8	0.1	TR	---	---	---	---	7.7	---
S00OK-055-002	Bw	8-17	20.1	40.9	7.4	33.5	39.0	38.1	0.6	0.2	0.1	TR	1.40	1.49	0.13	17.4	7.8	0.021
	B/Ck	17-26	13.0	44.6	7.1	37.5	42.4	39.9	1.5	0.5	0.4	0.1	1.57	1.62	0.13	14.4	6.0	0.010
	Cr1	26-52	10.3	25.9	6.1	19.8	63.8	56.1	6.0	1.3	0.2	0.2	---	---	---	---	5.1	---
	Cr2	52-67	22.2	67.1	31.3	35.8	10.7	8.0	1.5	0.7	0.4	0.1	---	---	---	---	10.7	---
Grandmore (3)	Ap1	0-4	2.5	5.2	1.2	4.0	92.3	7.2	42.8	39.5	2.7	0.1	1.70	1.72	0.07	5.5	5.8	0.004
S02OK-055-002	Ap2	4-13	2.4	3.1	0.1	3.0	94.5	7.3	44.7	39.5	3.0	BDL	1.69	1.72	0.05	4.1	1.4	0.006
	Ap/Bt	13-19	2.7	2.9	0.4	2.5	94.4	4.2	37.2	49.5	3.5	TR	1.49	1.58	0.15	11.9	1.1	0.020
	Ap/Bt	13-19	5.5	7.6	1.3	6.3	86.9	14.1	41.9	29.7	1.2	BDL	1.47	1.56	0.11	12.1	2.0	0.020
	Bt1	19-26	10.9	11.3	2.0	9.3	77.8	13.8	39.1	23.7	1.2	BDL	1.53	1.65	0.14	15.9	4.6	0.025
	Bt2	26-33	17.5	16.3	4.2	12.1	66.2	15.5	29.6	19.5	1.6	BDL	1.62	1.76	0.12	15.1	7.0	0.028
	Bt3	33-42	19.6	18.1	5.7	12.4	62.3	13.4	29.2	18.2	1.5	BDL	1.69	1.93	0.15	16.2	7.7	0.045
	Bt4	42-52	18.1	17.2	5.5	11.7	64.7	12.6	26.7	22.1	3.2	0.1	---	---	---	---	7.2	---
	2Btg	52-69	32.2	33.0	16.0	17.0	34.8	6.3	16.8	11.1	0.6	BDL	1.79	1.86	0.05	11.6	13.5	0.013
	2BCg	69-78	8.4	11.4	4.1	7.3	80.2	10.3	42.1	26.7	1.1	TR	---	---	---	---	8.6	---
	2C	78-89	8.8	20.0	4.8	15.2	71.2	9.6	37.1	23.5	1.0	TR	---	---	---	---	3.8	---

Physical Analyses of Selected Soils--Continued

Soil name and sample number*	Horizon	Depth	Particle-size distribution: Clay less than 0.002	Silt: Total Silt (0.002-0.05mm)	Silt: Fine (0.002-0.02mm)	Silt: Coarse (0.02-0.05mm)	Sand: Total Sand (0.05-2.0mm)	Sand: Very fine (0.05-0.10mm)	Sand: Fine (0.10-0.25mm)	Sand: Medium (0.25-0.50mm)	Sand: Coarse (0.5-1mm)	Sand: Very coarse (2.0-1.0mm)	Bulk density: 1/3 bar	Bulk density: Oven-dry	Water retention difference 1/3 bar 15 bar	Water content: 1/3 bar	Water content: 15 bar	COLE
		In	Percent										g/cm3	g/cm3	(cm/cm)	--Percent--		
Hayfork	A1	0-4	24.3	56.9	20.4	36.5	18.8	16.8	1.3	0.6	0.1	TR	---	---	---	---	9.5	---
S00OK-055-006	A2	4-11	54.6	36.3	16.1	20.2	9.1	8.3	0.6	0.2	TR	TR	---	---	---	---	17.8	---
	Bk	11-27	56.4	35.9	20.3	15.6	7.7	6.2	0.8	0.4	0.2	0.1	---	---	---	---	16.9	---
	Bky1	27-41	52.4	41.1	22.9	18.2	6.5	5.3	0.6	0.4	0.2	TR	---	---	---	---	15.8	---
	Bky2	41-50	39.1	48.7	21.5	27.2	12.2	9.8	1.4	0.6	0.3	0.1	---	---	---	---	13.0	---
	Cy	50-60	41.9	47.8	20.2	27.6	10.3	8.6	0.8	0.6	0.3	TR	---	---	---	---	14.1	---
Lawton (4)	Ap	0-6	21.8	57.5	15.3	42.2	20.7	13.4	3.2	2.1	1.2	0.8	1.47	1.58	0.22	23.0	7.9	0.024
S01OK-055-006	BAd	6-9	35.8	49.1	17.5	31.6	15.1	9.9	2.1	1.7	1.0	0.4	1.42	1.71	0.16	25.2	13.7	0.063
	Bt1	9-22	41.0	44.1	18.0	26.1	14.9	8.0	2.1	1.7	1.7	1.4	1.46	1.76	0.11	24.2	16.3	0.063
	Bt2	22-34	39.8	45.5	20.4	25.1	14.7	8.7	2.1	1.7	1.3	0.9	1.50	1.77	0.10	23.2	16.3	0.055
	2Bt1	34-42	34.5	42.4	15.4	27.0	23.1	8.2	3.0	2.4	3.0	6.5	1.41	1.62	0.08	23.4	15.0	0.032
	2Bt2	42-57	34.8	37.9	13.3	24.6	27.3	9.5	3.3	4.2	5.6	4.7	1.49	1.69	0.10	22.3	14.7	0.038
	2Bt3	57-70	45.4	37.5	15.1	22.4	17.1	9.7	2.2	2.2	2.1	0.9	1.54	1.88	0.09	25.0	18.7	0.067
	2Bt4	70-83	53.0	28.1	10.5	17.6	18.9	7.0	2.9	3.3	4.0	1.7	1.54	1.88	0.06	24.8	20.5	0.063
	2Bt5	83-91	44.4	20.7	8.9	11.8	34.9	4.2	4.1	7.7	9.7	9.2	1.65	1.81	0.01	16.9	15.9	0.022
	3Bt	91-102	39.7	40.3	17.7	22.6	20.0	12.0	5.1	1.5	1.0	0.4	1.48	1.70	0.07	24.3	19.3	0.045
Duke (5)	Ap	0-5	41.7	46.3	20.1	26.2	12.0	8.4	1.5	0.5	0.6	1.0	---	---	---	---	11.9	---
Sampled as	Bkss	5-14	48.2	41.4	23.4	18.0	10.4	1.1	5.6	1.6	1.1	1.0	1.68	1.99	0.09	19.1	13.8	0.057
Mangum	Bss	14-32	52.8	41.3	24.6	16.7	5.9	3.6	1.0	0.6	0.4	0.3	1.60	1.93	0.10	22.1	15.8	0.064
S02OK-055-004	Bssyz1	32-48	56.9	38.6	23.8	14.8	4.5	2.8	0.7	0.5	0.3	0.2	1.55	1.89	0.11	24.2	16.9	0.067
	Bssyz2	48-56	61.5	33.2	22.7	10.5	5.3	2.2	1.7	1.1	0.3	BDL	1.45	1.81	0.16	28.4	17.1	0.077
	Bssyz3	56-80	69.3	26.8	16.1	10.7	3.9	2.8	0.7	0.4	TR	BDL	1.35	1.76	0.14	31.7	21.7	0.092
Nobscot	A	0-10	1.5	10.7	2.0	8.7	87.8	13.0	37.6	33.2	3.9	0.1	---	---	---	---	1.6	---
S00OK-055-005	E1	10-24	1.6	5.0	0.8	4.2	93.4	10.5	42.5	37.3	3.1	TR	1.74	1.75	0.03	2.5	0.9	0.002
	E2	24-32	3.5	3.2	0.6	2.6	93.3	9.7	39.4	40.8	3.4	BDL	---	---	---	---	1.3	---
	Bt1	32-38	12.6	3.1	0.8	2.3	84.3	6.0	38.7	37.2	2.4	TR	1.68	1.76	0.07	9.6	5.7	0.016
	Bt2	38-51	13.5	3.4	0.2	3.2	83.1	8.4	44.7	27.0	3.0	TR	1.71	1.81	0.09	10.9	5.6	0.019
	Bt3	51-62	13.0	6.4	0.8	5.6	80.6	13.1	42.2	23.0	2.3	BDL	1.73	1.81	0.09	10.8	5.5	0.015
	Bt4	62-80	9.1	10.3	1.4	9.0	80.6	16.4	42.0	20.9	1.3	TR	1.64	1.70	0.06	8.3	4.4	0.012
Roark	Apd	0-8	19.8	61.0	23.6	37.4	19.2	8.1	4.8	5.1	1.1	0.1	1.43	1.53	0.20	21.8	7.8	0.023
S01OK-055-005	BAd	8-16	29.2	46.3	17.6	28.7	24.5	9.9	6.4	6.6	1.4	0.2	1.57	1.73	0.14	20.3	11.6	0.033
	Bt1	16-27	39.9	39.6	17.2	22.4	20.5	8.4	5.7	5.2	1.1	0.1	1.42	1.78	0.16	27.2	15.7	0.078
	Bt2	27-39	40.4	43.1	20.8	22.3	16.5	7.2	4.5	3.7	1.0	0.1	1.46	1.85	0.14	26.2	16.5	0.082
	Btk1	39-57	41.7	45.9	24.7	21.2	12.4	5.3	3.3	2.6	0.5	0.7	1.40	1.78	0.15	28.1	17.5	0.083
	Btk2	57-74	43.9	45.8	26.7	19.1	10.3	4.6	2.7	2.5	0.4	0.1	1.35	1.69	0.17	30.5	18.1	0.077
	2BCkg	74-89	37.1	34.6	16.7	17.9	28.3	10.5	8.5	7.2	1.7	0.4	1.46	1.78	0.16	27.0	15.9	0.068
	2BCg	89-99	34.2	29.6	10.6	19.0	36.2	14.8	11.6	8.1	1.7	TR	1.57	1.88	0.14	22.3	13.7	0.062
Springer (6)	Ap1	0-7	2.6	3.1	0.6	2.6	94.3	11.9	45.2	35.5	1.7	TR	1.67	1.74	0.06	5.0	1.3	0.014
Sampled as	Ap2	7-13	2.7	4.5	0.9	3.6	92.8	12.4	48.5	29.9	2.0	BDL	1.70	1.72	0.11	7.9	1.4	0.004
Devol	Bt1	13-22	10.6	4.9	1.5	3.4	84.5	9.3	41.6	31.8	1.8	TR	1.64	1.72	0.13	12.2	4.3	0.016
S00OK-055-004	Bt2	22-30	8.8	4.9	1.8	3.1	86.3	10.2	43.4	31.7	1.0	BDL	1.58	1.64	0.09	9.2	3.8	0.013
	Bt3	30-42	6.9	4.9	1.9	3.0	88.2	9.6	45.7	31.4	1.5	TR	---	---	---	---	3.1	---
	BC	42-57	6.3	3.8	1.3	2.5	89.9	10.9	46.5	30.7	1.8	BDL	1.61	1.62	0.05	5.5	2.5	0.002
	2BA	57-67	13.3	9.7	3.1	6.6	77.0	14.3	31.9	27.7	2.9	0.2	1.67	1.76	0.13	13.1	5.4	0.018
	2Bt	67-80	19.3	24.4	6.1	18.3	56.3	14.6	21.5	19.0	1.2	BDL	1.75	1.83	0.08	13.0	8.5	0.015

Physical Analyses of Selected Soils--Continued

Soil name and sample number*	Horizon	Depth	Particle-size distribution										Bulk density		Water retention difference 1/3 bar 15 bar	Water content		COLE
			Clay less than 0.002	Silt: Total Silt (0.002-0.05mm)	Silt: Fine (0.002-0.02mm)	Silt: Coarse (0.02-0.05mm)	Sand: Total Sand (0.05-2.0mm)	Sand: Very fine (0.05-0.10mm)	Sand: Fine (0.10-0.25mm)	Sand: Medium (0.25-0.50mm)	Sand: Coarse (0.5-1mm)	Sand: Very coarse (2.0-1.0mm)	1/3 bar	Oven-dry		1/3 bar	15 bar	
		In	Percent										g/cm3	g/cm3	(cm/cm)	--Percent--		
Spur (7) S02OK-055-001	Ap	0-6	51.6	51.6	16.1	35.5	24.2	12.9	4.5	5.9	0.9	TR	---	---	---	---	9.7	---
	A	6-15	48.7	48.7	14.6	34.1	23.6	13.2	3.9	5.4	1.0	0.1	1.56	1.68	0.14	18.7	9.9	0.025
	Bw1	15-23	40.1	40.1	10.1	30.0	31.4	14.9	6.9	8.4	1.1	0.1	1.61	1.75	0.12	17.1	9.8	0.028
	Bw2	23-38	36.6	36.6	9.6	27.0	39.1	14.2	8.7	14.4	1.7	0.1	1.70	1.79	0.10	14.4	8.6	0.017
	Bw3	38-48	32.8	32.8	9.7	23.1	45.8	11.9	13.2	18.5	2.2	TR	1.66	1.75	0.09	13.1	7.4	0.018
	Bk	48-65	24.7	24.7	8.7	16.0	56.4	11.6	19.4	22.8	2.6	TR	1.69	1.77	0.09	11.5	6.2	0.015
	BC	65-78	16.0	16.0	5.7	10.3	70.8	10.8	22.9	34.2	2.8	0.1	1.69	1.77	0.11	11.0	4.5	0.015
	C	78-81	15.5	15.5	5.2	10.3	75.3	12.2	20.4	38.1	4.4	0.2	1.71	1.76	0.14	11.4	3.3	0.010
Treadway S00OK-055-003	A1	0-2	36.0	58.1	29.1	29.0	5.9	5.4	0.2	0.2	0.1	TR	1.57	1.66	0.10	18.3	11.9	0.019
	A2	2-13	40.2	53.1	24.0	29.1	6.7	5.8	0.4	0.3	0.1	0.1	1.58	1.69	0.07	17.1	13.0	0.023
	Bkyz1	13-24	49.2	46.6	25.4	21.2	4.2	3.5	0.2	0.1	0.2	0.2	1.51	1.66	0.08	20.7	15.1	0.032
	Bkyz2	24-37	58.1	39.6	26.7	12.9	2.3	1.9	0.1	0.1	0.1	0.1	1.57	1.85	0.06	23.2	19.4	0.056
	Bkyz3	37-43	43.0	47.4	24.6	22.8	9.6	8.7	0.7	0.2	TR	TR	1.49	1.70	0.11	24.3	16.9	0.045
	Bkyz4	43-58	57.9	39.8	30.3	9.5	2.3	2.1	0.2	TR	TR	TR	1.53	1.81	0.06	24.0	19.9	0.058
	Bkyz5	58-70	70.7	28.5	26.7	1.8	0.8	0.6	0.1	0.1	TR	TR	1.49	1.81	0.06	26.2	21.9	0.067
	Bkssyz	70-80	63.5	33.1	25.2	7.9	3.4	2.8	0.3	0.1	BDL	0.2	1.48	1.81	0.09	27.0	20.8	0.069
Willow (8) S00OK-055-001	Ap1	0-6	26.3	49.8	14.2	35.6	23.9	21.7	1.5	0.6	0.1	BDL	---	---	---	---	11.1	---
	Ap2	6-10	30.1	45.1	14.7	30.4	24.8	22.5	1.5	0.7	0.1	BDL	1.49	1.68	0.12	21.1	12.9	0.041
	Bt1	10-21	39.6	39.3	13.9	25.4	21.1	18.8	1.5	0.7	0.1	BDL	1.52	1.81	0.09	22.7	17.1	0.060
	Bt2	21-29	29.4	43.3	12.5	30.4	27.3	24.6	2.0	0.6	0.1	BDL	1.49	1.67	0.08	18.8	13.6	0.039
	2Bk	29-41	22.8	51.4	24.0	27.4	25.8	20.4	1.3	1.0	1.4	1.7	1.50	1.60	0.13	16.7	8.3	0.022
	2BC	41-55	13.4	49.5	20.5	29.0	37.1	32.9	0.8	1.1	1.0	1.3	1.52	1.56	0.12	14.8	7.2	0.009
	2Cr	55-80	11.5	45.3	12.0	33.3	43.2	40.5	0.5	0.6	0.9	0.7	1.57	1.63	0.13	14.7	6.6	0.013

(1) This pedon was sampled in Beckham County, OK, and was originally correlated to mapping unit 6 in the 1980 published soil survey of Beckham County.
(2) This pedon has slightly more calcium carbonate content in the 2Bk1 horizon than the series range allows and is a similar component with management and interpretations that are not significantly different from the soil series classification.
(3) This pedon has slightly less clay content in the textural control section than the series range allows and is a similar component with management and interpretations that are not significantly different from the soil series classification.
(4) This pedon has a mollic epipedon more than 20 inches thick which is more than the series range allows and is a similar component with management and interpretations that are not significantly different from the soil series classification.
(5) This pedon has slightly more gypsum content than the series range allows and is a similar component with management and interpretations that are not significantly different from the soil series classification.
(6) This pedon has loamy sand throughout the argillic horizon and does not qualify for coarse loamy particle-size class and is a similar component with management and interpretations that are not significantly different from the soil series classification.
(7) This pedon has a regular decrease in organic carbon and is a similar component with management and interpretations that are not significantly different from the soil series classification.
(8) This pedon has slightly more clay content in the Bt1 horizon than the series range allows and is a similar component with management and interpretations that are not significantly different from the soil series classification.

* Location of sampled pedons is as follows:
Beckman (S00OK-009-001), about 430 feet north and 675 feet east of the southwest corner of sec. 28, T. 8 N., R. 23 W.
Burford (S01OK-055-002), about 2,350 feet north and 1,490 feet west of the southeast corner of sec. 10, T. 6 N., R. 22 W.

*Location of Sampled Pedons--Continued

Duke (S02OK-055-004), about 350 feet south and 2,100 feet west of the northeast corner of sec. 16, T. 3 N., R. 22 W.
Eda (S02OK-055-003), about 200 feet north and 500 feet east of the southwest corner of sec. 1, T. 7 N., R. 22 W.
Gotebo (S00OK-055-002), about 1,970 feet south and 850 feet west of the northeast corner of sec. 17, T. 6 N., R. 22 W.
Grandmore (S02OK-055-002), about 350 feet north and 1,600 west of the southeast corner of sec. 8, T. 7 N., R. 21 W.
Hayfork (S00OK-055-006), about 60 feet north and 1,340 east of the southwest corner of sec. 5, T. 7 N., R. 23 W.
Lawton (S01OK-055-006), about 1,900 feet south and 300 feet east of the northwest corner of sec. 34, T. 6 N., R. 21 W.
Nobscot (S00OK-055-005), about 380 feet north and 2,270 feet east of the southwest corner of sec. 18, T. 7 N., R. 21 W.
Roark (S01OK-055-005), about 350 feet north and 900 feet west of the southeast corner of sec. 11, T. 5 N., R. 21 W.
Springer (S00OK-055-004), about 760 feet south and 1,900 feet west of the northeast corner of sec. 3, T. 7 N., R. 22 W.
Spur (S02OK-055-001), about 250 feet north and 1,300 feet east of the southwest corner of sec. 6, T. 5 N., R. 21 W.
Treadway (S00OK-055-003), about 2,100 feet south and 400 feet east of the northwest corner of sec. 1, T. 7 N., R. 24 W.
Willow (S00OK-055-001), about 600 feet south and 400 feet west of the northeast corner of sec. 17, T. 6 N., R. 22 W.

Chemical Soil Properties

The table, “Chemical Properties of the Soils,” shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

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

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

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter (mmhos/cm) or decisiemens per meter (dS/m) at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

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

Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
AceB:							
Acme	0-12	11-16	7.4-8.4	1-10	0-3	0.0-4.0	0-4
	12-24	11-21	7.4-8.4	5-20	1-10	1.0-8.0	0-8
	24-44	6.5-21	7.4-8.4	2-20	20-80	1.0-8.0	0-10
	44-55	6.5-21	7.4-8.4	2-20	20-80	1.0-8.0	0-10
	55-80	6.5-21	7.4-8.4	1-15	3-50	1.0-8.0	0-10
ArHF:							
Arnett	0-15	7.0-13	6.1-7.8	0-1	0	0	0
	15-40	11-21	6.6-8.4	0-10	0	0	0
	40-58	11-21	6.6-8.4	0-10	0	0	0
	58-80	7.0-21	6.6-8.4	0-10	0	0	0
Hardeman	0-7	6.7-11	7.4-8.4	0-5	0	0.0-2.0	0
	7-40	7.8-11	7.4-8.4	1-10	0	0.0-2.0	0
	40-60	7.8-11	7.9-8.4	2-15	0	0.0-2.0	0
	60-80	3.8-11	7.9-8.4	2-15	0	0.0-2.0	0
ArnB:							
Arnett	0-7	7.0-13	6.1-7.8	0-1	0	0	0
	7-26	11-21	6.6-8.4	0-10	0	0	0
	26-46	7.0-21	6.6-8.4	0-10	0	0	0
	46-80	5.0-21	7.9-8.4	2-15	0	0	0
ArnC:							
Arnett	0-7	7.0-13	6.1-7.8	0-1	0	0	0
	7-17	11-21	6.6-8.4	0-10	0	0	0
	17-31	11-21	6.6-8.4	0-10	0	0	0
	31-44	7.0-21	6.6-8.4	0-10	0	0	0
	44-80	5.0-21	7.9-8.4	2-15	0	0	0
AsmB:							
Aspermont	0-6	11-22	7.9-8.4	2-10	0-1	0.0-2.0	0
	6-34	7.5-24	7.9-8.4	5-20	0-1	0.0-2.0	0
	34-43	7.5-24	7.9-8.4	15-40	0-2	0.0-2.0	0-2
	43-50	7.5-24	7.9-8.4	5-25	0-5	0.0-4.0	0-6
	50-80	12-24	7.4-8.4	1-8	0-2	0.0-2.0	0-8
AsmC:							
Aspermont	0-8	11-22	7.9-8.4	2-10	0-1	0.0-2.0	0
	8-35	7.5-24	7.9-8.4	5-20	0-1	0.0-2.0	0
	35-50	7.5-24	7.9-8.4	15-40	0-2	0.0-2.0	0-2
	50-80	12-24	7.4-8.4	1-8	0-2	0.0-2.0	0-8
BekA:							
Beckman	0-4	24-35	7.9-8.4	1-5	0-5	0.0-8.0	1-5
	4-14	21-35	7.9-8.4	1-5	0-2	0.0-8.0	1-5
	14-41	18-35	7.9-8.4	1-15	1-15	2.0-16.0	3-20
	41-80	18-35	7.9-8.4	1-15	1-15	4.0-20.0	3-20
BfdB:							
Burford	0-5	12-16	7.4-8.4	0-5	0	0	0
	5-12	12-22	7.9-8.4	2-15	0	0	0
	12-30	12-22	7.9-8.4	5-15	0	0	0
	30-43	16-30	7.9-8.4	5-15	0-2	0.0-2.0	0-6
	43-80	12-24	7.4-8.4	1-8	0-2	0.0-2.0	0-8

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
BfdC:							
Burford	0-6	12-16	7.4-8.4	0-5	0	0	0
	6-24	12-22	7.9-8.4	5-15	0	0	0
	24-40	16-30	7.9-8.4	5-15	0-2	0.0-2.0	0-6
	40-80	12-24	7.4-8.4	1-8	0-2	0.0-2.0	0-8
BfSC2:							
Burford, moderately eroded	0-6	12-16	7.4-8.4	0-10	0	0	0
	6-35	12-22	7.9-8.4	5-15	0	0	0
	35-40	12-22	7.9-8.4	5-15	0-2	0.0-2.0	0-6
	40-80	12-24	7.4-8.4	5-10	0-2	0.0-2.0	0-8
Spikebox, moderately eroded	0-7	5.5-12	7.4-8.4	0-15	0	0.0-2.0	0
	7-15	5.5-12	7.9-8.4	0-15	0-2	0.0-2.0	0
	15-40	---	---	---	---	---	---
BfSE:							
Burford	0-10	12-16	7.4-8.4	0-5	0	0	0
	10-29	12-22	7.9-8.4	2-15	0	0	0
	29-44	12-22	7.9-8.4	5-15	0	0	0
	44-57	16-30	7.9-8.4	5-15	0-2	0.0-2.0	0-6
	57-80	12-24	7.4-8.4	5-10	0-2	0.0-2.0	0-8
Spikebox	0-6	5.5-12	7.4-8.4	0-10	0	0.0-2.0	0
	6-14	5.5-12	7.9-8.4	0-15	0-2	0.0-2.0	0
	14-40	---	---	---	---	---	---
BriE:							
Brico	0-11	9.0-16	6.1-7.3	0	0	0	0
	11-24	21-35	6.1-7.3	0	0	0	0
	24-40	21-35	6.1-7.3	0	0	0	0
	40-72	16-21	6.1-7.3	0	0	0	0
BukA:							
Bukreek	0-11	11-16	6.6-7.8	0	0	0	0
	11-18	16-21	7.4-8.4	0-5	0	0	0
	18-30	16-21	7.4-8.4	0-15	0	0.0-2.0	0
	30-74	16-21	7.9-8.4	15-40	0	0.0-2.0	0
	74-80	9.5-18	7.9-8.4	5-15	0	0.0-2.0	0
CarB:							
Carey	0-15	6.5-16	6.6-7.8	0	0	0	0
	15-42	12-21	6.6-8.4	0-15	0	0.0-2.0	0
	42-65	5.0-16	7.9-8.4	5-15	0-1	0.0-2.0	0-2
	65-80	5.0-16	7.9-8.4	1-8	0-2	0.0-2.0	0-4
CawA:							
Carwile	0-15	3.8-11	5.6-7.3	0	0	0	0
	15-27	15-33	6.1-8.4	0	0	0	0
	27-57	12-33	6.1-8.4	0-5	0	0	0
	57-80	6.7-18	6.6-8.4	0-5	0	0	0
CVRD:							
Cottonwood	0-5	11-17	7.9-8.4	5-30	5-20	0.0-2.0	0-4
	5-8	11-17	7.9-8.4	5-30	40-90	0.0-2.0	0-4
	8-40	---	---	---	---	---	---

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
Vinson	0-4	9.6-17	7.4-8.4	0-10	0-1	0.0-2.0	0
	4-15	11-18	7.9-8.4	2-10	2-10	0.0-2.0	0
	15-22	11-18	7.9-8.4	5-15	2-10	0.0-2.0	0
	22-28	---	---	---	---	---	---
	28-60	---	---	---	---	---	---
Rock outcrop	0-60	---	---	---	---	---	---
DAM:							
Dam	0-80	---	---	---	---	---	---
DeSD:							
Devol	0-8	2.0-5.5	5.6-7.8	0	0	0	0
	8-28	5.5-11	6.1-8.4	0	0	0	0
	28-47	2.0-11	6.1-8.4	0	0	0	0
	47-62	2.0-6.7	6.6-8.4	0-5	0	0	0
	62-80	2.0-6.7	6.6-8.4	0-5	0	0	0
Springer	0-15	2.0-8.0	5.6-7.8	0	0	0.0-1.0	0
	15-41	3.6-13	6.1-8.4	0	0	0.0-1.0	0
	41-52	1.5-8.4	6.6-8.4	0	0	0.0-1.0	0
	52-70	6.0-16	6.6-8.4	0-5	0	0.0-2.0	0
	70-80	1.5-7.8	6.6-8.4	0-5	0	0	0
DkuA:							
Duke	0-5	16-30	7.4-8.4	0-15	0-1	0.0-4.0	0-4
	5-12	14-36	7.4-8.4	1-15	0-5	0.0-8.0	1-15
	12-44	14-36	7.4-8.4	1-15	0-15	2.0-16.0	13-20
	44-80	6.0-36	7.4-8.4	1-15	2-15	2.0-16.0	4-20
DodA:							
Dodson	0-7	11-19	6.1-7.8	0	0	0	0
	7-37	18-32	6.6-7.8	0-2	0	0	0
	37-56	12-28	6.6-8.4	2-15	0-1	0.0-2.0	0
	56-72	8.3-23	7.9-8.4	2-15	0-1	0.0-2.0	0
	72-80	5.5-23	7.9-8.4	2-20	0-2	0.0-2.0	0
DodB:							
Dodson	0-6	11-19	6.1-7.8	0	0	0	0
	6-26	18-32	6.6-7.8	0-1	0	0	0
	26-56	12-28	6.6-8.4	2-15	0-1	0.0-2.0	0
	56-83	8.3-23	7.9-8.4	2-20	0-1	0.0-2.0	0
	83-91	5.5-29	7.4-8.4	2-20	0-2	0.0-2.0	0
EatA:							
Eastall	0-12	35-50	6.6-8.4	0-2	0	0.0-2.0	0
	12-19	35-50	7.4-8.4	0-2	0	0.0-2.0	0
	19-56	35-50	7.4-8.4	0-5	0	0.0-2.0	0
	56-76	35-50	7.4-8.4	0-5	0	0.0-2.0	0
	76-95	25-50	7.9-8.4	2-15	0-2	0.0-2.0	0
EdsB:							
Eda	0-11	1.0-5.0	5.6-7.3	0	0	0	0
	11-35	1.0-6.0	5.6-7.3	0	0	0	0
	35-80	1.0-6.0	6.1-7.3	0-2	0	0	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
EdsD:							
Eda	0-13	1.0-5.0	5.6-7.3	0	0	0	0
	13-50	1.0-6.0	5.6-7.3	0	0	0	0
	50-80	1.0-6.0	6.1-7.3	0-2	0	0	0
EdsF:							
Eda	0-18	1.0-5.0	5.6-7.3	0	0	0	0
	18-40	1.0-6.0	5.6-7.3	0	0	0	0
	40-80	1.0-6.0	6.1-7.3	0-2	0	0	0
FraB:							
Frankirk	0-6	11-21	6.6-7.8	0	0	0.0-2.0	0
	6-18	21-27	6.6-8.4	0	0	0.0-2.0	0
	18-52	21-27	6.6-8.4	0-10	0	0.0-2.0	0
	52-65	12-18	7.9-8.4	5-20	0	0.0-2.0	0
	65-80	12-18	7.9-8.4	2-10	0	0.0-2.0	0
FryB:							
Farry	0-7	6.5-14	6.1-7.8	0	0	0	0
	7-11	11-20	6.6-8.4	0	0	0	0
	11-50	11-20	6.6-8.4	0-5	0	0	0
	50-63	6.5-16	6.6-8.4	0-5	0	0	0
	63-75	4.0-16	6.6-8.4	0-10	0	0	0
	75-84	2.5-15	6.6-8.4	0-10	0	0	0
GdfB:							
Grandfield	0-15	6.0-13	6.1-7.8	0	0	0	0
	15-32	9.6-18	6.1-7.8	0	0	0	0
	32-49	9.6-18	6.6-8.4	0	0	0	0
	49-56	6.7-15	6.6-8.4	0-5	0	0	0
	56-80	2.6-12	6.6-8.4	0-5	0	0	0
GlGB:							
Grandmore	0-18	2.6-6.7	6.1-7.8	0	0	0	0
	18-38	11-18	6.6-7.8	0	0	0	0
	38-46	9.0-18	6.6-8.4	0	0	0	0
	46-61	18-30	7.4-8.4	0-10	0	0	0
	61-80	5.0-30	7.9-8.4	0-15	0	0	0
Grandfield	0-8	2.6-6.7	6.1-7.8	0	0	0	0
	8-28	11-18	6.1-7.8	0	0	0	0
	28-55	7.8-18	6.6-8.4	0	0	0	0
	55-75	3.5-15	6.6-8.4	0-5	0	0	0
	75-80	2.6-12	6.6-8.4	0-5	0	0	0
GlsB:							
Grandfield	0-7	2.6-6.7	6.1-7.8	0	0	0	0
	7-21	11-18	6.1-7.8	0	0	0	0
	21-44	7.8-18	6.6-8.4	0	0	0	0
	44-72	3.5-15	6.6-8.4	0-5	0	0	0
	72-80	2.6-12	6.6-8.4	0-5	0	0	0
GlsD:							
Grandfield	0-13	2.6-6.7	6.1-7.8	0	0	0	0
	13-34	11-18	6.1-7.8	0	0	0	0
	34-47	7.8-18	6.6-8.4	0	0	0	0
	47-58	3.5-15	6.6-8.4	0-5	0	0	0
	58-80	2.6-12	6.6-8.4	0-5	0	0	0

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
GmuA:							
Gracemont, saline----	0-6	6.7-11	7.9-8.4	1-10	0-5	4.0-16.0	1-6
	6-20	6.7-11	7.9-8.4	1-10	0-5	4.0-16.0	1-6
	20-80	3.8-20	7.9-8.4	1-10	0-5	4.0-16.0	1-6
GmwA:							
Gracemont, saline----	0-4	6.7-11	7.9-8.4	1-10	0-5	4.0-16.0	1-6
	4-35	6.7-11	7.9-8.4	1-10	0-5	4.0-16.0	1-6
	35-80	3.8-20	7.9-8.4	1-10	0-5	4.0-16.0	1-6
GrrA:							
Gracemore, saline----	0-7	16-21	7.4-8.4	1-10	0-3	4.0-16.0	1-6
	7-17	2.0-6.7	7.9-8.4	1-10	0-3	4.0-16.0	1-6
	17-80	2.0-6.7	7.9-8.4	1-5	0-3	4.0-16.0	1-6
GtbB:							
Gotebo----------	0-8	6.0-11	6.6-8.4	0-5	0	0.0-2.0	0
	8-17	6.0-11	7.4-8.4	0-10	0	0.0-2.0	0
	17-26	6.0-11	7.9-9.0	2-10	0-2	0.0-2.0	0
	26-80	3.8-11	7.9-8.4	1-8	0-2	0.0-2.0	0-4
HdmB:							
Hardeman----------	0-6	4.8-12	7.4-8.4	0-5	0	0.0-2.0	0
	6-46	4.8-12	7.4-8.4	1-10	0	0.0-2.0	0
	46-80	4.8-12	7.9-8.4	2-15	0	0.0-2.0	0
HdmC:							
Hardeman----------	0-13	4.8-12	7.4-8.4	0-5	0	0.0-2.0	0
	13-35	4.8-12	7.4-8.4	1-10	0	0.0-2.0	0
	35-62	4.8-12	7.9-8.4	2-15	0	0.0-2.0	0
	62-80	3.0-12	7.9-8.4	2-15	0	0.0-2.0	0
HfkA:							
Hayfork----------	0-11	18-24	6.1-8.4	0-5	0	0.0-2.0	0-2
	11-27	20-27	7.4-8.4	2-15	0-1	0.0-4.0	0-3
	27-41	16-27	7.9-8.4	2-15	1-5	2.0-16.0	2-6
	41-50	16-27	7.9-8.4	2-15	1-5	2.0-16.0	2-6
	50-60	16-27	7.9-8.4	2-15	1-5	2.0-16.0	2-6
HksA:							
Headrick----------	0-5	2.6-6.7	6.1-7.8	0	0	0	0
	5-32	11-18	6.6-8.4	0-3	0	0	0
	32-66	18-27	6.6-8.4	0-15	0-5	0	0
	66-80	16-27	7.9-8.4	1-15	0-5	0.0-4.0	0-6
HolA:							
Hollister----------	0-9	15-30	6.6-8.4	0-2	0	0	0
	9-23	20-35	7.4-8.4	2-10	0-2	0.0-2.0	0
	23-72	20-35	7.4-8.4	2-10	0-2	0.0-4.0	1-8
	72-110	15-25	7.9-8.4	3-15	0-5	0.0-6.0	1-8
	110-138	15-25	7.9-8.4	3-15	0-5	0.0-6.0	1-8
HrAC:							
Harmon----------	0-7	5.0-15	7.9-8.4	40-65	0	0	0
	7-16	5.0-15	7.9-8.4	55-85	0	0	0
	16-40	---	---	---	---	---	---

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
Aspermont	0-5	11-22	7.9-8.4	2-10	0	0.0-2.0	0
	5-40	7.5-24	7.9-8.4	5-20	0	0.0-2.0	0
	40-50	7.5-24	7.9-8.4	15-30	0	0.0-2.0	0-2
	50-80	12-24	7.4-8.4	1-8	0-2	0.0-2.0	0-8
HSAF:							
Hardeman	0-14	6.7-11	6.6-8.4	0-5	0	0.0-2.0	0
	14-20	7.2-11	6.6-8.4	1-10	0	0.0-2.0	0
	20-46	7.2-11	7.4-8.4	2-15	0	0.0-2.0	0
	46-80	3.8-11	7.9-8.4	2-15	0	0.0-2.0	0
Southside	0-6	3.5-9.5	6.6-8.4	0-10	0	0.0-2.0	0
	6-28	1.0-6.5	7.9-8.4	2-10	0	0.0-2.0	0
	28-80	1.0-6.5	7.9-8.4	2-10	0	0.0-2.0	0
Arnett	0-5	7.0-13	6.1-7.8	0-1	0	0	0
	5-41	11-21	6.6-8.4	0-10	0	0	0
	41-70	7.0-21	7.4-8.4	0-10	0	0	0
	70-80	5.0-21	7.9-8.4	2-15	0	0	0
JesC:							
Jester	0-7	1.5-6.7	6.6-8.4	0-2	0	0	0
	7-45	1.5-6.7	7.4-8.4	1-5	0	0	0
	45-80	1.5-6.7	7.4-8.4	1-5	0	0	0
KcRG:							
Knoco, bouldery	0-3	12-24	7.4-8.4	1-8	0-15	1.0-4.0	0-8
	3-9	12-24	7.4-8.4	1-8	0-15	1.0-8.0	0-8
	9-60	12-24	7.4-8.4	1-8	0-15	1.0-8.0	0-8
Rock outcrop	0-60	---	---	---	---	---	---
KoBE:							
Knoco	0-6	12-24	7.4-8.4	1-8	0-15	1.0-4.0	0-8
	6-16	12-24	7.4-8.4	1-8	0-15	1.0-8.0	0-8
	16-60	12-24	7.4-8.4	1-8	0-15	1.0-8.0	0-8
Badland	0-60	---	---	1-15	0-15	1.0-8.0	0-8
KRCF:							
Knoco	0-3	12-24	7.4-8.4	1-8	0-15	1.0-4.0	0-8
	3-12	12-24	7.4-8.4	1-8	0-15	1.0-8.0	0-8
	12-60	12-24	7.4-8.4	1-8	0-15	1.0-8.0	0-8
Rock outcrop	0-60	---	---	---	---	---	---
Cottonwood	0-4	9.5-17	7.9-8.4	5-30	5-20	0.0-2.0	0-4
	4-40	---	---	---	---	---	---
LacB:							
La Casa	0-6	16-21	7.4-8.4	0-2	0-1	0.0-2.0	0
	6-12	20-30	7.4-8.4	0-5	0-2	0.0-2.0	0
	12-34	20-30	7.9-8.4	5-15	0-2	0.0-2.0	0
	34-64	18-30	7.9-8.4	10-40	0-2	0.0-2.0	0-2
	64-81	18-30	7.9-8.4	5-25	0-4	0.0-4.0	0-2
	81-91	18-30	7.4-8.4	2-10	0-8	2.0-8.0	0-6

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
LnuA:							
Lincoln	0-8	1.5-10	7.4-8.4	0-5	0	0	0
	8-21	1.5-10	7.9-8.4	0-5	0	0	0
	21-80	1.5-10	7.9-8.4	0-5	0	0	0
LnWA:							
Lincoln	0-5	1.5-10	7.4-8.4	0-5	0	0	0
	5-15	1.5-10	7.9-8.4	0-5	0	0	0
	15-80	1.5-10	7.9-8.4	0-5	0	0	0
Westola	0-5	7.0-11	7.4-8.4	1-5	0	0	0
	5-30	4.0-11	7.9-8.4	1-10	0	0	0
	30-80	4.0-11	7.9-8.4	1-10	0	0	0
LwtA:							
Lawton	0-6	11-16	6.1-7.3	0	0	0	0
	6-9	12-21	6.1-7.3	0	0	0	0
	9-34	21-24	6.1-8.4	0	0	0	0
	34-75	15-24	6.6-8.4	0-5	0-1	0.0-2.0	0-6
	75-80	12-21	6.6-8.4	0-10	0-2	0.0-2.0	0-6
LwtB:							
Lawton	0-6	11-16	6.1-7.3	0	0	0	0
	6-28	21-24	6.1-8.4	0	0	0	0
	28-56	21-24	6.1-8.4	0	0	0	0
	56-75	15-24	6.6-8.4	0-5	0-1	0.0-2.0	0-6
	75-80	12-21	6.6-8.4	0-10	0-2	0.0-2.0	0-6
LwtC2:							
Lawton, moderately eroded	0-5	11-16	6.1-7.3	0	0	0	0
	5-45	21-24	6.1-8.4	0	0	0	0
	45-62	15-24	6.6-8.4	0-5	0-1	0.0-2.0	0-6
	62-80	12-21	6.6-8.4	0-10	0-2	0.0-2.0	0-6
M-W:							
Water, Miscellaneous-	0-80	---	---	---	---	---	---
MagB:							
Madge	0-13	9.0-17	6.1-7.8	0	0	0	0
	13-25	11-21	6.6-8.4	0	0	0	0
	25-41	7.0-21	6.6-8.4	0-10	0	0	0
	41-57	4.0-16	6.6-8.4	0-10	0	0	0
	57-80	2.5-15	7.4-8.4	0-10	0	0	0
MdgB:							
Madge	0-5	5.0-11	6.1-7.8	0	0	0	0
	5-43	11-21	6.6-8.4	0	0	0	0
	43-49	7.0-21	6.6-8.4	0-10	0	0	0
	49-56	4.0-15	6.6-8.4	0-10	0	0	0
	56-80	2.5-15	7.4-8.4	0-10	0	0	0
MknB:							
Mcknight	0-7	6.0-11	5.6-8.4	0	0	0	0
	7-35	7.0-21	6.6-8.4	0-5	0	0	0
	35-53	14-35	7.9-8.4	0-15	0-2	0.0-2.0	0-4
	53-80	12-24	7.4-8.4	1-8	0-2	0.0-2.0	0-8

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
MktB:							
Mcknight	0-14	3.0-6.0	5.6-8.4	0	0	0	0
	14-29	7.0-21	6.6-8.4	0-5	0	0	0
	29-36	14-35	7.9-8.4	0-15	0	0	0
	36-52	14-35	7.9-8.4	2-15	0-2	0.0-2.0	0-4
	52-80	12-24	7.4-8.4	1-8	0-2	0.0-2.0	0-8
MktC2:							
Mcknight, moderately eroded	0-7	3.0-6.0	5.6-8.4	0	0	0	0
	7-35	7.0-21	6.6-8.4	0-5	0	0	0
	35-51	14-35	7.9-8.4	0-15	0-2	0.0-2.0	0-4
	51-80	12-24	7.4-8.4	1-8	0-2	0.0-2.0	0-8
NpsB:							
Nipsum	0-20	21-24	7.4-8.4	0-5	0-1	0.0-2.0	0-2
	20-27	21-33	7.9-8.4	1-10	0-1	0.0-2.0	0-2
	27-40	21-33	7.9-8.4	5-20	1-10	0.0-4.0	0-8
	40-62	17-33	7.9-8.4	5-20	2-15	0.0-8.0	0-12
	62-80	17-33	7.9-8.4	5-20	2-15	0.0-8.0	0-12
NstC:							
Nobscot	0-5	2.0-5.0	5.6-7.3	0	0	0	0
	5-23	2.0-6.0	5.6-7.3	0	0	0	0
	23-53	5.0-11	5.1-7.3	0	0	0	0
	53-71	2.0-11	5.1-7.3	0	0	0	0
	71-80	2.0-6.5	6.1-7.3	0	0	0	0
OakA:							
Oakley	0-12	10-15	7.4-8.4	2-10	0	0.0-2.0	0
	12-43	12-20	7.9-8.4	10-35	0	0.0-2.0	0
	43-58	12-20	7.9-9.0	10-35	0-2	0.0-4.0	0-8
	58-85	5.0-18	7.9-9.0	3-20	0-2	0.0-8.0	0-8
	85-95	5.0-18	7.9-9.0	3-15	0-2	0.0-8.0	0-8
	95-120	12-24	7.4-8.4	1-8	0-2	1.0-8.0	0-8
OakB:							
Oakley	0-7	10-15	7.4-8.4	2-10	0	0.0-2.0	0
	7-41	12-20	7.9-8.4	10-35	0	0.0-2.0	0
	41-49	12-20	7.9-9.0	10-35	0-2	0.0-4.0	0-8
	49-72	5.0-18	7.9-9.0	3-20	0-2	0.0-8.0	0-8
	72-95	5.0-18	7.9-9.0	3-15	0-2	0.0-8.0	0-8
	95-120	12-24	7.4-8.4	1-8	0-2	1.0-8.0	0-8
OzkA:							
Ozark	0-11	5.0-12	6.1-7.8	0	0	0	0
	11-24	11-21	6.6-7.8	0-5	0	0.0-2.0	0
	24-50	11-27	7.4-8.4	2-15	0-2	0.0-4.0	0-8
	50-59	11-27	7.4-8.4	2-15	0-5	0.0-4.0	0-12
	59-83	5.5-21	7.9-8.4	2-10	0-5	0.0-4.0	0-12
	83-105	18-30	7.9-8.4	2-10	0-5	0.0-4.0	0-12
	105-120	12-24	7.4-8.4	1-8	0-2	1.0-8.0	0-8
PIT:							
Pits	0-80	---	7.4-8.4	---	---	---	---

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
QhTC:							
Quanah	0-14	15-25	7.4-8.4	5-10	0	0.0-2.0	0
	14-22	15-25	7.9-8.4	5-15	0	0.0-2.0	0
	22-36	15-25	7.9-8.4	15-40	0	0.0-2.0	0
	36-82	15-25	7.9-8.4	15-40	0	0.0-2.0	0
Talpa	0-10	12-18	7.9-8.4	10-40	0	0	0
	10-20	---	---	---	---	---	---
QnRG:							
Quinlan	0-5	6.0-13	7.4-8.4	0-5	0	0	0
	5-11	6.0-18	7.4-8.4	2-15	0-2	0.0-2.0	0
	11-40	3.8-16	7.4-8.4	1-8	0-2	0.0-2.0	0-4
Rock outcrop	0-62	---	---	---	---	---	---
RakA:							
Roark	0-10	9.5-16	6.1-7.8	0	0	0.0-2.0	0
	10-24	21-27	7.4-8.4	0-5	0	0.0-2.0	0
	24-34	21-27	7.9-8.4	1-10	0	0.0-2.0	0
	34-49	21-27	7.9-8.4	1-10	0	0.0-4.0	0-6
	49-67	10-21	7.9-8.4	1-10	0-2	0.0-8.0	0-6
	67-80	4.0-21	7.9-8.4	1-5	0-4	0.0-8.0	0-6
RKBG:							
Rock outcrop, granite	0-60	---	---	---	---	---	---
Brico	0-10	9.0-16	6.1-7.3	0	0	0	0
	10-35	21-35	6.1-7.3	0	0	0	0
	35-72	16-21	6.1-7.3	0	0	0	0
RKO:							
Rock outcrop, granite	0-60	---	---	---	---	---	---
RuuA:							
Rups	0-7	16-21	7.4-8.4	0-5	0-2	4.0-20.0	0-4
	7-21	16-21	7.9-8.4	3-15	1-5	8.0-29.9	0-13
	21-43	16-21	7.9-8.4	3-15	1-5	8.0-29.9	0-13
	43-80	16-27	7.9-8.4	3-15	1-5	8.0-29.9	0-13
RuwA:							
Rups	0-15	16-21	7.4-8.4	0-5	0-2	4.0-20.0	0-4
	15-30	16-21	7.9-8.4	3-15	1-5	8.0-29.9	0-13
	30-48	16-21	7.9-8.4	3-15	1-5	8.0-29.9	0-13
	48-80	16-27	7.9-8.4	3-15	1-5	8.0-29.9	0-13
SKRG:							
Spikebox	0-3	5.5-12	7.4-8.4	0-10	0	0.0-2.0	0
	3-12	5.5-12	7.9-8.4	0-15	0-2	0.0-2.0	0
	12-40	---	---	---	---	---	---
Knoco	0-5	12-24	7.4-8.4	1-8	0-15	1.0-4.0	0-8
	5-11	12-24	7.4-8.4	1-8	0-15	1.0-8.0	0-8
	11-80	12-24	7.4-8.4	1-8	0-15	1.0-8.0	0-8
Rock outcrop	0-62	---	---	---	---	---	---

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
SpDB:							
Springer	0-13	2.0-8.0	5.6-7.8	0	0	0.0-1.0	0
	13-42	3.6-13	6.1-8.4	0	0	0.0-1.0	0
	42-57	1.5-8.4	6.6-8.4	0	0	0.0-1.0	0
	57-80	6.0-16	6.6-8.4	0-5	0	0.0-2.0	0
Devol	0-14	2.0-5.5	5.6-7.8	0	0	0	0
	14-29	5.5-11	6.1-8.4	0	0	0	0
	29-45	2.0-11	6.1-8.4	0	0	0	0
	45-65	2.0-6.7	6.6-8.4	0-5	0	0	0
	65-80	2.0-6.7	6.6-8.4	0-5	0	0	0
SplA:							
Spur	0-11	5.0-15	7.9-8.4	0-2	0	0.0-2.0	0
	11-43	12-23	7.9-8.4	2-10	0	0.0-2.0	0
	43-75	6.0-23	7.9-8.4	2-10	0-2	0.0-4.0	0-6
	75-90	6.0-23	7.9-8.4	2-10	0-2	0.0-4.0	0-6
SurA:							
Spur	0-14	17-21	7.9-8.4	0-2	0	0.0-2.0	0
	14-30	12-21	7.9-8.4	2-10	0	0.0-2.0	0
	30-51	12-21	7.9-8.4	2-10	0	0.0-2.0	0
	51-80	9.6-21	7.9-8.4	2-10	0	0.0-4.0	0
SuuA:							
Spur	0-10	17-21	7.9-8.4	0-2	0	0.0-2.0	0
	10-16	12-21	7.9-8.4	0-2	0	0.0-2.0	0
	16-48	12-21	7.9-8.4	2-10	0	0.0-2.0	0
	48-80	9.6-21	7.9-8.4	2-10	0-2	0.0-4.0	0
SuwA:							
Spur	0-8	17-21	7.9-8.4	0-2	0	0.0-2.0	0
	8-17	12-21	7.9-8.4	2-10	0	0.0-2.0	0
	17-35	12-21	7.9-8.4	2-10	0	0.0-2.0	0
	35-49	12-21	7.9-8.4	2-10	0	0.0-2.0	0
	49-80	9.6-21	7.9-8.4	2-10	0	0.0-4.0	0
TARD:							
Talpa	0-7	12-17	7.9-8.4	10-40	0	0	0
	7-40	---	---	---	---	---	---
Aspermont	0-10	11-22	7.9-8.4	2-10	0	0.0-2.0	0
	10-42	7.5-24	7.9-8.4	15-30	0	0.0-2.0	0
	42-80	12-24	7.4-8.4	1-8	0-2	0.0-2.0	0-8
Rock outcrop	0-60	---	---	---	---	---	---
TilA:							
Tillman	0-8	16-22	6.6-8.4	0	0	0.0-2.0	0-1
	8-15	20-30	7.4-8.4	0-2	0	0.0-2.0	0-1
	15-45	20-30	7.9-8.4	2-15	0-2	0.0-4.0	0-12
	45-62	20-30	7.9-8.4	5-30	0-2	0.0-8.0	0-12
	62-78	15-35	7.4-8.4	2-30	0-2	0.0-8.0	0-12
	78-90	15-35	7.9-8.4	1-10	0-2	0.0-8.0	0-12
	90-100	12-24	7.4-8.4	1-8	0-2	1.0-8.0	0-8

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
TilB:							
Tillman	0-6	16-22	6.6-8.4	0	0	0.0-2.0	0-1
	6-10	20-30	7.4-8.4	0-2	0	0.0-2.0	0-1
	10-25	20-30	7.4-8.4	0-5	0-2	0.0-2.0	0-2
	25-48	20-30	7.9-8.4	2-15	0-2	0.0-4.0	0-12
	48-60	20-30	7.9-8.4	5-30	0-2	0.0-8.0	0-12
	60-82	15-35	7.4-8.4	2-30	0-2	0.0-8.0	0-12
	82-90	15-35	7.9-8.4	1-10	0-2	0.0-8.0	0-12
	90-100	12-24	7.4-8.4	1-8	0-2	1.0-8.0	0-8
TipA:							
Tipton	0-8	9.5-16	6.6-7.8	0	0	0	0
	8-15	9.5-16	6.6-7.8	0	0	0	0
	15-25	12-21	6.6-8.4	0	0	0	0
	25-41	12-21	7.4-8.4	1-10	0	0	0
	41-66	9.5-21	7.9-8.4	3-15	0	0.0-2.0	0
	66-80	6.5-21	7.9-8.4	1-15	0	0.0-4.0	0
TlvB:							
Tilvern	0-5	21-25	7.4-8.4	0-5	0	0.0-2.0	0-2
	5-11	21-33	7.9-8.4	2-10	0	0.0-2.0	0-2
	11-31	18-33	7.9-8.4	2-15	0-3	0.0-4.0	0-6
	31-44	18-33	7.9-8.4	2-20	1-5	2.0-12.0	2-12
	44-51	18-33	7.9-8.4	2-20	1-5	2.0-12.0	2-12
	51-80	12-24	7.4-8.4	1-8	0-2	1.0-8.0	0-8
TpfA:							
Tipton	0-7	6.5-12	6.6-7.8	0	0	0	0
	7-13	6.5-12	6.6-7.8	0	0	0	0
	13-24	9.5-16	6.6-7.8	0	0	0	0
	24-47	12-21	6.6-8.4	0	0	0	0
	47-63	12-21	7.4-8.4	1-10	0	0	0
	63-80	6.5-21	7.9-8.4	1-15	0	0.0-4.0	0
TrwB:							
Treadway	0-13	10-12	7.9-9.0	0-10	0-5	0.0-8.0	0-8
	13-24	9.0-24	7.9-9.0	2-15	2-15	2.0-16.0	1-30
	24-80	9.0-24	7.9-9.0	2-15	2-15	2.0-16.0	1-30
VeKE:							
Vernon	0-6	18-24	7.9-8.4	0-15	0	0.0-2.0	0-2
	6-26	21-35	7.9-8.4	5-20	0-2	0.0-8.0	0-4
	26-80	12-24	7.4-8.4	1-8	0-2	1.0-8.0	0-8
Knoco	0-6	12-24	7.4-8.4	1-8	0-15	1.0-4.0	0-8
	6-16	12-24	7.4-8.4	1-8	0-15	1.0-8.0	0-8
	16-60	12-24	7.4-8.4	1-8	0-15	1.0-8.0	0-8
VerC:							
Vernon	0-6	18-24	7.9-8.4	0-15	0	0.0-2.0	0-2
	6-26	21-35	7.9-8.4	5-20	0-2	0.0-8.0	0-4
	26-35	21-35	7.9-8.4	5-20	0-2	0.0-8.0	0-4
	35-80	12-24	7.4-8.4	1-8	0-2	1.0-8.0	0-8
VeTE:							
Vernon	0-7	18-24	7.9-8.4	0-15	0	0.0-2.0	0-2
	7-16	21-35	7.9-8.4	5-20	0-2	0.0-8.0	0-4
	16-25	21-35	7.9-8.4	5-20	0-2	0.0-8.0	0-4
	25-38	21-35	7.9-8.4	1-15	0-2	0.0-8.0	0-4
	38-80	12-24	7.4-8.4	1-8	0-2	1.0-8.0	0-8

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
Talpa, stony	0-9	12-17	7.9-8.4	10-40	0	0	0
	9-40	---	---	---	---	---	---
W:							
Water	0-80	---	---	---	---	---	---
WlwB:							
Willow	0-7	11-19	6.1-7.8	0-2	0	0.0-1.0	0
	7-31	15-23	6.6-8.4	0-10	0-1	0.0-2.0	0
	31-39	9.0-18	7.9-9.0	10-40	0-2	0.0-2.0	0
	39-54	6.7-12	7.9-9.0	10-25	0-5	0.0-2.0	0-4
	54-80	3.8-12	7.9-9.0	1-8	0-2	0.0-2.0	0-4
WooB:							
Woodward	0-15	6.0-12	6.6-8.4	0-5	0	0	0
	15-32	6.0-12	7.4-8.4	2-10	0	0	0
	32-38	6.0-12	7.4-8.4	2-15	0-2	0.0-2.0	0
	38-80	3.8-12	7.4-8.4	1-8	0-2	0.0-2.0	0-4
WooC:							
Woodward	0-7	6.0-12	6.6-8.4	0-5	0	0	0
	7-19	6.0-12	7.4-8.4	2-10	0	0	0
	19-28	6.0-12	7.4-8.4	2-15	0-2	0.0-2.0	0
	28-80	3.8-12	7.4-8.4	1-8	0-2	0.0-2.0	0-4
WoQE:							
Woodward	0-9	6.0-12	6.6-8.4	0-5	0	0	0
	9-21	6.0-12	7.4-8.4	2-10	0	0	0
	21-26	6.0-12	7.4-8.4	2-15	0-2	0.0-2.0	0
	26-80	3.8-12	7.4-8.4	1-8	0-2	0.0-2.0	0-4
Quinlan	0-4	6.0-13	7.4-8.4	0-5	0	0	0
	4-12	6.0-18	7.4-8.4	2-15	0-2	0.0-2.0	0
	12-40	3.8-16	7.4-8.4	1-8	0-2	0.0-2.0	0-4
WslA:							
Westola	0-12	7.0-11	7.4-8.4	1-5	0	0	0
	12-50	4.0-11	7.9-8.4	1-10	0	0	0
	50-80	4.0-11	7.9-8.4	1-10	0	0	0
WstA:							
Westola	0-8	7.0-11	7.4-8.4	1-5	0	0	0
	8-19	7.0-11	7.4-8.4	1-5	0	0	0
	19-30	4.0-11	7.9-8.4	1-10	0	0	0
	30-80	4.0-11	7.9-8.4	1-10	0	0	0
WtlA:							
Westill	0-5	16-22	6.6-8.4	0	0	0.0-2.0	0-1
	5-15	20-30	7.4-8.4	0-5	0	0.0-2.0	0-2
	15-24	20-30	7.4-8.4	0-10	0	0.0-2.0	0-2
	24-55	18-35	7.9-8.4	5-15	0-2	0.0-4.0	0-6
	55-70	15-35	7.9-8.4	1-10	0-3	1.0-8.0	0-6
	70-80	12-24	7.4-8.4	1-8	0-2	1.0-8.0	0-8

Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
WtlB:							
Westill	0-9	16-22	6.6-8.4	0	0	0.0-2.0	0-1
	9-16	20-30	7.4-8.4	0-5	0	0.0-2.0	0-2
	16-47	18-35	7.9-8.4	5-15	0-2	0.0-4.0	0-6
	47-56	15-35	7.9-8.4	5-15	0-3	1.0-8.0	0-6
	56-68	15-35	7.9-8.4	1-10	0-3	1.0-8.0	0-6
	68-80	12-24	7.4-8.4	1-8	0-2	1.0-8.0	0-8

Chemical Analyses of Selected Soils

The results of chemical analysis of several pedons are shown in the table, “Chemical Analyses of Selected Soils.” The data are for soils sampled at carefully selected sites.The pedons are representative of the series described in this survey. Soil samples were analyzed by the National Soil Suvery Laboratory, Lincoln, Nebraska.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters across. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods *(6)*.

Organic carbon—wet combustion. Walkley-Black modified acid dichromate, ferric sulfate titration (6A1c).

Extractable cations—ammonium acetate pH 7.0, atomic absorption; calcium (6N2e), magnesium (6O2d), sodium (6P2b), potassium (6Q2b).

Extractable acidity—barium chloride-triethanolamine IV (6H5a).

Cation-exchange capacity—ammonium acetate, pH 7.0, steam distillation (5A8b).

Cation-exchange capacity—sum of cations (5A3a).

Base saturation—sum of cations, TEA, pH 8.2 (5C3).

Base saturation—ammonium acetate, pH 7.0 (5C1).

Reaction (pH)—calcium chloride (8C1f).

Reaction (pH)—1:1 water dilution (8C1f).

Chemical Analyses of Selected Soils

(The symbol < means less than. TR means trace. BDL means below detection limits. Dashes indicate that analyses were not made.)

Soil name and sample number*	Depth	Horizon	Total carbon	Extractable bases (Ammonium acetate)				Extractable acidity	Cation-exchange capacity		Base saturation		Calcium Carbonate less Than 2mm	Exch. Na	SAR	Salinity	pH	
				Ca	Mg	Na	K		Sum of cations	Ammonium acetate	Sum of cations	Ammonium acetate					CaCl2 1:2	H20 1:1
	In		Pct	Milliequivalents per 100 grams of soil							Pct	Pct	Pct	Pct		MMhos /cm		
Beckman	0-4	A	2.97	27.4	5.9	BDL	1.7	2.4	37.4	28.5	94	100	TR	TR	1	1.26	7.3	7.7
S000K-009-	4-14	Bw	0.87	30.7	5.8	0.7	1.1	0.6	38.9	18.2	98	100	2	1	3	2.68	7.7	8.0
001 (1)	14-24	Bkyz1	0.92	59.3	7.9	3.1	0.7	---	---	20.8	---	100	4	4	7	6.17	7.8	7.9
	24-41	Bkyz2	0.62	135.4	9.2	10.5	0.3	---	---	9.8	---	100	5	23	23	15.79	8.2	8.2
	41-51	Cyz1	0.55	104.7	10.7	12.8	0.6	---	---	10.6	---	100	4	26	24	17.06	8.2	8.2
	51-72	Cyz2	0.73	92.6	9.2	9.0	0.6	---	---	17.2	---	100	6	11	19	12.61	8.2	8.2
	72-80	Cyz3	1.38	121.0	9.3	7.4	0.9	---	---	26.3	---	100	10	7	16	9.80	8.1	8.1
	84-99	2Cr	0.18	43.0	11.8	9.4	1.6	---	---	18.2	---	100	1	22	16	9.98	8.0	8.0
Burford	0-4	Ap	1.27	20.8	1.2	BDL	0.7	---	---	14.5	---	100	1	BDL	---	---	7.4	7.8
S01OK-055-	4-7	Apd	1.06	25.5	1.3	BDL	0.6	---	---	14.5	---	100	2	BDL	---	---	7.5	7.9
002 (2)	7-12	Bw1	0.78	18.1	1.8	BDL	0.6	---	---	18.5	---	100	TR	BDL	---	---	7.2	7.9
	12-18	Bw2	0.65	19.7	2.7	BDL	0.6	---	---	19.5	---	100	TR	BDL	---	---	7.4	7.8
	18-28	2Bk1	1.96	48.7	2.8	BDL	0.3	---	---	11.2	---	100	15	BDL	---	---	7.7	8.1
	28-42	2Bk2	1.13	46.6	3.9	TR	0.3	---	---	8.1	---	100	9	TR	---	---	7.7	8.2
	42-54	2C/Bk	1.30	43.2	6.0	0.3	0.3	---	---	9.3	---	100	11	3	---	---	7.8	8.3
	54-61	2Cd1	0.36	27.3	10.4	1.0	0.5	---	---	16.1	---	100	3	5	3	0.55	7.7	8.2
	61-71	2Cd2	0.41	35.2	10.3	1.1	0.5	---	---	16.2	---	100	3	5	4	0.65	7.8	8.1
Eda	0-10	A	0.28	2.1	0.4	BDL	0.2	0.5	3.2	2.6	84	100	---	BDL	---	---	5.6	6.1
S020K-055-	10-18	E	0.14	1.9	0.4	TR	0.3	BDL	2.6	2.3	100	100	---	1	---	---	6.0	6.1
003	18-31	E/Bt1	0.11	2.7	0.7	BDL	0.3	BDL	3.7	3.6	100	100	---	BDL	---	---	5.5	6.0
	31-47	E/Bt1	0.07	2.4	0.6	BDL	0.2	1.0	4.2	3.0	76	100	---	BDL	---	---	5.8	6.2
	47-59	E/Bt2	0.04	1.5	0.5	0.2	0.2	0.3	2.7	2.3	89	100	---	10	---	---	6.2	6.4
	59-80	C	0.12	1.9	0.8	0.2	0.2	0.6	3.7	3.1	84	100	---	5	---	---	5.5	6.1
Gotebo	0-8	Ap	0.92	12.3	2.6	BDL	0.2	2.8	17.9	13.6	84	100	---	---	---	---	6.7	7.3
S000K-055-	8-17	Bw	0.32	9.0	2.9	BDL	BDL	2.8	14.7	11.1	81	100	---	---	---	---	7.1	7.6
002	17-26	B/Ck	0.48	18.0	2.1	BDL	BDL	---	---	6.4	---	100	3	---	---	---	7.7	8.2
	26-52	Cd1	0.68	25.7	3.6	BDL	BDL	---	---	4.6	---	100	5	---	---	---	7.9	8.5
	52-67	Cd2	1.13	34.8	11.6	BDL	BDL	---	---	9.1	---	100	9	---	---	---	8.1	8.5
Grandmore	0-4	Ap1	1.37	2.3	0.7	BDL	0.6	1.2	4.8	3.5	75	100	---	BDL	---	---	5.5	5.7
S020K-055-	4-13	Ap2	0.14	0.9	0.2	BDL	0.3	0.1	1.5	1.7	93	82	---	BDL	---	---	5.2	5.5
002 (3)	13-19	Ap/Bt	0.10	1.0	0.3	BDL	0.3	BDL	1.6	1.6	100	100	---	BDL	---	---	5.7	5.9
	13-19	Ap/Bt	0.19	1.9	0.5	BDL	0.5	0.3	3.2	2.9	91	100	---	BDL	---	---	5.6	6.0
	19-26	Bt1	0.32	4.4	1.1	TR	0.9	1.0	7.4	6.3	86	100	---	TR	---	---	5.9	6.4
	26-33	Bt2	0.40	7.5	1.8	BDL	1.1	1.0	11.4	7.6	91	100	---	BDL	---	---	6.0	6.7
	33-42	Bt3	0.38	8.9	2.2	BDL	0.7	1.4	13.2	11.7	89	100	---	BDL	---	---	6.4	6.8
	42-52	Bt4	0.29	8.7	2.4	TR	0.4	1.6	13.1	11.1	88	100	---	TR	---	---	6.6	7.1
	52-69	2Btg	0.35	15.0	4.6	0.1	0.6	1.8	22.1	20.3	92	100	---	TR	---	---	6.7	6.8
	69-78	2BCg	0.06	3.0	1.2	0.1	0.2	BDL	4.5	4.2	100	100	---	3	---	---	6.8	7.3
	78-89	2C	0.04	3.6	1.4		0.2	BDL	5.2	4.9	100	100	---	BDL	---	---	6.6	7.3

Chemical Analyses of Selected Soils--Continued

Soil name and sample number*	Depth	Horizon	Total carbon	Extractable bases (Ammonium acetate)				Extractable acidity	Cation-exchange capacity		Base saturation		Calcium Carbonate less Than 2mm	Exch. Na	SAR	Salinity	PH	
				Ca	Mg	Na	K		Sum of cations	Ammonium acetate	Sum of cations	Ammonium acetate					CaCl2 1:2	H20 1:1
	In		Pct	Milliequivalents per 100 grams of soil							Pct	Pct	Pct	Pct		MMhos /cm		
Hayfork	0-4	A1	1.75	7.5	4.6	0.2	1.2	3.7	17.2	14.6	78	92	---	2	---	---	5.7	6.4
S00OK-055-006	4-11	A2	1.04	12.4	10.5	0.4	2.0	2.4	27.7	24.6	91	100	---	2	---	---	6.7	7.3
	11-27	Bk	0.92	40.3	62.8	1.2	1.1	---	---	21.3	---	100	3	4	2	1.45	7.8	8.2
	27-41	Bky1	1.03	286.2	69.5	2.5	0.8	---	---	16.3	---	100	6	7	4	6.84	8.0	8.0
	41-50	Bky2	0.94	483.2	47.4	2.1	0.6	---	---	11.1	---	100	6	9	4	5.87	8.0	8.0
	50-60	Cyz	0.59	453.1	47.4	2.2	0.6	---	---	12.4	---	100	4	8	4	5.90	8.0	8.0
Lawton	0-6	Ap	0.84	6.4	2.8	0.2	0.9	---	---	12.5	---	82	---	2	---	---	4.9	5.5
S010K-055-006 (4)	6-9	BAd	0.87	12.6	5.4	0.2	0.8	---	---	19.8	---	96	---	1	---	---	5.9	6.4
	9-22	Bt1	0.73	16.0	6.9	0.3	0.7	---	---	23.5	---	100	---	1	---	---	6.7	7.1
	22-34	Bt2	0.59	18.2	7.6	0.6	0.7	---	---	22.7	---	100	TR	2	---	---	7.3	7.7
	34-42	2Bt1	0.54	29.2	7.5	0.9	0.6	---	---	19.3	---	100	2	4	2	0.68	7.6	8.1
	42-57	2Bt2	0.18	15.5	7.3	1.5	0.6	---	---	18.2	---	100	1	7	4	0.96	7.6	8.1
	57-70	2Bt3	0.09	12.7	8.9	1.9	0.7	---	---	21.7	---	100	TR	7	5	0.93	7.5	7.9
	70-83	2Bt4	0.06	11.6	8.9	2.2	0.7	---	---	22.6	---	100	TR	8	6	0.85	7.4	7.9
	83-91	2Bt5	0.05	11.0	6.7	1.7	0.6	---	---	17.3	---	100	TR	8	6	0.83	7.6	8.1
	91-102	3Bt	0.06	13.7	6.8	1.5	0.6	---	---	19.4	---	100	TR	7	5	0.65	7.6	8.0
Duke	0-5	Ap	1.95	45.8	4.7	0.8	0.8	---	---	13.9	---	100	10	5	2	1.14	7.9	8.0
Sampled as	5-14	Bkss	1.70	46.8	7.9	2.6	0.5	---	---	15.8	---	100	10	13	6	1.72	8.0	8.4
Mangum	14-32	Bss	0.90	130.7	12.9	6.6	0.6	---	---	19.6	---	100	6	19	9	7.18	7.9	8.0
S02OK-055-004 (5)	32-48	Bssyz1	0.74	115.7	14.1	7.8	0.7	---	---	23.1	---	100	4	17	11	8.17	7.9	7.9
	48-56	Bssyz2	0.59	210.2	15.0	9.4	0.8	---	---	23.6	---	100	3	22	11	8.07	7.8	7.9
	56-80	Bssyz3	0.56	116.6	13.9	9.8	1.0	---	---	25.5	---	100	2	20	11	7.34	7.7	7.8
Nobscot	0-10	A	0.32	1.8	0.3	0.2	0.2	1.1	3.6	2.5	69	100	---	8	---	---	5.3	5.9
S000K-055-005	10-24	E1	0.06	1.2	0.1	0.2	0.1	0.8	2.4	1.3	67	100	---	15	---	---	5.7	6.3
	24-32	E2	0.07	1.7	0.2	0.2	0.2	BDL	2.3	1.9	100	100	---	11	---	---	5.8	6.5
	32-38	Bt1	0.17	6.4	1.2	0.3	0.5	2.3	10.7	7.7	79	100	---	4	---	---	5.9	6.6
	38-51	Bt2	0.10	6.0	1.7	0.2	0.5	0.6	9.0	8.0	93	100	---	3	---	---	5.9	6.7
	51-62	Bt3	0.06	5.0	1.8	0.3	0.5	1.2	8.8	7.2	86	100	---	4	---	---	6.0	6.7
	62-80	Bt4	0.03	4.6	1.7	0.3	0.3	0.2	7.1	6.0	97	100	---	5	---	---	6.2	6.9
Roark	0-8	Apd	1.02	2.4	7.5	1.0	0.1	---	---	11.6	---	95	---	9	---	---	5.4	6.0
S010K-055-005	8-16	BAd	0.71	12.5	0.8	0.4	0.8	---	---	16.7	---	87	---	2	---	---	6.2	6.8
	16-27	Bt1	0.61	17.0	5.4	0.6	0.9	---	---	23.7	---	100	---	2	---	---	6.5	6.9
	27-39	Bt2	0.48	25.9	6.2	0.9	0.8	---	---	23.9	---	100	1	4	---	---	7.4	7.8
	39-57	Btk1	0.52	37.1	5.0	1.1	0.7	---	---	24.1	---	100	2	4	3	0.83	7.6	8.0
	57-74	Btk2	0.45	37.4	8.0	1.8	1.0	---	---	26.0	---	100	2	5	4	1.23	7.6	7.8
	74-89	2BCkg	0.59	45.3	5.9	1.9	0.7	---	---	20.1	---	100	4	8	5	1.04	7.7	8.1
	89-99	2BCg	0.05	13.3	4.2	1.7	0.7	---	---	17.5	---	100	TR	8	6	0.81	7.6	8.1

Chemical Analyses of Selected Soils--Continued

Soil name and sample number*	Depth	Horizon	Total carbon	Extractable bases (Ammonium acetate)				Extractable acidity	Cation-exchange capacity		Base saturation		Calcium Carbonate less Than 2mm	Exch. Na	SAR	Salinity	PH	
				Ca	Mg	Na	K		Sum of cations	Ammonium acetate	Sum of cations	Ammonium acetate					CaCl2 1:2	H20 1:1
	In		Pct	Milliequivalents per 100 grams of soil							Pct	Pct	Pct	Pct		MMhos /cm		
Springer	0-7	Ap1	0.21	2.7	0.4	0.3	0.1	BDL	3.5	2.1	100	100	---	14	---	---	7.5	8.0
Sampled as	7-13	Ap2	0.15	1.5	0.2	0.3	0.1	1.1	3.2	2.2	66	95	---	14	---	---	5.2	5.8
Devol	13-22	Bt1	0.22	4.2	1.0	0.3	0.2	4.0	9.7	6.3	59	90	---	5	---	---	5.5	6.3
S00OK-055-	22-30	Bt2	0.15	3.7	1.1	0.3	0.2	1.8	7.1	5.5	75	96	---	4	---	---	5.7	6.3
004 (6)	30-42	Bt3	0.11	3.2	1.0	0.4	0.3	1.6	6.5	4.6	75	100	---	9	---	---	5.8	6.5
	42-57	BC	0.06	2.6	0.8	0.3	0.2	1.4	5.3	3.8	74	100	---	8	---	---	5.9	6.6
	57-67	2BA	0.11	5.2	1.7	0.3	0.3	0.7	8.2	7.9	91	95	---	4	---	---	6.0	6.6
	67-80	2Bt	0.08	7.3	2.9	0.4	0.4	0.7	11.7	11.8	94	93	---	3	---	---	6.0	6.6
Spur	0-6	Ap	0.92	7.1	3.6	0.1	1.1	4.6	16.5	12.9	72	92	---	1	---	---	5.2	5.7
S020K-055-	6-15	A	0.75	11.2	4.2	BDL	0.7	1.7	17.8	15.6	90	100	---	BDL	---	---	6.3	6.8
001 (7)	15-23	Bw1	0.42	12.2	2.7	BDL	0.5	1.3	16.7	13.9	92	100	---	BDL	---	---	7.2	7.7
	23-38	Bw2	0.30	11.2	2.6	BDL	0.4	1.0	15.2	12.4	93	100	---	BDL	---	---	7.3	7.7
	38-48	Bw3	0.20	9.6	2.6	BDL	0.4	0.3	12.9	10.5	98	100	TR	BDL	---	---	7.5	8.0
	48-65	Bk	0.52	38.8	3.6	0.1	0.3	---	---	7.8	---	100	3	1	---	---	8.1	8.4
	65-78	BC	0.70	45.5	3.9	TR	0.2	---	---	5.1	---	100	5	1	---	---	8.1	8.6
	78-81	C	1.59	46.0	2.8	0.2	0.2	---	---	3.1	---	100	13	6	---	---	8.3	8.7
Treadway	0-2	A1	0.90	17.2	4.1	BDL	0.6	0.9	22.8	11.1	96	100	2	TR	1	0.90	7.5	7.9
S000K-055-	2-13	A2	0.74	43.8	4.2	BDL	0.4	BDL	---	11.5	100	100	3	TR	1	2.86	7.6	7.7
003	13-24	Bkyz1	0.43	137.0	4.7	0.9	0.3	0.3	---	11.6	100	100	2	1	3	4.05	7.6	7.7
	24-37	Bkyz2	0.51	64.1	11.2	12.4	0.6	BDL	---	18.4	100	100	2	22	21	10.60	8.1	8.1
	37-43	Bkyz3	0.79	70.0	9.5	12.6	0.5	BDL	---	16.5	100	100	5	26	25	12.34	8.2	8.2
	43-58	Bkyz4	0.52	70.3	10.6	15.7	0.6	BDL	---	16.2	100	100	2	29	27	12.43	8.2	8.1
	58-70	Bkyz5	0.43	57.7	11.8	19.6	0.8	BDL	---	22.0	100	100	2	27	28	13.80	8.1	8.1
	70-80	Bkssyz	0.48	52.4	11.0	18.8	0.7	0.2	---	18.1	100	100	2	31	29	14.06	8.0	8.0
Willow	0-6	Ap1	1.06	10.7	3.7	BDL	1.1	6.9	22.4	16.0	69	97	TR	BDL	---	---	5.2	5.7
S000K-055-	6-10	Ap2	0.81	13.8	4.2	BDL	0.6	5.0	23.6	19.0	79	98	---	BDL	---	---	6.0	6.5
001 (8)	10-21	Bt1	0.64	17.9	5.7	BDL	0.5	4.3	28.4	24.2	85	100	---	BDL	---	---	6.7	7.2
	21-29	Bt2	0.32	13.4	4.2	BDL	0.4	3.3	21.3	17.1	85	100	TR	BDL	---	---	7.1	7.6
	29-41	2Bk	3.65	48.0	2.6	BDL	BDL	---	---	9.6	100	100	30	BDL	TR	0.44	7.8	8.3
	41-55	2BC	2.18	37.7	2.6	BDL	TR	---	---	16.8	100	100	18	BDL	1	0.39	8.1	8.7
	55-80	2Cr	0.80	26.2	3.3	BDL	BDL	---	---	10.0	100	100	7	BDL	---	---	8.1	8.7

(1) This pedon was sampled in Beckham Co., OK and was originally correlated to mapping unit 6 in the 1980 published soil survey of Beckham County.

(2) This pedon has slightly more calcium carbonate content in the 2Bk1 horizon than the series range allows and is a similar component with management and interpretations that are not significantly different from the soil series classification.

(3) This pedon has slightly less clay content in the textural control section than the series range allows and is a similar component with management and interpretations that are not significantly different from the soil series classification.

(4) This pedon has a mollic epipedon more than 20 inches thick which is more than the series range allows and is a similar component with management and interpretations that are not significantly different from the soil series classification.

(5) This pedon has slightly more gypsum content than the series range allows and is a similar component with management and interpretations that are not significantly different from the soil series classification.

(6) This pedon has loamy sand throughout the argillic horizon and does not qualify for coarse-loamy particle size class and is a similar component with management and interpretations that are not significantly different from the soil series classification.

(7) This pedon has a regular decrease in organic carbon and is a similar component with management and interpretations that are not significantly different from the soil series classification.
(8) This pedon has slightly more clay content in the Bt1 horizon than the series range allows and is a similar component with management and interpretations that are not significantly different from the soil series classification.

* Location of Sampled pedons is as follows:
Beckman (S00OK-009-001), about 430 feet north and 675 feet east of the southwest corner of sec. 28, T. 8 N., R. 23 W.
Burford (S01OK-055-002), about 2,350 feet north and 1,490 feet west of the southeast corner of sec. 10, T. 6 N., R. 22 W.
Duke (S02OK-055-004), about 350 feet south and 2,100 feet west of the northeast corner of sec. 16, T. 3 N., R. 22 W.
Eda (S02OK-055-003), about 200 feet north and 500 feet east of the southwest corner of sec. 1, T. 7 N., R. 22 W.
Gotebo (S00OK-055-002), about 1,970 feet south and 850 feet west of the northeast corner of sec. 17, T. 6 N., R. 22 W.
Grandmore (S02OK-055-002), about 350 feet north and 1,600 west of the southeast corner of sec. 8, T. 7 N., R. 21 W.
Hayfork (S00OK-055-006), about 60 feet north and 1,340 east of the southwest corner of sec. 5, T. 7 N., R. 23 W.
Lawton (S01OK-055-006), about 1,900 feet south and 300 feet east of the northwest corner of sec. 34, T. 6 N., R. 21 W.
Nobscot (S00OK-055-005), about 380 feet north and 2,270 feet east of the southwest corner of sec. 18, T. 7 N., R. 21 W.
Roark (S01OK-055-005), about 350 feet north and 900 feet west of the southeast corner of sec. 11, T. 5 N., R. 21 W.
Springer (S00OK-055-004), about 760 feet south and 1,900 feet west of the northeast corner of sec. 3, T. 7 N., R. 22 W.
Spur (S02OK-055-001), about 250 feet north and 1,300 feet east of the southwest corner of sec. 6, T. 5 N., R. 21 W.
Treadway (S00OK-055-003), about 2,100 feet south and 400 feet east of the northwest corner of sec. 1, T. 7 N., R. 24 W.
Willow (S00OK-055-001), about 600 feet south and 400 feet west of the northeast corner of sec. 17, T. 6 N., R. 22 W.

Water Features

The table, “Water Features,” shows 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 drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of 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.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

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

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

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

The frequency of ponding generally is expressed as none, rare, occasional, or frequent. *None* means no reasonable possibility of ponding. The chance of ponding is nearly 0 percent in any year. *Rare* means that ponding is unlikely but is possible under unusual weather conditions. The chance of ponding is nearly 0 percent to 5

percent in any year (ponding occurs nearly 0 times to 5 times in 100 years). *Occasional* means that ponding is expected infrequently under usual weather conditions. The chance of ponding is 5 to 50 percent in any year (ponding occurs 5 to 50 times in 100 years). *Frequent* means that ponding is likely to occur often under usual weather conditions. The chance of ponding is more than 50 percent in any year (ponding occurs more than 50 times in 100 years).

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 ponding is based on evidence of ponded areas as indicated by debries along high water lines and by other signs of maximum water height.

Also considered are local information about the extent and level of ponding and the relation of each soil on the landscape to historic ponding. Information on the extent of ponding based on soil data is less specific than that provided by detailed engineering surveys that delineate areas that are subject to ponding at specific frequency levels.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflow from streams or by runoff from adjacent slopes.

The table shows the frequency and duration of flooding and the time of year when flooding is mot likely to occur. Frequency, duration, and probable dates of occurrence are estimated.

Frequency generally is expressed as none, rare, occasional, or frequent. *None* means no reasonable possibility of flooding. The chance of flooding is nearly 0 percent in any year. *Rare* means that flooding is unlikely but is possible under unusual weather conditions. The chance of flooding is nearly 0 percent to 5 percent in any year (flooding occurs nearly 0 times to 5 times in 100 years). *Occasional* means that flooding is expected infrequently under usual weather conditions. The chance of flooding is 5 to 50 percent in any year (flooding occurs 5 to 50 times in 100 years). *Frequent* means that flooding is likely to occur often under usual weather conditions. The chance of flooding is more than 50 percent in any year (flooding occurs more than 50 times in 100 years).

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.

Water Features

(Depths of layers are in feet. See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
AceB:										
Acme	B	Negligible	Jan-May	4.0-6.0	>6.0	---	---	None	---	None
			Jun-Oct	---	---	---	---	None	---	None
			Nov-Dec	4.0-6.0	>6.0	---	---	None	---	None
ArHF:										
Arnett	B	Medium	Jan-Dec	---	---	---	---	None	---	None
Hardeman	B	Low	Jan-Dec	---	---	---	---	None	---	None
ArnB:										
Arnett	B	Low	Jan-Dec	---	---	---	---	None	---	None
ArnC:										
Arnett	B	Low	Jan-Dec	---	---	---	---	None	---	None
AsmB:										
Aspermont	B	Medium	Jan-Dec	---	---	---	---	None	---	None
AsmC:										
Aspermont	B	Medium	Jan-Dec	---	---	---	---	None	---	None
BekA:										
Beckman	D	High	Jan-Mar	3.0-6.0	>6.0	---	---	None	---	None
			Apr-May	3.0-6.0	>6.0	---	---	None	Very brief	Occasional
			Jun-Sep	---	---	---	---	None	Very brief	Occasional
			Oct	3.0-6.0	>6.0	---	---	None	Very brief	Occasional
			Nov-Dec	3.0-6.0	>6.0	---	---	None	---	None
BfdB:										
Burford	C	Medium	Jan-Dec	---	---	---	---	None	---	None
BfdC:										
Burford	C	Medium	Jan-Dec	---	---	---	---	None	---	None
BfSC2:										
Burford, moderately eroded	C	Medium	Jan-Dec	---	---	---	---	None	---	None
Spikebox, moderately eroded	C	Medium	Jan-Dec	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
BfSE:										
Burford	C	High	Jan-Dec	---	---	---	---	None	---	None
Spikebox	C	High	Jan-Dec	---	---	---	---	None	---	None
BriE:										
Brico	C	High	Jan-Dec	---	---	---	---	None	---	None
BukA:										
Bukreek	B	Negligible	Jan-Dec	---	---	---	---	None	---	None
CarB:										
Carey	B	Low	Jan-Dec	---	---	---	---	None	---	None
CawA:										
Carwile	D	Negligible	Jan-Jun	0.0-3.0	2.0-5.0	0.0-1.0	Long	Frequent	---	None
			Jul-Sept	1.5-3.0	2.0-5.0	---	---	None	---	None
			Oct-Dec	0.0-3.0	2.0-5.0	0.0-1.0	Long	Frequent	---	None
CVRD:										
Cottonwood	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Vinson	B	High	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Very high	Jan-Dec	---	---	---	---	None	---	None
DAM:										
Dam	D	Very high	Jan-Dec	---	---	---	---	None	---	None
DeSD:										
Devol	B	Low	Jan-Dec	---	---	---	---	None	---	None
Springer	B	Low	Jan-Dec	---	---	---	---	None	---	None
DkuA:										
Duke	D	High	Jan-Mar	---	---	---	---	None	---	None
			Apr-Oct	---	---	---	---	None	Very brief	Occasional
			Nov-Dec	---	---	---	---	None	---	None
DodA:										
Dodson	C	Low	Jan-Dec	---	---	---	---	None	---	None
DodB:										
Dodson	C	Medium	Jan-Dec	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
EatA:										
Eastall	D	Negligible	Jan-Mar	---	---	---	---	None	---	None
			Apr-Nov	0.0	1.0-3.0	0.0-3.0	Very long	Frequent	---	None
			Dec	---	---	---	---	None	---	None
EdsB:										
Eda	A	Negligible	Jan-Dec	---	---	---	---	None	---	None
EdsD:										
Eda	A	Very low	Jan-Dec	---	---	---	---	None	---	None
EdsF:										
Eda	A	Very low	Jan-Dec	---	---	---	---	None	---	None
FraB:										
Frankirk	C	Medium	Jan-Dec	---	---	---	---	None	---	None
FryB:										
Farry	B	Low	Jan-Dec	---	---	---	---	None	---	None
GdfB:										
Grandfield	B	Low	Jan-Dec	---	---	---	---	None	---	None
GlGB:										
Grandmore	B	Low	Jan-May	3.3-5.0	5.0-6.7	---	---	None	---	None
			Jun-Sept	---	---	---	---	None	---	None
			Oct-Dec	3.3-5.0	5.0-6.7	---	---	None	---	None
Grandfield	B	Low	Jan-Dec	---	---	---	---	None	---	None
GlsB:										
Grandfield	B	Low	Jan-Dec	---	---	---	---	None	---	None
GlsD:										
Grandfield	B	Medium	Jan-Dec	---	---	---	---	None	---	None
GmuA:										
Gracemont, saline	C	High	Jan-Feb	0.5-1.5	>6.0	---	---	None	---	None
			Mar-May	0.5-1.5	>6.0	---	---	None	Very brief	Occasional
			Jun-Aug	---	---	---	---	None	Very brief	Occasional
			Sept-Oct	---	---	---	---	None	---	None
			Nov-Dec	0.5-1.5	>6.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
GmwA:										
Gracemont, saline	C	High	Jan-Feb	0.5-1.5	>6.0	---	---	None	---	None
			Mar-May	0.5-1.5	>6.0	---	---	None	Very brief	Frequent
			Jun-Aug	---	---	---	---	None	Very brief	Frequent
			Sept-Oct	---	---	---	---	None	---	None
			Nov-Dec	0.5-1.5	>6.0	---	---	None	---	None
GrrA:										
Gracemore, saline	C	High	Jan-Feb	0.5-3.5	>6.0	---	---	None	---	None
			Mar-May	0.5-3.5	>6.0	---	---	None	Very brief	Occasional
			Jun-Oct	---	---	---	---	None	Very brief	Occasional
			Nov-Dec	0.5-3.5	>6.0	---	---	None	---	None
GtbB:										
Gotebo	B	Low	Jan-Dec	---	---	---	---	None	---	None
HdmB:										
Hardeman	B	Very low	Jan-Dec	---	---	---	---	None	---	None
HdmC:										
Hardeman	B	Very low	Jan-Dec	---	---	---	---	None	---	None
HfkA:										
Hayfork	C	Medium	Jan-Mar	---	---	---	---	None	---	None
			Apr-Oct	---	---	---	---	None	Very brief	Rare
			Nov-Dec	---	---	---	---	None	---	None
HksA:										
Headrick	B	Negligible	Jan-May	1.7-3.3	4.2-6.0	---	---	None	---	None
			Jun-Sept	---	---	---	---	None	---	None
			Oct-Dec	1.7-3.3	4.2-6.0	---	---	None	---	None
HolA:										
Hollister	D	High	Jan-Dec	---	---	---	---	None	---	None
HrAC:										
Harmon	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Aspermont	B	Medium	Jan-Dec	---	---	---	---	None	---	None
HSAF:										
Hardeman	B	Low	Jan-Dec	---	---	---	---	None	---	None
Southside	A	Low	Jan-Dec	---	---	---	---	None	---	None
Arnett	B	Medium	Jan-Dec	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
JesC:										
Jester	A	Negligible	Jan-Dec	---	---	---	---	None	---	None
KcRG:										
Knoco, bouldery	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Very high	Jan-Dec	---	---	---	---	None	---	None
KoBE:										
Knoco	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Badland	D	Very high	Jan-Dec	---	---	---	---	None	---	None
KRCF:										
Knoco	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Cottonwood	C	Very high	Jan-Dec	---	---	---	---	None	---	None
LacB:										
La Casa	C	High	Jan-Dec	---	---	---	---	None	---	None
LnuA:										
Lincoln	A	Negligible	Jan-Feb	5.0-6.7	>6.0	---	---	None	---	None
			Mar-May	5.0-6.7	>6.0	---	---	None	Very brief	Frequent
			Jun-Oct	---	---	---	---	None	Very brief	Frequent
			Nov	5.0-6.7	>6.0	---	---	None	Very brief	Frequent
			Dec	5.0-6.7	>6.0	---	---	None	---	None
LnWA:										
Lincoln	A	Negligible	Jan-Feb	5.0-6.7	>6.0	---	---	None	---	None
			Mar-May	5.0-6.7	>6.0	---	---	None	Very brief	Frequent
			Jun-Oct	---	---	---	---	None	Very brief	Frequent
			Nov	5.0-6.7	>6.0	---	---	None	Very brief	Frequent
			Dec	5.0-6.7	>6.0	---	---	None	---	None
Westola	B	Negligible	Jan-Mar	---	---	---	---	None	---	None
			Apr-Oct	---	---	---	---	None	Very brief	Frequent
			Nov-Dec	---	---	---	---	None	---	None
LwtA:										
Lawton	C	Low	Jan-Dec	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
LwtB:										
Lawton	C	Medium	Jan-Dec	---	---	---	---	None	---	None
LwtC2:										
Lawton, moderately eroded	C	Medium	Jan-Dec	---	---	---	---	None	---	None
M-W:										
Water, Miscellaneous	---	---	Jan-Dec	---	---	---	---	---	---	---
MagB:										
Madge	B	Low	Jan-Dec	---	---	---	---	None	---	None
MdgB:										
Madge	B	Low	Jan-Dec	---	---	---	---	None	---	None
MknB:										
McKnight	B	Medium	Jan-Dec	---	---	---	---	None	---	None
MktB:										
McKnight	B	Medium	Jan-Dec	---	---	---	---	None	---	None
MktC2:										
McKnight, moderately eroded	B	Medium	Jan-Dec	---	---	---	---	None	---	None
NpsB:										
Nipsum	C	High	Jan-Dec	---	---	---	---	None	---	None
NstC:										
Nobscot	A	Negligible	Jan-Dec	---	---	---	---	None	---	None
OakA:										
Oakley	B	Low	Jan-May	5.0-8.0	>6.0	---	---	None	---	None
			Jun-Sept	---	---	---	---	None	---	None
			Oct-Dec	5.0-8.0	>6.0	---	---	None	---	None
OakB:										
Oakley	B	Medium	Jan-May	5.0-8.0	>6.0	---	---	None	---	None
			Jun-Sept	---	---	---	---	None	---	None
			Oct-Dec	5.0-8.0	>6.0	---	---	None	---	None
OzkA:										
Ozark	B	Low	Jan-May	3.5-5.0	5.0-9.0	---	---	None	---	None
			Jun-Sept	---	---	---	---	None	---	None
			Oct-Dec	3.5-5.0	5.0-9.0	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
PIT:										
Pits	D	Very high	Jan-Dec	---	---	---	---	None	---	None
QhTC:										
Quanah	B	Low	Jan-Dec	---	---	---	---	None	---	None
Talpa	D	Very high	Jan-Dec	---	---	---	---	None	---	None
QnRG:										
Quinlan	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Very high	Jan-Dec	---	---	---	---	None	---	None
RakA:										
Roark	C	Medium	Jan-Dec	---	---	---	---	None	---	None
RKBG:										
Rock outcrop, granite	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Brico	C	High	Jan-Dec	---	---	---	---	None	---	None
RKO:										
Rock outcrop, granite	D	Very high	Jan-Dec	---	---	---	---	None	---	None
RuuA:										
Rups	C	Very high	Jan-Mar	1.5-3.5	>6.0	---	---	None	---	None
			Apr-May	1.5-3.5	>6.0	---	---	None	Very brief	Occasional
			Jun-Sept	---	---	---	---	None	Very brief	Occasional
			Oct	1.5-3.5	>6.0	---	---	None	Very brief	Occasional
			Nov-Dec	1.5-3.5	>6.0	---	---	None	---	None
RuwA:										
Rups	C	Very high	Jan-Mar	1.5-3.5	>6.0	---	---	None	---	None
			Apr-May	1.5-3.5	>6.0	---	---	None	Very brief	Frequent
			Jun-Sept	---	---	---	---	None	Very brief	Frequent
			Oct	1.5-3.5	>6.0	---	---	None	Very brief	Frequent
			Nov-Dec	1.5-3.5	>6.0	---	---	None	---	None
SKRG:										
Spikebox	C	Very high	Jan-Dec	---	---	---	---	None	---	None
Knoco	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
SpDB:										
Springer	B	Very low	Jan-Dec	---	---	---	---	None	---	None
Devol	B	Very low	Jan-Dec	---	---	---	---	None	---	None
SplA:										
Spur	B	Negligible	Jan-Mar	---	---	---	---	None	---	None
			Apr-Oct	---	---	---	---	None	Very brief	Occasional
			Nov-Dec	---	---	---	---	None	---	None
SurA:										
Spur	B	Negligible	Jan-Mar	---	---	---	---	None	---	None
			Apr-Oct	---	---	---	---	None	Very brief	Rare
			Nov-Dec	---	---	---	---	None	---	None
SuuA:										
Spur	B	Negligible	Jan-Mar	---	---	---	---	None	---	None
			Apr-Oct	---	---	---	---	None	Very brief	Occasional
			Nov Dec	---	---	---	---	None	---	None
SuwA:										
Spur	B	Negligible	Jan-Mar	---	---	---	---	None	---	None
			Apr-Oct	---	---	---	---	None	Very brief	Frequent
			Nov-Dec	---	---	---	---	None	---	None
TARD:										
Talpa	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Aspermont	B	Medium	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Very high	Jan-Dec	---	---	---	---	None	---	None
TilA:										
Tillman	D	Medium	Jan-Dec	---	---	---	---	None	---	None
TilB:										
Tillman	D	High	Jan-Dec	---	---	---	---	None	---	None
TipA:										
Tipton	B	Negligible	Jan-Dec	---	---	---	---	None	---	None
TlvB:										
Tilvern	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
TpfA:										
Tipton	B	Negligible	Jan-Dec	---	---	---	---	None	---	None
TrwB:										
Treadway	D	Very high	Jan-Dec	---	---	---	---	None	---	None
VeKE:										
Vernon	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Knoco	D	Very high	Jan-Dec	---	---	---	---	None	---	None
VerC:										
Vernon	D	Very high	Jan-Dec	---	---	---	---	None	---	None
VeTE:										
Vernon	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Talpa, stony	D	Very high	Jan-Dec	---	---	---	---	None	---	None
W:										
Water	---	---	Jan-Dec	---	---	---	---	---	---	---
WlwB:										
Willow	B	Medium	Jan-Dec	---	---	---	---	None	---	None
WooB:										
Woodward	B	Low	Jan-Dec	---	---	---	---	None	---	None
WooC:										
Woodward	B	Low	Jan-Dec	---	---	---	---	None	---	None
WoQE:										
Woodward	B	Medium	Jan-Dec	---	---	---	---	None	---	None
Quinlan	C	High	Jan-Dec	---	---	---	---	None	---	None
WslA:										
Westola	B	Negligible	Jan-Mar	---	---	---	---	None	---	None
			Apr-Oct	---	---	---	---	None	Very brief	Occasional
			Nov-Dec	---	---	---	---	None	---	None
WstA:										
Westola	B	Negligible	Jan-Mar	---	---	---	---	None	---	None
			Apr-Oct	---	---	---	---	None	Very brief	Rare
			Nov-Dec	---	---	---	---	None	---	None

Water Features--Continued

Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
WtlA:										
Westill	D	High	Jan-Dec	---	---	---	---	None	---	None
WtlB:										
Westill	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Soil Features

The table, “Soil Features,” shows estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of which significantly affect the ease of excavation. Depth *to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

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

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

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

Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
AceB:							
Acme	---	---	---	---	None	High	Moderate
ArHF:							
Arnett	---	---	---	---	None	Low	Low
Hardeman	---	---	---	---	None	Low	Low
ArnB:							
Arnett	---	---	---	---	None	Low	Low
ArnC:							
Arnett	---	---	---	---	None	Low	Low
AsmB:							
Aspermont	Densic bedrock	40-60	---	Noncemented	None	Moderate	Low
AsmC:							
Aspermont	Densic bedrock	40-60	---	Noncemented	None	Moderate	Low
BekA:							
Beckman	---	---	---	---	None	High	Moderate
BfdB:							
Burford	Densic bedrock	40-60	---	Noncemented	None	Moderate	Low
BfdC:							
Burford	Densic bedrock	40-60	---	Noncemented	None	Moderate	Low
BfSC2:							
Burford, moderately eroded	Densic bedrock	40-60	---	Noncemented	None	Moderate	Low
Spikebox, moderately eroded	Paralithic bedrock	8-20	---	Very weakly cemented	None	Moderate	Low
BfSE:							
Burford	Densic bedrock	40-60	---	Noncemented	None	Moderate	Low
Spikebox	Paralithic bedrock	8-20	---	Very weakly cemented	None	Moderate	Low

Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
BriE:							
Brico	---	---	---	---	None	Moderate	Low
BukA:							
Bukreek	---	---	---	---	None	Moderate	Low
CarB:							
Carey	Densic bedrock	60-100	---	Noncemented	None	Moderate	Low
CawA:							
Carwile	---	---	---	---	None	High	Moderate
CVRD:							
Cottonwood	Lithic bedrock	3-12	---	Strongly cemented	None	High	High
Vinson	Lithic bedrock	20-40	---	Strongly cemented	None	Moderate	Low
Rock outcrop	Lithic bedrock	0-3	---	Strongly cemented	None	---	---
DAM:							
Dam	---	---	---	---	None	---	---
DeSD:							
Devol	---	---	---	---	None	Low	Low
Springer	---	---	---	---	None	Low	Low
DkuA:							
Duke	---	---	---	---	None	High	Low
DodA:							
Dodson	---	---	---	---	None	Moderate	Low
DodB:							
Dodson	---	---	---	---	None	Moderate	Low
EatA:							
Eastall	---	---	---	---	None	High	Low
EdsB:							
Eda	---	---	---	---	None	Low	Moderate
EdsD:							
Eda	---	---	---	---	None	Low	Moderate

Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
EdsF:							
Eda	---	---	---	---	None	Low	Moderate
FraB:							
Frankirk	---	---	---	---	None	High	Low
FryB:							
Farry	---	---	---	---	None	Low	Low
GdfB:							
Grandfield	---	---	---	---	None	Low	Low
GlGB:							
Grandmore	---	---	---	---	None	High	Low
Grandfield	---	---	---	---	None	Low	Low
GlsB:							
Grandfield	---	---	---	---	None	Low	Low
GlsD:							
Grandfield	---	---	---	---	None	Low	Low
GmuA:							
Gracemont, saline	---	---	---	---	None	High	High
GmwA:							
Gracemont, saline	---	---	---	---	None	High	High
GrrA:							
Gracemore, saline	---	---	---	---	None	High	High
GtbB:							
Gotebo	Densic bedrock	20-40	---	Noncemented	None	Low	Low
HdmB:							
Hardeman	---	---	---	---	None	Low	Low
HdmC:							
Hardeman	---	---	---	---	None	Low	Low
HfkA:							
Hayfork	---	---	---	---	None	High	Moderate

Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
HksA:							
Headrick	---	---	---	---	None	High	Low
HolA:							
Hollister	---	---	---	---	None	High	Low
HrAC:							
Harmon	Paralithic bedrock	6-18	---	Very weakly cemented	None	High	Low
Aspermont	Densic bedrock	40-60	---	Noncemented	None	Moderate	Low
HSAF:							
Hardeman	---	---	---	---	None	Low	Low
Southside	---	---	---	---	None	Low	Low
Arnett	---	---	---	---	None	Low	Low
JesC:							
Jester	---	---	---	---	None	Low	Low
KcRG:							
Knoco, bouldery	Densic bedrock	3-20	---	Noncemented	None	High	Low
Rock outcrop	Lithic bedrock	0-3	---	Indurated	None	---	---
KoBE:							
Knoco	Densic bedrock	3-20	---	Noncemented	None	High	Low
Badland	Densic bedrock	0-3	---	Noncemented	None	High	Low
KRCF:							
Knoco	Densic bedrock	3-20	---	Noncemented	None	High	Low
Rock outcrop	Lithic bedrock	0-3	---	Very strongly cemented	None	---	---
Cottonwood	Lithic bedrock	3-14	---	Strongly cemented	None	High	High
LacB:							
La Casa	---	---	---	---	None	High	Low

Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
LnuA:							
Lincoln	---	---	---	---	None	Low	Low
LnWA:							
Lincoln	---	---	---	---	None	Low	Low
Westola	---	---	---	---	None	Low	Low
LwtA:							
Lawton	---	---	---	---	None	Moderate	Low
LwtB:							
Lawton	---	---	---	---	None	Moderate	Low
LwtC2:							
Lawton, moderately eroded	---	---	---	---	None	Moderate	Low
M-W:							
Water, Miscellaneous	---	---	---	---	None	---	---
MagB:							
Madge	---	---	---	---	None	Low	Low
MdgB:							
Madge	---	---	---	---	None	Low	Low
MknB:							
Mcknight	Densic bedrock	40-60	---	Noncemented	None	Moderate	Low
MktB:							
Mcknight	Densic bedrock	40-60	---	Noncemented	None	Moderate	Low
MktC2:							
Mcknight, moderately eroded	Densic bedrock	40-60	---	Noncemented	None	Moderate	Low
NpsB:							
Nipsum	---	---	---	---	None	High	Low
NstC:							
Nobscot	---	---	---	---	None	Low	Moderate

Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
OakA:							
Oakley	Densic bedrock	61-120	---	Noncemented	None	Moderate	Low
OakB:							
Oakley	Densic bedrock	61-120	---	Noncemented	None	Moderate	Low
OzkA:							
Ozark	Densic bedrock	61-120	---	Noncemented	None	Moderate	Low
PIT:							
Pits	Paralithic bedrock	0-3	---	Very weakly cemented	None	High	Low
QhTC:							
Quanah	---	---	---	---	None	Moderate	Low
Talpa	Lithic bedrock	4-20	---	Indurated	None	High	Low
QnRG:							
Quinlan	Densic bedrock	10-20	---	Noncemented	None	Moderate	Low
Rock outcrop	Densic bedrock	0-3	---	Noncemented	None	---	---
RakA:							
Roark	---	---	---	---	None	High	Low
RKBG:							
Rock outcrop, granite	Lithic bedrock	0-0	---	Indurated	None	---	---
Brico	---	---	---	---	None	Moderate	Low
RKO:							
Rock outcrop, granite	Lithic bedrock	0-0	---	Indurated	None	---	---
RuuA:							
Rups	---	---	---	---	None	High	Moderate
RuwA:							
Rups	---	---	---	---	None	High	Moderate
SKRG:							
Spikebox	Paralithic bedrock	8-20	---	Very weakly cemented	None	Moderate	Low

Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
Knoco	Densic bedrock	3-20	---	Noncemented	None	High	Low
Rock outcrop	Paralithic bedrock	0-3	---	Very weakly cemented	None	---	---
SpDB:							
Springer	---	---	---	---	None	Low	Low
Devol	---	---	---	---	None	Low	Low
SplA:							
Spur	---	---	---	---	None	Moderate	Low
SurA:							
Spur	---	---	---	---	None	Moderate	Low
SuuA:							
Spur	---	---	---	---	None	Moderate	Low
SuwA:							
Spur	---	---	---	---	None	Moderate	Low
TARD:							
Talpa	Lithic bedrock	4-20	---	Indurated	None	High	Low
Aspermont	Densic bedrock	40-60	---	Noncemented	None	Moderate	Low
Rock outcrop	Lithic bedrock	0-3	---	Indurated	None	---	---
TilA:							
Tillman	Densic bedrock	80-120	---	Noncemented	None	High	Low
TilB:							
Tillman	Densic bedrock	80-120	---	Noncemented	None	High	Low
TipA:							
Tipton	---	---	---	---	None	Moderate	Low
TlvB:							
Tilvern	Densic bedrock	40-60	---	Noncemented	None	High	Low
TpfA:							
Tipton	---	---	---	---	None	Moderate	Low

Soil Features--Continued

Map symbol and soil name	Restrictive layer				Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness		Uncoated steel	Concrete
		In	In				
TrwB:							
Treadway	---	---	---	---	None	High	High
VeKE:							
Vernon	Densic bedrock	20-40	---	Noncemented	None	High	Low
Knoco	Densic bedrock	3-20	---	Noncemented	None	High	Low
VerC:							
Vernon	Densic bedrock	20-40	---	Noncemented	None	High	Low
VeTE:							
Vernon	Densic bedrock	20-40	---	Noncemented	None	High	Low
Talpa, stony	Lithic bedrock	4-20	---	Indurated	None	High	Low
W:							
Water	---	---	---	---	---	---	---
WlwB:							
Willow	Densic bedrock	40-60	---	Noncemented	None	Low	Low
WooB:							
Woodward	Densic bedrock	20-40	---	Noncemented	None	Low	Low
WooC:							
Woodward	Densic bedrock	20-40	---	Noncemented	None	Low	Low
WoQE:							
Woodward	Densic bedrock	20-40	---	Noncemented	None	Low	Low
Quinlan	Densic bedrock	10-20	---	Noncemented	None	Moderate	Low
WslA:							
Westola	---	---	---	---	None	Low	Low
WstA:							
Westola	---	---	---	---	None	Low	Low
WtlA:							
Westill	Densic bedrock	60-80	---	Noncemented	None	High	Low
WtlB:							
Westill	Densic bedrock	60-80	---	Noncemented	None	High	Low

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Glossary

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.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

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

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month. Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

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.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

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

Backslope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Backslopes in profile are commonly steep, are linear, and may or may not include cliff segments.

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

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

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

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

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.

Blowout. A shallow depression from which all or most of the soil material has been removed by wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

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

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

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte. An isolated small mountain or hill with steep or precipitous sides and a top variously flat, rounded, or pointed that may be a residual mass isolated by erosion or an exposed volcanic neck.

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

Caliche. A more or less cemented deposit of calcium carbonate in soils of warm-temperate, subhumid to arid areas. Caliche occurs as soft, thin layers in the soil or as hard, thick beds directly beneath the solum, or it is exposed at the surface by erosion.

Canyon. A long, deep, narrow, very steep-sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

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

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Cemented. Material in an air-dry test specimen that does not slake after being immersed in water for 1 hour. Cemented soil material has a brittle, hard consistence caused by some cementing agent other than clay. Calcium carbonate, silica, or oxides or salts of iron and aluminum are common cementing materials.

Channeled. Refers to a drainage area in which natural meandering or repeated branching and convergence of a streambed have created deeply incised cuts, either active or abandoned, in alluvial material.

Channery soil material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

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.

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

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

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.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

Colluvium. Soil material or 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.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse-grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Consolidated sandstone. Sandstone that disperses within a few hours when fragments are placed in water. The fragments are extremely hard or very hard when dry, are not easily crushed, and cannot be textured by the usual field method.

Consolidated shale. Shale that disperses within a few hours when fragments are placed in water. The fragments are extremely hard or very hard when dry and are not easily crushed.

Consolidated siltstone. Siltstone that disperses within a few hours when fragments are placed in water. The fragments are extremely hard or very hard when dry and are not easily crushed.

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

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coppice dune. A small dune of fine-grained soil material stabilized around shrubs or small trees.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

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

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cuesta. A hill or ridge that has a gentle slope on one side and a steep slope on the other; specifically, an asymmetric, homoclinal ridge capped by resistant rock layers of slight or moderate dip.

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

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

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 resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep soils, 20 to 40 inches; shallow soils, 10 to 20 inches; and very shallow soils, less than 10 inches.

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

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

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

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized— excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,and very poorly drained. These classes are defined in the “Soil Survey Manual.”

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

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.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Dune. A mound, ridge, or hill of loose, windblown granular material (generally sand), either bare or covered with vegetation.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep. Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion. Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

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.

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Excess sodium (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

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

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

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

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called normal field capacity, normal moisture capacity, or capillary capacity .

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

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

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Footslope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

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.

Gilgai. Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter. Very gravelly soil material has 35 to 60 percent of these rock fragments, and extremely gravelly soil material has more than 60 percent.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is

one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Gypsum. A mineral consisting of hydrous calcium sulfate.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Heavy metal. Inorganic substances that are solid at ordinary temperatures and are not soluble in water. They form oxides and hydroxides that are basic. Examples are copper, iron, cadmium, zinc, manganese, lead, and arsenic.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

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

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

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum

rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

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

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

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

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

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

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

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

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

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

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

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

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

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

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

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

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Knoll. A small, low, rounded hill rising above adjacent landforms.

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

Large stones (in tables). Rock fragments 3 inches (7.6 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.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

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

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesa. A broad, nearly flat-topped and commonly isolated upland mass characterized by summit widths that are more than the heights of bounding erosional scarps.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Microhigh. An area that is 2 to 12 inches higher than the adjacent microlow.

Microlow. An area that is 2 to 12 inches lower than the adjacent microhigh.

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.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

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

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—few, common, and many; size—fine, medium, and coarse; and contrast—faint, distinct, and prominent. The size measurements are of the diameter along the greatest dimension. Fine indicates less than 5 millimeters (about 0.2 inch); medium, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and coarse, more than 15 millimeters (about 0.6 inch). Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

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.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

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

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

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

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Oxbow. The horseshoe-shaped channel of a former meander, remaining after the stream formed a cutoff across a narrow meander neck.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, hardpan, fragipan, claypan, plowpan, and traffic pan.

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

Pebble. See Gravel.

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

Pedisediment. A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher-lying areas of the erosion surface.

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 affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.00 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

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

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

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic. Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressional areas. Temporary flooding occurs primarily in response to precipitation and runoff.

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

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, 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.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

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

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

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannahs, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

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

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features

indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relict stream terrace. One of a series of platforms in or adjacent to a stream valley that formed prior to the current stream system.

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.

Ridge. A long, narrow elevation of the land surface. It generally is sharp crested and forms an extended upland between valleys.

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.

Riser. The relatively short, steeply sloping area below a terrace tread that grades to a lower terrace tread or base level.

Riverwash. Unstable areas of sandy, silty, clayey, or gravelly sediments. These areas are flooded, washed, and reworked by rivers so frequently that they support little or no vegetation.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

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

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.

Rubble land. Areas that have more than 90 percent of the surface covered by stones or boulders. Voids contain no soil material and virtually no vegetation other than lichens. The areas commonly are at the base of mountain slopes, but some are on mountain slopes as deposits of cobbles, stones, and boulders left by Pleistocene glaciation or by periglacial phenomena.

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

Saline soil. A soil containing soluble salts in an amount that impairs the growth of plants. A saline soil does not contain excess exchangeable sodium.

Salinity. The electrical conductivity of a saline soil. It is expressed, in millimhos per centimeter, as follows:

Nonsaline	0 to 2
Very slightly saline	2 to 4
Slightly saline	4 to 8
Moderately saline	8 to 16
Strongly saline	more than 16

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

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

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.
Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.
Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.
Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.
Sediment. Solid, clastic material, both mineral and organic, that is in suspension, is being transported or has been moved from its site of origin by water, wind, ice, or mass wasting, and has come to rest on the earth's surface either above or below sea level.
Sedimentary plain. An extensive nearly level to gently rolling or moderately sloping area that is underlain by sedimentary bedrock and that has a slope of 0 to 8 percent.
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.
Sedimentary uplands. Land areas of bedrock formed from water- or wind-deposited sediments. They are higher on the landscape than the flood plain.
Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.
Semiconsolidated sedimentary beds. Soft geologic sediments that disperse when fragments are placed in water. The fragments are hard or very hard when dry. Determining the texture by the usual field method is difficult.
Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)
Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.
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 backslope 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.
Silica. A combination of silicon and oxygen. The mineral form is called quartz.
Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

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 slope classes are recognized:

Nearly level	0 to 1 percent
Very gently sloping	1 to 3 percent
Gently sloping	3 to 5 percent
Moderately sloping	5 to 8 percent
Strongly sloping	8 to 12 percent
Moderately steep	12 to 20 percent
Steep	20 to 45 percent
Very steep	45 percent and higher

Classes for complex slopes are as follows:

Nearly level	0 to 3 percent
Gently undulating	1 to 5 percent
Undulating	1 to 8 percent
Gently rolling	5 to 12 percent
Rolling	5 to 15 percent
Hilly	8 to 30 percent
Steep	20 to 45 percent
Very steep	45 percent and higher

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.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na+ to Ca++ + Mg++. The degrees of sodicity and their respective ratios are:

Slight	less than 13:1
Moderate	13 to 30:1
Strong	more than 30:1

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate

and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Species. A single, distinct kind of plant or animal having certain distinguishing characteristics.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

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

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

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

Strath terrace. A surface cut formed by the erosion of hard or semi consolidated bedrock and thinly mantled with stream deposits.

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.

Stripcropping. 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 erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. 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.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

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.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Tailwater. The water directly downstream of a structure.

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.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The outermost inclined surface at the base of a hill; part of a footslope.

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.

Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur that severely hinder establishment of vegetation or severely restrict plant growth.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Trafficability. The degree to which a soil is capable of supporting vehicular traffic across a wide range in soil moisture conditions

Tread. The relatively flat terrace surface that was cut or built by stream or wave action. Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

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

Valley. An elongated depressional area primarily developed by stream action.

Valley fill. Alluvium deposited by heavily loaded streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

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.

Well graded. Refers to soil material consisting of coarse-grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

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