



United States
Department of
Agriculture

In cooperation
with Texas
AgriLife
Research

Soil Survey of Mason County, Texas



Natural
Resources
Conservation
Service



How To Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

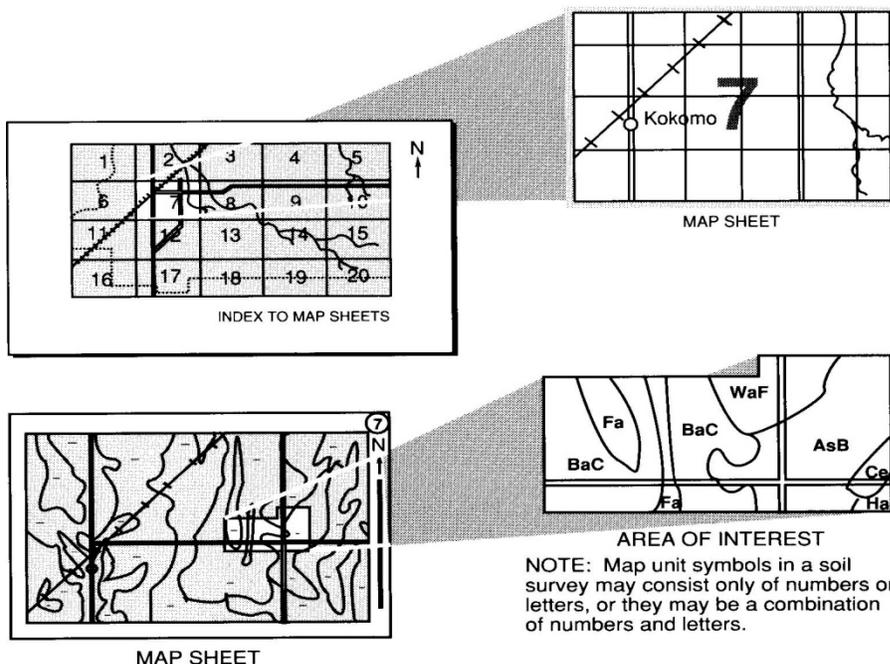
Detailed Soil Maps

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

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

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

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



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 AgriLife Research, and local agencies. The Natural Resources Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 2010. Soil names and descriptions were approved in 2010. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2010. This survey was made cooperatively by the Natural Resources Conservation Service and the Texas AgriLife Research. The survey is part of the technical assistance furnished to the Mason County Soil and Water Conservation District.

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

The U.S. Department of Agriculture (USDA) prohibits discrimination in all of its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, political beliefs, genetic information, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write to USDA, Assistant Secretary for Civil Rights, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, S.W., Stop 9410, Washington, DC 20250-9410, or call toll-free at (866) 632-9992 (English) or (800) 877-8339 (TDD) or (866) 377-8642 (English Federal-relay) or (800) 845-6136 (Spanish Federal-relay). USDA is an equal opportunity provider and employer.

Cover: Cambrian limestone escarpment along the James River in southwestern Mason County. The James River is a major tributary of the Llano River. Though it is intermittent at its source in Kimble County, by the time it reaches Mason County it is a free-flowing river for approximately 16 miles until it reaches the Llano River. The Eckert-James River Bat Cave, the home to one of the largest Mexican free-tailed bat colonies in the United States, is found along its shores.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service homepage on the World Wide Web. The address is <http://www.nrcs.usda.gov>

Contents

How to Use This Soil Survey	i
Foreword	vii
Soil Survey of Mason County, Texas	1
General Nature of the Survey Area	2
History	2
Land Use, Natural Resources, and Recreation	2
Physiography and Drainage	3
Climate	4
How this Survey Was Made	5
Survey Procedures	6
General Soil Map Units	9
1. Eckert-Rock outcrop	9
2. Nebgen-Hye-Loneoak	9
3. Ligon-Katemcy-Keese	11
4. Eckert-Yates-Rock outcrop	11
5. Sunev-Pedernales-Mereta	12
6. Voca-Keese-Lou	13
7. Tarrant-Rock outcrop	14
8. Castell-Keese	15
9. Keese-Lou-Rock outcrop	17
Detailed Soil Map Units	19
ACC—Acove-Campair-Loneoak complex, 0 to 5 percent slopes	20
AMC—Acove-Menard complex, 0 to 5 percent slopes	23
CAC—Campwood, Sunev, and Valera soils, 0 to 5 percent slopes	26
CeC—Castell sandy loam, 0 to 5 percent slopes, rocky	30
ERD—Eckert-Rock outcrop complex, 1 to 8 percent slopes	31
ERG—Eckert-Rock outcrop complex, 8 to 30 percent slopes	33
FRC—Fieldcreek-Riverwash complex, 0 to 5 percent slopes, flooded	36
HeD—Hensley loam, 1 to 8 percent slopes	40
HkC—Honeycreek fine sandy loam, 0 to 5 percent slopes	41
HND—Hye-Nebgen-Oben complex, 1 to 8 percent slopes, rocky	43
HOD—Hye-Oben-Loneoak complex, 1 to 8 percent slopes	47
HPC—Hye-Pontotoc complex, 0 to 5 percent slopes	50
KAC—Katemcy-Honeycreek complex, 0 to 5 percent slopes	52
KeD—Keese gravelly sandy loam, 1 to 8 percent slopes, very rocky	55
KLE—Keese-Lou-Rock outcrop complex, 1 to 12 percent slopes	57
KRG—Keese-Rock outcrop complex, 12 to 35 percent slopes	60
KTG—Kerrville, Brackett, and Tarrant soils, 12 to 40 percent slopes, very rocky	63
KVE—Kerrville, Real, and Sunev soils, 1 to 12 percent slopes	66
LKD—Ligon-Katemcy-Keese complex, 1 to 8 percent slopes, very rocky	70
LND—Ligon-Keese complex, 1 to 8 percent slopes, rocky	73
LOC—Loneoak-Campair complex, 0 to 5 percent slopes	76
LRC—Lou-Click-Voca complex, 0 to 5 percent slopes, rocky	79
LuC—Luckenbach clay loam, 0 to 5 percent slopes	82
MPC—Menard-Pedernales complex, 0 to 5 percent slopes	83
MSC—Mereta-Cho-Sunev complex, 0 to 5 percent slopes, rocky	86

Table of Contents Cont'd

NRE—Nebgen-Rock outcrop complex, 1 to 12 percent slopes	89
NRG—Nebgen-Rock outcrop complex, 12 to 40 percent slopes	91
OaB—Oakalla loam, 0 to 2 percent slopes, occasionally flooded.....	94
PeC—Pedernales fine sandy loam, 0 to 5 percent slopes	95
RCC—Riverwash-Rock outcrop complex, 0 to 5 percent slopes, frequently flooded.....	97
RgG—Rock outcrop, granite, 1 to 25 percent slopes	99
RhE—Roughcreek very gravelly clay loam, 1 to 12 percent slopes, very rocky	101
RkE—Roughcreek very cobbly clay, 1 to 12 percent slopes, very rocky	102
RRG—Roughcreek-Rock outcrop complex, 12 to 40 percent slopes	104
SuD—Sunev clay loam, 1 to 8 percent slopes	107
TRE—Tarrant-Rock outcrop complex, 1 to 12 percent slopes.....	108
TRG—Tarrant-Rock outcrop complex, 12 to 40 percent slopes	111
VeD—Venus loam, 0 to 8 percent slopes, rocky	114
VoC—Voca gravelly sandy loam, 0 to 5 percent slopes, rocky	116
W—Water	117
YNE—Yates-Nebgen-Rock outcrop complex, 1 to 12 percent slopes	118
YNG—Yates-Nebgen-Rock outcrop complex, 12 to 40 percent slopes.....	121
Prime Farmland	125
Use and Management of the Soils	127
Interpretive Ratings.....	127
Rating Class Terms.....	127
Numerical Ratings.....	127
Crops and Pasture.....	128
Management of Cropland	128
Management of Pasture and Hayland	129
Management of Orchards	130
Yields Per Acre	130
Land Capability Classification.....	130
Rangeland.....	131
Evaluation Tools.....	133
Rangeland Productivity	134
Ecological Sites.....	136
MLRA 81B MLRA 81B—Edwards Plateau, Central Part.....	136
Adobe Ecological Site 23-31" PZ	136
Clay Loam Ecological Site 23-31" PZ.....	137
Loamy Bottomland Ecological Site 23-31" PZ.....	138
Low Stony Hill Ecological Site 23-31" PZ.....	138
Redland Ecological Site 23-31" PZ	139
Shallow Ecological Site 23-31" PZ	139
Steep Adobe Ecological Site 23-31" PZ.....	140
Steep Rocky Ecological Site 23-31" PZ	140
Stony Loam Ecological Site 23-31" PZ.....	140
Very Shallow Ecological Site 23-31" PZ.....	141
MLRA 82A—Texas Central Basin	142
Granite Gravel Ecological Site 25-32" PZ	142
Granite Hill Ecological Site 25-32" PZ	142
Gravelly Sandy Loam Ecological Site 25-32" PZ	142
Loamy Bottomland Ecological Site 25-32" PZ.....	142
Loamy Sand Ecological Site 25-32" PZ.....	143
Red Sandy Loam Ecological Site 25-32" PZ.....	143

Table of Contents Cont'd

Red Savannah Ecological Site 25-32" PZ.....	144
Sandstone Hill Ecological Site 25-32" PZ.....	144
Sandy Ecological Site 25-32" PZ.....	145
Sandy Loam Ecological Site 25-32" PZ.....	145
Shallow Granite Ecological Site 25-32" PZ.....	146
Shallow Ridge Ecological Site 25-32" PZ.....	147
Tight Sandy Loam Ecological Site 25-32" PZ.....	147
Wildlife Habitat.....	147
Recreation.....	155
Hydric Soils.....	157
Engineering.....	158
Building Site Development.....	159
Sanitary Facilities.....	160
Construction Materials.....	162
Water Management.....	164
Soil Properties	167
Engineering Soil Properties.....	167
Physical Soil Properties.....	168
Chemical Soil Properties.....	170
Water Features.....	171
Soil Features.....	172
Physical, Chemical, and Clay Mineralogy and Engineering Index Properties Analyses of Selected Soils.....	172
Classification of the Soils	175
Soil Series and Their Morphology.....	175
Acove Series.....	176
Brackett Series.....	179
Campair Series.....	180
Campwood Series.....	182
Castell Series.....	184
Cho Series.....	186
Click Series.....	187
Eckert Series.....	189
Fieldcreek Series.....	190
Hensley Series.....	192
Honeycreek Series.....	193
Hye Series.....	195
Katemcy Series.....	196
Keese Series.....	198
Kerrville Series.....	200
Ligon Series.....	202
Loneoak Series.....	203
Lou Series.....	207
Luckenbach Series.....	209
Menard Series.....	211
Mereta Series.....	213
Nebgen Series.....	215
Oakalla Series.....	217
Oben Series.....	218
Pedernales Series.....	220
Pontotoc Series.....	223
Real Series.....	224
Roughcreek Taxadjunct.....	226

Table of Contents Cont'd	
Roughcreek Series.....	227
Sunev Series.....	229
Tarrant Series.....	231
Valera Series.....	233
Venus Series.....	234
Voca Series.....	236
Yates Series.....	238
Formation of the Soils.....	241
Factors of Soil Formation.....	241
Parent Material.....	241
Climate.....	241
Plant and Animal Life.....	242
Relief.....	242
Time.....	243
Processes of Horizon Differentiation.....	243
Surface Geology.....	244
Stratigraphy.....	244
Precambrian Rocks.....	244
Valley Spring Gneiss.....	245
Lost Creek Gneiss.....	245
Packsaddle Schist.....	246
Igneous Rocks.....	246
Paleozoic Rocks.....	246
Cambrian.....	246
Rilley Formation.....	246
Wilberns Formation.....	247
Ordovician.....	247
Devonian, Mississippian, and Pennsylvanian.....	247
Mesozoic Rocks.....	248
Cretaceous.....	248
Cenozoic Rocks.....	249
Recent.....	249
Structural Geology.....	249
Mineral Resources.....	250
References.....	251
Glossary.....	253
Tables.....	271
Table 1.—Temperature and Precipitation.....	272
Table 2.—Freeze Dates in Spring and Fall.....	273
Table 3.—Growing Season.....	273
Table 4.—Acreage and Proportionate Extent of the Soils.....	274
Table 5.—Prime and Other Important Farmland.....	275
Table 6.—Irrigated and Nonirrigated Yields by Map Unit.....	276
Table 7.—Rangeland Productivity.....	280
Table 8.—Grain and Seed Crops, Domestic Grasses and Legumes, and Irrigated Grain and Seed Crops for Wildlife Habitat.....	283
Table 9.—Irrigated Domestic Grasses and Legumes, and Habitat for Burrowing Mammals and Reptiles.....	294
Table 10.—Upland Native Herbaceous Plants, and Upland Shrubs and Vines for Wildlife Habitat.....	305
Table 11.—Upland Deciduous Trees for Wildlife Habitat.....	312
Table 12.—Riparian Herbaceous Plants, and Riparian Shrubs, Vines, and Trees for Wildlife Habitat.....	320

Table of Contents Cont'd

Table 13.—Camp Areas, Picnic Areas, and Playgrounds	329
Table 14.—Paths, Trails, and Golf Course Fairways	338
Table 15.—Dwellings and Small Commercial Buildings.....	346
Table 16.—Roads and Streets, Shallow Excavations, and Lawns and Landscaping	354
Table 17.—Sewage Disposal	365
Table 18.—Landfills	374
Table 19.—Source of Gravel and Sand.....	383
Table 20.—Source of Reclamation Material, Roadfill, and Topsoil	390
Table 21.—Ponds and Embankments.....	399
Table 22.—Engineering Soil Properties	407
Table 23.—Physical Soil Properties	437
Table 24.—Chemical Soil Properties.....	448
Table 25.—Water Features	455
Table 26.—Soil Features	460
Table 27.—Physical Analyses of a Selected Soil	465
Table 28.—Chemical Analyses of a Selected Soil	466
Table 29.—Clay Mineralogy of a Selected Soil	467
Table 30.—Engineering Index Properties of a Selected Soil	468
Table 31.—Taxonomic Classification of the Soils	469

Issued 2011

Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

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

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

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or Texas AgriLife Research.



Salvador Salinas
State Conservationist
Natural Resources Conservation Service

Soil Survey of Mason County, Texas

By Julia A. McCormick, Natural Resources Conservation Service

Fieldwork by Julia A. McCormick, Amanda Bragg, James A. Douglass II, Auline R. Goerdel, Cory Moffit, Alan C. Terrell, and Winfred Coburn, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
Texas AgriLife Research

Mason County, located in the central part of Texas, is joined by Menard and Kimble Counties on the west; McCulloch and San Saba Counties on the north; Llano County on the east; and Gillespie and Kimble Counties on the southern boundary (fig. 1). All of these counties have published soil surveys of different vintages available on the Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov/>.

Mason County has a land area of 597,459 acres or 932 square miles. Approximately 9 percent of the area is water. The county shape is almost square: about 31 miles from north to south and about 32 miles from east to west. The survey is located in Land Resource Region I—Southwest Plateaus and Plains Range and Cotton Region. Approximately, eighty-five percent of the county is located within the MLRA 82A—Texas Central Basin Major and fifteen percent of the county is located within the MLRA 81B—Central Edwards Plateau.

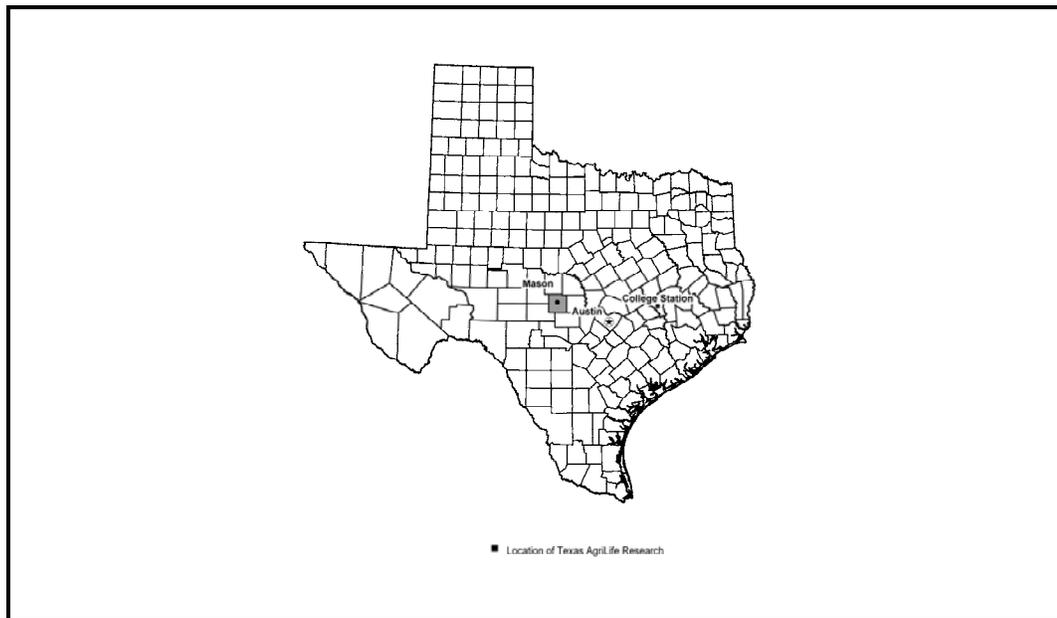


Figure 1.—Location of Mason County, Texas. College Station is headquarters of the Texas AgriLife Research. Austin is the capitol of Texas.

The county seat is the centrally located town of Mason. According to the 2000 census, the population of the town of Mason was 2,134 and the population of the county was 3,738. It is located approximately 100 miles southeast of San Angelo, 110 miles northwest of San Antonio, and 100 miles west of Austin. Other towns in Mason County include Art, Hilda, Fredonia, Grit, Loyal Valley, Pontotoc, and Katemcy.

General Nature of the Survey Area

This section provides general information about Mason County. It describes the history; land use, natural resources, and recreation; physiography and drainage; and climate of the survey area.

History

Mason County was created from Bexar and Gillespie counties and organized in 1858. The county was named after Fort Mason, located south of the present day town, and established in 1851. Fort Mason was named for Lieutenant George T. Mason, killed near Brownsville in 1846. Settlers came to this area attracted by ranching opportunities and the healthful climate. Prior to settlement of the county, only Kiowa, Apache, and Comanche Native Americans inhabited the area. Buffalo, antelope, and deer were plentiful. In 1847, John O. Meusebach signed a treaty with the indigenous Comanche tribe represented by Chief Katemcy, allowing peaceful settlement of the land between the Llano and San Saba Rivers.

With the settling of the west, hostilities arose between the native tribes and settlers. In the 1840s, a line of forts was established from the Red River to the mouth of the Rio Grande about every 50 miles. Captain Mason was sent to locate military posts and selected the hill just south of the present day courthouse. By 1850, Major Merrill and four companies of soldiers had arrived to work at the fort and by 1851, the fort was complete and new settlers began to arrive. During the time the fort was garrisoned, many famous men served here. Robert E. Lee and Albert Sidney Johnson were two of the generals-to-be who were stationed at Fort Mason. As the Civil War approached, soldiers were sent to other locations. The fort was evacuated in 1861 and reoccupied after the Civil war in 1869. The first court house was built in 1872. Several state historical markers and sites are in the survey area. Currently, there are between 50 to 100 properties registered with the Texas Department of Agriculture's Family Land Heritage Historic Farms and Ranches in Mason County.

Land Use, Natural Resources, and Recreation

Historically, the soils formed under a post oak, blackjack oak, or live oak savannah ecological system with grasses ranging from short to tall. In 2010, 97 percent of the county was used as rangeland and the remaining 3 percent is divided into cropland, pasture, or hayland. With the exception of about 5,400 irrigated acres that is cultivated, most of the county is rangeland; therefore, cattle, sheep, or goat ranching are the main agricultural enterprise. According to the 2005 Census Bureau statistics, 25 percent of the population received employment from private non-farm employment. There are no manufacturing facilities or railroad in the county. Peanuts were an abundant commodity crop a couple of decades ago, but have since faded out of the picture. Few of the property owners have vineyards and orchards. Soil is the most important natural resource in Mason County and the production of livestock, crops, and forage are sources of livelihood for many people in the county; all depend on the soil (fig. 2).

Wildlife, especially white-tailed deer and turkey, are valuable resources. In fact, the economic contribution of lease hunting to landowners and the local economy has become as important as traditional livestock ranching. Wildlife habitat can be maintained,

developed, or improved by managing the existing plant cover, or by promoting the establishment of desired vegetation. Other wildlife, such as quail, dove, feral hogs, exotic game, small mammals, and reptiles are also abundant in the county. The bird life of Mason County is also quite diverse. Many naturalists are drawn to the Eckert James River Bat Cave Preserve where large populations of Mexican free-tailed bats reside in Mason County for a portion of the year.

The James, Llano, and San Saba Rivers are suited to recreational uses such as fishing, floating, canoeing, and camping. Many private water areas ranging from 3 to 20 acres are in the survey area. There are many kinds of native fish in this county.

Physiography and Drainage

The topography of Mason County ranges from nearly level to very steep. Elevation varies from 1,000 to 2,200 feet above mean sea level. The lowest elevation is located at the Llano County line on the Llano River. Monument Mountain, the tallest peak at 2,172 feet is located in the Blue Mountains in the southwestern corner of the county.

Mason County is located in two major river watersheds. The San Saba River in the northwestern corner of the county covers approximately 20 percent of the county and the Llano River in the center of the county covers the remaining 80 percent of the county. The Llano River has a number of tributaries including the James River (fig. 3), Leon Creek, Honey Creek, Will Creek, and Comanche Creek. There are no major lakes in



Figure 2.—Native wildflowers and mesquite trees on an area of Castell sandy loam, 0 to 5 percent slopes, rocky in the foreground. Keese-Rock outcrop, 12 to 35 percent slopes, is in the background. The Castell series is moderately deep to a paralithic contact with granite gneiss. This restrictive layer impedes water infiltration below 40 inches; therefore, water in the soil profile is available to the beautiful native Texas plants.



Figure 3.—A scene of the James River in southwestern Mason County. An area of Eckert-Rock outcrop complex, 8 to 30 percent slopes, are on the left side of the photograph. Roughcreek and Hensley soils are on right side of the photograph.

Mason County; therefore, all municipal, irrigation, and industrial water is supplied by underground sources, mostly from the Hickory Sandstone aquifer. There are many isolated hills and mountains scattered throughout this county. Major limestone landmarks include the Blue, Flathead Point, Long, Loyal, and Mason Mountains. Near the town of Katemcy, a large barren granite rock outcrop protrudes above the surrounding landscape. Other interesting landmarks in the granite or granite gneiss geologies include the Eckert Roughs, Bodie Peak, and Fly Gap.

A number of diverse and contrasting geological formations occur in the county, mainly of the Precambrian Era and Cambrian Period in the Texas Central Basin (MLRA 82A) and Lower Cretaceous Period in the Central Edwards Plateau (MLRA 81B). Limestone, marble, and granite are found in this county and provide another source of minor economic income. Limestone is used locally for road base material. Granite is mined for gravel and quarried for building products. Marble is quarried for building material. Hematitic sandstone, magnesite, manganese, and tin occur in minor amounts in Precambrian deposits. The Texas State Gemstone, the Blue Topaz, can be found within the borders of the county. These geological anomalies contribute to the aesthetic beauty of the county, especially in the spring when the wildflowers are in bloom. Tourist and locals alike enjoy the radiant glory of the blue bonnets, Indian blankets, Texas paintbrush, winecup, prairie verbena, Engelmann's daisy, and assorted sunflowers.

Climate

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

Climate tables are created from climate station Mason Texas.

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

Table 1 provides data on temperature and precipitation for the survey area as recorded at Mason in the period 1971 to 2000. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average temperature is 48 degrees F and the average daily minimum temperature is 34 degrees. The lowest temperature on record, which occurred at Mason on February 2, 1985, is 3 degrees. In summer, the average temperature is 81 degrees and the average daily maximum temperature is 93 degrees. The highest temperature, which occurred at Mason on August 12, 1962, is 108 degrees.

Growing degree days are shown in Table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The 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 about 28 inches. Of this, about 22 inches, or 78 percent, usually falls in March through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 7.45 inches at Mason on September 10, 1952. Thunderstorms occur on about 40 days each year, and most occur in May.

The average seasonal snowfall is 0.5 inch. The greatest snow depth at any one time during the period of record was 9 inches recorded on February 9, 1973. The heaviest 1-day snowfall on record was 8.0 inches recorded on January 13, 1944, February 22, 1966, and February 9, 1973.

The average relative humidity in mid-afternoon is about 52 percent. Humidity is higher at night, and the average at dawn is about 84 percent. The sun shines 72 percent of the time in summer and 48 percent in winter. The prevailing wind is from the south-southeast. Average wind speed is highest, 10 miles per hour, in April.

How This Survey Was Made

This survey was made to provide updated information about the soils and miscellaneous areas in the Mason County, Texas which are located in the Major Land Resource Areas (MLRAs) of the Edwards Plateau (81B) and the Central Basin (82A). Major Land Resource Areas (MLRA's) are geographically associated land resource units that share a common land use, elevation, and topography, climate, water, soils, and vegetation (USDA, 1981). Map unit design is based on documentation of the occurrence of soil components throughout the MLRA.

The information includes a description of the soils and miscellaneous areas and their location and a discussion of their properties and the subsequent effects on 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 observed. The maximum depth of observation was about 203 centimeters or 80 inches or about 6.7 feet. Soil scientists noted soil color, texture, size, and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, soil 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. Interpretations are modified as necessary 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 zone in which the soil moisture status is wet within certain depths in most years, but they cannot predict that this zone 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.

Survey Procedures

Careful study of the surveys from surrounding counties and other available soils maps was made, along with many field observations, before major fieldwork for this soil survey began. From these field observations soil scientists were able to determine where map units in the original survey would remain unchanged, which map units should be

Soil Survey of Mason County, Texas

eliminated, and which new map units should be added to the legend for Mason County Soil Survey.

Soil scientists studied U.S. Geological Survey topographic maps and aerial photographs, relating land and image features. Between 1985 and 1994, soil scientists made preliminary boundaries of slopes and landforms by stereoscopically plotting the boundaries on aerial photographs. In 2006, these photographs were compiled and scanned by the Lubbock Digitizing Center to create a digital layer used by the 2006 to 2009 field crew as a base layer in ArcGIS. All line work was drawn digitally onto this layer through the completion of the survey.

The soil scientists made traverses by truck on the existing network of roads and trails.

General Soil Map Units

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

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

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

1. Eckert–Rock outcrop

Well drained, moderately permeable, very shallow and shallow, very stony soils and rock outcrop

This map unit makes up about 20 percent of the survey area and typically occurs on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone. (fig. 4) Slope ranges from 1 to 30 percent. The soils formed in residuum from limestone.

This map unit consists of about 53 percent Eckert, 25 percent Rock outcrop, 7 percent Roughcreek, 6 percent Hensley, 2 percent Oakalla, 1 percent Riverwash, and 6 percent other soils.

Eckert soils are moderately permeable and very shallow or shallow.

Eckert soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.

Eckert soils typically have surface layers of strong brown very cobbly clay. The soils are neutral to moderately alkaline. The underlying material is indurated limestone bedrock.

Hensley and Roughcreek soils are on shoulders and summits of ridges on dissected plateaus underlain by Mississippian, Devonian, and Ordovician limestone. Oakalla soils are on small streams and flood plains of major rivers. Riverwash areas are in stream beds and on banks of creeks and rivers.

This unit is used mostly as range.

2. Nebgen–Hye–Loneoak

Moderately well and well drained, moderately rapidly to slowly permeable, very shallow and shallow, moderately deep and very deep loamy soils

This map unit makes up about 16 percent of the survey area and typically occurs on undulating plains, footslopes, backslopes, shoulders, and summits of sandstone ridges of Cambrian age (fig. 4). Slope ranges from 0 to 30 percent. The soils formed in residuum and slope alluvium from sandstone.

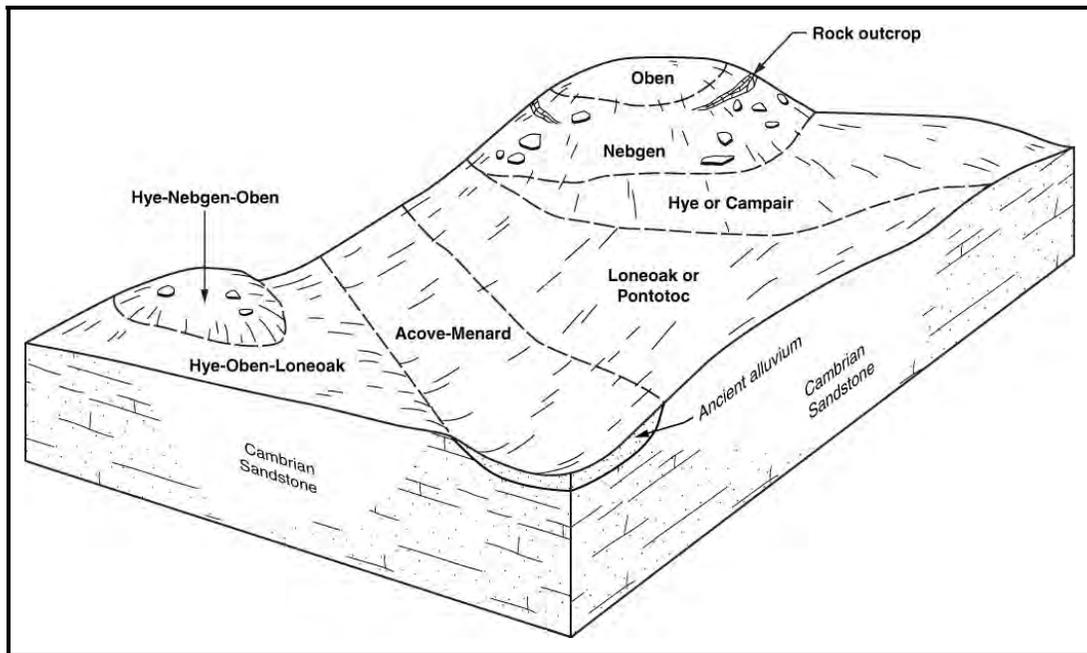


Figure 4.—Pattern of soils and underlying material in the Nebgen-Hye-Loneoak general soil map unit.

This map unit consists of about 19 percent Nebgen, 17 percent Hye, 11 percent Loneoak, 9 percent Acove, 7 percent Rock outcrop, 7 percent Campair, 5 percent Oben, 4 percent Yates, 3 percent Pontotoc, 2 percent Luckenbach, 2 percent Fieldcreek, 2 percent Menard, 1 percent Keese, 1 percent Venus, 1 percent Ligon, 1 percent Katemcy, and 8 percent other soils.

Nebgen soils are moderately rapidly permeable and very shallow and shallow. Hye soils are moderately permeable and moderately deep. Loneoak soils are slowly permeable and very deep.

Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone. Hye soils are on footslopes of ridges underlain by Cambrian sandstone. Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.

Nebgen soils typically have a surface layer of brown sandy loam. The soils are slightly acid to neutral. The underlying material is indurated sandstone bedrock.

Hye soils typically have a surface layer of brown fine sandy loam. The subsoil is reddish brown to light reddish brown sandy clay loam. The soils are slightly acid to neutral. The underlying material is indurated sandstone bedrock.

Loneoak soils typically have a thick surface horizon of dark yellow brown sandy loam. The subsoil is grayish brown to light yellowish brown clay. The soil is moderately acid to slightly acid. The underlying material is weakly cemented to indurated sandstone.

Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone. Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone. Fieldcreek soils are on flood plains of small streams and creeks. Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist. Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite. Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist. Pontotoc soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone. Luckenbach and Menard soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus. Oben soils are on backslopes, shoulders,

and summits of ridges underlain by Cambrian sandstone. Venus soils are on footslopes in valleys of dissected plateaus underlain by limestone and sandstone. Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.

This unit is used mostly as range.

3. Ligon–Katemcy–Keese

Well drained, moderately rapidly to slowly permeable, shallow to moderately deep, loamy soils

This map unit makes up about 13 percent of the survey area and typically occurs on undulating plains and on footslopes, backslopes, shoulders, and summits of ridges underlain by pre-Cambrian schist and granite grus (fig. 5). Slope ranges from 1 to 12 percent. The soils formed in residuum and slope alluvium weathered from schist and granite grus.

This map unit consists of about 25 percent Ligon, 24 percent Katemcy, 19 percent Keese, 8 percent Honeycreek, 4 percent Castell, 4 percent Fieldcreek, 4 percent Lou, 3 percent Rock outcrop, 1 percent Voca, and 8 percent other soils.

Ligon soils are moderately slowly permeable and moderately deep. Katemcy soils are slowly permeable and moderately deep. Keese soils are moderately rapidly permeable and shallow.

Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist. Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist. Keese soils are on shoulder, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.

Ligon soils typically have a surface layer of reddish brown gravelly sandy clay loam. The subsoil is red sandy clay. The soil is medium acid to slightly alkaline. The underlying material is weathered schist.

Katemcy soils typically have a surface layer of reddish brown sandy loam. The subsoil is red to reddish brown sandy clay. The soil is slightly acid to slightly alkaline. The underlying material is weathered schist.

Keese soils typically have a surface layer of brown coarse sandy loam. The subsoil is brown gravelly coarse sandy loam. The soil is moderately acid to slightly alkaline. The underlying material is weathered granite or schist.

Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss. Fieldcreek soils are on flood plains of small streams and creeks. Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss. Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite grus. Voca soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian granite grus.

This unit is used mostly as range.

4. Eckert–Yates–Rock outcrop

Well drained, moderately permeable, Very shallow and shallow, very stony soils, and rock outcrop

This map unit makes up about 13 percent of the survey area, and typically occurs on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone. Slope ranges from 1 to 40 percent. The soils formed in residuum from limestone.

This map unit consists of about 28 percent Eckert, 24 percent Yates, 20 percent Rock outcrop, 12 percent Nebgen, 3 percent Hye, 1 percent Oakalla, 1 percent Oben, and 11 percent other soils.

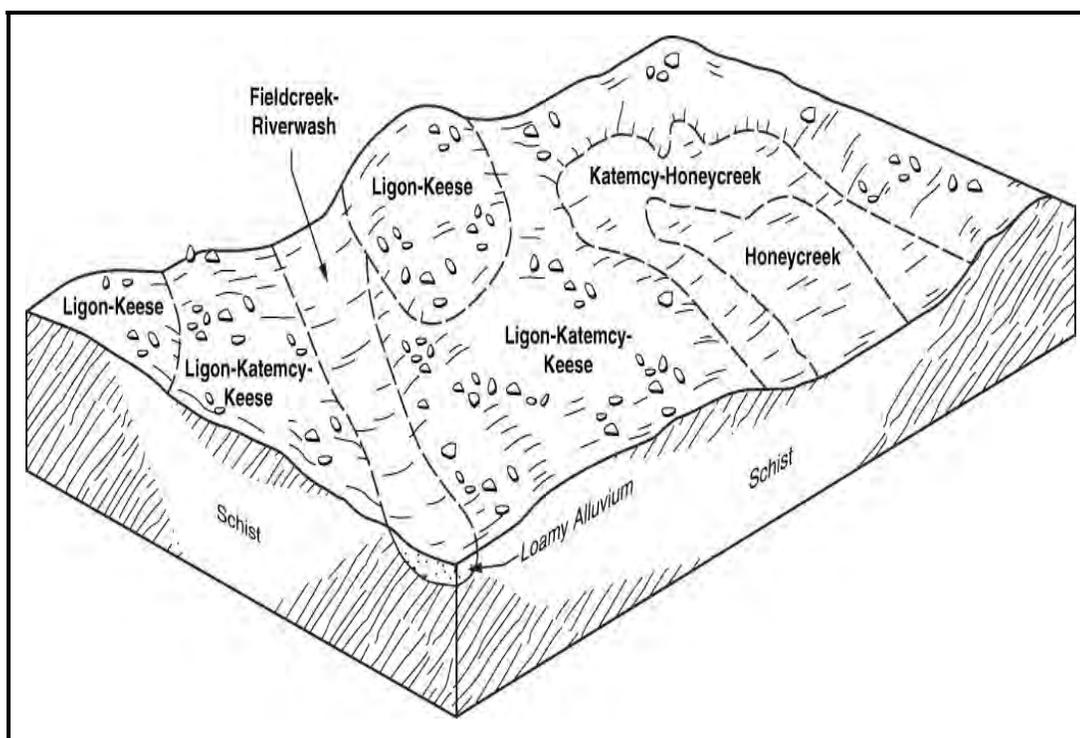


Figure 5.—Pattern of soils and underlying material in the Ligon–Katemcy–Keese general soil map unit.

Eckert soils are moderately permeable and very shallow or shallow. Yates soils are moderately permeable and very shallow. These soils are well drained.

Eckert and Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.

Eckert soils typically have surface layers of strong brown very cobbly loam. The underlying material is indurated limestone bedrock. The soils are neutral to moderately alkaline.

Yates soils typically have surface layers of yellowish red very gravelly fine sandy loam. The underlying material is indurated limestone bedrock. The soils are neutral to moderately alkaline.

Hye soils are on footslopes of ridges underlain by Cambrian sandstone. Nebgen and Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone. Oakalla soils are on small streams and flood plains of major rivers.

This unit is used mostly as range.

5. Sunev-Pedernales-Mereta

Well drained, moderately and moderately slowly permeable, shallow to very deep, loamy and clayey soils

This map unit makes up about 9 percent of the survey area and typically occurs on alluvial plain remnants and valleys of dissected plateaus underlain by limestone. Slope ranges from 0 to 8 percent but is mostly less than 1 percent. The soils formed in loamy slope alluvium or colluvium from limestone and/or ancient alluvium of Cretaceous and Quaternary age from limestone or sandstone.

This map unit consists of about 22 percent Sunev, 12 percent Pedernales, 12 percent Menard, 12 percent Mereta, 9 percent Cho, 9 percent Campwood, 7 percent Luckenbach,

4 percent Valera, 3 percent Eckert, 3 percent Tarrant, 2 percent Rock outcrop, 1 percent Kerrville, and 4 percent other soils.

Sunev soils are moderately permeable and very deep. Pedernales soils are moderately slowly permeable and very deep. Mereta soils are moderately permeable and shallow. These soils are well drained.

Sunev soils are on footslopes of valleys and ridges in dissected plateaus underlain by limestone. Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus. Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.

Sunev soils typically have a surface layer of dark grayish brown clay loam. The upper part of the subsoil is yellowish brown and brownish yellow clay loam, and strong brown loam. The lower part of the subsoil is brown and red loam. The underlying material is reddish yellow very fine sandy loam. The soils are slightly alkaline or moderately alkaline.

Pedernales soils typically have a surface layer of dark yellowish brown fine sandy loam. The upper part of the subsoil is reddish brown and light reddish brown clay. The lower part of the subsoil is very pale brown clay loam and light gray sandy clay. The soils are slightly acid to slightly alkaline.

Mereta soils typically have a surface layer of very dark brown silty clay. The upper part of the subsoil is a cemented caliche layer or petrocalcic horizon. The lower part of the subsoil is pink and light brown silty clay loam, and brown clay loam. The soil is moderately alkaline.

Campwood and Valera soils are on footslopes of valleys of dissected plateaus underlain by limestone. Cho soils are on knolls on alluvial plain remnants on dissected plateaus. Eckert soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone. Kerrville soils are on backslopes, shoulders, and summits of ridges on dissected plateaus underlain by Cretaceous limestone. Luckenbach and Menard soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus. Tarrant soils are on backslopes, shoulders, and summits of ridges on dissected plateaus underlain by Cretaceous limestone.

This unit is used mostly as pastureland.

6. Voca–Keese–Lou

Well drained, moderately rapidly to slowly permeable, very shallow to shallow, moderately deep and very deep loamy soils

This map unit makes up about 8 percent of the survey area and typically occurs on undulating plains and on footslopes, backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite gneiss (fig. 6). Slope ranges from 0 to 12 percent. The soils formed in residuum and slope alluvium from granite and/or granite gneiss.

This map unit consists of about 38 percent Voca, 17 percent Keese, 15 percent Lou, 8 percent Click, 6 percent Rock outcrop, 6 percent Castell, 4 percent Fieldcreek, 1 percent Ligon, 1 percent Katemcy, and 4 percent other soils.

Voca soils are slowly permeable and very deep. Keese soils are moderately rapidly permeable and shallow. Lou soils are moderately permeable and moderately deep.

Voca soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian granite gneiss. Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite. Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite gneiss.

Voca soils typically have surface layers of brown very gravelly sandy loam. The subsoil is yellowish red to red gravelly clay. The soils are moderately acid to neutral. The underlying material is red extremely gravelly loam.

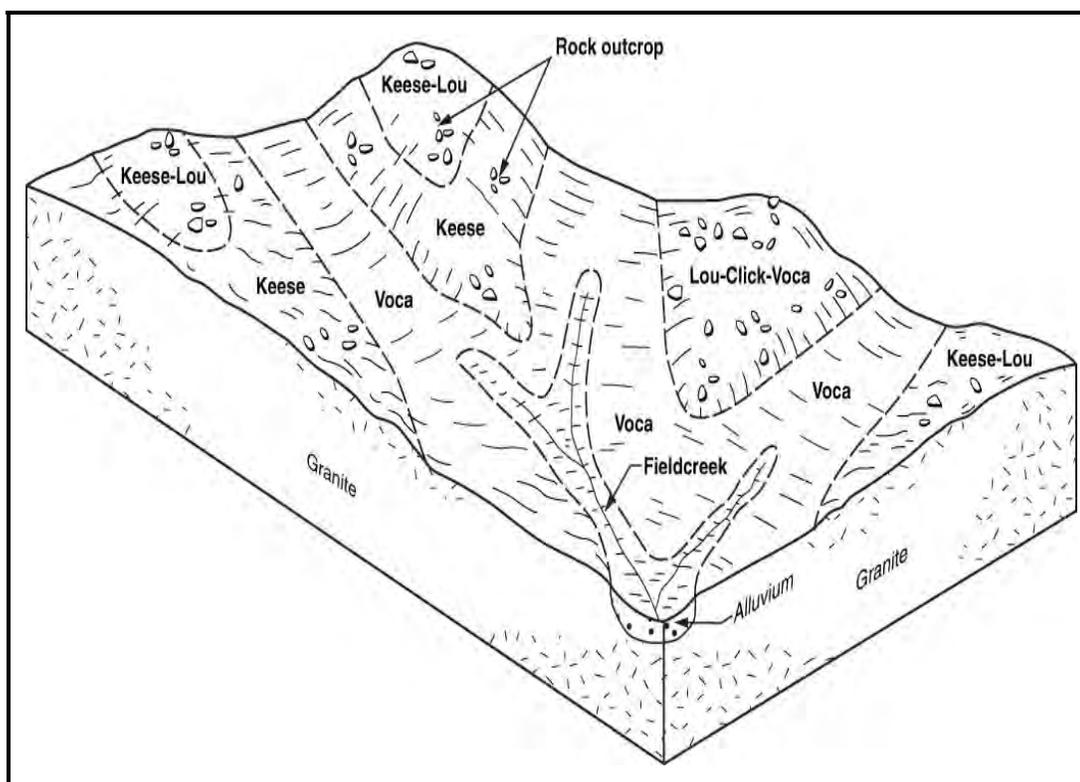


Figure 6.—Pattern of soils and underlying material in the Voca-Keese-Lou general soil map unit.

Keese soils typically have a surface layer of brown coarse sandy loam. The subsoil is brown gravelly coarse sandy loam. The soil is moderately acid to slightly alkaline. The underlying material is weathered granite or schist.

Lou soils typically have a surface layer of brown sandy loam. The subsoil is brown gravelly sandy clay loam to sandy clay loam. The soil is moderately acid to neutral. The underlying material is red extremely gravelly loam.

Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss. Click soils are on shoulders and summits of ridges and hills underlain by pre-Cambrian granite grus. Fieldcreek soils are on flood plains of small streams and creeks. Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist. Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist.

This unit is used mostly as range.

7. Tarrant-Rock outcrop

Well drained, moderately slowly permeable, very shallow and shallow, very stony soils, and rock outcrop

This map unit makes up about 8 percent of the survey area and typically occurs on backslopes, shoulders, and summits of ridges on dissected plateaus (fig. 7). Slope ranges from 1 to 40 percent. The soils formed in clayey residuum, loamy slope alluvium, and/or loamy colluvium weathered from Cretaceous limestone.

This map unit consists of about 58 percent Tarrant, 12 percent Rock outcrop, 9 percent Kerrville, 9 percent Sunev, 5 percent Brackett, 2 percent Campwood, 1 percent Real, 1 percent Valera, and 3 percent other soils.

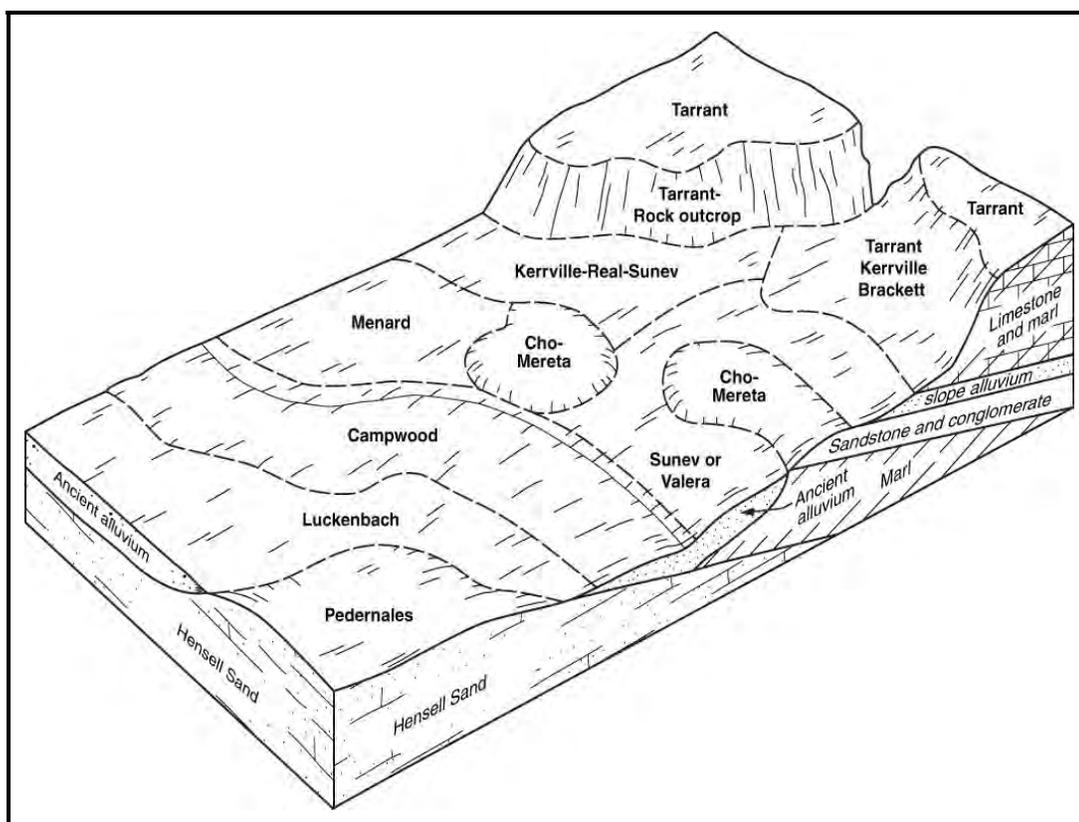


Figure 7.—Pattern of soils and underlying material in the Tarrant-Rock outcrop general soil map unit.

Tarrant soils are well drained, moderately slowly permeable, and very shallow or shallow.

Tarrant soils are on backslopes, shoulders, and summits of ridges on dissected plateaus underlain by Cretaceous limestone.

Tarrant soils typically have a surface layer of strong brown very cobbly clay. The underlying material is indurated limestone bedrock. The soils are moderately alkaline.

Brackett and Real soils are on backslopes of ridges on dissected plateaus underlain by Cretaceous limestone. Campwood and Valera soils are on footslopes of valleys of dissected plateaus underlain by limestone. Kerrville soils are on backslopes, shoulders, and summits of ridges on dissected plateaus underlain by Cretaceous limestone. Sunev soils are on footslopes of valleys and ridges in dissected plateaus underlain by limestone.

This unit is used mostly as range.

8. Castell-Keese

Well drained, moderately rapidly to slowly permeable, very shallow to shallow, and moderately deep loamy soils

This map unit makes up about 8 percent of the survey area, and typically occurs on undulating plains and on footslopes, backslopes, and summits of ridges underlain by pre-Cambrian gneiss (fig. 8). Slope ranges from 0 to 12 percent. The soils formed in residuum and slope alluvium and/or weathered from gneiss and granite grus.

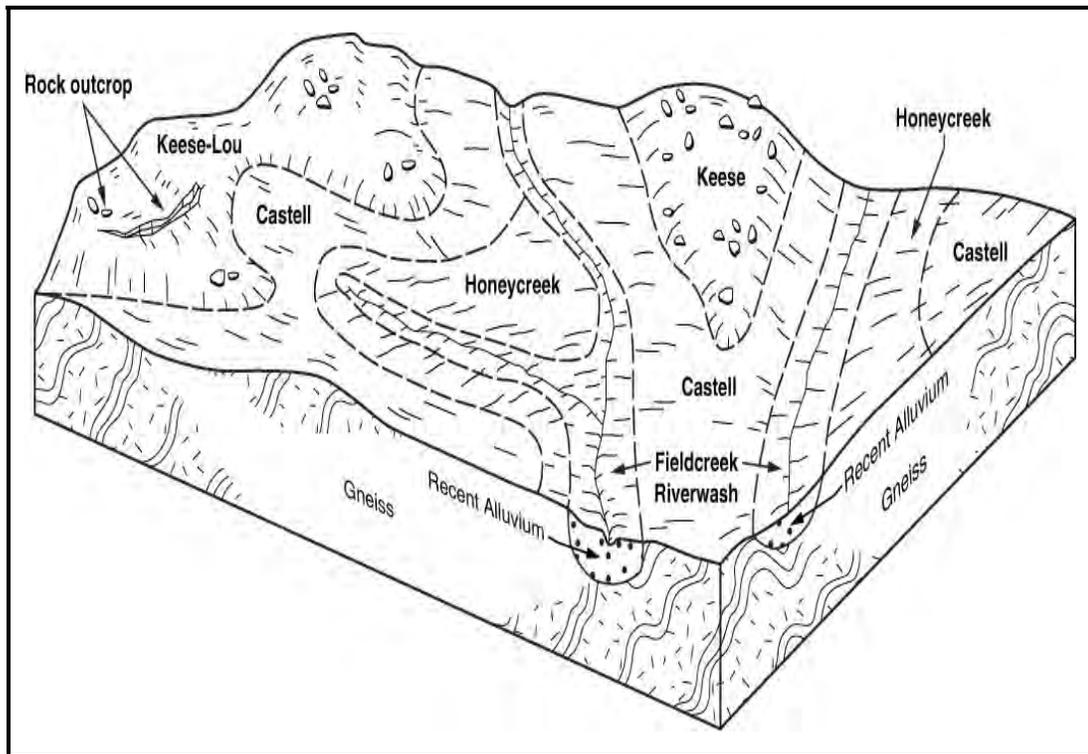


Figure 8.—Pattern of soils and underlying material in the Castell-Keese general soil map unit.

This map unit consists of about 41 percent Castell, 26 percent Keese, 10 percent Lou, 9 percent Rock outcrop, 4 percent Fieldcreek, 2 percent Voca, 1 percent Honeycreek, 1 percent Riverwash, 1 percent Oakalla, 1 percent Ligon, 1 percent Katemcy, and 3 percent other soils.

Castell soils are slowly permeable and moderately deep. Keese soils are moderately rapidly permeable and shallow.

Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss. Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.

Castell soils typically have a surface layer of brown sandy loam. The subsoil is brown to yellowish brown sandy clay. The soil is moderately acid to slightly alkaline. The underlying material is weathered gneiss or schistose gneiss.

Keese soils typically have a surface layer of brown coarse sandy loam. The subsoil is brown gravelly coarse sandy loam. The soil is moderately acid to slightly alkaline. The underlying material is weathered granite or gneiss.

Fieldcreek soils are on flood plains of small streams and creeks. Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss. Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist. Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist. Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite grus. Oakalla soils are on small streams and flood plains of major rivers.

Riverwash areas are in stream beds and on banks of creeks and rivers. Voca soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian granite grus.

This unit is used mostly as range.

9. Keese–Lou–Rock outcrop

Well drained, moderately rapidly to moderately permeable, very shallow and shallow, and moderately deep loamy soils, and rock outcrop

This map unit makes up about 5 percent of the survey area and typically occurs on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite grus or gneiss. Slope ranges from 1 to 40 percent. The soils formed in residuum and slope alluvium from granite, granite grus, and gneiss.

This map unit consists of about 39 percent Keese, 26 percent Rock outcrop, 15 percent Lou, 7 percent Castell, 3 percent Fieldcreek, 2 percent Nebgen, 2 percent Acove, 2 percent Loneoak, 1 percent Campair, 1 percent Voca, 1 percent Honeycreek, and 1 percent other soils.

Keese soils are moderately rapidly permeable and shallow. Lou soils are moderately permeable and moderately deep.

Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite. Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite grus.

Keese soils typically have a surface layer of brown coarse sandy loam. The subsoil is brown gravelly coarse sandy loam. The soil is moderately acid to slightly alkaline. The underlying material is weathered granite or schist.

Lou soils typically have a surface layer of brown sandy loam. The subsoil is brown gravelly sandy clay loam to sandy clay loam. The soil is moderately acid to neutral. The underlying material is red extremely gravelly loam.

Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone. Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone. Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss. Fieldcreek soils are on flood plains of small streams and creeks. Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss. Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone. Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone. Voca soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian granite grus.

This unit is used mostly as range.

Detailed Soil Map Units

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

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

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

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

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and provides 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, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Honeycreek fine sandy loam, 0 to 5 percent slopes is a phase of the Honeycreek series.

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

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. Menard-Pedernales complex, 0 to 5 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Riverwash-Rock outcrop complex, 0 to 5 percent slopes, frequently flooded, is an example.

A complete soil description with range in characteristics is included, in alphabetical order, in the "Soil Series and Morphology" section. Composition is based on observations, descriptions, and transects of the map unit. Additional information specific to the components of this map unit is available in the Tables section. For more information about managing a map unit, see the section on "Soil Properties", and the section on "Use and Management" which includes subsections on "Crops and Pasture", "Engineering", "Rangeland", "Recreation", and "Wildlife Habitat".

Table 4 shows the acreage and proportionate extent of each map unit in this survey area. Other 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.

ACC—Acove-Campair-Loneoak complex, 0 to 5 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Elevation: 1,095 to 2,000 feet

Mean annual precipitation: 22 to 30 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 210 to 240 days

Map unit prime farmland class: Not prime farmland

Composition

Acove and similar soils: 42 percent

Campair and similar soils: 19 percent

Loneoak and similar soils: 18 percent

Minor components and similar soils: 21 percent

The composition of this map unit is based on cumulative field observations and descriptions from six transects with fifty observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 21 to 62 percent Acove and similar soils, 6 to 33 percent Campair and similar soils, 13 to 24 percent Loneoak soils, and 7 to 34 percent minor components that include Honeycreek, Hye, Katemcy, Keese, Ligon, Lou, Luckenbach, Nebgen, Oben, and Rock outcrop.

- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.

Soil Survey of Mason County, Texas

- Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite gneiss.
- Luckenbach soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Nebgen and Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Acove

Landforms: Ridges

Geomorphic positions, two-dimensional: Shoulder, summit

Geomorphic positions, three-dimensional: Interfluvium

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 6 inches; moderately acid sandy loam

Subsurface layer:

6 to 13 inches; moderately acid sandy loam

Subsoil layer:

13 to 19 inches; slightly acid sandy clay loam

19 to 26 inches; slightly acid very flaggy clay

26 to 35 inches; slightly acid clay

Underlying material:

35 to 59 inches; moderately cemented sandstone bedrock

Properties and Qualities

Slope: 1 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 24 to 40 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 4.6 inches (low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: None specified

Soil Survey of Mason County, Texas

Ecological site name: Sandy Loam 25-32" PZ

Ecological site number: R082AY373TX

Typical vegetation: Little bluestem, other perennial grasses, pinhole bluestem, sideoats grama, Canada wildrye, other annual forbs, other perennial forbs, plains bristlegrass, purpletop tridens, sand lovegrass, yellow Indiangrass, other trees, other shrubs

Campair

Landforms: Ridges

Geomorphic positions, two-dimensional: Shoulder, backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 7 inches; slightly acid loamy fine sand

Subsurface layer:

7 to 12 inches; neutral loamy fine sand

Subsoil layer:

12 to 16 inches; strongly acid sandy clay loam

16 to 28 inches; slightly acid and neutral clay loam

Underlying material:

28 to 38 inches; strongly cemented sandstone bedrock

Properties and Qualities

Slope: 1 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 20 to 40 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 3.7 inches (low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4e

Land capability irrigated: 4e

Ecological site name: Loamy Sand 25-32" PZ

Ecological site number: R082AY368TX

Typical vegetation: Little bluestem, other perennial forbs, other perennial grasses, sideoats grama, dropseed, other shrubs, panicum, post oak, sand bluestem, sand lovegrass, silver bluestem, Texas wintergrass, yellow Indiangrass

Loneoak

Landforms: Ridges, undulating plains

Geomorphic positions, two-dimensional: Foothlope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 16 inches; slightly acid loamy sand

Subsurface layer:

16 to 22 inches; slightly acid loamy sand

Subsoil layer:

22 to 49 inches; neutral clay

49 to 61 inches; neutral cobbly clay

Underlying material:

61 to 65 inches; weakly cemented sandstone bedrock

65 to 75 inches; strongly cemented sandstone bedrock

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 60 to 71 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: No restrictive layer

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 6.8 inches (moderate)

Natural drainage class: Moderately well drained

Runoff: Very low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: 3e

Ecological site name: Sandy 25-32" PZ

Ecological site number: R082AY372TX

Typical vegetation: Little bluestem, sand lovegrass, other perennial grasses, post oak, blackjack oak, fall witchgrass, purpletop tridens, yellow Indiangrass, greenbriar, other perennial forbs, other annual forbs

AMC—Acove-Menard complex, 0 to 5 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Soil Survey of Mason County, Texas

Elevation: 1,000 to 2,945 feet
Mean annual precipitation: 22 to 34 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 210 to 260 days
Map unit prime farmland class: Not prime farmland

Composition

Acove and similar soils: 56 percent
Menard and similar soils: 30 percent
Minor components and similar soils: 14 percent

The composition of this map unit is based on cumulative field observations and descriptions from three transects with thirty observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 45 to 66 percent Acove and similar soils, 18 to 43 percent Menard and similar soils, and 5 to 23 percent minor components including Campair, Honeycreek, Hye, Katemcy, Keese, Loneoak, Nebgen, Oben, Pontotoc, and Rock outcrop.

- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Keese soils are on shoulder, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Nebgen and Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Pontotoc soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Acove

Landforms: Ridges

Geomorphic positions, two-dimensional: Shoulder, summit

Geomorphic positions, three-dimensional: Interfluvium

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 6 inches; moderately acid sandy loam

Subsurface layer:

6 to 13 inches; moderately acid sandy loam

Subsoil layer:

13 to 19 inches; slightly acid sandy clay loam

19 to 26 inches; slightly acid very flaggy clay

26 to 35 inches; slightly acid clay

Underlying material:

35 to 59 inches; moderately cemented sandstone bedrock

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 24 to 40 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 4.6 inches (low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: None specified

Ecological site name: Sandy Loam 25-32" PZ

Ecological site number: R082AY373TX

Typical vegetation: Little bluestem, other perennial grasses, pinhole bluestem, sideoats grama, Canada wildrye, other annual forbs, other perennial forbs, plains bristlegrass, purpletop tridens, sand lovegrass, yellow Indiangrass, other trees, other shrubs

Menard

Landforms: Valleys

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Calcareous slope alluvium over residuum

Typical Profile

Surface layer:

0 to 13 inches; slightly acid sandy loam

Subsoil layer:

13 to 50 inches; neutral sandy clay loam

50 to 80 inches; slightly alkaline loam

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.3 inches (high)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site name: Sandy Loam 25-32" PZ
Ecological site number: R082AY373TX
Typical vegetation: Little bluestem, big bluestem, other perennial forbs, yellow
Indiangrass, other trees, Arizona cottontop, other perennial grasses, Scribner
panicum, sideoats grama, silver bluestem, Texas wintergrass, post oak

CAC—Campwood, Sunev, and Valera soils, 0 to 5 percent slopes

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part
Landscape: Dissected plateaus
Elevation: 1,000 to 2,945 feet
Mean annual precipitation: 16 to 34 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 215 to 245 days
Map unit prime farmland class: Prime farmland, if irrigated

Composition

Campwood and similar soils: 34 percent
Sunev and similar soils: 33 percent
Valera and similar soils: 15 percent
Minor components and similar soils: 18 percent

The composition of this map unit is based on cumulative field observations and descriptions from nine transects with ninety-two observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 24 to 43 percent Campwood and similar soils, 31 to 36 percent Sunev and similar soils, 8 to 19 percent Valera and similar soils, and 13 to 32 percent minor components including Cho, Dev, Eckert, Luckenbach, Menard, Mereta, Nebgen, Pedernales, Tarrant, Yates, and Rock outcrop.

- Cho and Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.
- Dev soils are on flood plains and riverbeds of large streams and rivers.
- Eckert and Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Luckenbach, Menard, and Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Tarrant soils are on backslopes, shoulders, and summits of ridges on dissected plateaus underlain by Cretaceous limestone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Campwood

Landforms: Valleys (fig. 9)

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Calcareous clayey alluvium derived from limestone

Typical Profile

Surface layer:

0 to 15 inches; moderately alkaline clay

Subsoil layer:

15 to 51 inches; moderately alkaline clay

51 to 64 inches; slightly alkaline clay

Underlying material:

64 to 80 inches; moderately alkaline clay

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer



Figure 9.—An area of Campwood in Campwood, Sunev, and Valera soils, 0 to 5 percent slopes. These very deep soils provide abundant forage when managed properly. Campwood soils are in valleys.

Soil Survey of Mason County, Texas

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 8.4 inches (moderate)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: 3e

Ecological site name: Clay Loam 23-31" PZ

Ecological site number: R081BY326TX

Typical vegetation: Little bluestem, other perennial forbs, yellow Indiangrass, big bluestem, buffalograss, Canada wildrye, other perennial grasses, sideoats grama, silver bluestem, switchgrass, Texas wintergrass, vine mesquite, other shrubs, elm

Sunev

Landforms: Stream terraces, valleys

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loamy slope alluvium and/or colluvium derived from limestone

Typical Profile

Surface layer:

0 to 12 inches; slightly alkaline clay loam

Subsoil layer:

12 to 37 inches; slightly alkaline clay loam

37 to 57 inches; moderately alkaline loam

57 to 64 inches; slightly alkaline loam

Underlying material:

64 to 80 inches; slightly alkaline very fine sandy loam

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 8.4 inches (moderate)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: None specified

Ecological site name: Clay Loam 23-31" PZ

Ecological site number: R081BY326TX

Typical vegetation: Little bluestem, yellow Indiangrass, big bluestem, other annual forbs, other perennial forbs, live oak, buffalograss, eastern gamagrass, other trees, sideoats grama, switchgrass, vine mesquite

Valera

Landforms: Valleys

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Slope alluvium derived from limestone

Typical Profile

Surface layer:

0 to 14 inches; slightly alkaline clay loam

Subsoil layer:

14 to 25 inches; slightly alkaline clay loam

25 to 29 inches; moderately alkaline cemented material

Underlying material:

29 to 39 inches; indurated limestone bedrock

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 20 to 40 inches petrocalcic

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 3.2 inches (low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: None specified

Ecological site name: Clay Loam 23-31" PZ

Ecological site number: R081BY326TX

Typical vegetation: Little bluestem, other perennial forbs, yellow Indiangrass, big bluestem, buffalograss, Canada wildrye, other perennial grasses, sideoats grama, silver bluestem, switchgrass, Texas wintergrass, vine mesquite, other shrubs, other trees

CeC—Castell sandy loam, 0 to 5 percent slopes, rocky

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Elevation: 1,095 to 1,900 feet

Mean annual precipitation: 24 to 30 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 215 to 230 days

Map unit prime farmland class: Not prime farmland

Composition

Castell and similar soils: 85 percent

Minor components and similar soils: 15 percent

The composition of this map unit is based on cumulative field observations and descriptions from seven transects with sixty-seven observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 79 to 89 percent Castell and similar soils and 11 to 21 percent minor components including Campair, Honeycreek, Katemcy, Keese, Ligon, Loneoak, Lou, Luckenbach, Voca, and Rock outcrop.

- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Keese soils are on shoulder, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite grus.
- Luckenbach soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Voca soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian granite grus.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Castell

Landforms: Hills, undulating plains, ridges

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from gneiss

Typical Profile

Surface layer:

0 to 8 inches; slightly acid sandy loam

Subsoil layer:

8 to 30 inches; slightly acid sandy clay

Underlying material:

30 to 42 inches; weakly cemented gneiss bedrock

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 20 to 40 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 4.0 inches (low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4e

Land capability irrigated: None specified

Ecological site name: Sandy Loam 25-32" PZ

Ecological site number: R082AY373TX

Typical vegetation: Little bluestem, other perennial grasses, other perennial forbs, pinhole bluestem, sideoats grama, Canada wildrye, other trees, plains bristlegrass, plains lovegrass, sand lovegrass, yellow Indiangrass

ERD—Eckert-Rock outcrop complex, 1 to 8 percent slopes

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part

Landscape: Dissected plateaus

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 10 to 35 inches

Mean annual air temperature: 52 to 73 degrees F

Frost-free period: 120 to 320 days

Map unit prime farmland class: Not prime farmland

Composition

Eckert and similar soils: 64 percent

Rock outcrop and similar soils: 25 percent

Minor components and similar soils: 11 percent

The composition of this map unit is based on cumulative field observations and descriptions from seventeen transects with one hundred eighty-seven observations of

the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 58 to 72 percent Eckert and similar soils, 18 to 33 percent Rock outcrop, and 6 to 12 percent minor components including Cho, Hensley, Hye, Mereta, Nebgen, Oakalla, Pedernales, Roughcreek, Sunev, and Yates.

- Cho and Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.
- Hensley and Roughcreek soils are on shoulders and summits of ridges on dissected plateaus underlain by Mississippian, Devonian, and Ordovician limestone.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Oakalla soils are on small streams and flood plains of major rivers.
- Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.
- Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.

Soil Description

Eckert

Landforms: Ridges

Geomorphic positions, two-dimensional: Shoulder, summit

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:

0 to 12 inches; slightly alkaline very cobbly loam

Underlying material:

12 to 22 inches; indurated limestone bedrock

Properties and Qualities

Slope: 1 to 8 percent

Percent of area covered by surface fragments: About 8 percent angular medium and coarse gravel, about 10 percent angular cobbles, about 10 percent angular stones

Depth to first restrictive layer: 4 to 20 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 1.5 inches (very low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s

Land capability irrigated: None specified

Ecological site name: Stony Loam 23-31" PZ

Ecological site number: R081BY351TX

Typical vegetation: Little bluestem, green sprangletop, sideoats grama, other perennial forbs, Arizona cottontop, fall witchgrass, hooded windmill grass, other perennial grasses, other shrubs, other trees, pinhole bluestem, vine mesquite, other annual forbs

Rock outcrop

Landforms: Ridges

Geomorphic positions, two-dimensional: Shoulder, summit

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Limestone

Properties and Qualities

Slope: 1 to 8 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 0 to 2 inches lithic bedrock

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (very slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Runoff: High

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 8s

Land capability irrigated: None specified

Ecological site name: Not assigned

Ecological site number: Not assigned

ERG—Eckert-Rock outcrop complex, 8 to 30 percent slopes

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part

Landscape: Dissected plateaus

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 10 to 35 inches

Mean annual air temperature: 52 to 73 degrees F

Frost-free period: 120 to 320 days

Map unit prime farmland class: Not prime farmland

Composition

Eckert and similar soils: 63 percent

Rock outcrop and similar soils: 33 percent

Minor components and similar soils: 4 percent

The composition of this map unit is based on cumulative field observations and descriptions from nine transects with ninety-four observations of the map unit (fig. 10). There is an estimated 80 percent probability that the true composition of the whole map unit is 55 to 71 percent Eckert and similar soils, 24 to 42 percent Rock outcrop, and 1 to 7 percent minor components including Cho, Hensley, Mereta, Nebgen, Oakalla, Pedernales, Roughcreek, Sunev, Venus, and Yates.

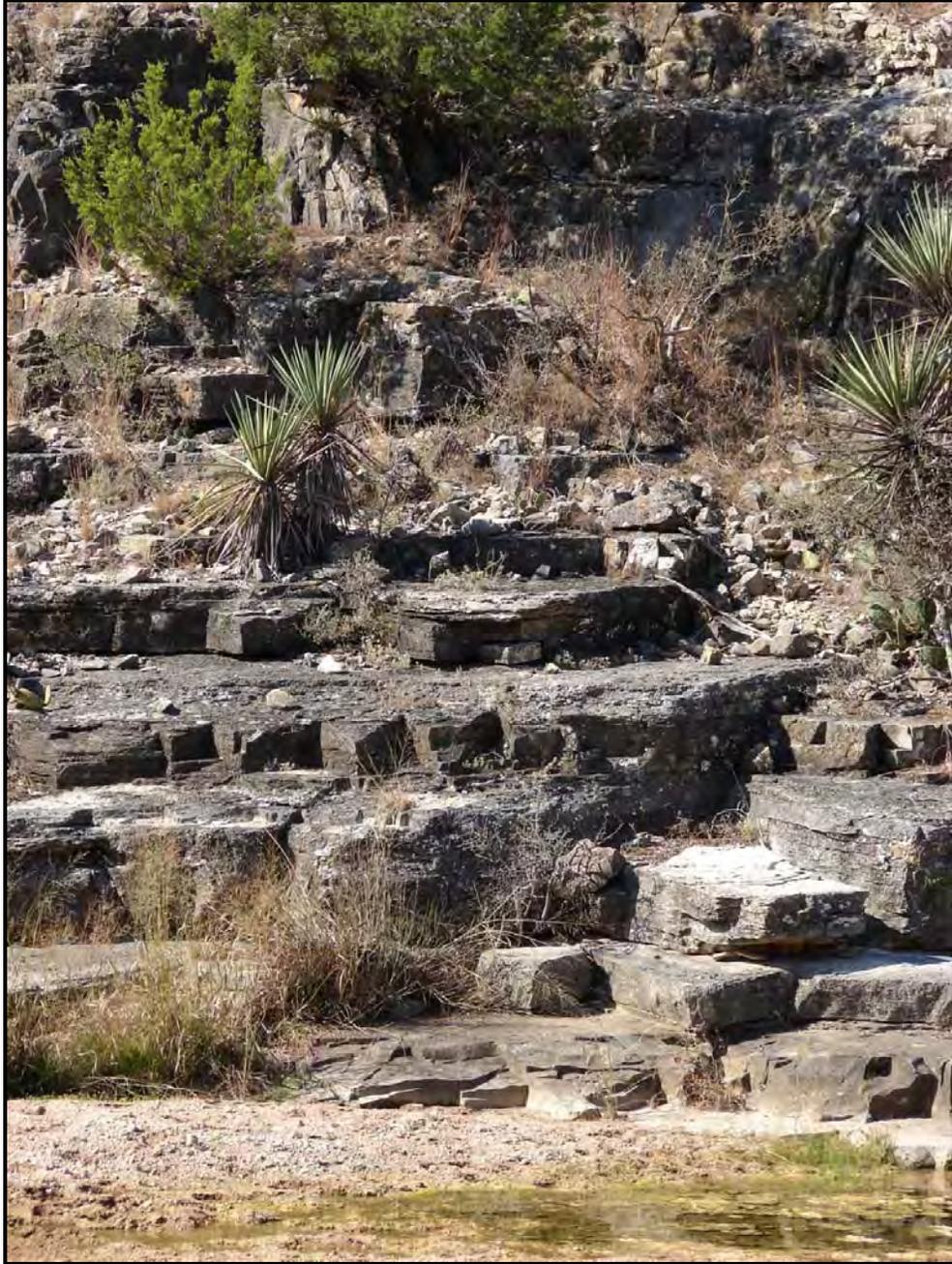


Figure 10.—An area of Eckert-Rock outcrop complex, 8 to 30 percent slopes. These shallow soils are located on the stair-stepped ledges of the Tanyard dolomitic limestone of the Ordovician period and the Cambrian period geologies. Rock outcrop makes up a significant portion of this map unit, ranging from 24 to 42 percent of the map unit.

Soil Survey of Mason County, Texas

- Cho and Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.
- Hensley and Roughcreek soils are on shoulders and summits of ridges on dissected plateaus underlain by Mississippian, Devonian, and Ordovician limestone.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Oakalla soils are on small streams and flood plains of major rivers.
- Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.
- Venus soils are on stream terraces and footslopes in valleys of dissected plateaus underlain by limestone and sandstone.
- Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.

Soil Description

Eckert

Landforms: Ridges

Geomorphic positions, two-dimensional: Backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:

0 to 9 inches; slightly alkaline very gravelly loam

Underlying material:

9 to 19 inches; indurated limestone bedrock

Properties and Qualities

Slope: 8 to 20 percent

Percent of area covered by surface fragments: About 5 percent angular channers; about 20 percent angular flagstones; about 20 percent angular stones

Depth to first restrictive layer: 4 to 14 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 1.2 inches (very low)

Natural drainage class: Well drained

Runoff: Medium

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s

Land capability irrigated: None specified

Ecological site name: Stony Loam 23-31" PZ

Ecological site number: R081BY351TX

Typical vegetation: Little bluestem, green sprangletop, sideoats grama, other perennial forbs, Arizona cottontop, fall witchgrass, hooded windmill grass, other perennial grasses, other shrubs, other trees, pinhole bluestem, vine mesquite, other annual forbs

Rock outcrop

Landforms: Ridges

Geomorphic positions, two-dimensional: Backslope, footslope

Geomorphic positions, three-dimensional: Side slope, base slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Limestone

Properties and Qualities

Slope: 12 to 30 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 0 to 2 inches lithic bedrock

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (very slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Runoff: Very high

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 8s

Land capability irrigated: None specified

Ecological site name: Not assigned

Ecological site number: Not assigned

FRC—Fieldcreek-Riverwash complex, 0 to 5 percent slopes, flooded

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Valleys

Elevation: 1,000 to 1,900 feet

Mean annual precipitation: 10 to 35 inches

Mean annual air temperature: 64 to 70 degrees F

Frost-free period: 215 to 300 days

Map unit prime farmland class: Not prime farmland

Composition

Fieldcreek, occasionally flooded and similar soils: 52 percent

Fieldcreek, frequently flooded and similar soils: 23 percent

Riverwash and similar soils: 15 percent

Minor components and similar soils: 10 percent

The composition of this map unit is based on cumulative field observations and descriptions from four transects with thirty-seven observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit

is 61 to 88 percent Fieldcreek and similar soils, 3 to 24 percent Riverwash, and 0 to 29 percent minor components including Castell, Honeycreek, Katemcy, Keese, Ligon, Loneoak, Lou, Nebgen, Voca, and Rock outcrop.

- Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Keese soils are on shoulder, summits and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite grus.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Voca soils are on undulating plains and footslopes of ridges and hills underlain by granite grus.
- Rock outcrop occurs on backslopes and footslopes of ridges and on flood plains of streams.

Soil Description

Fieldcreek, Occasionally Flooded

Landforms: Flood plains on ephemeral streams, flood plains on perennial streams (fig. 11)

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loamy alluvium derived from igneous, metamorphic, and sedimentary rock

Typical Profile

Surface layer:

0 to 8 inches; slightly acid fine sandy loam

Subsurface layer:

8 to 25 inches; slightly acid loam

Subsoil layer:

25 to 48 inches; neutral loam

48 to 80 inches; neutral fine sandy loam

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 7.8 inches (moderate)



Figure 11.—An area of Fieldcreek-Riverwash complex, 0 to 5 percent slopes, flooded. Fieldcreek soils are located on flood plains of small streams and creeks. The climax plant community is a semi-wooded flood plain that has trees shading as much as 15 percent of the area along the water courses. Fieldcreek soils are in the Loamy Bottomland ecological site.

Natural drainage class: Well drained

Runoff: Very low

Flooding frequency: Occasional

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: None specified

Ecological site name: Loamy Bottomland 25-32" PZ

Ecological site number: R082AY367TX

Typical vegetation: Little bluestem, other trees, yellow Indiangrass, other perennial grasses, switchgrass, Canada wildrye, dropseed, other perennial forbs, pinhole bluestem, Scribner panicum, Texas wintergrass, vine mesquite

Fieldcreek, Frequently Flooded

Landforms: Flood plains on ephemeral streams, flood plains on perennial streams (fig. 11)

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loamy alluvium derived from igneous, metamorphic, and sedimentary rock

Typical Profile

Surface layer:

0 to 8 inches; slightly acid fine sandy loam

Subsurface layer:

8 to 25 inches; slightly acid loam

Subsoil layer:

25 to 48 inches; neutral loam

48 to 80 inches; neutral fine sandy loam

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0
in/hr (moderately rapid)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 7.8 inches (moderate)

Natural drainage class: Well drained

Runoff: Very low

Flooding frequency: Frequent

Interpretive Groups

Land capability nonirrigated: 5w

Land capability irrigated: None specified

Ecological site name: Loamy Bottomland 25-32" PZ

Ecological site number: R082AY367TX

Typical vegetation: Little bluestem, other trees, yellow Indiangrass, other perennial
grasses, switchgrass, Canada wildrye, dropseed, other perennial forbs, pinhole
bluestem, Scribner panicum, Texas wintergrass, vine mesquite

Riverwash

Landforms: Flood plains on ephemeral streams, flood plains on perennial streams

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Gravelly alluvium derived from igneous, metamorphic, and sedimentary rock

Properties and Qualities

Slope: 0 to 3 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 6.0 to 20
in/hr (rapid)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 1.8 inches (very low)

Natural drainage class: Excessively drained

Runoff: Negligible

Flooding frequency: Frequent

Interpretive Groups

Land capability nonirrigated: 8w

Land capability irrigated: None specified

Ecological site name: Not assigned

Ecological site number: Not assigned

HeD—Hensley loam, 1 to 8 percent slopes

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part

Landscape: Dissected plateaus

Elevation: 1,000 to 2,020 feet

Mean annual precipitation: 24 to 34 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 210 to 250 days

Map unit prime farmland class: Not prime farmland

Composition

Hensley and similar soils: 68 percent

Minor components and similar soils: 32 percent

The composition of this map unit is based on cumulative field observations and descriptions from seven transects and sixty-nine observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 57 to 78 percent Hensley and similar soils and 22 to 43 percent minor components including Eckert, Luckenbach, Menard, Nebgen, Pedernales, Roughcreek, Sunev, Yates, and Rock outcrop.

- Eckert and Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Roughcreek soils are on shoulders and summits of ridges on dissected plateaus underlain by Mississippian, Devonian, and Ordovician limestone.
- Luckenbach, Menard, and Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Hensley

Landforms: Ridges

Geomorphic positions, two-dimensional: Summit, shoulder

Geomorphic positions, three-dimensional: Side slope, interfluvium

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:

0 to 6 inches; slightly acid loam

Subsoil layer:

6 to 14 inches; neutral clay

Underlying material:

14 to 24 inches; indurated limestone bedrock

Properties and Qualities

Slope: 1 to 8 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 10 to 20 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 1.6 inches (very low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 6e

Land capability irrigated: None specified

Ecological site name: Redland 23-31" PZ

Ecological site number: R081BY340TX

Typical vegetation: Little bluestem, yellow Indiangrass, sideoats grama, big bluestem, dropseed, live oak, other perennial forbs, other perennial grasses, silver bluestem, Texas wintergrass, bush sunflower, Engelmann's daisy, Maximilian sunflower, other trees, post oak

HkC—Honeycreek fine sandy loam, 0 to 5 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 25 to 30 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 210 to 240 days

Map unit prime farmland class: Prime farmland, if irrigated

Composition

Honeycreek and similar soils: 71 percent

Minor components and similar soils: 29 percent

The composition of this map unit is based on cumulative field observations and descriptions from four transects with forty observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 60 to 83 percent Honeycreek and similar soils and 17 to 40 percent minor components including Campair, Castell, Katemcy, Keese, Ligon, Loneoak, Lou, Nebgen, Oakalla, Riverwash, and Rock outcrop.

- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss.

Soil Survey of Mason County, Texas

- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite gneiss.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Oakalla soils are on small streams and flood plains of major rivers.
- Riverwash areas are in stream beds and on banks of creeks and rivers.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Honeycreek

Landforms: Hills, ridges, undulating plains

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Slope alluvium derived from schist and/or gneiss

Typical Profile

Surface layer:

0 to 9 inches; neutral fine sandy loam

Subsurface layer:

9 to 17 inches; moderately acid fine sandy loam

Subsoil layer:

17 to 25 inches; moderately acid fine sandy loam

25 to 37 inches; neutral sandy clay loam

37 to 50 inches; neutral gravelly sandy clay loam

50 to 56 inches; neutral gravelly fine sandy loam

Underlying material:

56 to 66 inches; weakly cemented schist bedrock

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 40 to 60 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 7.6 inches (moderate)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: 3e

Ecological site name: Sandy Loam 25-32" PZ (fig. 12)

Ecological site number: R082AY373TX

Typical vegetation: Little bluestem, other perennial grasses, other perennial forbs, pinhole bluestem, sideoats grama, Canada wildrye, other trees, plains bristlegrass, plains lovegrass, sand lovegrass, yellow Indiangrass

HND—Hye-Nebgen-Oben complex, 1 to 8 percent slopes, rocky

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 24 to 34 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 215 to 235 days

Map unit prime farmland class: Not prime farmland



Figure 12.—Wilman lovegrass on an area of Honeycreek fine sandy loam, 0 to 5 percent slopes. Honeycreek soils are in the Sandy Loam ecological site.

Composition

Hye and similar soils: 41 percent
Nebgen and similar soils: 30 percent
Oben and similar soils: 15 percent
Minor components and similar soils: 14 percent

The composition of this map unit is based on cumulative field observations and descriptions from ten transects with one hundred ten observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 35 to 47 percent Hye and similar soils, 25 to 35 percent Nebgen and similar soils, 10 to 20 percent Oben and similar soils, and 9 to 19 percent minor components including Acove, Campair, Honeycreek, Keese, Loneoak, Luckenbach, Menard, Pontotoc, Yates, and Rock outcrop.

- Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone.
- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Luckenbach and Menard soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Pontotoc soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Hye

Landforms: Ridges

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 10 inches; slightly acid fine sandy loam

Subsoil layer:

10 to 36 inches; neutral sandy clay loam

Underlying material:

36 to 46 inches; bedrock

Properties and Qualities

Slope: 1 to 8 percent

Percent of area covered by surface fragments: Not assigned

Soil Survey of Mason County, Texas

Depth to first restrictive layer: 20 to 40 inches lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.2 inches (low)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4e
Land capability irrigated: None specified
Ecological site name: Red Sandy Loam 25-32" PZ
Ecological site number: R082AY369TX
Typical vegetation: Little bluestem, sand lovegrass, sideoats grama, Arizona cottontop, live oak, other perennial forbs, other perennial grasses, other shrubs, pinhole bluestem, plains bristlegrass, post oak, purpletop tridens, yellow Indiangrass

Nebgen

Landforms: Ridges
Geomorphic positions, two-dimensional: Shoulder, summit
Geomorphic positions, three-dimensional: Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:
0 to 5 inches; slightly acid sandy loam
Subsurface layer:
5 to 11 inches; slightly acid sandy loam
Underlying material:
11 to 21 inches; indurated sandstone bedrock

Properties and Qualities

Slope: 1 to 8 percent
Percent of area covered by surface fragments: About 1 percent subangular stones
Depth to first restrictive layer: 4 to 14 inches lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 1.2 inches (very low)
Natural drainage class: Well drained

Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s
Land capability irrigated: None specified
Ecological site name: Sandstone Hill 25-32" PZ
Ecological site number: R082AY371TX
Typical vegetation: Little bluestem, sideoats grama, other perennial grasses, fringed leaf
paspalum, pinhole bluestem, plains lovegrass, purpletop tridens, sand lovegrass,
yellow Indiangrass, post oak, Texas wintergrass, blackjack oak, buffalograss, live
oak, other perennial forbs

Oben

Landforms: Ridges
Geomorphic positions, two-dimensional: Backslope, shoulder, summit
Geomorphic positions, three-dimensional: Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:
0 to 5 inches; slightly acid fine sandy loam
Subsoil layer:
5 to 14 inches; neutral sandy clay loam
14 to 19 inches; neutral parachannery sandy clay loam
Underlying material:
19 to 29 inches; weakly cemented sandstone bedrock

Properties and Qualities

Slope: 1 to 8 percent
Percent of area covered by surface fragments: About 1 percent subangular stones
Depth to first restrictive layer: 9 to 20 inches paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0
in/hr (moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to
2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.4 inches (very low)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 6e
Land capability irrigated: None specified
Ecological site name: Red Sandy Loam 25-32" PZ
Ecological site number: R082AY369TX

Typical vegetation: Little bluestem, other perennial forbs, other trees, sand lovegrass, sideoats grama, Arizona cottontop, green sprangletop, other annual forbs, pinhole bluestem, plains lovegrass, yellow Indiagrass

HOD—Hye-Oben-Loneoak complex, 1 to 8 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin
Landscape: Dissected plateaus
Elevation: 1,000 to 2,200 feet
Mean annual precipitation: 22 to 34 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 215 to 235 days
Map unit prime farmland class: Not prime farmland

Composition

Hye and similar soils: 43 percent
Oben and similar soils: 19 percent
Loneoak and similar soils: 18 percent
Minor components and similar soils: 20 percent

The composition of this map unit is based on cumulative field observations and descriptions from seven transects with seventy-one observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 33 to 54 percent Hye and similar soils, 13 to 24 percent Oben and similar soils, 9 to 28 percent Loneoak and similar soils, and 10 to 29 percent minor components including Acove, Campair, Eckert, Honeycreek, Katemcy, Keese, Menard, Pontotoc, Venus, Yates, and Rock outcrop.

- Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone.
- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Eckert and Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Menard soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Pontotoc soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Venus soils are on stream terraces and footslopes in valleys of dissected plateaus underlain by limestone and sandstone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Hye

Landforms: Ridges

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:
0 to 10 inches; slightly acid fine sandy loam

Subsoil layer:
10 to 36 inches; neutral sandy clay loam

Underlying material:
36 to 46 inches; sandstone bedrock

Properties and Qualities

Slope: 1 to 8 percent
Percent of area covered by surface fragments: Not assigned
Depth to first restrictive layer: 20 to 40 inches lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.2 inches (low)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4e
Land capability irrigated: None specified
Ecological site name: Red Sandy Loam 25-32" PZ
Ecological site number: R082AY369TX
Typical vegetation: Little bluestem, sand lovegrass, sideoats grama, Arizona cottontop, live oak, other perennial forbs, other perennial grasses, other shrubs, pinhole bluestem, plains bristlegrass, post oak, purpletop tridens, yellow Indiangrass

Oben

Landforms: Ridges
Geomorphic positions, two-dimensional: Summit, shoulder, backslope
Geomorphic positions, three-dimensional: Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:
0 to 5 inches; slightly acid fine sandy loam

Subsoil layer:
5 to 14 inches; neutral sandy clay loam
14 to 19 inches; neutral parachannery sandy clay loam

Soil Survey of Mason County, Texas

Underlying material:

19 to 29 inches; weakly cemented sandstone bedrock

Properties and Qualities

Slope: 1 to 8 percent

Percent of area covered by surface fragments: About 1 percent subangular stones

Depth to first restrictive layer: 9 to 20 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 2.4 inches (very low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 6e

Land capability irrigated: None specified

Ecological site name: Red Sandy Loam 25-32" PZ

Ecological site number: R082AY369TX

Typical vegetation: Little bluestem, other perennial forbs, other trees, sand lovegrass, sideoats grama, Arizona cottontop, green sprangletop, other annual forbs, pinhole bluestem, plains lovegrass, yellow Indiagrass

Loneoak

Landforms: Undulating plains, ridges

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 16 inches; slightly acid loamy sand

Subsurface layer:

16 to 22 inches; slightly acid loamy sand

Subsoil layer:

22 to 49 inches; neutral clay

49 to 61 inches; neutral cobbly clay

Underlying material:

61 to 65 inches; weakly cemented sandstone bedrock

65 to 75 inches; strongly cemented sandstone bedrock

Properties and Qualities

Slope: 1 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 60 to 71 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: No restrictive layer

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 6.8 inches (moderate)

Natural drainage class: Moderately well drained

Runoff: Very low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: 3e

Ecological site name: Sandy 25-32" PZ

Ecological site number: R082AY372TX

Typical vegetation: Little bluestem, sand lovegrass, other perennial grasses, post oak, blackjack oak, fall witchgrass, purpletop tridens, yellow Indiangrass, other perennial forbs, greenbriar, other annual forbs

HPC—Hye-Pontotoc complex, 0 to 5 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 24 to 34 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 215 to 235 days

Map unit prime farmland class: Prime farmland, if irrigated

Composition

Hye and similar soils: 48 percent

Pontotoc and similar soils: 34 percent

Minor components and similar soils: 18 percent

The composition of this map unit is based on cumulative field observations and descriptions from four transects with thirty-six observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 19 to 77 percent Hye and similar soils, 9 to 59 percent Pontotoc and similar soils, and 10 to 26 percent minor components including Acove, Campair, Keese, Loneoak, Luckenbach, Menard, Nebgen, Oben, Yates, and Rock outcrop.

- Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone.
- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.

Soil Survey of Mason County, Texas

- Luckenbach and Menard soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Nebgen and Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Hye

Landforms: Ridges

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Slope alluvium derived from sandstone, residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 10 inches; slightly acid fine sandy loam

Subsoil layer:

10 to 36 inches; neutral sandy clay loam

Underlying material:

36 to 46 inches; sandstone bedrock

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 20 to 40 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 5.2 inches (low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: 3e

Ecological site name: Red Sandy Loam 25-32" PZ

Ecological site number: R082AY369TX

Typical vegetation: Little bluestem, sand lovegrass, sideoats grama, Arizona cottontop, live oak, other perennial forbs, other perennial grasses, other shrubs, pinhole bluestem, plains bristlegrass, post oak, purpletop tridens, yellow Indiagrass

Pontotoc

Landforms: Ridges, undulating plains

Geomorphic positions, two-dimensional: Foothlope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 5 inches; neutral fine sandy loam

Subsurface layer:

5 to 10 inches; neutral fine sandy loam

Subsoil layer:

10 to 21 inches; slightly acid sandy clay loam

21 to 33 inches; slightly acid fine sandy loam

33 to 67 inches; slightly acid sandy clay loam

Underlying material:

67 to 77 inches; moderately cemented sandstone bedrock

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 60 to 80 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: No restrictive layer

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 8.3 inches (moderate)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4s

Land capability irrigated: 4s

Ecological site name: Red Sandy Loam 25-32" PZ

Ecological site number: R082AY369TX

Typical vegetation: Little bluestem, other shrubs, sand lovegrass, sideoats grama, annual grasses, Arizona cottontop, live oak, pinhole bluestem, plains lovegrass, post oak, purpletop tridens, yellow Indiangrass

KAC—Katemcy-Honeycreek complex, 0 to 5 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Soil Survey of Mason County, Texas

Elevation: 1,000 to 2,250 feet
Mean annual precipitation: 24 to 30 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 210 to 240 days
Map unit prime farmland class: Prime farmland, if irrigated

Composition

Katemcy and similar soils: 60 percent
Honeycreek and similar soils: 15 percent
Minor components and similar soils: 25 percent

The composition of this map unit is based on cumulative field observations from six transects with sixty-four observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 55 to 65 percent Katemcy and similar soils, 7 to 19 percent Honeycreek and similar soils, and 20 to 34 percent minor components including Acove, Campair, Castell, Hye, Keese, Ligon, Loneoak, Lou, Nebgen, and Rock outcrop.

- Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone.
- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite gneiss.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Katemcy

Landforms: Hills, undulating plains, ridges

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from schist and/or slope alluvium derived from schist

Typical Profile

Surface layer:

0 to 3 inches; slightly acid sandy loam

Subsurface layer:

3 to 9 inches; slightly acid sandy loam

Subsoil layer:

9 to 20 inches; neutral sandy clay

Soil Survey of Mason County, Texas

20 to 27 inches; neutral gravelly sandy clay
27 to 38 inches; neutral channery sandy clay loam

Underlying material:

38 to 80 inches; weakly cemented schist bedrock

Properties and Qualities

Slope: 1 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 20 to 40 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 4.8 inches (low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: 3e

Ecological site name: Red Savannah 25-32" PZ

Ecological site number: R082AY568TX

Typical vegetation: Sideoats grama, other perennial grasses, vine mesquite, Arizona cottontop, pinhole bluestem, buffalograss, curlymesquite, plains bristlegrass, Texas wintergrass, other perennial forbs, other trees, other annual forbs, other shrubs

Honeycreek

Landforms: Hills, ridges, undulating plains

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Slope alluvium derived from schist and/or gneiss

Typical Profile

Surface layer:

0 to 9 inches; neutral fine sandy loam

Subsurface layer:

9 to 17 inches; moderately acid fine sandy loam

Subsoil layer:

17 to 25 inches; moderately acid fine sandy loam

25 to 37 inches; neutral sandy clay loam

37 to 50 inches; neutral gravelly sandy clay loam

50 to 56 inches; neutral gravelly fine sandy loam

Underlying material:

56 to 66 inches; weakly cemented schist bedrock

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 40 to 60 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 7.6 inches (moderate)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4e

Land capability irrigated: None specified

Ecological site name: Sandy Loam 25-32" PZ

Ecological site number: R082AY373TX

Typical vegetation: Little bluestem, other perennial grasses, other perennial forbs, pinhole bluestem, sideoats grama, Canada wildrye, other trees, plains bristlegrass, plains lovegrass, sand lovegrass, yellow Indiangrass

KeD—Keese gravelly sandy loam, 1 to 8 percent slopes, very rocky

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Elevation: 895 to 2,000 feet

Mean annual precipitation: 24 to 30 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 210 to 240 days

Map unit prime farmland class: Not prime farmland

Composition

Keese and similar soils: 73 percent

Minor components and similar soils: 27 percent

The composition of this map unit is based on cumulative field observations and descriptions from three transects with thirty-five observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 69 to 78 percent Keese and similar soils and 22 to 31 percent minor components including Castell, Fieldcreek, Honeycreek, Katemcy, Ligon, Lou, Luckenbach, Voca, Riverwash, and Rock outcrop.

- Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss.
- Fieldcreek soils are on flood plains of small streams and creeks.

Soil Survey of Mason County, Texas

- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite grus.
- Luckenbach soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Voca soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian granite grus.
- Riverwash areas are in stream beds and on banks of creeks and rivers.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Keese

Landforms: Hills, ridges

Geomorphic positions, two-dimensional: Shoulder

Geomorphic positions, three-dimensional: Side slope, interfluvium

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from gneiss and/or residuum over grus derived from granite

Typical Profile

Surface layer:

0 to 5 inches; slightly acid coarse sandy loam

Subsoil layer:

5 to 10 inches; slightly acid coarse sandy loam

10 to 14 inches; moderately acid gravelly coarse sandy loam

Underlying material:

14 to 24 inches; weakly cemented granite bedrock

Properties and Qualities

Slope: 1 to 8 percent

Percent of area covered by surface fragments: About 20 percent subrounded medium and coarse gravel

Depth to first restrictive layer: 10 to 20 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 1.5 inches (very low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s

Land capability irrigated: None specified

Ecological site name: Shallow Granite 25-32" PZ

Ecological site number: R082AY377TX

Typical vegetation: Little bluestem, other perennial grasses, sideoats grama, yellow Indiangrass, other trees, Canada wildrye, green sprangletop, hairy grama, plains lovegrass, sand lovegrass, other perennial forbs, other annual forbs, other shrubs

KLE—Keese-Lou-Rock outcrop complex, 1 to 12 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 10 to 35 inches

Mean annual air temperature: 52 to 73 degrees F

Frost-free period: 120 to 320 days

Map unit prime farmland class: Not prime farmland

Composition

Keese and similar soils: 45 percent

Lou and similar soils: 23 percent

Rock outcrop and similar soils: 16 percent

Minor components and similar soils: 16 percent

The composition of this map unit is based on cumulative field observations and descriptions from seven transects with ninety-nine observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 40 to 50 percent and similar Keese soils, 14 to 32 percent Lou and similar soils, 9 to 22 percent Rock outcrop, and 10 to 23 percent minor components including Campair, Castell, Click, Honeycreek, Hye, Katemcy, Ligon, Loneoak, Nebgen, and Voca.

- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss.
- Click soils are on shoulders and summits of ridges and hills underlain by pre-Cambrian granite grus.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Voca soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian granite grus.

Soil Description

Keese

Landforms: Hills, ridges

Geomorphic positions, two-dimensional: Summit, shoulder, backslope

Geomorphic positions, three-dimensional: Side slope, interfluvium

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from gneiss and/or residuum over grus derived from granite

Typical Profile

Surface layer:

0 to 10 inches; slightly acid coarse sandy loam

Subsoil layer:

10 to 14 inches; moderately acid gravelly coarse sandy loam

Underlying material:

14 to 24 inches; weakly cemented granite bedrock

Properties and Qualities

Slope: 1 to 12 percent

Percent of area covered by surface fragments: About 2 percent angular stones, about 5 percent angular cobbles, about 20 percent subangular medium and coarse gravel

Depth to first restrictive layer: 11 to 20 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 1.5 inches (very low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s

Land capability irrigated: None specified

Ecological site name: Shallow Granite 25-32" PZ

Ecological site number: R082AY377TX

Typical vegetation: Little bluestem, other perennial grasses, sideoats grama, yellow Indiangrass, other trees, Canada wildrye, green sprangletop, hairy grama, plains lovegrass, sand lovegrass, other perennial forbs, other annual forbs, other shrubs

Lou

Landforms: Hills, ridges

Geomorphic positions, two-dimensional: Summit, shoulder, backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum over grus derived from granite

Typical Profile

Surface layer:

0 to 8 inches; slightly acid sandy loam

Subsoil layer:

8 to 20 inches; moderately acid sandy clay loam

20 to 30 inches; moderately acid gravelly sandy clay loam

30 to 80 inches; moderately acid extremely gravelly loam

Properties and Qualities

Slope: 1 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 20 to 40 inches strongly contrasting textural stratification

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 6.2 inches (moderate)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: None specified

Ecological site name: Granite Gravel 25-32" PZ

Ecological site number: R082AY365TX

Typical vegetation: Little bluestem, Arizona cottontop, sideoats grama, other perennial forbs, live oak, pinhole bluestem, sand lovegrass, Scribner panicum, Texas wintergrass, vine mesquite, yellow Indiangrass, other annual forbs, other trees, other shrubs

Rock outcrop

Landforms: Ridges, hills

Geomorphic positions, two-dimensional: Summit, shoulder, backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Granite

Properties and Qualities

Slope: 1 to 12 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 0 to 2 inches lithic bedrock

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.0 to 0.001 in/hr (Almost impermeable)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Runoff: Very high

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 8s
Land capability irrigated: None specified
Ecological site name: Not assigned
Ecological site number: Not assigned

KRG—Keese-Rock outcrop complex, 12 to 35 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin
Landscape: Dissected plateaus
Elevation: 1,000 to 2,000 feet
Mean annual precipitation: 10 to 35 inches
Mean annual air temperature: 52 to 73 degrees F
Frost-free period: 120 to 320 days
Map unit prime farmland class: Not prime farmland

Composition

Rock outcrop and similar soils: 36 percent
Keese 15 to 30 percent slopes and similar soils: 25 percent
Keese 12 to 15 percent slopes and similar soils: 13 percent
Minor components and similar soils: 26 percent

The composition of this map unit is based on cumulative field observations and descriptions from six transects with eighty-nine observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 28 to 46 percent Keese and similar soils, 22 to 51 percent Rock outcrop, and 14 to 39 percent minor components including Campair, Castell, Honeycreek, Katemcy, Ligon, Loneoak, Lou, Nebgen, Voca, and Water.

- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite grus.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Voca soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian granite grus.

Soil Description

Rock outcrop

Landforms: Hills, ridges
Geomorphic positions, two-dimensional: Shoulder, backslope

Geomorphic positions, three-dimensional: Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Granite

Properties and Qualities

Slope: 12 to 35 percent
Percent of area covered by surface fragments: Not assigned
Depth to first restrictive layer: 0 to 2 inches lithic bedrock
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.0 to 0.001 in/hr (Almost impermeable)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Runoff: Very high
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 8s
Land capability irrigated: None specified
Ecological site name: Not assigned
Ecological site number: Not assigned

Keese soils, 15 to 30 percent slopes

Landforms: Hills, ridges
Geomorphic positions, two-dimensional: Shoulder, backslope
Geomorphic positions, three-dimensional: Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from gneiss and/or residuum over grus derived from granite

Typical Profile

Surface layer:
0 to 9 inches; slightly acid gravelly sandy loam
Underlying material:
9 to 19 inches; weakly cemented granite bedrock

Properties and Qualities

Slope: 15 to 30 percent
Percent of area covered by surface fragments: About 2 percent angular cobbles; about 25 percent subangular medium and coarse gravel
Depth to first restrictive layer: 5 to 20 inches paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 0.7 inches (very low)
Natural drainage class: Well drained

Runoff: Medium
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s
Land capability irrigated: None specified
Ecological site name: Granite Hill 25-32" PZ
Ecological site number: R082AY366TX
Typical vegetation: Other perennial grasses, sideoats grama, little bluestem, hairy grama, Canada wildrye, green sprangletop, other shrubs, other trees, plains lovegrass, yellow Indiangrass, other perennial forbs, other annual forbs

Keese soils, 12 to 15 percent slopes

Landforms: Hills, ridges
Geomorphic positions, two-dimensional: Shoulder, backslope
Geomorphic positions, three-dimensional: Side slope, interfluvium
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from gneiss and/or residuum over grus derived from granite

Typical Profile

Surface layer:
0 to 9 inches; slightly acid gravelly sandy loam
Underlying material:
9 to 19 inches; weakly cemented granite bedrock

Properties and Qualities

Slope: 12 to 15 percent
Percent of area covered by surface fragments: About 2 percent angular cobbles; about 25 percent subangular medium and coarse gravel
Depth to first restrictive layer: 5 to 20 inches paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 0.7 inches (very low)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s
Land capability irrigated: None specified
Ecological site name: Granite Hill 25-32" PZ
Ecological site number: R082AY366TX
Typical vegetation: Other perennial grasses, sideoats grama, little bluestem, hairy grama, Canada wildrye, green sprangletop, other shrubs, other trees, plains lovegrass, yellow Indiangrass, other perennial forbs, other annual forbs

KTG—Kerrville, Brackett, and Tarrant soils, 12 to 40 percent slopes, very rocky

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part

Landscape: Dissected plateaus

Elevation: 1,000 to 2,945 feet

Mean annual precipitation: 20 to 34 inches

Mean annual air temperature: 63 to 70 degrees F

Frost-free period: 210 to 270 days

Map unit prime farmland class: Not prime farmland

Composition

Kerrville and similar soils: 33 percent

Brackett and similar soils: 21 percent

Tarrant and similar soils: 17 percent

Minor components and similar soils: 29 percent

The composition of this map unit is based on cumulative field observations and descriptions from six transects with fifty-one observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 18 to 45 percent Kerrville and similar soils, 13 to 29 percent Brackett and similar soils, 8 to 24 percent Tarrant and similar soils, and 18 to 46 percent minor components including Campwood, Cho, Lou, Luckenbach, Menard, Mereta, Pedernales, Purves, Sunev, Valera, and Rock outcrop.

- Campwood and Valera soils are on footslopes of valleys of dissected plateaus underlain by limestone.
- Cho and Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.
- Lou soils are on backslopes, shoulders and summits of ridges and hills underlain by pre-Cambrian granite grus.
- Luckenbach, Menard, and Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Purves soils are backslopes and summits of dissected plateaus underlain by limestone.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Kerrville

Landforms: Ridges

Geomorphic positions, two-dimensional: Backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:

0 to 6 inches; slightly alkaline very paragravelly loam

Subsoil layer:

6 to 18 inches; slightly alkaline very paragravelly loam
18 to 26 inches; moderately alkaline paragravelly loam

Underlying material:

26 to 35 inches; strongly cemented limestone bedrock

Properties and Qualities

Slope: 20 to 40 percent

Percent of area covered by surface fragments: About 6 percent subrounded gravel; about 1 percent subrounded cobbles

Depth to first restrictive layer: 20 to 40 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 2.0 inches (very low)

Natural drainage class: Well drained

Runoff: High

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7e

Land capability irrigated: None specified

Ecological site name: Steep Adobe 23-31" PZ

Ecological site number: R081BY348TX

Typical vegetation: Little bluestem, other perennial grasses, yellow Indiangrass, sideoats grama, muhly, other trees, other perennial forbs, silver bluestem, other shrubs, tall grama, slim tridens

Brackett

Landforms: Ridges

Geomorphic positions, two-dimensional: Backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:

0 to 4 inches; moderately alkaline loam

Subsoil layer:

4 to 13 inches; moderately alkaline loam

Underlying material:

13 to 28 inches; weakly cemented limestone bedrock

Properties and Qualities

Slope: 12 to 40 percent
Percent of area covered by surface fragments: About 15 percent angular stones; about 15 percent angular cobbles
Depth to first restrictive layer: 10 to 20 inches paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 1.8 inches (very low)
Natural drainage class: Well drained
Runoff: High
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7e
Land capability irrigated: None specified
Ecological site name: Steep Adobe 23-31" PZ
Ecological site number: R081BY348TX
Typical vegetation: Little bluestem, other trees, sideoats grama, tall grama, yellow Indiangrass, dropseed, hairy grama, other perennial forbs, silver bluestem, slim tridens

Tarrant

Landforms: Ridges
Geomorphic positions, two-dimensional: Backslope
Geomorphic positions, three-dimensional: Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:
0 to 13 inches; moderately alkaline very cobbly clay
Underlying material:
13 to 23 inches; indurated limestone bedrock

Properties and Qualities

Slope: 12 to 30 percent
Percent of area covered by surface fragments: Not assigned
Depth to first restrictive layer: 6 to 20 inches lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 1.0 inches (very low)
Natural drainage class: Well drained
Runoff: High
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7e
Land capability irrigated: None specified
Ecological site name: Steep Rocky 23-31" PZ
Ecological site number: R081BY350TX
Typical vegetation: Little bluestem, yellow Indiangrass, other perennial forbs, other perennial grasses, other shrubs, sideoats grama, green sprangletop, live oak, silver bluestem, Texas cupgrass

KVE—Kerrville, Real, and Sunev soils, 1 to 12 percent slopes

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part
Landscape: Dissected plateaus (fig. 13)
Elevation: 1,000 to 2,945 feet
Mean annual precipitation: 25 to 34 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 220 to 250 days
Map unit prime farmland class: Not prime farmland

Composition

Kerrville and similar soils: 28 percent
Real and similar soils: 25 percent
Sunev and similar soils: 21 percent
Minor components and similar soils: 26 percent

The composition of this map unit is based on cumulative field observations and descriptions from three transects with thirty-two observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 17 to 39 percent Kerrville and similar soils, 8 to 42 percent Real and similar soils, 4 to 38 percent Sunev and similar soils, and 10 to 42 percent minor components including Brackett, Campwood, Eckert, Luckenbach, Menard, Pedernales, Oakalla, Tarrant, and Rock outcrop.

- Brackett soils are on backslopes of ridges on dissected plateaus underlain by Cretaceous limestone.
- Campwood and Valera soils are on footslopes of valleys of dissected plateaus underlain by limestone.
- Eckert soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Luckenbach, Menard, and Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Oakalla soils are on small streams and flood plains of major rivers.
- Tarrant soils are on backslopes, shoulders, and summits of ridges on dissected plateaus underlain by Cretaceous limestone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.



Figure 13.—An area of Kerrville, Real, and Sunev soils, 1 to 12 percent slopes. The climax plant community is a tall grass and mid grass, oak savannah with a species composition by weight of 85 percent grasses, 5 percent forbs, and 10 percent woody vegetation. The Texas Red Oak with little bluestem dominate the landscape. Kerrville and Real soils are in the Adobe ecological site, and are on side slopes. The Sunev soils are in the Clay Loam ecological site and are associated with valleys, ridges, and stream terraces.

Soil Description

Kerrville

Landforms: Ridges

Geomorphic positions, two-dimensional: Summit, shoulder

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:

0 to 6 inches; slightly alkaline very paragravelly loam

Subsoil layer:

6 to 18 inches; slightly alkaline very paragravelly loam

18 to 26 inches; moderately alkaline paragravelly loam

Underlying material:

26 to 35 inches; strongly cemented limestone bedrock

Properties and Qualities

Slope: 1 to 12 percent
Percent of area covered by surface fragments: About 6 percent subrounded gravel, about 1 percent subrounded cobbles
Depth to first restrictive layer: 20 to 40 inches lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.0 inches (very low)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 6e
Land capability irrigated: None specified
Ecological site name: Adobe 23-31" PZ
Ecological site number: R081BY320TX
Typical vegetation: Little bluestem, other perennial grasses, yellow Indiangrass, sideoats grama, muhly, other trees, other perennial forbs, silver bluestem, other shrubs, tall grama, slim tridens

Real

Landforms: Ridges
Geomorphic positions, two-dimensional: Backslope
Geomorphic positions, three-dimensional: Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:
0 to 3 inches; slightly alkaline very paragravelly loam
Subsoil layer:
3 to 12 inches; slightly alkaline very paragravelly clay loam
Underlying material:
12 to 22 inches; weakly cemented limestone bedrock

Properties and Qualities

Slope: 1 to 12 percent
Percent of area covered by surface fragments: Not assigned
Depth to first restrictive layer: 8 to 20 inches paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline

Soil Survey of Mason County, Texas

Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 1.4 inches (very low)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 6e
Land capability irrigated: None specified
Ecological site name: Adobe 23-31" PZ
Ecological site number: R081BY320TX
Typical vegetation: Little bluestem, big bluestem, other perennial grasses, yellow
Indiangrass, muhly, other trees, other perennial forbs, other shrubs, sideoats grama

Sunev

Landforms: Valleys, ridges, stream terraces
Geomorphic positions, two-dimensional: Footslope
Geomorphic positions, three-dimensional: Base slope
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Loamy slope alluvium and/or colluvium derived from limestone

Typical Profile

Surface layer:
0 to 12 inches; slightly alkaline clay loam
Subsoil layer:
12 to 37 inches; slightly alkaline clay loam
37 to 57 inches; moderately alkaline loam
57 to 64 inches; slightly alkaline loam
Underlying material:
64 to 80 inches; slightly alkaline very fine sandy loam

Properties and Qualities

Slope: 1 to 8 percent
Percent of area covered by surface fragments: Not assigned
Depth to first restrictive layer: No restrictive layer
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0
in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.4 inches (moderate)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4e
Land capability irrigated: None specified
Ecological site name: Clay Loam 23-31" PZ

Ecological site number: R081BY326TX

Typical vegetation: Little bluestem, yellow Indiangrass, big bluestem, other annual forbs, other perennial forbs, live oak, buffalograss, eastern gamagrass, other trees, sideoats grama, switchgrass, vine mesquite

LKD—Ligon-Katemcy-Keese complex, 1 to 8 percent slopes, very rocky

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Elevation: 895 to 2,250 feet

Mean annual precipitation: 24 to 30 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 210 to 240 days

Map unit prime farmland class: Not prime farmland

Composition

Ligon and similar soils: 42 percent

Katemcy and similar soils: 29 percent

Keese and similar soils: 15 percent

Minor components and similar soils: 14 percent

The composition of this map unit is based on cumulative field observations and descriptions from eight transects with eighty-seven observations of the map unit.

There is an estimated 80 percent probability that the true composition of the whole map unit is 33 to 52 percent Ligon and similar soils, 24 to 34 percent Katemcy and similar soils, 11 to 18 percent Keese and similar soils, and 6 to 22 percent minor components including Acove, Campair, Castell, Honeycreek, Hye, Loneoak, Lou, Nebgen, Voca, and Rock outcrop.

- Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone.
- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite grus.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Voca soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian granite grus.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges and hills.

Soil Description

Ligon

Landforms: Hills, ridges

Geomorphic positions, two-dimensional: Summit, shoulder, backslope

Geomorphic positions, three-dimensional: Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from schist

Typical Profile

Surface layer:
0 to 4 inches; neutral gravelly sandy clay loam

Subsoil layer:
4 to 31 inches; neutral sandy clay

Underlying material:
31 to 41 inches; weakly cemented schist bedrock

Properties and Qualities

Slope: 1 to 8 percent
Percent of area covered by surface fragments: Not assigned
Depth to first restrictive layer: 20 to 40 inches paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 4.4 inches (low)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4e
Land capability irrigated: None specified
Ecological site name: Red Savannah 25-32" PZ
Ecological site number: R082AY568TX
Typical vegetation: Other perennial grasses, sideoats grama, vine mesquite, Arizona cottontop, pinhole bluestem, buffalograss, other perennial forbs, other trees, plains bristlegrass, Texas wintergrass

Katemcy

Landforms: Hills, undulating plains, ridges
Geomorphic positions, two-dimensional: Footslope
Geomorphic positions, three-dimensional: Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from schist and/or slope alluvium derived from schist

Typical Profile

Surface layer:
0 to 3 inches; slightly acid sandy loam

Subsurface layer:
3 to 9 inches; slightly acid sandy loam

Soil Survey of Mason County, Texas

Subsoil layer:

9 to 20 inches; neutral sandy clay
20 to 27 inches; neutral gravelly sandy clay
27 to 38 inches; neutral channery sandy clay loam

Underlying material:

38 to 80 inches; weakly cemented schist bedrock

Properties and Qualities

Slope: 1 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 20 to 40 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 4.8 inches (low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4e

Land capability irrigated: None specified

Ecological site name: Red Savannah 25-32" PZ

Ecological site number: R082AY568TX

Typical vegetation: Sideoats grama, other perennial grasses, vine mesquite, Arizona cottontop, pinhole bluestem, buffalograss, curlymesquite, plains bristlegrass, Texas wintergrass, other perennial forbs, other trees, other annual forbs, other shrubs

Keese

Landforms: Ridges, hills

Geomorphic positions, two-dimensional: Summit, shoulder, backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from gneiss and/or residuum over grus derived from granite

Typical Profile

Surface layer:

0 to 5 inches; slightly acid coarse sandy loam

Subsoil layer:

5 to 10 inches; slightly acid coarse sandy loam

10 to 14 inches; moderately acid gravelly coarse sandy loam

Underlying material:

14 to 24 inches; weakly cemented granite bedrock

Properties and Qualities

Slope: 1 to 5 percent
Percent of area covered by surface fragments: About 20 percent subrounded medium and coarse gravel
Depth to first restrictive layer: 10 to 20 inches paralithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 1.5 inches (very low)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s
Land capability irrigated: None specified
Ecological site name: Shallow Granite 25-32" PZ
Ecological site number: R082AY377TX
Typical vegetation: Little bluestem, other perennial grasses, sideoats grama, yellow Indiangrass, other trees, Canada wildrye, green sprangletop, hairy grama, plains lovegrass, sand lovegrass, other perennial forbs, other annual forbs, other shrubs

LND—Ligon-Keese complex, 1 to 8 percent slopes, rocky

Setting

Major land resource area: MLRA 82A—Texas Central Basin
Landscape: Dissected plateaus (fig. 14)
Elevation: 895 to 2,250 feet
Mean annual precipitation: 24 to 30 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 210 to 240 days
Map unit prime farmland class: Not prime farmland

Composition

Ligon and similar soils: 67 percent
Keese and similar soils: 22 percent
Minor components and similar soils: 11 percent

The composition of this map unit is based on cumulative field observations and descriptions from six transects with sixty-seven observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 55 to 80 percent Ligon and similar soils, 15 to 29 percent Keese and similar soils, and 3 to 19 percent minor components including Acove, Campair, Castell, Honeycreek, Hye, Katemcy, Loneoak, Lou, Nebgen, and Rock outcrop.

- Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone.



Figure 14.—Wildflowers and Rock outcrop on an area of Ligon-Keese complex, 1 to 8 percent slopes, rocky. These soils developed on the Town Mountain Granite Formation of the Precambrian geology of the Central Basin. The soils support a mid-grass community with scattered live oak and post oak occurring as individual trees or motts.

- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite gneiss.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Ligon

Landforms: Hills, ridges

Geomorphic positions, two-dimensional: Summit, shoulder, backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from schist

Typical Profile

Surface layer:

0 to 4 inches; neutral gravelly sandy clay loam

Subsoil layer:

4 to 31 inches; neutral sandy clay

Underlying material:

31 to 41 inches; weakly cemented schist bedrock

Properties and Qualities

Slope: 1 to 8 percent

Percent of area covered by surface fragments: About 3 percent subangular stones; about 40 percent subangular cobbles

Depth to first restrictive layer: 20 to 40 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 4.4 inches (low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4e

Land capability irrigated: None specified

Ecological site name: Shallow Ridge 25-32" PZ

Ecological site number: R082AY576TX

Typical vegetation: Other perennial grasses, sideoats grama, vine mesquite, Arizona cottontop, pinhole bluestem, buffalograss, other perennial forbs, other trees, plains bristlegrass, Texas wintergrass

Keese

Landforms: Hills, ridges

Geomorphic positions, two-dimensional: Summit, shoulder, backslope

Geomorphic positions, three-dimensional: Side slope, interfluvium

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from gneiss and/or residuum over grus derived from granite

Typical Profile

Surface layer:

0 to 5 inches; slightly acid coarse sandy loam

Subsoil layer:

5 to 10 inches; slightly acid coarse sandy loam

10 to 14 inches; moderately acid gravelly coarse sandy loam

Underlying material:

14 to 24 inches; weakly cemented granite bedrock

Properties and Qualities

Slope: 1 to 8 percent

Percent of area covered by surface fragments: About 2 percent angular stones; about 5 percent angular cobbles; about 20 percent subangular medium and coarse gravel

Depth to first restrictive layer: 11 to 20 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 1.5 inches (very low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7e

Land capability irrigated: None specified

Ecological site name: Shallow Granite 25-32" PZ

Ecological site number: R082AY377TX

Typical vegetation: Little bluestem, other perennial grasses, sideoats grama, yellow Indiangrass, other trees, Canada wildrye, green sprangletop, hairy grama, plains lovegrass, sand lovegrass, other perennial forbs, other annual forbs, other shrubs

LOC—Loneoak-Campair complex, 0 to 5 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Elevation: 1,095 to 2,000 feet

Mean annual precipitation: 22 to 28 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 215 to 230 days

Map unit prime farmland class: Not prime farmland

Composition

Loneoak and similar soils: 51 percent

Campair and similar soils: 37 percent

Minor components and similar soils: 12 percent

The composition of this map unit is based on cumulative field observations and descriptions from six transects with fifty-four observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 35 to 67 percent Loneoak and similar soils, 21 to 53 percent Campair and similar soils, and 8 to 16 percent minor components including Acove, Honeycreek, Hye, Katemcy, Keese, Lou, Luckenbach, Nebgen, Oben, and Rock outcrop.

- Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.

Soil Survey of Mason County, Texas

- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite gneiss.
- Luckenbach soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Nebgen and Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Loneoak

Landforms: Ridges, undulating plains

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 16 inches; slightly acid loamy sand

Subsurface layer:

16 to 22 inches; slightly acid loamy sand

Subsoil layer:

22 to 49 inches; neutral clay

49 to 61 inches; neutral cobbly clay

Underlying material:

61 to 65 inches; weakly cemented sandstone bedrock

65 to 75 inches; strongly cemented sandstone bedrock

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 60 to 71 inches paralithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 6.8 inches (moderate)

Natural drainage class: Moderately well drained

Runoff: Very low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: 3e

Ecological site name: Sandy 25-32" PZ

Ecological site number: R082AY372TX

Typical vegetation: Little bluestem, sand lovegrass, other perennial grasses, post oak, blackjack oak, fall witchgrass, purpletop tridens, yellow Indiangrass, other perennial forbs, greenbriar, other annual forbs

Campair

Landforms: Ridges

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 7 inches; slightly acid loamy fine sand

Subsurface layer:

7 to 12 inches; neutral loamy fine sand

Subsoil layer:

12 to 16 inches; strongly acid sandy clay loam

16 to 28 inches; slightly acid and neutral clay loam

Underlying material:

28 to 38 inches; strongly cemented sandstone bedrock

Properties and Qualities

Slope: 1 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 20 to 40 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 3.7 inches (low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4e

Land capability irrigated: 4e

Ecological site name: Loamy Sand 25-32" PZ

Ecological site number: R082AY368TX

Typical vegetation: Little bluestem, other perennial forbs, other perennial grasses, sideoats grama, dropseed, other shrubs, panicum, post oak, sand bluestem, sand lovegrass, silver bluestem, Texas wintergrass, yellow Indiangrass

LRC—Lou-Click-Voca complex, 0 to 5 percent slopes, rocky

Setting

Major land resource area: MLRA 82A—Texas Central Basin
Landscape: Dissected plateaus
Elevation: 1,000 to 2,250 feet
Mean annual precipitation: 24 to 30 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 210 to 240 days
Map unit prime farmland class: Not prime farmland

Composition

Lou and similar soils: 32 percent
Click and similar soils: 29 percent
Voca and similar soils: 23 percent
Minor components and similar soils: 16 percent

The composition of this map unit is based on cumulative field observations and descriptions from ten transects with ninety-six observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 22 to 39 percent Lou and similar soils, 20 to 38 percent Click and similar soils, 15 to 32 percent Voca and similar soils, and 11 to 23 percent minor components including Campair, Castell, Fieldcreek, Honeycreek, Keese, Ligon, Loneoak, Luckenbach, Sunev, Riverwash, and Rock outcrop.

- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss.
- Fieldcreek soils are on flood plains of small streams and creeks.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Luckenbach soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.
- Riverwash areas are in stream beds and on banks of creeks and rivers.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Lou

Landforms: Hills, ridges

Geomorphic positions, two-dimensional: Shoulder, backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum over grus derived from granite

Typical Profile

Surface layer:

0 to 8 inches; slightly acid sandy loam

Subsoil layer:

8 to 20 inches; moderately acid sandy clay loam

20 to 30 inches; moderately acid gravelly sandy clay loam

30 to 80 inches; moderately acid extremely gravelly loam

Properties and Qualities

Slope: 1 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 20 to 40 inches strongly contrasting textural stratification

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 6.2 inches (moderate)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: None specified

Ecological site name: Granite Gravel 25-32" PZ

Ecological site number: R082AY365TX

Typical vegetation: Little bluestem, Arizona cottontop, sideoats grama, other perennial forbs, live oak, pinhole bluestem, sand lovegrass, Scribner panicum, Texas wintergrass, vine mesquite, yellow Indiangrass, other annual forbs, other trees, other shrubs

Click

Landforms: Hills, ridges

Geomorphic positions, two-dimensional: Summit, shoulder

Geomorphic positions, three-dimensional: Interfluvium

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum over grus derived from granite

Typical Profile

Surface layer:

0 to 11 inches; slightly acid very gravelly sandy loam

Subsoil layer:

11 to 45 inches; slightly acid and neutral very gravelly sandy loam

45 to 53 inches; moderately acid extremely gravelly loam

Underlying material:

53 to 63 inches; indurated granite bedrock

Properties and Qualities

Slope: 1 to 5 percent
Percent of area covered by surface fragments: About 20 percent subangular medium and coarse gravel; about 20 percent subangular medium and coarse gravel
Depth to first restrictive layer: 40 to 60 inches strongly contrasting textural stratification
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 6.0 to 20 in/hr (rapid)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 3.6 inches (low)
Natural drainage class: Somewhat excessively drained
Runoff: Very low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: None specified
Ecological site name: Granite Gravel 25-32" PZ
Ecological site number: R082AY365TX
Typical vegetation: Little bluestem, Arizona cottontop, sideoats grama, blackjack oak, fringleaf paspalum, live oak, other perennial grasses, other shrubs, pinhole bluestem, post oak, purpletop tridens, vine mesquite, yellow Indiangrass

Voca

Landforms: Hills, ridges, undulating plains
Geomorphic positions, two-dimensional: Footslope
Geomorphic positions, three-dimensional: Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum over grus derived from granite

Typical Profile

Surface layer:
0 to 6 inches; neutral sandy loam
Subsurface layer:
6 to 11 inches; slightly acid very gravelly sandy loam
Subsoil layer:
11 to 17 inches; slightly acid very gravelly sandy clay loam
17 to 34 inches; slightly acid and moderately acid gravelly clay
34 to 80 inches; moderately acid extremely gravelly coarse sandy loam

Properties and Qualities

Slope: 0 to 3 percent
Percent of area covered by surface fragments: About 10 percent subrounded medium and coarse gravel; about 10 percent subrounded medium and coarse gravel
Depth to first restrictive layer: 28 to 60 inches strongly contrasting textural stratification
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: No restrictive layer

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 5.9 inches (low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3s

Land capability irrigated: None specified

Ecological site name: Gravelly Sandy Loam 25-32" PZ

Ecological site number: R082AY600TX

Typical vegetation: Little bluestem, Arizona cottontop, sideoats grama, other trees, other perennial forbs, pinhole bluestem, sand lovegrass, Scribner panicum, Texas wintergrass, vine mesquite, yellow Indiangrass, other annual forbs, other shrubs

LuC—Luckenbach clay loam, 0 to 5 percent slopes

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part

Landscape: Alluvial plain remnants, dissected plateaus

Elevation: 1,000 to 2,175 feet

Mean annual precipitation: 26 to 34 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 215 to 235 days

Map unit prime farmland class: All areas are prime farmland

Composition

Luckenbach and similar soils: 76 percent

Minor components and similar soils: 24 percent

The composition of this map unit is based on cumulative field observations and descriptions from seven transects with sixty-five observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 67 to 84 percent Luckenbach and similar soils and 16 to 33 percent minor components including Acove, Campair, Hye, Keese, Loneoak, Menard, Nebgen, Pedernales, Sunev, and Rock outcrop.

- Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone.
- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Menard soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.

- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Luckenbach

Landforms: Valleys

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Ancient alluvium derived from limestone and sandstone

Typical Profile

Surface layer:

0 to 15 inches; neutral clay loam

Subsoil layer:

15 to 39 inches; neutral clay

39 to 80 inches; moderately alkaline clay loam

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 9.1 inches (high)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: 3e

Ecological site name: Clay Loam 23-31" PZ

Ecological site number: R081BY326TX

Typical vegetation: Little bluestem, sideoats grama, vine mesquite, yellow Indiangrass, big bluestem, Canada wildrye, live oak, other perennial forbs, silver bluestem, Texas wintergrass, hairy wedelia, Engelmann's daisy

MPC—Menard-Pedernales complex, 0 to 5 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Alluvial plain remnants, dissected plateaus

Soil Survey of Mason County, Texas

Elevation: 1,000 to 2,945 feet
Mean annual precipitation: 22 to 34 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 210 to 260 days
Map unit prime farmland class: All areas are prime farmland

Composition

Menard and similar soils: 47 percent
Pedernales and similar soils: 23 percent
Minor components and similar soils: 30 percent

The composition of this map unit is based on cumulative field observations and descriptions from four transects with thirty-six observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 33 to 62 percent Menard and similar soils, 13 to 33 percent Pedernales and similar soils, and 15 to 44 percent minor components including Campwood, Cho, Eckert, Hye, Luckenbach, Mereta, Nebgen, Sunev, Valera, and Rock outcrop.

- Campwood and Valera soils are on footslopes valleys of dissected plateaus underlain by limestone.
- Cho and Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.
- Eckert soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Luckenbach soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Menard

Landforms: Valleys

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Calcareous slope alluvium over residuum

Typical Profile

Surface layer:

0 to 13 inches; slightly acid sandy loam

Subsoil layer:

13 to 50 inches; neutral sandy clay loam

50 to 80 inches; slightly alkaline loam

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Soil Survey of Mason County, Texas

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.3 inches (high)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: 3e
Ecological site name: Sandy Loam 25-32" PZ
Ecological site number: R082AY373TX
Typical vegetation: Little bluestem, big bluestem, other perennial forbs, yellow Indiangrass, other trees, Arizona cottontop, other perennial grasses, Scribner panicum, sideoats grama, silver bluestem, Texas wintergrass, post oak

Pedernales

Landforms: Valleys
Geomorphic positions, two-dimensional: Footslope
Geomorphic positions, three-dimensional: Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous slope alluvium over residuum

Typical Profile

Surface layer:
0 to 7 inches; neutral fine sandy loam
Subsurface layer:
7 to 12 inches; neutral fine sandy loam
Subsoil layer:
12 to 20 inches; neutral sandy clay loam
20 to 45 inches; neutral sandy clay and clay
45 to 61 inches; slightly alkaline clay loam
61 to 80 inches; moderately alkaline sandy loam

Properties and Qualities

Slope: 1 to 5 percent
Percent of area covered by surface fragments: Not assigned
Depth to first restrictive layer: No restrictive layer
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 9.5 inches (high)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: 3e

Ecological site name: Tight Sandy Loam 25-32" PZ

Ecological site number: R082AY378TX

Typical vegetation: Sideoats grama, little bluestem, other perennial grasses, other trees, pinhole bluestem, vine mesquite, Arizona cottontop, Canada wildrye, other perennial forbs, Texas wintergrass

MSC—Mereta-Cho-Sunev complex, 0 to 5 percent slopes, rocky

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part

Landscape: Alluvial plain remnants, dissected plateaus

Elevation: 1,000 to 2,095 feet

Mean annual precipitation: 15 to 34 inches

Mean annual air temperature: 63 to 70 degrees F

Frost-free period: 210 to 245 days

Map unit prime farmland class: Not prime farmland

Composition

Mereta and similar soils: 35 percent

Cho and similar soils: 26 percent

Sunev and similar soils: 17 percent

Minor components and similar soils: 22 percent

The composition of this map unit is based on cumulative field observations and descriptions from seven transects with sixty-eight observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 30 to 41 percent Mereta and similar soils, 22 to 30 percent Cho and similar soils, 6 to 27 percent Sunev and similar soils, and 13 to 32 percent minor components including Campwood, Eckert, Hye, Luckenbach, Menard, Nebgen, Oben, Pedernales, Valera, and Rock outcrop.

- Campwood and Valera soils are on footslopes of valleys of dissected plateaus underlain by limestone.
- Eckert soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Luckenbach, Menard, and Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Nebgen and Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Mereta

Landforms: Knolls

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Ancient alluvium derived from limestone and sandstone

Typical Profile

Surface layer:

0 to 6 inches; moderately alkaline clay loam

Subsoil layer:

6 to 16 inches; moderately alkaline clay

16 to 20 inches; moderately alkaline cemented material

20 to 61 inches; moderately alkaline silt loam

61 to 80 inches; moderately alkaline silty clay loam

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 14 to 20 inches petrocalcic

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 2.6 inches (very low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4s

Land capability irrigated: None specified

Ecological site name: Shallow 23-31" PZ

Ecological site number: R081BY343TX

Typical vegetation: Little bluestem, sideoats grama, other perennial forbs, other shrubs, Arizona cottontop, buffalograss, curlymesquite, green sprangletop, plains bristlegrass, Reverchon's bristlegrass, slim tridens, Texas wintergrass, Wright's threawn, yellow Indiangrass

Cho

Landforms: Knolls

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Ancient alluvium derived from limestone and sandstone

Typical Profile

Surface layer:

0 to 6 inches; slightly alkaline loam

Subsoil layer:

6 to 10 inches; moderately alkaline cemented material

10 to 20 inches; moderately alkaline loam

Underlying material:

20 to 40 inches; moderately alkaline loam

Properties and Qualities

Slope: 0 to 4 percent
Percent of area covered by surface fragments: About 5 percent angular medium and coarse gravel
Depth to first restrictive layer: 4 to 20 inches petrocalcic
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 0.9 inches (very low)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s
Land capability irrigated: None specified
Ecological site name: Very Shallow 23-31" PZ
Ecological site number: R081BY354TX
Typical vegetation: Sideoats grama, buffalograss, curlymesquite, hairy woollygrass, little bluestem, slim tridens, Wright's threeawn, other perennial forbs, other perennial grasses, other shrubs

Sunev

Landforms: Valleys, stream terraces
Geomorphic positions, two-dimensional: Footslope
Geomorphic positions, three-dimensional: Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy slope alluvium and/or colluvium derived from limestone

Typical Profile

Surface layer:
0 to 12 inches; slightly alkaline clay loam
Subsoil layer:
12 to 37 inches; slightly alkaline clay loam
37 to 57 inches; moderately alkaline loam
57 to 64 inches; slightly alkaline loam
Underlying material:
64 to 80 inches; slightly alkaline very fine sandy loam

Properties and Qualities

Slope: 1 to 4 percent
Percent of area covered by surface fragments: Not assigned
Depth to first restrictive layer: No restrictive layer
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 8.4 inches (moderate)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: None specified
Ecological site name: Clay Loam 23-31" PZ
Ecological site number: R081BY326TX
Typical vegetation: Little bluestem, yellow Indiangrass, big bluestem, other annual forbs, other perennial forbs, live oak, buffalograss, eastern gamagrass, other trees, sideoats grama, switchgrass, vine mesquite

NRE—Nebgen-Rock outcrop complex, 1 to 12 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin
Landscape: Dissected plateaus
Elevation: 1,000 to 2,200 feet
Mean annual precipitation: 10 to 35 inches
Mean annual air temperature: 52 to 73 degrees F
Frost-free period: 120 to 320 days
Map unit prime farmland class: Not prime farmland

Composition

Nebgen and similar soils: 53 percent
Rock outcrop and similar soils: 17 percent
Minor components and similar soils: 30 percent

The composition of this map unit is based on cumulative field observations and descriptions from six transects with sixty observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 44 to 62 percent Nebgen and similar soils, 5 to 28 percent Rock outcrop, and 16 to 44 percent minor components including Acove, Campair, Eckert, Hye, Keese, Loneoak, Menard, Oben, Pontotoc, and Yates.

- Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone.
- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Eckert and Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Menard soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.

Soil Survey of Mason County, Texas

- Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Pontotoc soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.

Soil Description

Nebgen

Landforms: Ridges

Geomorphic positions, two-dimensional: Shoulder, summit

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 5 inches; slightly acid sandy loam

Subsurface layer:

5 to 11 inches; slightly acid sandy loam

Underlying material:

11 to 21 inches; indurated sandstone bedrock

Properties and Qualities

Slope: 1 to 12 percent

Percent of area covered by surface fragments: About 1 percent angular stones

Depth to first restrictive layer: 4 to 14 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 1.2 inches (very low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s

Land capability irrigated: None specified

Ecological site name: Sandstone Hill 25-32" PZ

Ecological site number: R082AY371TX

Typical vegetation: Little bluestem, sideoats grama, other perennial grasses, fringleaf paspalum, pinhole bluestem, plains lovegrass, purpletop tridens, sand lovegrass, yellow Indiangrass, post oak, Texas wintergrass, blackjack oak, buffalograss, live oak, other perennial forbs

Rock outcrop

Landforms: Ridges

Geomorphic positions, two-dimensional: Shoulder, summit

Geomorphic positions, three-dimensional: Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandstone

Properties and Qualities

Slope: 1 to 12 percent
Percent of area covered by surface fragments: Not assigned
Depth to first restrictive layer: 0 to 2 inches lithic bedrock
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Runoff: High
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 8s
Land capability irrigated: None specified
Ecological site name: Not assigned
Ecological site number: Not assigned

NRG—Nebgen-Rock outcrop complex, 12 to 40 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin
Landscape: Dissected plateaus
Elevation: 1,000 to 2,200 feet
Mean annual precipitation: 10 to 35 inches
Mean annual air temperature: 52 to 73 degrees F
Frost-free period: 120 to 320 days
Map unit prime farmland class: Not prime farmland

Composition

Nebgen and similar soils: 56 percent
Rock outcrop and similar soils: 34 percent
Minor components and similar soils: 10 percent

The composition of this map unit is based on cumulative field observations and descriptions from five transects with forty-nine observations of the map unit (fig. 15). There is an estimated 80 percent probability that the true composition of the whole map unit is 47 to 65 percent Nebgen and similar soils, 19 to 49 percent Rock outcrop, and 2 to 18 percent minor components including Acove, Campair, Hye, Keese, Loneoak, Lou, Oben, Pontotoc, Venus, and Yates.

- Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone.
- Campair soils are on footslopes, backslopes, and shoulders of ridges underlain by Cambrian sandstone.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Keese soils are on shoulder, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.



Figure 15.—This escarpment is in an area of Nebgen-Rock outcrop complex, 12 to 40 percent slopes. The escarpment exposes the underlying Hickory Sandstone Formation. Nebgen soils are shallow, loamy soils on the side slopes and summits of sandstone hills and ridges. Nebgen soils are in the Sandstone Hill ecological site.

- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite gneiss.
- Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Pontotoc soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Venus soils are on stream terraces and footslopes in valleys of dissected plateaus underlain by limestone and sandstone.
- Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.

Soil Description

Nebgen

Landforms: Ridges

Geomorphic positions, two-dimensional: Backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 8 inches; neutral sandy loam

Underlying material:

8 to 18 inches; indurated sandstone bedrock

Properties and Qualities

Slope: 12 to 30 percent

Percent of area covered by surface fragments: About 15 percent angular stones

Depth to first restrictive layer: 4 to 14 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 0.9 inches (very low)

Natural drainage class: Well drained

Runoff: High

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7e

Land capability irrigated: None specified

Ecological site name: Sandstone Hill 25-32" PZ

Ecological site number: R082AY371TX

Typical vegetation: Little bluestem, sideoats grama, other perennial grasses, fringed leaf paspalum, pinhole bluestem, plains lovegrass, purpletop tridens, sand lovegrass, yellow Indiangrass, post oak, Texas wintergrass, blackjack oak, buffalograss, live oak, other perennial forbs

Rock outcrop

Landforms: Ridges

Geomorphic positions, two-dimensional: Backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Sandstone

Properties and Qualities

Slope: 12 to 40 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 0 to 2 inches lithic bedrock

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Runoff: Very high

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 8s

Land capability irrigated: None specified

Ecological site name: Not assigned

Ecological site number: Not assigned

OaB—Oakalla loam, 0 to 2 percent slopes, occasionally flooded

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part

Landscape: River valleys

Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 24 to 34 inches

Mean annual air temperature: 64 to 70 degrees F

Frost-free period: 210 to 240 days

Map unit prime farmland class: Not prime farmland

Composition

Oakalla and similar soils: 70 percent

Minor components and similar soils: 30 percent

The composition of this map unit is based on cumulative field observations and descriptions from seven transects with sixty-five observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 58 to 82 percent Oakalla and similar soils and 18 to 42 percent minor components including Castell, Eckert, Honeycreek, Katemcy, Keese, Lou, Luckenbach, Nebgen, Yates, and Rock outcrop.

- Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss.
- Eckert and Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite grus.
- Luckenbach soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Oakalla

Landforms: Flood plains on perennial streams

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from limestone

Typical Profile

Surface layer:

0 to 12 inches; slightly alkaline loam

Subsoil layer:

12 to 37 inches; slightly alkaline clay loam

37 to 80 inches; moderately alkaline clay loam

Properties and Qualities

Slope: 0 to 2 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 10.3 inches (high)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: 3e

Ecological site name: Loamy Bottomland 23-31" PZ

Ecological site number: R081BY335TX

Typical vegetation: Little bluestem, yellow Indiangrass, other trees, switchgrass, big bluestem, Canada wildrye, dropseed, eastern gamagrass, other perennial forbs, other perennial grasses, sideoats grama, southwestern bristlegrass, Texas wintergrass, vine mesquite

PeC—Pedernales fine sandy loam, 0 to 5 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Alluvial plain remnants, dissected plateaus

Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 24 to 32 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 220 to 240 days

Map unit prime farmland class: All areas are prime farmland

Composition

Pedernales and similar soils: 75 percent

Minor components and similar soils: 25 percent

The composition of this map unit is based on cumulative field observations and descriptions from three transects with twenty-eight observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 64 to 86 percent Pedernales and similar soils and 14 to 36 percent minor components including Campwood, Cho, Eckert, Hensley, Luckenbach, Menard, Mereta, Sunev, Valera, and Rock outcrop.

Soil Survey of Mason County, Texas

- Campwood and Valera soils are on footslopes of valleys of dissected plateaus underlain by limestone.
- Cho and Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.
- Eckert soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Hensley soils are on shoulders and summits of ridges on dissected plateaus underlain by Mississippian, Devonian, and Ordovician limestone.
- Luckenbach and Menard soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Pedernales

Landforms: Valleys

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Calcareous slope alluvium over residuum

Typical Profile

Surface layer:

0 to 7 inches; neutral fine sandy loam

Subsurface layer:

7 to 12 inches; neutral fine sandy loam

Subsoil layer:

12 to 20 inches; neutral sandy clay loam

20 to 45 inches; neutral sandy clay and clay

45 to 61 inches; slightly alkaline clay loam

61 to 80 inches; moderately alkaline sandy loam

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 9.5 inches (high)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e

Land capability irrigated: 3e

Ecological site name: Tight Sandy Loam 25-32" PZ

Ecological site number: R082AY378TX

Typical vegetation: Sideoats grama, little bluestem, other perennial grasses, other trees, pinhole bluestem, vine mesquite, Arizona cottontop, Canada wildrye, other perennial forbs, Texas wintergrass

RCC—Riverwash-Rock outcrop complex, 0 to 5 percent slopes, frequently flooded

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: River valleys

Elevation: 1,000 to 2,400 feet

Mean annual precipitation: 10 to 35 inches

Mean annual air temperature: 64 to 70 degrees F

Frost-free period: 215 to 300 days

Map unit prime farmland class: Not prime farmland

Composition

Riverwash and similar soils: 55 percent

Rock outcrop and similar soils: 20 percent

Minor components and similar soils: 25 percent

The composition of this map unit is based on cumulative field observations and descriptions from four transects with forty-four observations of the map unit (fig. 16). There is an estimated 80 percent probability that the true composition of the whole map unit is 40 to 70 percent Riverwash, 10 to 30 percent Rock outcrop, and 3 to 47 percent minor components including Cho, Eckert, Hye, Loneoak, Lou, Mereta, Nebgen, Oakalla, Oben, Sunev, and Yates.

- Cho and Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.
- Eckert and Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite gneiss.
- Nebgen and Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Oakalla soils are on small streams and flood plains of major rivers.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.

Soil Description

Riverwash

Landforms: Perennial streams

Down-slope shape: Concave

Across-slope shape: Linear

Parent material: Gravelly alluvium derived from igneous, metamorphic, and sedimentary rock



Figure 16.—An area of Riverwash-Rock outcrop complex, 0 to 5 percent slopes, frequently flooded, along the James River. Riverwash and Rock outcrop are miscellaneous areas that have little or no recognizable soil. Riverwash is unstabilized sandy, silty, clayey, or gravelly sediment that is flooded, washed, and reworked frequently by rivers. Rock outcrop consists of exposures of bare bedrock.

Properties and Qualities

Slope: 0 to 3 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 6.0 to 20 in/hr (rapid)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 1.8 inches (very low)

Natural drainage class: Excessively drained

Runoff: Very low

Flooding frequency: Frequent

Interpretive Groups

Land capability nonirrigated: 8w

Land capability irrigated: None specified

Ecological site name: Not assigned

Ecological site number: Not assigned

Rock outcrop

Landforms: Perennial streams

Down-slope shape: Concave

Across-slope shape: Linear

Parent material: Igneous, metamorphic, and sedimentary rock

Properties and Qualities

Slope: 0 to 5 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 0 to 4 inches lithic bedrock

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (very slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Runoff: Very low

Flooding frequency: Frequent

Interpretive Groups

Land capability nonirrigated: 8s

Land capability irrigated: None specified

Ecological site name: Not assigned

Ecological site number: Not assigned

RgG—Rock outcrop, granite, 1 to 25 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Granite batholiths

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 10 to 35 inches

Mean annual air temperature: 52 to 73 degrees F

Frost-free period: 120 to 320 days

Map unit prime farmland class: Not prime farmland

Composition

Rock outcrop and similar soils: 95 percent

Minor components and similar soils: 5 percent

The composition of this map unit is based on cumulative field observations and descriptions from three transects with thirty observations of the map unit (fig. 17). There is an estimated 80 percent probability that the true composition of the whole map unit is 85 to 100 percent Rock outcrop and 0 to 10 percent minor components including Castell, Click, Fieldcreek, Keese, Lou, Voca, and Riverwash.

- Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss.
- Click soils are on shoulders and summits of ridges and hills underlain by pre-Cambrian granite gneiss.
- Fieldcreek soils are on flood plains of small streams and creeks.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.



Figure 17.—An area of Rock outcrop, granite, 1 to 25 percent slopes. These areas provide recreational opportunities and wildlife habitat.

- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite grus.
- Voca soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian granite grus.
- Riverwash areas are in stream beds and on banks of creeks and rivers.

Soil Description

Rock outcrop

Landforms: Hills

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Granite

Properties and Qualities

Slope: 1 to 25 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 0 to 2 inches lithic bedrock

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.0 to 0.001 in/hr (Almost impermeable)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Runoff: Very high
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 8s
Land capability irrigated: None specified
Ecological site name: Not assigned
Ecological site number: Not assigned

RhE—Roughcreek very gravelly clay loam, 1 to 12 percent slopes, very rocky

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part
Landscape: Dissected plateaus
Elevation: 1,000 to 2,400 feet
Mean annual precipitation: 24 to 30 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 215 to 235 days
Map unit prime farmland class: Not prime farmland

Composition

Roughcreek and similar soils: 72 percent
Minor components and similar soils: 28 percent

The composition of this map unit is based on cumulative field observations and descriptions from three transects with twenty-nine observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 55 to 92 percent Roughcreek and similar soils and 8 to 45 percent minor components including Cho, Eckert, Hensley, Keese, Luckenbach, Mereta, Pedernales, Sunev, and Rock outcrop.

- Cho and Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.
- Eckert soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Hensley soils are on shoulders and summits of ridges on dissected plateaus underlain by Mississippian, Devonian, and Ordovician limestone.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Luckenbach and Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Roughcreek

Landforms: Ridges
Geomorphic positions, two-dimensional: Summit, shoulder

Geomorphic positions, three-dimensional: Interfluvial
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:
0 to 6 inches; slightly alkaline very gravelly clay loam

Subsoil layer:
6 to 18 inches; neutral very gravelly clay

Underlying material:
18 to 28 inches; indurated cherty limestone bedrock

Properties and Qualities

Slope: 1 to 12 percent
Percent of area covered by surface fragments: About 16 percent subrounded gravel;
about 5 percent angular cobbles; about 1 percent angular stones
Depth to first restrictive layer: 10 to 20 inches lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2
in/hr (slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to
2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 2.4 inches (very low)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 6e
Land capability irrigated: None specified
Ecological site name: Low Stony Hill 23-31" PZ
Ecological site number: R081BY337TX
Typical vegetation: Little bluestem, sideoats grama, live oak, big bluestem, buffalograss,
curlymesquite, fall witchgrass, hairy grama, meadow dropseed, other perennial forbs,
other trees, Texas wintergrass, yellow Indiangrass

RkE—Roughcreek very cobbly clay, 1 to 12 percent slopes, very rocky

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part
Landscape: Dissected plateaus
Elevation: 1,000 to 2,400 feet
Mean annual precipitation: 22 to 32 inches
Mean annual air temperature: 66 to 70 degrees F
Frost-free period: 210 to 240 days
Map unit prime farmland class: Not prime farmland

Composition

Roughcreek and similar soils: 84 percent
Minor components and similar soils: 16 percent

The composition of this map unit is based on cumulative field observations and descriptions from three transects with thirty-one observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 79 to 88 percent Roughcreek and similar soils, 12 to 21 percent minor components including Campwood, Eckert, Hensley, Hye, Nebgen, Oben, Valera, Yates, and Rock outcrop.

- Campwood and Valera soils are on footslopes of valleys of dissected plateaus underlain by limestone.
- Eckert and Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Hensley soils are on shoulders and summits of ridges on dissected plateaus underlain by Mississippian, Devonian, and Ordovician limestone.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Nebgen and Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Roughcreek

Landforms: Ridges

Geomorphic positions, two-dimensional: Shoulder, summit

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:

0 to 15 inches; slightly acid very cobbly clay

Underlying material:

15 to 25 inches; indurated cherty limestone bedrock

Properties and Qualities

Slope: 1 to 12 percent

Percent of area covered by surface fragments: About 10 percent angular cobbles; about 20 percent angular stones

Depth to first restrictive layer: 8 to 20 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 1.3 inches (very low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s

Land capability irrigated: None specified

Ecological site name: Low Stony Hill 23-31" PZ

Ecological site number: R081BY337TX

Typical vegetation: Little bluestem, sideoats grama, yellow Indiangrass, other perennial forbs, fall witchgrass, green sprangletop, meadow dropseed, other shrubs, other trees, pinhole bluestem, other perennial grasses, hairy grama, Texas wintergrass, other annual forbs

RRG—Roughcreek-Rock outcrop complex, 12 to 40 percent slopes

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part

Landscape: Dissected plateaus

Elevation: 1,000 to 2,400 feet

Mean annual precipitation: 10 to 35 inches

Mean annual air temperature: 52 to 73 degrees F

Frost-free period: 120 to 320 days

Map unit prime farmland class: Not prime farmland

Composition

Roughcreek, 15 to 40 percent slopes, and similar soils: 40 percent

Rock outcrop and similar soils: 35 percent

Roughcreek, 12 to 15 percent slopes, and similar soils: 20 percent

Minor components and similar soils: 5 percent

The composition of this map unit is based on cumulative field observations and descriptions from four transects with thirty-eight observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 49 to 71 percent Roughcreek and similar soils, 29 to 51 percent Rock outcrop, and 0 to 10 percent minor components including Campwood, Eckert, Hye, Nebgen, Oakalla, Pontotoc, Valera, Yates, and Riverwash.

- Campwood and Valera soils are on footslopes of valleys of dissected plateaus underlain by limestone.
- Eckert and Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Oakalla soils are on small streams and flood plains of major rivers.
- Pontotoc soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Riverwash areas are in stream beds and on banks of creeks and rivers.

Soil Description

Roughcreek soils, 15 to 40 percent slopes

Landforms: Ridges

Geomorphic positions, two-dimensional: Backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:

0 to 11 inches; slightly acid very cobbly clay

Underlying material:

11 to 21 inches; indurated cherty limestone bedrock

Properties and Qualities

Slope: 15 to 40 percent

Percent of area covered by surface fragments: About 20 percent angular stones; about 20 percent angular cobbles; about 10 percent angular medium and coarse gravel

Depth to first restrictive layer: 4 to 20 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 1.0 inches (very low)

Natural drainage class: Well drained

Runoff: High

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s

Land capability irrigated: None specified

Ecological site name: Steep Rocky 23-31" PZ

Ecological site number: R081BY350TX

Typical vegetation: Texas wintergrass, sideoats grama, little bluestem, other shrubs, other trees, pinhole bluestem, green sprangletop, other perennial grasses, yellow Indiangrass

Rock outcrop

Landforms: Ridges

Geomorphic positions, two-dimensional: Backslope, footslope

Geomorphic positions, three-dimensional: Side slope, base slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Limestone

Properties and Qualities

Slope: 12 to 40 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 0 to 2 inches lithic bedrock

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (very slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic
Runoff: Very high
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 8s
Land capability irrigated: None specified
Ecological site name: Not assigned
Ecological site number: Not assigned

Roughcreek soils, 12 to 15 percent slopes

Landforms: Ridges
Geomorphic positions, two-dimensional: Shoulder
Geomorphic positions, three-dimensional: Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:
0 to 15 inches; slightly alkaline very cobbly clay

Underlying material:
15 to 25 inches; bedrock

Properties and Qualities

Slope: 12 to 15 percent
Percent of area covered by surface fragments: About 10 percent angular cobbles; about 20 percent angular stones
Depth to first restrictive layer: 8 to 20 inches lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 1.3 inches (very low)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7e
Land capability irrigated: None specified
Ecological site name: Low Stony Hill 23-31" PZ
Ecological site number: R081BY337TX
Typical vegetation: Little bluestem, sideoats grama, yellow Indiangrass, other perennial forbs, fall witchgrass, green sprangletop, meadow dropseed, other shrubs, other trees, pinhole bluestem, other perennial grasses, hairy grama, Texas wintergrass, other annual forbs

SuD—Sunev clay loam, 1 to 8 percent slopes

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part
Landscape: Dissected plateaus
Elevation: 1,000 to 2,095 feet
Mean annual precipitation: 28 to 34 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 230 to 245 days
Map unit prime farmland class: Prime farmland, if irrigated

Composition

Sunev and similar soils: 70 percent
Minor components and similar soils: 30 percent

The composition of this map unit is based on cumulative field observations and descriptions from five transects with fifty observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 61 to 79 percent Sunev and similar soils and 21 to 39 percent minor components including Campwood, Cho, Kerrville, Luckenbach, Menard, Mereta, Pedernales, Tarrant, Valera, and Rock outcrop.

- Campwood and Valera soils are on footslopes of valleys of dissected plateaus underlain by limestone.
- Cho and Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.
- Kerrville and Tarrant soils are on backslopes, shoulders, and summits of ridges on dissected plateaus underlain by Cretaceous limestone.
- Luckenbach, Menard, and Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Sunev

Landforms: Valleys, ridges, stream terraces
Geomorphic positions, two-dimensional: Footslope
Geomorphic positions, three-dimensional: Base slope
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Loamy slope alluvium and/or colluvium derived from limestone

Typical Profile

Surface layer:
0 to 12 inches; slightly alkaline clay loam

Subsoil layer:
12 to 37 inches; slightly alkaline clay loam
37 to 57 inches; moderately alkaline loam
57 to 64 inches; slightly alkaline loam

Underlying material:
64 to 80 inches; slightly alkaline very fine sandy loam

Properties and Qualities

Slope: 1 to 8 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 8.4 inches (moderate)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4e

Land capability irrigated: None specified

Ecological site name: Clay Loam 23-31" PZ

Ecological site number: R081BY326TX

Typical vegetation: Little bluestem, yellow Indiangrass, big bluestem, other annual forbs, other perennial forbs, live oak, buffalograss, eastern gamagrass, other trees, sideoats grama, switchgrass, vine mesquite

TRE—Tarrant-Rock outcrop complex, 1 to 12 percent slopes

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part

Landscape: Dissected plateaus

Elevation: 1,000 to 2,445 feet

Mean annual precipitation: 10 to 35 inches

Mean annual air temperature: 52 to 73 degrees F

Frost-free period: 120 to 320 days

Map unit prime farmland class: Not prime farmland

Composition

Tarrant and similar soils: 67 percent

Rock outcrop and similar soils: 14 percent

Minor components and similar soils: 19 percent

The composition of this map unit is based on cumulative field observations and descriptions from six transects with seventy-seven observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 50 to 82 percent Tarrant and similar soils, 7 to 20 percent Rock outcrop, and 9 to 32 percent minor components including Brackett, Campwood, Cho, Kerrville, Menard, Mereta, Oakalla, Pedernales, Sunev, Valera, and Rock outcrop.

- Brackett soils are on backslopes of Cretaceous limestone ridges.
- Campwood and Valera soils are on footslopes in valleys of dissected plateaus underlain by limestone.
- Cho and Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.
- Kerrville soils are on backslopes and shoulders of Cretaceous limestone ridges.

- Menard and Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Oakalla soils are on small streams and flood plains of major rivers.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Tarrant

Landforms: Ridges (fig. 18)

Geomorphic positions, two-dimensional: Shoulder, summit

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:

0 to 8 inches; slightly alkaline very cobbly clay



Figure 18.—An area of Tarrant-Rock outcrop complex, 1 to 12 percent slopes. The areas in the background are Tarrant-Rock outcrop, 12 to 40 percent slopes. Tarrant soils are the dominant soil series in the Edwards Plateau portion of Mason County. These shallow, clayey soils are located on summits and side slopes of the limestone ridges on this dissected plateau landscape.

Subsoil layer:

8 to 12 inches; slightly alkaline very cobbly clay

Underlying material:

12 to 22 inches; indurated limestone bedrock

Properties and Qualities

Slope: 1 to 12 percent

Percent of area covered by surface fragments: About 10 percent angular cobbles; about 5 percent angular medium and coarse gravel; about 10 percent angular flagstones; about 5 percent subrounded medium and coarse gravel; about 5 percent coarse angular gravel

Depth to first restrictive layer: 6 to 20 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 0.9 inches (very low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s

Land capability irrigated: None specified

Ecological site name: Low Stony Hill 23-31" PZ

Ecological site number: R081BY337TX

Typical vegetation: Other perennial grasses, sideoats grama, little bluestem, other perennial forbs, buffalograss, curlymesquite, dropseed, green sprangletop, live oak, other shrubs, silver bluestem, Texas cupgrass, Texas wintergrass, yellow Indiangrass

Rock outcrop

Landforms: Ridges

Geomorphic positions, two-dimensional: Shoulder, summit

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Limestone

Properties and Qualities

Slope: 1 to 12 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 0 to 2 inches lithic bedrock

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Runoff: High

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 8s

Land capability irrigated: None specified

Ecological site name: Not assigned

Ecological site number: Not assigned

TRG—Tarrant-Rock outcrop complex, 12 to 40 percent slopes

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part

Landscape: Dissected plateaus

Elevation: 1,000 to 2,445 feet

Mean annual precipitation: 10 to 35 inches

Mean annual air temperature: 52 to 73 degrees F

Frost-free period: 120 to 320 days

Map unit prime farmland class: Not prime farmland

Composition

Tarrant soils, 15 to 40 percent slopes and similar soils: 48 percent

Rock outcrop and similar soils: 27 percent

Tarrant soils, 12 to 15 percent slopes and similar soils: 14 percent

Minor components and similar soils: 11 percent

The composition of this map unit is based on cumulative field observations and descriptions from four transects with forty observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 56 to 68 percent Tarrant and similar soils, 14 to 40 percent Rock outcrop, and 1 to 21 percent minor components including Brackett, Campwood, Cho, Kerrville, Mereta, Nebgen, Oakalla, Real, Sunev, and Valera.

- Brackett and Real soils are on backslopes of ridges on dissected plateaus underlain by Cretaceous limestone.
- Campwood and Valera soils are on footslopes of valleys of dissected plateaus underlain by limestone.
- Cho and Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.
- Kerrville soils are on backslopes and shoulders of Cretaceous limestone ridges.
- Nebgen soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Oakalla soils are on small streams and flood plains of major rivers.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.

Soil Description

Tarrant soils, 15 to 40 percent slopes

Landforms: Ridges

Geomorphic positions, two-dimensional: Backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:

0 to 13 inches; moderately alkaline very cobbly clay

Underlying material:

13 to 23 inches; indurated limestone bedrock

Properties and Qualities

Slope: 15 to 40 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 6 to 20 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 1.0 inches (very low)

Natural drainage class: Well drained

Runoff: High

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s

Land capability irrigated: None specified

Ecological site name: Steep Rocky 23-31" PZ

Ecological site number: R081BY350TX

Typical vegetation: Little bluestem, yellow Indiangrass, other perennial forbs, other perennial grasses, other shrubs, sideoats grama, green sprangletop, live oak, silver bluestem, Texas cupgrass

Rock outcrop

Landforms: Ridges

Geomorphic positions, two-dimensional: Backslope, footslope

Geomorphic positions, three-dimensional: Side slope, base slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Limestone

Properties and Qualities

Slope: 12 to 40 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 0 to 2 inches lithic bedrock

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.001 to 0.06 in/hr (very slow)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Runoff: Very high

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 8s
Land capability irrigated: None specified
Ecological site name: Not assigned
Ecological site number: Not assigned

Tarrant soils, 12 to 15 percent slopes

Landforms: Ridges
Geomorphic positions, two-dimensional: Shoulder
Geomorphic positions, three-dimensional: Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:
0 to 8 inches; slightly alkaline very cobbly clay
Subsoil layer:
8 to 12 inches; slightly alkaline very cobbly clay
Underlying material:
12 to 22 inches; indurated limestone bedrock

Properties and Qualities

Slope: 12 to 15 percent
Percent of area covered by surface fragments: About 10 percent angular cobbles; about 5 percent angular medium and coarse gravel; about 10 percent angular flagstones; about 5 percent subrounded medium and coarse gravel; about 5 percent coarse angular gravel
Depth to first restrictive layer: 6 to 20 inches lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.2 to 0.6 in/hr (moderately slow)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 0.9 inches (very low)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7e
Land capability irrigated: None specified
Ecological site name: Low Stony Hill 23-31" PZ
Ecological site number: R081BY337TX
Typical vegetation: Other perennial grasses, sideoats grama, little bluestem, other perennial forbs, buffalograss, curlymesquite, dropseed, green sprangletop, live oak, other shrubs, silver bluestem, Texas cupgrass, Texas wintergrass, yellow Indiangrass

VeD—Venus loam, 0 to 8 percent slopes, rocky

Setting

Major land resource area: MLRA 81B—Edwards Plateau, Central Part
Landscape: Dissected plateaus
Elevation: 1,000 to 2,095 feet
Mean annual precipitation: 28 to 40 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 220 to 250 days
Map unit prime farmland class: All areas are prime farmland

Composition

Venus 0 to 3 percent slopes and similar soils: 44 percent
Venus 3 to 8 percent slopes and similar soils: 27 percent
Minor components and similar soils: 29 percent

The composition of this map unit is based on cumulative field observations and descriptions from three transects with thirty-two observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 51 to 90 percent Venus and similar soils and 10 to 49 percent minor components including Eckert, Honeycreek, Hye, Loneoak, Lou, Luckenbach, Menard, Nebgen, Oakalla, Oben, Yates, and Rock outcrop.

- Eckert and Yates soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite gneiss.
- Luckenbach and Menard soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Nebgen and Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Oakalla soils are on small streams and flood plains of major rivers.
- Rock outcrop occurs on backslopes, shoulders, and summits of ridges.

Soil Description

Venus soils, 0 to 3 percent slopes

Landforms: Stream terraces, valleys

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Calcareous loamy slope alluvium and/or alluvium derived from limestone and sandstone

Typical Profile

Surface layer:

0 to 10 inches; slightly alkaline loam

Subsoil layer:

10 to 41 inches; moderately alkaline clay loam
41 to 80 inches; moderately alkaline sandy clay loam

Properties and Qualities

Slope: 0 to 3 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0
in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 9.7 inches (high)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 2e

Land capability irrigated: 2e

Ecological site name: Clay Loam 23-31" PZ

Ecological site number: R081BY326TX

Typical vegetation: Little bluestem, other perennial forbs, yellow Indiangrass, big
bluestem, sideoats grama, Canada wildrye, dropseed, other perennial grasses, other
trees, silver bluestem, Texas wintergrass

Venus soils, 3 to 8 percent slopes

Landforms: Stream terraces, valleys

Geomorphic positions, two-dimensional: Footslope

Geomorphic positions, three-dimensional: Base slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Calcareous loamy slope alluvium and/or alluvium derived from limestone
and sandstone

Typical Profile

Surface layer:

0 to 10 inches; slightly alkaline loam

Subsoil layer:

10 to 41 inches; moderately alkaline clay loam

41 to 80 inches; moderately alkaline sandy clay loam

Properties and Qualities

Slope: 3 to 8 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: No restrictive layer

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.6 to 2.0
in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 9.7 inches (high)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 4e

Land capability irrigated: None specified

Ecological site name: Clay Loam 23-31" PZ

Ecological site number: R081BY326TX

Typical vegetation: Little bluestem, other perennial forbs, yellow Indiangrass, big bluestem, sideoats grama, Canada wildrye, dropseed, other perennial grasses, other trees, silver bluestem, Texas wintergrass

VoC—Voca gravelly sandy loam, 0 to 5 percent slopes, rocky

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 24 to 28 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 210 to 240 days

Map unit prime farmland class: Not prime farmland

Composition

Voca and similar soils: 77 percent

Minor components and similar soils: 23 percent

The composition of this map unit is based on cumulative field observations and descriptions from ten transects with eighty-six observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 67 to 86 percent Voca and similar soils and 14 to 33 percent minor components including Castell, Click, Honeycreek, Katemcy, Keese, Ligon, Loneoak, Lou, Luckenbach, and Rock outcrop.

- Castell soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian gneiss.
- Click soils are on shoulders and summits of ridges and hills underlain by pre-Cambrian granite gneiss.
- Honeycreek soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist and gneiss.
- Katemcy soils are on undulating plains and footslopes of ridges and hills underlain by pre-Cambrian schist.
- Keese soils are on shoulders, summits, and backslopes of ridges and hills underlain by pre-Cambrian gneiss or granite.
- Ligon soils are on shoulders, backslopes, and summits of ridges and hills underlain by pre-Cambrian schist.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Lou soils are on backslopes, shoulders, and summits of ridges and hills underlain by pre-Cambrian granite gneiss.
- Luckenbach soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Rock outcrop occur on backslopes, shoulders, and summits of ridges and hills.

Soil Description

Voca

Landforms: Ridges, undulating plains, hills
Geomorphic positions, two-dimensional: Footslope
Geomorphic positions, three-dimensional: Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum over grus derived from granite

Typical Profile

Surface layer:
0 to 6 inches; neutral sandy loam

Subsurface layer:
6 to 11 inches; slightly acid gravelly sandy loam

Subsoil layer:
11 to 17 inches; slightly acid very gravelly sandy clay loam
17 to 34 inches; slightly acid and moderately acid gravelly clay
34 to 80 inches; moderately acid extremely gravelly coarse sandy loam

Properties and Qualities

Slope: 0 to 5 percent
Percent of area covered by surface fragments: About 10 percent subrounded medium and coarse gravel; about 10 percent subrounded medium and coarse gravel
Depth to first restrictive layer: 28 to 60 inches strongly contrasting textural stratification
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 0.06 to 0.2 in/hr (slow)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 5.9 inches (low)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 3e
Land capability irrigated: None specified
Ecological site name: Gravelly Sandy Loam 25-32" PZ
Ecological site number: R082AY600TX
Typical vegetation: Little bluestem, Arizona cottontop, sideoats grama, other trees, other perennial forbs, pinhole bluestem, sand lovegrass, Scribner panicum, Texas wintergrass, vine mesquite, yellow Indiangrass, other annual forbs, other shrubs

W—Water

This map unit includes rivers, streams, lakes, and ponds. These areas are covered with water in most years, at least during the period that is warm enough for plants to grow. Many areas are covered with water year-round.

YNE—Yates-Nebgen-Rock outcrop complex, 1 to 12 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin
Landscape: Dissected plateaus
Elevation: 1,000 to 2,200 feet
Mean annual precipitation: 10 to 35 inches
Mean annual air temperature: 52 to 73 degrees F
Frost-free period: 120 to 320 days
Map unit prime farmland class: Not prime farmland

Composition

Yates and similar soils: 60 percent
Nebgen and similar soils: 20 percent
Rock outcrop and similar soils: 15 percent
Minor components and similar soils: 5 percent

The composition of this map unit is based on cumulative field observations and descriptions from five transects with fifty-six observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 49 to 69 percent Yates and similar soils, 16 to 25 percent Nebgen and similar soils, 7 to 23 percent Rock outcrop, and 3 to 8 percent minor components including Acove, Eckert, Hye, Loneoak, Luckenbach, Menard, Oakalla, Oben, Pedernales, Pontotoc, and Venus.

- Acove soils are on shoulders and summits of ridges underlain by Cambrian sandstone.
- Eckert soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Luckenbach, Menard, and Pedernales soils are on alluvial plain remnants and on footslopes in valleys of dissected plateaus.
- Oakalla soils are on small streams and flood plains of major rivers.
- Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Pontotoc soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Venus soils are on stream terraces and footslopes in valleys of dissected plateaus underlain by limestone and sandstone.

Soil Description

Yates

Landforms: Ridges

Geomorphic positions, two-dimensional: Shoulder, summit

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:

0 to 12 inches; slightly alkaline very gravelly fine sandy loam

Underlying material:

12 to 22 inches; indurated limestone bedrock

Properties and Qualities

Slope: 1 to 12 percent

Percent of area covered by surface fragments: About 4 percent angular stones; about 40 percent angular flagstones; about 16 percent angular cobbles; about 5 percent angular medium and coarse gravel

Depth to first restrictive layer: 4 to 14 inches lithic bedrock

Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 0.9 inches (very low)

Natural drainage class: Well drained

Runoff: Low

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s

Land capability irrigated: None specified

Ecological site name: Very Shallow 23-31" PZ

Ecological site number: R081BY354TX

Typical vegetation: Sideoats grama, dropseed, other perennial forbs, other perennial grasses, silver bluestem, buffalograss, hairy grama, little bluestem, slim tridens, Texas wintergrass, Wright's threeawn

Nebgen

Landforms: Ridges

Geomorphic positions, two-dimensional: Summit, shoulder

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:

0 to 5 inches; slightly acid sandy loam

Subsurface layer:

5 to 11 inches; slightly acid sandy loam

Underlying material:

11 to 21 inches; indurated sandstone bedrock

Properties and Qualities

Slope: 1 to 12 percent
Percent of area covered by surface fragments: About 1 percent angular stones
Depth to first restrictive layer: 4 to 14 inches lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 1.2 inches (very low)
Natural drainage class: Well drained
Runoff: Low
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s
Land capability irrigated: None specified
Ecological site name: Sandstone Hill 25-32" PZ
Ecological site number: R082AY371TX
Typical vegetation: Little bluestem, sideoats grama, other perennial grasses, fringed leaf paspalum, pinhole bluestem, plains lovegrass, purpletop tridens, sand lovegrass, yellow Indiangrass, post oak, Texas wintergrass, blackjack oak, buffalograss, live oak, other perennial forbs

Rock outcrop

Landforms: Ridges
Geomorphic positions, two-dimensional: Shoulder, summit
Geomorphic positions, three-dimensional: Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Limestone and sandstone

Properties and Qualities

Slope: 1 to 12 percent
Percent of area covered by surface fragments: Not assigned
Depth to first restrictive layer: 0 to 2 inches lithic bedrock
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Runoff: High
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 8s
Land capability irrigated: None specified
Ecological site name: Not assigned
Ecological site number: Not assigned

YNG—Yates-Nebgen-Rock outcrop complex, 12 to 40 percent slopes

Setting

Major land resource area: MLRA 82A—Texas Central Basin

Landscape: Dissected plateaus

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 10 to 35 inches

Mean annual air temperature: 52 to 73 degrees F

Frost-free period: 120 to 320 days

Map unit prime farmland class: Not prime farmland

Composition

Yates and similar soils: 50 percent

Nebgen and similar soils: 25 percent

Rock outcrop and similar soils: 20 percent

Minor components and similar soils: 5 percent

The composition of this map unit is based on cumulative field observations and descriptions from four transects with thirty-seven observations of the map unit. There is an estimated 80 percent probability that the true composition of the whole map unit is 43 to 66 percent Yates and similar soils, 13 to 36 percent Nebgen and similar soils, 12 to 30 percent Rock outcrop, and 0 to 10 percent minor components including Cho, Eckert, Hensley, Hye, Loneoak, Mereta, Oakalla, Oben, Pontotoc, Sunev, and Venus.

- Cho and Mereta soils are on knolls on alluvial plain remnants on dissected plateaus.
- Eckert soils are on summits, shoulders, and backslopes of ridges on dissected plateaus underlain by Cambrian limestone.
- Hensley soils are on shoulders and summits of ridges on dissected plateaus underlain by Mississippian, Devonian, and Ordovician limestone.
- Hye soils are on footslopes of ridges underlain by Cambrian sandstone.
- Loneoak soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Oakalla soils are on small streams and flood plains of major rivers.
- Oben soils are on backslopes, shoulders, and summits of ridges underlain by Cambrian sandstone.
- Pontotoc soils are on undulating plains and footslopes of ridges underlain by Cambrian sandstone.
- Sunev soils are on stream terraces and footslopes of valleys and ridges in dissected plateaus underlain by limestone.
- Venus soils are on stream terraces and footslopes in valleys of dissected plateaus underlain by limestone and sandstone.

Soil Description

Yates

Landforms: Ridges

Geomorphic positions, two-dimensional: Backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Residuum weathered from limestone

Typical Profile

Surface layer:
0 to 10 inches; slightly alkaline very gravelly loam

Underlying material:
10 to 20 inches; indurated limestone bedrock

Properties and Qualities

Slope: 12 to 40 percent
Percent of area covered by surface fragments: About 40 percent angular stones
Depth to first restrictive layer: 4 to 14 inches lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)
Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)
Salinity, representative within 40 inches: Not saline
Salinity, maximum within 40 inches: Not saline
Sodicity, representative within 40 inches: Not sodic
Sodicity, maximum within 40 inches: Not sodic
Representative total available water capacity to 60 inches: About 0.8 inches (very low)
Natural drainage class: Well drained
Runoff: Medium
Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7e
Land capability irrigated: None specified
Ecological site name: Very Shallow 23-31" PZ
Ecological site number: R081BY354TX
Typical vegetation: Sideoats grama, dropseed, other perennial forbs, other perennial grasses, silver bluestem, buffalograss, hairy grama, little bluestem, slim tridens, Texas wintergrass, Wright's threeawn

Nebgen

Landforms: Ridges
Geomorphic positions, two-dimensional: Backslope
Geomorphic positions, three-dimensional: Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Typical Profile

Surface layer:
0 to 8 inches; neutral sandy loam

Underlying material:
8 to 18 inches; indurated sandstone bedrock

Properties and Qualities

Slope: 12 to 30 percent
Percent of area covered by surface fragments: About 15 percent angular stones
Depth to first restrictive layer: 4 to 14 inches lithic bedrock
Slowest soil permeability to 60 inches, above first cemented restrictive layer: 2.0 to 6.0 in/hr (moderately rapid)

Soil Survey of Mason County, Texas

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Representative total available water capacity to 60 inches: About 0.9 inches (very low)

Natural drainage class: Well drained

Runoff: High

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 7s

Land capability irrigated: None specified

Ecological site name: Sandstone Hill 25-32" PZ

Ecological site number: R082AY371TX

Typical vegetation: Little bluestem, sideoats grama, other perennial grasses, fringeleaf paspalum, pinhole bluestem, plains lovegrass, purpletop tridens, sand lovegrass, yellow Indiangrass, post oak, Texas wintergrass, blackjack oak, buffalograss, live oak, other perennial forbs

Rock outcrop

Landforms: Ridges

Geomorphic positions, two-dimensional: Backslope

Geomorphic positions, three-dimensional: Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Limestone and sandstone

Properties and Qualities

Slope: 12 to 40 percent

Percent of area covered by surface fragments: Not assigned

Depth to first restrictive layer: 0 to 2 inches lithic bedrock

Slowest permeability to 60 inches, within and below first cemented restrictive layer: 0.6 to 2.0 in/hr (moderate)

Salinity, representative within 40 inches: Not saline

Salinity, maximum within 40 inches: Not saline

Sodicity, representative within 40 inches: Not sodic

Sodicity, maximum within 40 inches: Not sodic

Runoff: Very high

Flooding frequency: Not flooded

Interpretive Groups

Land capability nonirrigated: 8s

Land capability irrigated: None specified

Ecological site name: Not assigned

Ecological site number: Not assigned

Prime Farmland

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land/or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 5 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 84,177 acres in the survey area or nearly 14.1 percent of the total acreage meets the soil requirements for prime farmland. Prime farmland is located throughout the survey area. Most of the acreage is used predominantly for rangeland, with some areas used as improved pasture, and cultivated crops.

A trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units that make up the prime farmland in Mason County are listed in table 5. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help 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 forestland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

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

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

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

Interpretive Ratings

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

Rating Class Terms

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

Numerical Ratings

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

Crops and Pasture

Matt Kast, USDA-NRCS District Conservationist, prepared this section

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

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

In Mason County, about 53,000 acres, or about 8.8 percent of the land area, is used for cropland, pasture, and orchards.

Management of Cropland

About 20,000 acres in the county are cropland. About 5,000 acres are irrigated annually and the rest are nonirrigated.

The major irrigated crops are peanuts, watermelons, alfalfa, and haygrazer.

The major nonirrigated crops are wheat and oats. Wheat and oat plantings are used mainly for livestock grazing and hay.

Irrigation water comes mainly from wells. Primarily sprinkler irrigation systems are used.

Sprinkler systems throughout the county include siderolls and more recently center pivot systems.

Irrigation water management is important because of the high cost of pumping water and the need to conserve the water. Irrigation water should be applied at the proper times, and in the amounts required by the crop. Irrigation timing can be determined by the feel and appearance method, moisture monitoring devices like gypsum blocks and tensiometers, and by the moisture accounting method. Crop needs can be determined for various growth stages from consumptive use curves.

Irrigation water should be distributed evenly to all parts of the field. Annual or biennial evaluations of surface and sprinkler irrigation systems are recommended to locate inefficiencies in distribution so they can be corrected. On surface systems, land leveling, land grading, surge irrigation systems, shortening irrigation runs, and cut-back head can be used to increase distribution efficiency. On sprinkler systems, replacing worn nozzles can increase distribution efficiency. Also the systems should be operated at the pressures designed by manufacturers or distributors to ensure a high degree of efficiency. On all systems, soil compaction should be controlled to ensure uniform infiltration rates.

On all cropland, soil and water conservation are important concerns. Crop residue management and practices such as furrow diking, cover cropping, contour farming, and field terracing address these concerns. These practices help to control wind and water erosion, conserve moisture, and maintain or improve soil tilth. Practices that conserve soil moisture generally result in higher crop yields.

Crop residue management practices include crop residue use, delayed seedbed preparation, and conservation tillage. Leaving crop residues on the soil surface protects the soil against wind erosion, reduces soil crusting and detachment of soil particles, thereby decreasing runoff and water erosion, and reduces evaporation of soil moisture. In addition, it improves the tilth of the surface layer and reduces compaction by farm machinery.

Tillage should be sufficient to prepare a good seedbed and control weeds without damaging the structure of the soil. Heavy traffic on the soil, especially when it is wet, causes the formation of a compaction pan by destroying soil structure. Compaction reduces soil porosity and restricts root growth into and through the compacted layer. This

limits the ability of the root system of a crop to take up moisture and nutrients, and decreases yields. Compaction also increases the loss of moisture and nutrients through runoff and erosion. Deep chiseling and controlled traffic patterns are two methods that will alleviate compaction problems. Surface roughening to create clods or beds on the soil surface can be used to control wind erosion.

The proper use of fertilizer is needed on all cultivated soils. Soil analyses and knowledge of the fertilizer application history on a field are needed to estimate accurately the kinds and amounts of nutrients needed to produce a specific yield. An annual soil analysis can detect a buildup or depletion of required nutrients for each crop. In addition, plant analyses can be used to determine nutrient deficiencies in a growing crop.

The proper placement and formulation of fertilizer nutrients can also aid in the efficiency of their use. Banding, foliar application, and slow-release formulations can help reduce soil tie-up of nutrients and leaching potential.

Management of Pastureland and Hayland

Pastureland and hayland in the county comprise about 27,000 acres. It is mostly nonirrigated.

Management includes choosing plants suited to the soil, fertilizing, rotating pastures for proper grazing, and weed/brush control. Irrigation water management is important where pastureland or hayland are irrigated.

Many high producing grasses are suitable for improved pasture. (fig. 19) The most widely used grasses are improved bermudagrass, Kleingrass, and Wilman lovegrass.

Application of fertilizer is essential for economical production of irrigated pasture and hay. Fertilizer on nonirrigated pasture should be applied when moisture is adequate. All fertilizer should be applied according to need as indicated by soil or plant analysis.

Rotation of pastures for proper grazing is an important practice. Timely rotation allows for maximum returns from the improved grasses. Weeds and brush can be controlled with such measures as mowing, prescribed burning, or treatment with approved herbicides.



Figure 19.—An area of Acove-Menard complex, 0 to 5 percent slopes, used for pasture.

Management of Orchards

About 1,000 acres are presently in orchards. These orchards utilize trickle irrigation systems.

Pecans are the major orchard crop grown. Most of the soils presently used for irrigated row crops are also well suited to pecan production. Interest in pecans has increased considerably in the past few years, and a number of pecan orchards have been established. Selecting varieties which are disease resistant, drought hardy, and consistent producers is essential to efficient production. Other orchard crops with potential for this area include grapes, walnuts, peaches, and apples.

Good orchard management corresponds to a great degree to good management for other irrigated crops. Proper tillage, management of residue, a well-designed fertilization program, timely disease and insect control, and irrigation water management are important practices.

Yields per Acre

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

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 also are 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 table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or Texas Agrilife Research can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

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

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit (USDA, 1961).

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

Class 1 soils have slight limitations that restrict their use.

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

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

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

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

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

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

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

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

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

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

The capability classification of the soils in this survey area is provided in the section Detailed Soil Map Units, and in table 6.

Rangeland

Mark Moseley, Rangeland Management Specialist, Natural Resources Conservation Service, prepared this section.

Rangeland is a type of land covered with native vegetation consisting of a wide variety of grasses, grass-like plants, forbs, shrubs, and trees. The species may or may not be grazed but are generally suitable for grazing and are found in sufficient amounts to justify grazing use. Rangeland receives no regular or frequent agronomic treatment and is managed according to ecological principles and practices. The composition and production of the plant community is determined by the brush management, soil, climate and topography, overstory canopy, and grazing history.

Soil Survey of Mason County, Texas

About 580,000 acres or 97 percent of Mason County is rangeland. The original vegetation was predominantly a fire-climax open community composed of tall and midgrasses interspersed with occasional trees and woody shrubs.

The vegetative community of Mason County rangelands has changed drastically over the past 100 years. Widely fluctuating climatic conditions, heavy continuous livestock grazing with multiple classes of livestock, many types of brush management plus the elimination of fire (with the exception of wildfire) are the major factors driving the change. Highly desirable tall grasses and perennial forbs have been replaced with less desirable mid and short grasses, annual forbs, Ashe and redberry juniper, mesquite and other woody plants and cacti. Prescribed fire is currently being restored to Mason County on a limited basis.

Rangeland is the main renewable natural resource in Mason County. The major enterprises are ranching and raising livestock and the management of native game species. Sheep, goats, and cattle are the main types of livestock. There are also some exotic game species in the county. Recreational pursuits include hunting and nature tourism.

Several livestock operations supplement rangeland grazing with tame pasture and grazing crops produced on cropland. Kleingrass, 'Wilman' lovegrass and bermudagrass are commonly used tame pasture grasses. Small grains and forage sorghums also enhance livestock grazing.

Rangeland forage production occurs primarily during two distinct growth periods. Approximately 60 to 70 percent of the annual growth is produced in April, May, and June when spring rains and moderate temperatures are most favorable to the growth of warm season plants. A secondary growth period occurs in September and October when fall rains and gradually cooling temperatures are common.

Droughts of varying lengths are frequent and affect forage production in this area. Short midsummer droughts are normal. Long drought periods, lasting from several months to several years, are more normal than a rarity.

Soils vary in their capacity to produce plants. Soils that produce about the same kinds, amounts, and proportions of forage plants are grouped into ecological sites. Each ecological site is capable of producing historic, native vegetation. Even the climax plant community will fluctuate from year to year or within years depending upon rainfall. Timing can be just as influential on plant growth as rainfall amounts. But, the composition changes very little when considered over several years. The historic vegetation consists of the plants that were growing there when the region was first settled and is a result of the natural processes occurring at that time. These include periodic fires, droughts, browsing from the native wildlife and periodic rests. The most productive and diverse combination of forage plants on an ecological site is generally the climax vegetation.

Preferred plants are those in the native plant community that tend to decrease in relative amounts under heavy continuous grazing by domestic livestock. They are the most palatable to livestock or wildlife and are generally the most productive perennial grasses and forbs.

Desirable plants are those in the native plant community that increase in relative amounts as the more "preferred" plants are reduced by continuous heavy grazing. "Desirable" plants are less palatable to livestock than "desirable" plants, but do provide nutrients.

Undesirable plants are those not preferred by grazing or browsing animals. These plants offer little forage and limited resource protection. Some may be toxic. Forced grazing on these plants will reduce intake by livestock and wildlife.

Invaders are plants not native to the site. These plants can be native to the area but may not originally occur on a given site. Invaders can become established along with desirable plants after the climax vegetation has been reduced. This usually results from the lack of fire coupled with heavy continuous grazing. However, some invaders can be a result of many years of no grazing or adverse weather. Juniper is one of those types of plants. Some invaders contribute to the forage base. Kleingrass would be one of these plants.

The most significant management decision affecting rangeland is the stocking rate. The manager must evaluate and balance the forage supply with the animal demand to determine carrying capacity. (fig. 20) This is not an exact science as rainfall occurs as episodic events. Balancing animal numbers with forage supply implies flexibility and adaptive management over time with risk considerations. This is to prevent production from going down with expenses going up. Wildlife populations should also be managed within their carrying capacity.

Total production is the pounds per acre of air-dry vegetation that can be expected to grow on an ecological site during favorable, normal, or unfavorable years of precipitation. However, yields must be adjusted according to such factors as exposure, amount of shade, recent rains, dry periods, and the stage of growth. Yields include all vegetation regardless of availability or palatability to grazing animals. This includes current year's growth of leaves, twigs (woody plants), fruit (woody plants) and stems (grass plants). It does not include the increase in stem diameter of trees and shrubs.

Evaluation Tools

Current forage production depends on the Similarity Index, ecological site, the management plan, and the moisture available to plants during their growing season. Total rainfall may not be as important as when the moisture comes. Effective rainfall is the most important. Rain falling outside of the growth curve will not be as helpful as that falling within the optimum growth period. Rangeland with higher Similarity Indexes will retain more rainfall and have less runoff.

There are three tools used to evaluate rangeland. These are the *Similarity Index*, *Range Health*, and *Range Trend*.



Figure 20.—Lambs and their guard llama graze on an area of Castell sandy loam, 1 to 5 percent slopes. Proper stocking rates allow domestic and wild animals to have abundant forage.

Similarity Index is the gauge to compare the present plant composition to the perceived climax or reference plant community. The Index is calculated on an air-dry-weight basis. An Index of 100 would suggest the current plant community is near the same as the historic plant community. In comparison, an Index of 25 would suggest that only one-fourth of the historic plants still occur. Similarity Index can also be used to compare the current plant community to a desired plant community chosen by the land manager based on goals and objectives. This Index changes slowly over time.

Range Health is a measure of how well the land is functioning. It is measured by indicators that characterize the soil factors, hydrologic factors, and the biotic factors unique to an ecological site. These changes take place gradually and can be subtle. They can be misinterpreted or overlooked. For instance, growth from above average rainfall may lead to the conclusion that the range is in good health when actually the plants may be composed of a large percent of low functioning plants. Conversely, some rangeland that has been closely grazed for short periods may look degraded but still have the ability to recover.

Range Trend is a tool to monitor change for the plant community being evaluated. One-time readings do not measure trend. Rather, monitoring over time reveals the direction and magnitude of change for a plant community. Transects and photo points are only two of many techniques to monitor change.

Years of prolonged abuse may deplete the seed or rootstock source of desirable vegetation. In severe cases, sometimes the topsoil is lost, permanently impacting the productive capacity of the soil. In such instances vegetative re-establishment is a choice. As a rule of thumb, reseeding should be considered when less than 15 percent of the desired vegetation remains. Restoration through proper stocking rates, brush management, prescribed fire and grazing management is possible most of the time and does not carry the risk of failure reseeding might have. If reseeding is needed, it can be applied with brush control or other mechanical treatment to revitalize stands of native plants. Thereafter, management practices must be applied to maintain and improve the range.

Rangeland Productivity

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

Table 7 shows, for each soil that supports rangeland vegetation, the ecological site and the potential annual production of vegetation in favorable, normal, and unfavorable years. An explanation of the column headings in the table follows.

An *ecological site* is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of the site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production.

Descriptions of ecological sites are available in the local offices of the Natural Resources Conservation Service or on the internet at <http://www.nrcs.usda.gov/technical/efotg/>.

Total dry-weight production is the amount of vegetation that can be expected to grow annually on well managed rangeland 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 fruits 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 temperatures make growing conditions substantially better than average. In a normal year, growing conditions are

about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Range management requires knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in the "National Range and Pasture Handbook," which is available on the internet at <http://www.glti.nrcs.usda.gov> or in local offices of the Natural Resources Conservation Service.

The objective in range management is to control grazing so that the plants growing on a site remain or improve to about the same in kind and amount as the climax plant community for that site. Such management generally results in the optimum production of vegetation, reduction of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Good production of livestock and forage on rangeland is obtained primarily by managing the time of grazing and limiting the amount of forage removed. The green parts of plants manufacture food for growth and store part of it for use in regrowth and seed production.

A typical growth curve for rangeland in Mason County is as follows:

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	2	3	7	20	30	15	5	10	4	2	1

Approximately 72 percent of the annual forage production occurs in the months April to July responding to spring and early summer rains. A second smaller growth period may occur in the fall if sufficient moisture is available.

A typical growth curve for Mason County for small grains is as follows:

Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
7	15	22	19	4	0	0	0	0	7	16	10

Approximately 63 percent of the annual grain production occurs in the months January to April responding to winter precipitation.

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

Soils vary in their capability to produce grasses and other plants. Soils that produce about the same kinds and amounts of forage are grouped into an ecological site.

An ecological site is a distinctive kind of rangeland that produces a characteristic natural plant community. This community differs from natural plant communities on other ecological sites in kind, amount, and proportion of range plants. This natural plant community is also referred to as the historic climax plant community or climax vegetation because it is the product of all the environmental factors responsible for its development.

Generally, the climax vegetation consists of the plants that were present when the area was first settled. If a site contains at least 60 percent of the plants that characterize the climax vegetation, the plant community is relatively stable. It will replicate itself so that plant composition will not change significantly as long as the environment remains unchanged.

Ecological sites are subject to many influences that modify or even temporarily destroy vegetation. Examples are drought, overgrazing, wildfires, and short-term tillage. If these conditions are not too severe, the plant community will recover and return to climax.

However, severe deterioration of the ecological site may permanently alter the potential of the site.

Grazing can change the quality and quantity of forage on an ecological site by changing the composition of the plant community, whereas rainfall changes the total production.

Potential forage production depends on the ecological site. Current forage production depends on Similarity Index and the moisture available to plants during their growing season.

Management Practices. Following years of prolonged overuse of range, seed sources of desirable vegetation will be eliminated. Under these conditions, the vegetation must be reestablished before management can be effective. The condition of the range can be improved by brush control, range seeding, fencing, water development, or other mechanical treatments to revitalize stands of native plants as long as these treatments are coupled with proper stocking rates and grazing management.

Prescribed Grazing. The objective of this practice is to graze at an intensity that will maintain enough cover to protect the soil and maintain or improve the quantity of vegetation. This usually involves some form of deferment until the desirable forage plants have recovered. To be successful, the grazing management must be tailored to conditions existing in each ranch and meet the needs of the plants and animals as well as the goals of the rancher.

Fencing. This practice provides management control over livestock and to an extent wildlife. Fencing is recommended along terrain features to facilitate the easy movement of livestock, help in distributing grazing, and to increase livestock density.

Prescribed Burning. Prescribed burning is an effective management tool to create a desired plant community. Burning can suppress unwanted vegetation, increase forage quality, increase germination of some species and alter the structure of existing woody plants.

Ecological Sites

The following section describes each ecological site in Mason County. The potential plant community is described as well as the site's response to heavy, continuous grazing. For additional information on the soils in each ecological site, refer to the section on detailed soil map units. Information on rangeland forage yields for each soil can be found in table 7.

An ecological site is indicated for each soil map unit listed in table 7. The relationship between soils and vegetation was established during this survey; thus ecological sites generally can be determined directly from the soil map. Soil properties that affect moisture supply, such as soil depth and texture have the greatest influence on the productivity of range plants. Soil reaction, slope, erosion history, salt content, or seasonal high water tables are also important.

Two MLRA's occur in Mason County; MLRA 81B—Edwards Plateau, Central Part; and MLRA 82A—Texas Central Basin. Each MLRA has its unique set of soils, ecological sites, and vegetation. There are twenty-three ecological sites identified in Mason County, ten in MLRA 81B, and thirteen in MLRA 82A.

In MLRA 81B—Adobe, Clay Loam, Loamy Bottomland, Low Stony Hill, Redland, Shallow, Steep Adobe, Steep Rocky, Stony Loam, and Very Shallow.

In MLRA 82A—Granite Gravel, Granite Hill, Gravelly Sandy Loam, Loamy Bottomland, Loamy Sand, Red Sandy Loam, Red Savannah, Sandstone Hill, Sandy, Sandy Loam, Shallow Granite, Shallow Ridge, and Tight Sandy Loam.

MLRA 81B—Edwards Plateau, Central Part

Adobe Ecological Site 23-31" PZ. This site includes soil map unit: the Kerrville and Real parts of KVE—Kerrville, Real, and Sunev soils, 1 to 12 percent slopes.

The climax plant community is a tall grass and mid grass, oak savannah with a species composition by weight of 85 percent grasses, 5 percent forbs, and 10 percent woody vegetation.

The dominant grass is little bluestem, which generally makes up 30 percent of the total vegetation. The other grasses are sideoats grama, tall grama, yellow Indiangrass, silver bluestem, slim tridens, pinhole bluestem, cane bluestem, tall dropseed, hairy grama, and perennial threeawn. The dominant forbs include Engelmann daisy, bush sunflower, and sensitive briar. The woody plants include live oak, Texas oak, flameleaf sumac, evergreen sumac, agarito, and greenbriar.

Little bluestem, Indiangrass, Engelmann daisy, and Texas oak are eliminated from the plant community if domestic livestock continuously graze them. These plants are then replaced by sideoats grama, seep muhly, and live oak. If continuous heavy grazing continues for many years, Ashe juniper will increase and form a dense stand with an understory of plants, such as Texas grama, red grama, puff sheath dropseed, Lindheimer muhly, and Texas persimmon.

Clay Loam Ecological Site 23-31" PZ. This site includes soil map units: CAC—Campwood, Sunev, and Valera soils, 0 to 5 percent slopes; the Sunev part of KVE—Kerrville, Real, and Sunev soils, 1 to 12 percent slopes; LuC—Luckenbach clay loam, 0 to 5 percent slopes (fig. 21); the Sunev part of MSC—Mereta-Cho-Sunev complex, 0 to 5 percent slopes, rocky; SuD—Sunev clay loam, 1 to 8 percent slopes; and VeD—Venus clay loam, 0 to 8 percent slopes, rocky.

The climax plant community is a tall grass prairie with a species composition by weight of 85 percent grasses, 15 percent forbs, and a trace of woody species.

The dominant grass is little bluestem, which generally makes up 30 percent of the total vegetation. Other plants include sideoats grama, vine mesquite, yellow Indiangrass, big bluestem, Canada wildrye, live oak, silver bluestem, Texas wintergrass, cane bluestem, hairy wedelia, Texas cupgrass, tall dropseed, and plains lovegrass.



Figure 21.—On the surface, native Indiangrass grows on an area of Luckenbach clay loam, 0 to 5 percent slopes. These soils occur on footslopes of alluvial plain remnants associated with the Hensell Sand formation. Luckenbach soils are in the Clay Loam ecological site.

The dominant forbs include Maximilian sunflower, Engelmann daisy, and bush sunflower. The woody plants include elm, live oak, hackberry, bumelia, greenbriar, and elbowbush.

Little bluestem, Indiangrass, and big bluestem are grazed out of the plant community if livestock continuously graze them at heavy stocking rates. These plants are replaced by sideoats grama, Texas wintergrass, cane bluestem, and buffalograss. Continued heavy use causes further deterioration and plants such as tumblegrass, hairy tridens, Texas grama, red threeawn, western ragweed, broomweed, prairie coneflower, and Ashe juniper, will dominate the site.

Loamy Bottomland Ecological Site 23-31" PZ. This site includes soil map units: OaB—Oakalla clay loam, 0 to 2 percent slopes, occasionally flooded.

The historic climax plant community is a tall grass bottomland with scattered trees including pecan, elm, several oak species, cypress, hackberry, walnut, hoptree, and sycamore. The species composition is approximately 80 percent grasses, 15 percent woody plants, and 5 percent forbs.

The dominant tall grass species include little bluestem, big bluestem, yellow Indiangrass, switchgrass, and eastern gamagrass all of which generally make up 50 percent of the total vegetation. Midgrasses present include sideoats grama, plains lovegrass, vine mesquite, pinhole and cane bluestem, meadow dropseed, purpletop tridens, southwestern bristlegrass, and Texas cupgrass. Cool-season midgrasses present are Texas wintergrass, and Canada and Virginia wildryes. Buffalograss and fall witchgrass, shortgrasses, may also be present. Mid and shortgrasses make up 30 percent of the plant community. Woody plants including pecan, elm, several oak species, cypress, hackberry, sycamore, walnut, hoptree, greenbriar, and wild grape make up 15 percent of the plant community. Forbs, such as western indigo, hairy ruellia, hairy tubetongue, aster, Maximilian sunflower, and Engelmann daisy are present.

Continuous grazing of livestock with high stocking rates will eliminate little bluestem, big bluestem, yellow Indiangrass, switchgrass, eastern gamagrass, Canada and Virginia wildryes, Maximilian sunflower, and Engelmann daisy from the plant community in a few years. These plants are replaced by the midgrasses including sideoats grama, plains lovegrass, dropseed, and the woody plants. If the high stocking rates and continuous grazing practice continues, the site will deteriorate to a dense stand of Ashe juniper, Texas persimmon, mesquite, oaks, elm, and sycamore and with an herbaceous understory that is all but eliminated with small amounts of threeawn, Texas wintergrass, common bermudagrass, upright prairie coneflower, common broomweed, and western ragweed.

Low Stony Hill Ecological Site 23-31" PZ. This site includes soil map units: RhE—Roughcreek very gravelly clay loam, 1 to 12 percent slopes, very rocky; RkE—Roughcreek very cobbly clay, 1 to 12 percent slopes, very rocky; the 12 to 15 percent slopes part of Roughcreek part of RRG—Roughcreek-Rock outcrop complex, 12 to 40 percent slopes; TRE—Tarrant-Rock outcrop complex, 1 to 12 percent slopes (fig. 22); the Tarrant 12 to 15 percent slopes part of TRG—Tarrant-Rock outcrop complex, 12 to 40 percent slopes.

The climax plant community is a tall grass savannah with motts of live oak throughout the landscape. The species composition is approximately 80 percent grasses, 15 percent woody plants, and 5 percent forbs.

The dominant grasses are little bluestem and sideoats grama, which generally make up 40 percent of the total vegetation. Other grasses include yellow Indiangrass, fall witchgrass, wildrye, green sprangletop, meadow dropseed, cane and pinhole bluestem, hairy grama, Texas wintergrass, curlymesquite, and buffalograss. Woody plants include live oak, shin oak, evergreen sumac, hackberry, elbowbush, redbud, and white honeysuckle. Forbs, such as orange zexmenia, Engelmann daisy, bundleflower, snout bean, and bush sunflower, are present.

Continuous grazing with heavy stocking rates will slowly eliminate little bluestem, Indiangrass, and climax forbs from the plant community. These plants are then replaced by sideoats grama, buffalograss, hairy grama, dropseed, and the woody plants. If this destructive grazing practice continues, the site will deteriorate to a plant population of Ashe juniper, Texas persimmon, live oak, Texas grama, hairy tridens, curlymesquite, threeawn, prairie coneflower, and broomweed.



Figure 22.—An area of Tarrant-Rock outcrop complex, 1 to 12 percent slopes in the foreground. The Tarrant soils are in the Low Stony Hills ecological site.

Redland Ecological Site 23-31" PZ. This site includes soil map unit: HeD—Hensley loam, 1 to 8 percent slopes.

The climax plant community is a tall grass savannah with post oak, blackjack oak, and live oak throughout the landscape. The species composition is approximately 85 percent grasses, 10 percent woody plants, and 5 percent forbs.

The dominant grass is little bluestem, which generally makes up 50 percent of the total vegetation. Other grasses include big bluestem, yellow Indiangrass, sideoats grama, wildrye, plains lovegrass, Texas wintergrass, vine mesquite, pinhole bluestem, meadow dropseed, Texas cupgrass, curlymesquite, and buffalograss. Woody plants include live oak, post oak, blackjack oak, redbud, greenbriar, and hackberry. Forbs, such as velvet bundleflower, Engelmann daisy, orange zexmenia, and Mexican sagewort, are present.

Continuous grazing with heavy stocking rates will slowly eliminate big bluestem, Indiangrass, and little bluestem from the plant community. These plants are then replaced by sideoats grama, plains lovegrass, buffalograss, dropseed, and the woody plants. If this destructive grazing practice continues, the site will deteriorate to a plant population of Ashe juniper, Texas persimmon, prickly pear, mesquite, live oak, Texas grama, hairy tridens, red grama, prairie coneflower, and broomweed.

Shallow Ecological Site 23-31" PZ. This site includes soil map unit: the Mereta part of MSC—Mereta-Cho-Sunev complex, 0 to 5 percent slopes, rocky.

The climax plant community is a mid grass prairie with a species composition of 85 percent grasses, 10 percent woody plants, and 5 percent forbs.

The dominant grasses are little bluestem and sideoats grama which generally make up 20 and 15 percent, respectively, of the total vegetation. Other grasses include Texas wintergrass, silver bluestem, Arizona cottontop, dropseed, slim tridens, green

sprangletop, buffalograss, Wright's threeawn, plains bristlegrass, and curlymesquite. The woody plant is live oak. Forbs include bush sunflower, orange zexmenia, and gayfeather.

Continuous grazing with heavy stocking rates will slowly eliminate sideoats grama, little bluestem, and the climax forbs from the plant community. These plants are then replaced by buffalograss, curlymesquite, threeawn, agarito, and lotebush. If destructive grazing practices continue, the site will revert to a plant population of lotebush, prickly pear, Texas persimmon, tasajillo, agarito, threeawn, red grama, Texas grama, hairy tridens, prairie coneflower, and broomweed.

Steep Adobe Ecological Site 23-31" PZ. This site includes soil map unit: the Brackett and Kerrville parts of KTG—Kerrville, Brackett, and Tarrant soils, 12 to 40 percent slopes, very rocky.

The climax plant community is a tall grass savannah with motts of live oak and Texas oak scattered throughout the landscape. The species composition is 80 percent grasses, 15 percent woody plants, and 5 percent forbs.

The dominant grass is little bluestem, which generally makes up 30 percent of the total vegetation. Other grasses include yellow Indiangrass, sideoats grama, tall grama, seep muhly, slim tridens, hairy grama, silver bluestem, slim tridens, tall dropseed, and perennial threeawn. Woody plants include live oak, Texas oak, kidneywood, and shin oak. Forbs, such as bundleflower, sensitive briar, Maximilian sunflower, Engelmann daisy, and gayfeather, are found throughout the site.

Cattle grazing on this site is somewhat limited by steepness. Continuous grazing with heavy stocking rates will slowly eliminate little bluestem, Indiangrass, and sideoats grama from the plant community. These plants are then replaced by seep muhly, threeawn, hairy grama, dropseed, and the woody plants. If this destructive grazing practice continues, the site will deteriorate to a plant population of Ashe juniper, Texas persimmon, agarito, live oak, threeawn, Texas grama, hairy tridens, red grama, prairie coneflower, broomweed, and ragweed.

Steep Rocky Ecological Site 23-31" PZ. This site includes soil map unit: the Tarrant part of KTG—Kerrville, Brackett, and Tarrant soils, 12 to 40 percent slopes, very rocky; the Roughcreek 15 to 40 percent slopes part of RRG—Roughcreek-Rock outcrop complex, 12 to 40 percent slopes; and the Tarrant 15 to 40 percent slopes part of TRG—Tarrant-Rock outcrop complex, 12 to 40 percent slopes.

The climax plant community is a tall and mid grass savannah with motts of live oak, Texas oak, and shin oak throughout the landscape. The species composition is 75 percent grasses, 15 percent woody plants, and 10 percent forbs.

The dominant grasses are little bluestem and sideoats grama, which generally makes up 30 percent of the total vegetation. Other grasses include yellow Indiangrass, big bluestem, fall witchgrass, tall grama, cane bluestem, meadow dropseed, Texas wintergrass, slim tridens, hairy grama, green sprangletop, buffalograss, curlymesquite, and perennial threeawn. Woody plants include live oak, Texas oak, shin oak, Ashe juniper, kidneywood, and sumac. Forbs, such as bundleflower, sensitive briar, orange zexmenia, Engelmann daisy, and bush sunflower, are present.

Cattle grazing on this site is somewhat limited by steepness. (fig. 23) However, continuous grazing with heavy stocking rates will slowly eliminate little bluestem, Indiangrass, and sideoats grama from the plant community. These plants are then replaced by seep muhly, Texas wintergrass, threeawn, hairy grama, dropseed, and the woody plants. If this destructive grazing practice continues, the site will deteriorate to a plant population of Ashe juniper, Texas persimmon, agarito, live oak, threeawn, Texas grama, hairy tridens, red grama, prairie coneflower, broomweed, and ragweed.

Stony Loam Ecological Site 23-31" PZ. This site includes soil map unit: ERD—Eckert-Rock outcrop complex, 1 to 8 percent slopes; and ERG—Eckert-Rock outcrop complex, 8 to 30 percent slopes.

The climax plant community is grassland with an occasional live oak and low shrubs throughout the landscape. Mid and short grasses along with forbs and a few small shrubs are present. The plant composition consists of 90 percent grasses, 5 percent woody plants, and 5 percent forbs.



Figure 23.—An area of Roughcreek-Rock outcrop complex, 12 to 40 percent slopes. The Roughcreek soils are in the Steep Rocky ecological site. Cattle grazing is limited on this site because of the steep slopes.

The dominant grass is little bluestem, which generally makes up 25 percent of the total vegetation. Other grasses include green sprangletop, sideoats grama, Arizona cottontop, vine mesquite, pinhole bluestem, fall witchgrass, and hooded windmillgrass. Woody plants include live oak, tasajillo, Texas persimmon, yucca, and mesquite. Forbs, such as sagewort, and gaura are present.

Continuous grazing with heavy stocking rates will slowly eliminate little bluestem, sprangletop, and sideoats grama from the plant community. These plants are then replaced by croton, prickly pear, tasajillo, Texas persimmon, mesquite, and other woody plants.

Very Shallow Ecological Site 23-31" PZ. This site includes soil map unit: the Cho part of MSC—Mereta-Cho-Sunev complex, 0 to 5 percent slopes, rocky; the Yates part of YNE—Yates-Nebgen-Rock outcrop complex, 1 to 12 percent slopes; and the Yates part of YNG—Yates-Nebgen-Rock outcrop complex, 12 to 40 percent slopes.

The climax plant community is a mid grass prairie with a species composition of 85 percent grasses, 10 percent woody plants, and 5 percent forbs.

The dominant grass is sideoats grama, which generally makes up 30 percent of the total vegetation. Other grasses include little bluestem, Texas wintergrass, silver bluestem, Arizona cottontop, dropseed, white tridens, hairy grama, little bluestem, slim tridens, buffalograss, Wright's threeawn, and curlymesquite. The woody plant is live oak. Forbs include bush sunflower, orange zexmenia, and gayfeather.

Continuous grazing with heavy stocking rates will slowly eliminate sideoats grama, little bluestem, and the climax forbs from the plant community. These plants are then replaced by buffalograss, curlymesquite, threeawn, agarito, and lotebush. If this destructive grazing practice continues, the site will deteriorate to a plant population of lotebush, prickly pear, Texas persimmon, tasajillo, agarito, threeawn, red grama, Texas grama, hairy tridens, prairie coneflower, and broomweed.

MLRA 82A—Texas Central Basin

Granite Gravel Ecological Site 25-32" PZ. This site includes soil map unit: the Lou part of KLE—Keese-Lou-Rock outcrop complex, 1 to 12 percent slopes; and the Lou and Click parts of LRC—Lou-Click-Voca complex, 0 to 5 percent slopes, rocky.

The potential plant community is an open savannah of post oak, blackjack oak, and live oak with mid and tall grasses in thin stands. The species composition by weight is 82 percent grasses, 8 percent forbs, and 10 percent woody plants.

The dominant grass is little bluestem, which generally makes up 30 percent of the total vegetation. Other grasses include sideoats grama, yellow Indiangrass, sandhill lovegrass, Arizona cottontop, fringed leaf paspalum, pinhole bluestem, vine mesquite, and purpletop tridens. The dominant forbs include orange zexmenia, sagewort, snoutbean, and heath aster. The woody plants include post oak, blackjack oak, and live oak.

Little bluestem, sideoats grama, and the better-quality forbs are grazed by livestock. These plants are replaced by an increase in oaks, threeawn, hairy grama, yucca, mesquite, and persimmon. Continued heavy use causes further deterioration and plants such as mesquite, whitebrush, yucca, Ashe juniper, gummy lovegrass, Texas grama, prairie coneflower, and basin sneezeweed will dominate the site.

Granite Hill Ecological Site 25-32" PZ. This site includes soil map unit: KRG—Keese-Rock outcrop complex, 12 to 35 percent slopes.

The climax plant community is a savannah with scattered motts of live oak and post oak which has an understory of mid and tall grasses. It has a species composition of 85 percent grasses, 5 percent forbs, and 10 percent woody plants.

The dominant grasses are sideoats grama and little bluestem, which generally make up 35 percent of the total vegetation. Other grasses include hairy grama, Canada wildrye, green sprangletop, plains lovegrass, and yellow Indiangrass. The dominant forbs are orange zexmenia, bush sunflower, and sensitive briar. The dominant woody plants include live oak, post oak, hickory, and elm.

Little bluestem, Indiangrass, and the better-quality forbs are grazed out of the plant community if livestock continuously graze them at high stocking rates. These plants are replaced by sideoats grama, sand dropseed, sand lovegrass, silver bluestem, and annual forbs. Continued heavy use causes further deterioration and plants, such as signalgrass, basin sneezeweed, prickly pear, juniper, tasajillo, whitebrush, mesquite, and annual forbs will dominate the ecological site.

Gravelly Sandy Loam Ecological Site 25-32" PZ. This site includes soil map unit: the Voca part of LRC—Lou-Click-Voca complex, 0 to 5 percent slopes, rocky; and VoC—Voca gravelly sandy loam, 0 to 5 percent slopes, rocky.

The climax plant community is a tall and mid grass savannah with occasional post oak and blackjack oak throughout the landscape. The species composition is 90 percent grasses, 5 percent forbs, and 5 percent woody plants.

The dominant grass is little bluestem, which generally makes up 30 percent of the total vegetation. Other grasses include Arizona cottontop, sideoats grama, yellow Indiangrass, vine mesquite, Texas wintergrass, Scribner's panicum, purpletop tridens, wildrye, plains lovegrass, sandhill lovegrass, hooded windmillgrass, fringed leaf paspalum, and pinhole bluestem. Woody plants include post oak, blackjack oak, live oak, and greenbriar. Forbs, such as Maximilian sunflower, Engelmann daisy, sensitive briar, and prairie clovers, are present.

Continuous heavy grazing will slowly eliminate little bluestem and Indiangrass from the plant community. These plants are then replaced by sideoats grama, purpletop tridens, pinhole bluestem, hairy grama, sand lovegrass, Texas wintergrass, and the woody plants. Continued heavy use causes further deterioration and plants, such as whitebrush, mesquite, prickly pear, greenbriar, live oak, Texas grama, camphorweed, red grama, curlycup gumweed, sneezeweed, and ragweed will dominate the site.

Loamy Bottomland Ecological Site 25-32" PZ. This site includes soil map unit: the Fieldcreek part of FRC—Fieldcreek-Riverwash complex, 0 to 5 percent slopes, flooded.

The climax plant community is a semi-wooded flood plain that has trees shading as much as 15 percent of the area along the water courses. Away from the water courses, there are tall and mid grasses with occasional trees.

The dominant plants are big bluestem, little bluestem, and vine mesquite, which generally make up 30 percent of the total vegetation. Other grasses include yellow Indiangrass, eastern gamagrass, switchgrass, southwestern bristlegrass, Canada wildrye, purple tridens, broadleaf uniola, Scribner's panicum, plains lovegrass, eastern gamagrass, Texas wintergrass, sideoats grama, cane bluestem, and buffalograss. Woody plants include pecan, walnut, oak, elm, mulberry, sycamore, wafer ash, button willow, wild grape, hackberry, greenbriar, honeysuckle, peppervine, and poison ivy or poison oak. Forbs include Maximilian sunflower, bush sunflower, Engelmann daisy, blood ragweed, and yellow neptunia.

Continuous grazing with heavy stocking rates will slowly eliminate grasses, such as Indiangrass, eastern gama, big bluestem, little bluestem, and switchgrass, from the plant community. These plants are then replaced by meadow dropseed, vine mesquite, silver bluestem, sideoats grama, buffalograss, and mesquite. If this destructive grazing practice is continued the site will deteriorate to an understory plant community of prickly pear, buffalograss, threeawn, Texas wintergrass, red grama, and annual weeds and grasses with a dense overstory of oak, elm, mesquite, and hackberry. Extensive shading by trees and thicket-forming plants can cause a management problem on this site.

Loamy Sand Ecological Site 25-32" PZ. This site includes soil map unit: the Campair part of ACC—Acove-Campair-Loneoak complex, 0 to 5 percent slopes; and the Campair part of LOC—Loneoak-Campair complex, 0 to 5 percent slopes.

The climax plant community is a tall grass savannah with motts of live oak throughout the landscape. The species composition is approximately 80 percent grasses, 15 percent woody plants, and 5 percent forbs.

The dominant grass is little bluestem, which generally makes up 25 percent of the total vegetation. Other plants include sideoats grama, Texas wintergrass, dropseed, panicum, post oak, sand bluestem, sand lovegrass, yellow Indiangrass, and silver bluestem.

Continuous grazing with heavy stocking rates will slowly eliminate little bluestem, sand bluestem, and Indiangrass from the plant community. These plants are then replaced by plains lovegrass, sand lovegrass, hooded windmillgrass, threeawn, dropseed, and the woody plants. If destructive grazing practices continue, the site will revert to a plant population of prickly ash, whitebrush, mesquite, prickly pear, catclaw, greenbriar, croton, tumble lovegrass, red lovegrass, windmillgrass, and weedy forbs.

Red Sandy Loam Ecological Site 25-32" PZ. This site includes soil map unit: the Hye and Oben parts of HND—Hye-Nebgen-Oben complex, 1 to 8 percent slopes, rocky; the Hye and Oben parts of HOD—Hye-Oben-Loneoak complex, 1 to 8 percent slopes; and HPC—Hye-Pontotoc complex, 0 to 5 percent slopes.

The climax plant community consists of live oak and post oak savannah. The trees are large on this site. Live oak is more abundant than post oak. The plant composition usually consists of 75 percent grasses, 10 percent woody plants, and 15 percent forbs.

The dominant grass is little bluestem, which generally makes up 30 percent of the total vegetation. Other grasses include sandhill lovegrass, yellow Indiangrass, green sprangletop, purpletop tridens, sideoats grama, Arizona cottontop, Scribner's panicum, plains lovegrass, and pinhole bluestem. Woody plants include live oak, post oak, greenbriar, wild grape, catclaw, and Texas oak. Forbs, such as Maximilian sunflower, Mexican sagewort, orange zexmenia, sensitive briar, bush sunflower, trailing wildbean, evening primrose, and many annual species, are present.

Continuous grazing with heavy stocking rates will slowly eliminate little bluestem, Indiangrass, sandhill lovegrass, and big bluestem from the plant community. These plants are then replaced by silver bluestem, hooded windmillgrass, dropseed, and the woody plants. If this destructive grazing practice continues, the site will deteriorate to a plant population of mesquite, prickly pear, prickly ash, whitebrush, tasajillo, gummy lovegrass, grassbur, red lovegrass, signalgrass, windmillgrass, and weedy forbs.

Red Savannah Ecological Site 25-32" PZ. This site includes soil map unit: the Ligon and Katemcy parts of LKD—Ligon-Katemcy-Keese complex, 1 to 8 percent slopes, very rocky; and the Katemcy part of KAC—Katemcy-Honeycreek complex, 0 to 5 percent slopes (fig. 24).

The climax plant community is a grassland with occasional post oak and blackjack oak throughout the landscape. Mid and short grasses along with forbs and a few small shrubs are present. The plant composition consists of 90 percent grasses, 5 percent woody plants, and 5 percent forbs.

The dominant grass is sideoats grama, which generally makes up 20 percent of the total vegetation. Other grasses include vine mesquite, Arizona cottontop, little bluestem, cane bluestem, buffalograss, plains bristlegrass, pinhole bluestem, wildrye, Texas wintergrass, and hooded windmillgrass. Woody plants include post oak, live oak, and hackberry. Forbs, such as sensitive briar, Engelmann daisy, orange zexmenia, and bundleflower, are present.

Continuous grazing with heavy stocking rates will slowly eliminate sideoats grama and wildrye from the plant community. These plants are then replaced by hooded windmillgrass, curlymesquite, buffalograss, Texas wintergrass, threeawn, hairy grama, and the woody plants. If this destructive grazing practice continues, the site will deteriorate to a plant population of Texas colubrina, whitebrush, mesquite, prickly pear, tasajillo, Texas persimmon, Texas grama, hairy tridens, red grama, prairie coneflower, broomweed, and ragweed.

Sandstone Hill Ecological Site 25-32" PZ. This site includes soil map unit: the Nebgen part of HND—Hye-Nebgen-Oben complex, 1 to 8 percent slopes, rocky; the Nebgen part of NRE—Nebgen-Rock outcrop complex, 1 to 12 percent slopes; the Nebgen part of NRG—Nebgen-Rock outcrop complex, 12 to 40 percent slopes; the Nebgen part of YNE—Yates-Nebgen-Rock outcrop complex, 1 to 12 percent slopes; and the Nebgen part of YNG—Yates-Nebgen-Rock outcrop complex, 12 to 40 percent slopes.



Figure 24.—An area of Katemcy-Honeycreek complex, 0 to 5 percent slopes. The Honeycreek soils are in the Sandy Loam ecological site, and the Katemcy soils are in the Red Savannah ecological site.

The climax plant community is a tall and mid grass savannah with post oak, live oak, and blackjack oak throughout the landscape. The species composition is 85 percent grasses, 10 percent woody plants, and 5 percent forbs.

The dominant plant is little bluestem, which generally makes up 40 percent of the total vegetation. Other plants include yellow Indiangrass, sideoats grama, sand lovegrass, fringed leaf paspalum, plains lovegrass, Texas wintergrass, buffalograss, purpletop tridens, green sprangletop, tall dropseed, and wildrye. Forbs include sensitive briar, Engelmann daisy, Mexican sage, and prairie clovers. Woody plants are post oak and blackjack oak.

Continuous grazing with heavy stocking rates will slowly eliminate little bluestem, Indiangrass, plains lovegrass, and sideoats grama from the plant community. These plants are then replaced by Texas wintergrass, silver bluestem, Arizona cottontop, hooded windmillgrass, dropseed, and the woody plants. If this destructive grazing practice continues, the site will deteriorate to a plant population of whitebrush, Texas persimmon, prickly pear, tasajillo, catclaw, red lovegrass, tumble windmillgrass, sand dropseed, and prairie coneflower.

Sandy Ecological Site 25-32" PZ. This site includes soil map unit: the Loneoak part of ACC—Acove-Campair-Loneoak complex, 0 to 5 percent slopes; the Loneoak part of HOD—Hye-Oben-Loneoak complex, 1 to 8 percent slopes; and the Loneoak part of LOC—Loneoak-Campair complex, 0 to 5 percent slopes.

The climax plant community is a tall and mid grass savannah with stands of post oak and blackjack oak throughout the landscape. The trees get rather large on this site. The species composition is generally 80 percent grasses, 15 percent woody plants, and 5 percent forbs.

The dominant plant is little bluestem, which generally makes up 40 percent of the total vegetation. Other grasses include yellow Indiangrass, plains lovegrass, sand lovegrass, purpletop tridens, fall witchgrass, and Scribner's panicum. Woody plants include post oak, blackjack oak, greenbriar, skunkbush sumac, and Texas oak. Forbs, such as Louisiana sage, Leavenworth vetch, Texas bullnettle, sensitive briar, bush sunflower, trailing wildbean, and western indigo, are present.

Continuous grazing with heavy stocking rates will slowly eliminate little bluestem and Indiangrass from the plant community. These plants are then replaced by plains lovegrass, sand lovegrass, hooded windmillgrass, dropseed, and the woody plants. If this destructive grazing practice continues, the site will deteriorate to a plant population of prickly ash, whitebrush, mesquite, prickly pear, catclaw, skunkbush sumac, greenbriar, croton, tumble lovegrass, red lovegrass, windmillgrass, and weedy forbs.

Sandy Loam Ecological Site 25-32" PZ. This site includes soil map unit: the Acove part of ACC—Acove-Campair-Loneoak complex, 0 to 5 percent slopes; AMC—Acove-Menard complex, 0 to 5 percent slopes; CeC—Castell sandy loam, 0 to 5 percent slopes, rocky; HkC—Honeycreek fine sandy loam, 0 to 5 percent slopes; the Honeycreek part of KAC—Katemcy-Honeycreek complex, 0 to 5 percent slopes; and the Menard part of MPC—Menard-Pedernales complex, 0 to 5 percent slopes.

The climax plant community is a tall and mid grass savannah with occasional post oak and live oak throughout the landscape. The species composition is 85 percent grasses, 5 percent woody plants, and 10 percent forbs.

The dominant grass is little bluestem, which generally makes up 30 percent of the total vegetation. Other grasses include big bluestem, yellow Indiangrass, sideoats grama, purpletop tridens, Texas wintergrass, silver bluestem, Arizona cottontop, wildrye, plains lovegrass, sand lovegrass, hooded windmillgrass, fringed leaf paspalum, Scribner's panicum, and pinhole bluestem. Woody plants include post oak, blackjack oak, live oak, and greenbriar. Forbs, such as Maximilian sunflower, Engelmann daisy, sensitive briar, and prairie clovers are present.

Continuous grazing with heavy stocking rates will slowly eliminate little bluestem, Indiangrass, and the better-quality forbs from the plant community. These plants are then replaced by sideoats grama, purpletop tridens, pinhole bluestem, hairy grama, sand lovegrass, Texas wintergrass, and the woody plants. If this destructive grazing practice continues, the site will deteriorate to a plant population of whitebrush, mesquite, prickly

pear, greenbriar, Texas persimmon, Texas grama, camphorweed, croton, red grama, signalgrass, curlycup gumweed, sneezeweed, and ragweed.

Shallow Granite Ecological Site 25-32" PZ. This site includes soil map unit: KeD—Keese gravelly sandy loam, 1 to 8 percent slopes, very rocky; the Keese part of KLE—Keese-Lou-Rock outcrop complex, 1 to 12 percent slopes; the Keese part of KRG—Keese-Rock outcrop complex, 12 to 35 percent slopes (fig. 25); the Keese part of LKD—Ligon-Katemcy-Keese complex, 1 to 8 percent slopes, very rocky; and the Keese part of LND—Ligon-Keese complex, 1 to 8 percent slopes, rocky.

The climax plant community is a post oak and live oak savannah. The understory is dominated by tall and mid grasses. The oak overstory shades about 20 percent of the ground. This site supports an abundance of forbs with some woody shrubs and vines. The species composition is 85 percent grasses, 10 percent woody plants, and 5 percent forbs.

The dominant grass is little bluestem, which generally makes up 25 percent of the total vegetation. Other grasses include tanglehead, yellow Indiangrass, sideoats grama, big bluestem, green sprangletop, plains lovegrass, Canada wildrye, Texas wintergrass, sand lovegrass, and hairy grama. Woody plants include live oak, post oak, elm, and hackberry. Forbs, such as Mexican sagewort, Engelmann daisy, bush sunflower, and bundleflower are present.

Continuous grazing with heavy stocking rates will slowly eliminate little bluestem, tanglehead, and Indiangrass from the plant community. These plants are then replaced by sideoats grama, sand dropseed, Arizona cottontop, hooded windmill, sand lovegrass, plains bristlegrass, hairy grama, and the woody plants. If this destructive grazing practice continues, the site will deteriorate to a plant population of whitebrush, juniper, elm, Texas persimmon, prickly pear, mesquite, yucca, signalgrass, tumble windmillgrass, threeawn, hairy grama, red grama, basin sneezeweed, ragweed, and other annual weeds.



Figure 25.—An area of Keese-Rock outcrop complex, 12 to 35 percent slopes. The shallow soils and exposures of rock outcrop limit the production of forage on this area. The Keese soils are in the Steep Granite ecological site.

Shallow Ridge Ecological Site 25-32" PZ. This site includes soil map unit: the Ligon part of LND—Ligon-Keese complex, 1 to 8 percent slopes, rocky.

The climax plant community is grassland with occasional post oak and blackjack oak throughout the landscape. Mid and short grasses along with forbs and a few small shrubs are present. The plant composition consists of 90 percent grasses, 5 percent woody plants, and 5 percent forbs.

The dominant grass is sideoats grama, which generally makes up 20 percent of the total vegetation. Other grasses include Arizona cottontop, vine mesquite, little bluestem, cane bluestem, plains bristlegrass, buffalograss, sideoats grama, pinhole bluestem, wildrye, Texas wintergrass, and hooded windmillgrass. Woody plants include post oak, live oak, and hackberry. Forbs, such as sensitive briar, Engelmann daisy, orange zexmenia, and bundleflower, are present.

Continuous grazing with heavy stocking rates will slowly eliminate sideoats grama and wildrye from the plant community. These plants are then replaced by hooded windmillgrass, curlymesquite, buffalograss, Texas wintergrass, threeawn, hairy grama, and the woody plants. If this destructive grazing practice continues, the site will deteriorate to a plant population of Texas colubrina, whitebrush, mesquite, prickly pear, tasajillo, Texas persimmon, Texas grama, hairy tridens, red grama, prairie coneflower, broomweed, and ragweed.

Tight Sandy Loam Ecological Site 25-32" PZ. This site includes soil map unit: the Pedernales part of MPC—Menard-Pedernales complex, 0 to 5 percent slopes; and PeC—Pedernales fine sandy loam, 0 to 5 percent slopes.

The climax plant community is a mid grass savannah with occasional post oak and live oak throughout the landscape. The species composition is 85 percent grasses, 10 percent woody plants, and 5 percent forbs.

The dominant grass is sideoats grama, which generally makes up 25 percent of the total vegetation. Other grasses include little bluestem, cane bluestem, pinhole bluestem, vine mesquite, Canada wildrye, Arizona cottontop, Texas wintergrass, and hooded windmillgrass. Woody plants include post oak, blackjack oak, live oak, and greenbriar. Forbs include Maximilian sunflower, Engelmann daisy, orange zexmenia, and bush sunflower.

Continuous grazing with heavy stocking rates will slowly eliminate little bluestem, sideoats grama, and wildrye from the plant community. These plants are then replaced by hooded windmillgrass, vine mesquite, Texas wintergrass, threeawn, hairy grama, buffalograss, and the woody plants. If this destructive grazing practice continues, the site will deteriorate to a plant population of Ashe juniper, mesquite, whitebrush, tasajillo, prickly pear, Texas persimmon, Texas grama, hairy tridens, red grama, prairie coneflower, broomweed, and ragweed.

Wildlife Habitat

Steve Nelle, USDA-NRCS Wildlife Biologist, prepared this section.

Wildlife is an important natural resource in Mason County. The area is renowned for its white-tailed deer population and the rich tradition of deer hunting. The economic contribution of lease hunting to landowners and the local economy has become as important as traditional livestock ranching.

The kinds and numbers of wildlife have changed considerably since settlement by European man. In the latter half of the 1800's, heavy and continuous livestock grazing led to a decline of the grasslands. The sparse grass cover, caused by heavy grazing, diminished the frequency, intensity, and extent of natural fires. As a result, woody plants, which had been suppressed by periodic fire, began to increase and dominate the entire landscape.

With this change to a more wooded and brushy landscape, combined with unregulated hunting, the major kinds of wildlife changed. Wild animals, once present in Mason County, which no longer exist, include bison, pronghorn, gray wolf, red wolf, black bear, jaguar, lesser prairie chicken, passenger pigeon, and Carolina parakeet.

Even with these changes, Mason County still supports an abundance and variety of wildlife. The kinds and numbers of wildlife depend largely on the distribution and quantity

of food, cover, and water. Soils affect the kind and amount of vegetation which provides food and cover. Soils and geology also affect the distribution of water. The soils in the survey area are grouped into ecological sites according to the kinds, proportions, and amounts of vegetation that the climate can support. These ecological sites vary in their ability to meet the habitat needs of different wildlife species. Each site can be managed to either benefit or harm wildlife habitat. Therefore, a good understanding of ecological sites, vegetation, and their response to management is essential to proper wildlife habitat management. For detailed information on ecological sites, refer to the "Rangeland" section of this soil survey.

In order for any species of wildlife to inhabit an area, the land must either naturally provide the needed habitat, or it must be managed so that the specific habitat requirements are met. Wildlife habitat can be maintained, developed, or improved by managing the existing plant cover, or by promoting the establishment of desired vegetation. The past and present management of the land has a major influence on wildlife habitat in the county. In Mason County, the land management practices that affect wildlife habitat include grazing management, brush and weed control, range seeding, pasture planting, management of cropland, livestock water development, and hunting practices. The trend toward increasing land development and fragmentation of larger properties into smaller units also has a profound effect on wildlife habitat.

White-tailed deer (fig. 26) are the most common of the large native mammals in the county. They have a definite impact on the rangeland resource as well as the ranching industry and the local economy. Deer are distributed across the entire county, and their populations are often in excess of the carrying capacity of the habitat. The eradication of the parasitic screw worm fly, predator control, the increase in brush, and the switch away from sheep and goat production have all been responsible for high deer numbers. In recent years, the deer population has fluctuated between about 75,000 and 110,000. Average deer densities range from about 5 to 8 acres per deer, however peak densities of 1 to 2 acres per deer have been documented in certain areas.



Figure 26.—A white-tailed buck on the move in an area of Tarrant-Rock outcrop complex, 1 to 12 percent slopes. Tarrant soils provide a variety of browse, and offer areas for cover and rest.

Deer feed primarily on browse, mast, and broadleaf forbs. Deer prefer to feed on forbs when available, since they are more nutritious than browse. Perennial forbs, such as bush sunflower, Engelmann daisy, orange zexmenia, bundleflower, spiderwort, and primrose provide high quality feed as well as a reliable, yearlong food supply, being deep-rooted and drought tolerant. Because of past grazing management and excessive deer numbers, some of the more preferred, perennial forbs have been greatly reduced. Annual forbs, such as filaree, tallow weed, wild vetch, and pigweed also provide high nutritional quality but are only present during periods of adequate soil moisture. As the soil dries, the shallow-rooted annuals die, providing no food for deer.

When forbs are not available, deer must consume browse. Browse, such as live oak, sumac, acacia, hackberry, and greenbriar is a reliable deer food since it is deep-rooted and produces food even in the dry periods. However, the best, most desirable browse plants are no longer abundant in Mason County. They have been so severely browsed for so long by livestock and deer, that they have been eliminated or greatly reduced in most areas. The presence of pronounced browse lines and severe hedging is a visual indicator of excessive browsing. The better browse plants are not reproducing well because of the vulnerability of seedlings to browsing. The less desirable browse plants, such as persimmon, whitebrush, mesquite, and juniper, are increasing. Mast, such as acorns, mesquite beans, prickly pear fruit, and persimmons are readily eaten when available.

Deer habitat management and deer herd management have become an important part of many ranching operations. Deer habitat is managed by retaining adequate, well distributed, brushy cover (fig. 27) and by maintaining or improving the food supply. Cover is retained by selectively controlling brush in patterns. Blocks or strips of thick brush are left interspersed between clearings. This provides escape cover and shade near the more open feeding areas. Deer food supplies are managed by retaining the better browse plants during brush-control projects and by practicing grazing management that minimizes competition for the good deer-food plants. Heavy and continuous grazing by livestock, especially sheep and goats, is detrimental to deer-food production. Moderate stocking with cattle and the use of grazing rotations are the best ways to ensure a reliable food supply. Keeping deer numbers at or near carrying capacity through hunting is also needed to keep the food supply productive.

Deer herd management involves a specified and selective harvest of deer based on age, sex, and antler characteristics to achieve a balanced and more desirable population. This usually involves a heavy harvest of does to improve the sex ratio and a selective harvest of bucks to improve antler size. As deer numbers are reduced, diet quality increases, leading to better body size and larger antlers. Progressive deer management, practiced by a growing number of landowners is based on annual deer surveys, a prescribed harvest, and keeping accurate records of harvest.

An estimated 90 percent of Mason County is leased to hunters primarily in the pursuit of white-tailed deer. An average of about 12,500 hunters harvests about 15,000 deer each year. Turkey, quail, dove, feral hogs, and exotic game animals are also hunted. Hunters pay several million dollars annually to Mason County landowners for the right to hunt. The local economy is further enriched by the expenditures of sportsmen on food, lodging, travel, and supplies.

Even though high deer numbers have been an economic asset to Mason County, their overpopulation has deteriorated the quality and diversity of the habitat. As the habitat deteriorates, only the lesser-quality food plants can thrive and reproduce. This decrease in the stable carrying capacity of the habitat has caused decreased diet quality for deer, which has led to decreased body weight, antler development, and reproduction. Even with a seemingly high harvest, there are still too many deer for the stable, yearlong food supply.

In addition to the native deer population, there are several thousand head of exotic hoof stock in Mason County. (fig. 28) These exotics are often enclosed within high fenced areas, but also occur as free ranging populations. They include axis deer, sika deer, fallow deer, red deer, blackbuck antelope, mouflon sheep, and aoudad sheep as well as many other species. These exotic herbivores are generally highly competitive with white-tailed deer. If their numbers are not managed, they pose a potential threat to native wildlife and vegetation.



Figure 27.—White-tailed deer resting in a brushy area.



Figure 28.—Exotic game on an area of Keese-Lou-Rock outcrop complex, 1 to 12 percent slopes.

The escape of the domestic pig has created a large and growing population of feral hogs. The introduction of the European wild boar and their interbreeding with feral hogs has made the animals wilder and smarter. These wild hogs damage fences, feeders, and fields and compete with livestock and other wildlife for food. Feral hogs are also considered a predator, and will kill and eat fawns, kids, and lambs, and will destroy the nests of ground nesting birds. They are hunted for sport, for meat, and to control the damage they cause.

Mason County also provides habitat for about 40 other species of native mammals. Twelve species of native carnivores exist, and many of these will also eat insects and vegetation. These include the raccoon, ringtail, skunk, badger, fox, coyote, bobcat, and mountain lion. The larger predators are commonly trapped or shot, since they prey upon sheep, goats, and deer. However, it should be remembered that predators play an essential role in helping keep the rodent, rabbit, and deer populations in balance.

There are many species of native rodents, including ground squirrel, fox squirrel, pocket gopher, pocket mouse, harvest mouse, cotton rat, wood rat, beaver, and porcupine. The introduced species of rodents which may cause problems include the house mouse, Norway rat, roof rat, and nutria. Other mammals include six species of bats, cottontail rabbit, jackrabbit, opossum, Eastern mole, and armadillo.

Of special note are the large populations of Mexican free-tailed bats that reside in Mason County for a portion of the year. These bats normally arrive in Texas in February, raise their young, and then return to Mexico in the fall. Several million of these bats live in Mason County, making them the most numerous species of mammal. They use caves for roosting and rearing of young. These bats consume extremely large numbers of insects each night, making them an important cog in the balance of nature.

The bird life of Mason County is also quite diverse. About 230 species are common enough to be seen each year. About 80 to 100 species are expected to nest in the county. Raptorial birds are common and include Mississippi kite, Coopers hawk, and red-tailed hawk. The golden eagle, bald eagle, Northern harrier, kestrel, and six species of owls also are present. These birds are sometimes maligned because of their predatory nature; however, they play an important part in the natural balance. The turkey vulture and black vulture are also present in the county.

A large group of birds in the survey area are almost exclusively insect eaters. The more common ones include nighthawks, poor-wills, woodpeckers, cuckoos, kingbirds, flycatchers, phoebes, swallows, wrens, gnatcatchers, kinglets, vireos, and warblers. The loggerhead shrike and roadrunner not only eat insects but also reptiles, mice, and small birds.

Another group of birds are primarily seed eaters. These include cardinals, grosbeaks, buntings, finches, towhees, sparrows, and doves. Birds which readily eat insects, fruits, or seeds include blue jay, crow, chickadee, titmouse, mockingbird, catbird, thrashers, robins, bluebirds, waxwings, meadowlarks, blackbirds, and the ubiquitous house sparrow.

Upland game birds are also found in the survey area. They are the bobwhite quail, turkey, mourning dove, and white-wing dove. These birds are hunted throughout the county. Landowners sometimes perform specific management practices intended to increase the numbers of these birds.

Bobwhite quail spend their entire life in a rather small area, and therefore, they must have all of their habitat needs in close proximity. Nesting cover consists of large clumps of grass left from the previous year. Heavy grazing can greatly limit nesting success. Quail feed primarily on the hard seeds of forbs, grasses, and some woody species. In many cases, it is the "weedy" kinds of plants which produce the best quail food. These plants normally grow best on soil that is periodically disturbed or has significant bare areas. Quail require some low-growing shrubs to hide under and protect themselves from hot summer sun, cold winter winds, rain, and predators. Therefore, the best quail habitat consists of areas with scattered, low-growing, thick bushes interspersed with bunchgrasses, bare ground, and forbs. The presence of surface water is not considered essential to quail. However, in dry years water sources are utilized and may increase quail survival.

Soil Survey of Mason County, Texas

Turkeys range over a much wider area than quail, and will travel 10 to 30 miles to find suitable habitat. Turkeys also require large clumps of grass or weeds to nest in and are, therefore, affected by grazing management. Turkeys eat the fruits and seeds of forbs, woody plants, and cactus, as well as grass seed. Young, succulent grasses and forbs are also grazed, and insects are essential for young poults. Turkeys need considerable brush for escape and concealment as well as food. Turkeys roost in tall trees, and are attracted to bottomlands and draws. Turkeys must drink water daily, and have benefited greatly from the extensive development of livestock water in the area.

Mourning dove and white-wing dove can fly long distances to find suitable food, cover, and water. Doves eat seeds, and are especially fond of the seeds of agricultural crops and the associated weeds. Dove nest on the ground or in trees. They prefer to feed in areas of bare ground or in areas of sparse cover where seeds can be easily seen. Doves require water daily and will fly some distance from feeding grounds to water. Livestock water troughs do not provide ideal water for quail, turkey, or dove. Water troughs can be modified to provide ground-level water with an overflow pipe leading to a small, nearby depression.

A large number of birds are associated with the rivers and creeks of Mason County. They include herons, egrets, seven species of dabbling ducks, five species of diving ducks, wood ducks, mergansers, bald eagle, osprey, coot, grebe, killdeer, several species of plover, sandpipers, yellowlegs, snipe, dowitchers, avocets, stilts, gulls, terns, and kingfishers.

Amphibians are common throughout the survey area near creeks, rivers, ponds, lakes, and where windmills overflow. Seven species of toads, five species of frogs, and two kinds of salamanders are in the county. Numerous reptiles also inhabit Mason County. Eight species of turtles are associated with water, while the ornate box turtle is in upland areas.

There are at least 16 species of lizards, skinks, and geckos; including the common six-lined racerunner, earless lizard, spiny lizard, collared lizard, and horned lizard.

Over 30 species of snakes are found in Mason County, most of them being nonpoisonous and very beneficial to the natural balance. The more commonly seen snakes include garter snakes, ribbon snakes, rat snakes, hognose snakes, bullsnakes, kingsnakes, coachwhips, racers, and water snakes. The poisonous snakes include the coral snake, copperhead, cottonmouth, and diamondback rattlesnake.

Many kinds of native fish exist in the Llano River, James River, and the larger creeks. Small fish which feed on microscopic plants and animals and which provide forage for larger fish include killifish, mosquito fish, silversides, shiners, darters, and minnows. At least five species of sunfish occur as well as the Rio Grande perch. Five species of catfish, Guadalupe bass, largemouth and smallmouth bass live in the Llano River along with buffalo, freshwater drum, and three species of gar. The most prolific introduced fish is the carp. Their abundance is considered detrimental to native fish populations.

An estimated 2,000 farm ponds have been constructed in Mason County, primarily for livestock water and recreation. Because of the porous nature of the soils, approximately one half of these ponds provides permanent water and can sustain a fish population. Most ponds are less than 1 acre in size. These are often stocked with channel catfish, largemouth bass, bluegill sunfish, fathead minnows, and other species. Less desirable species, such as bullheads, carp, crappie, and green sunfish, sometimes find their way into these ponds during periods of spillway flow from downstream. Unbalanced fish populations often develop. Pond management practices include aquatic weed control, fertilization, pond renovation, and proper harvest.

Although more emphasis has traditionally been placed upon the management and conservation of game species in the county, the numerous nongame species are also very important. Nongame species are often benefited by the management intended for livestock and game species. Land treatment that promotes maximum plant diversity and water quality will also favor the greatest diversity of wildlife.

In table 8, table 9, table 10, table 11, and table 12, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information

can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

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

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

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

Ratings for grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of domestic grasses and legumes are primarily warm-season perennials such as sideoats grama, plains lovegrass, buffalograss, curlymesquite, and little bluestem.

Ratings for irrigated grain and seed crops for food and cover can be used in the selection of sites that have the soil properties and plant species necessary to sustain wildlife habitat. The ratings do not reflect the limitations for commercial agronomic production. The soil properties and features that affect the growth of grain and seed crops are soil texture, content of organic matter, the amount of rock fragments on or near the soil surface, available water capacity, depth to bedrock or a cemented pan, depth to a high water table, ponding, flooding, permeability of the soil surface, slope, presence of excess salts in the soil, and susceptibility of the soil surface to water erosion and wind erosion. Examples of grain and seed crops are corn, wheat, and oats.

Ratings for irrigated domestic grasses and legumes for food and cover can be used in the selection of sites that have the soil properties and plant species necessary to sustain wildlife habitat. The ratings do not reflect the limitations for commercial agronomic production. The soil properties and features that affect the growth of grasses and legumes are soil texture, content of organic matter, the amount of rock fragments on or near the soil surface, available water capacity, depth to bedrock or a cemented pan, depth to a high water table, ponding, flooding, permeability of the soil surface, slope, presence of excess salts in the soil, and susceptibility of the soil surface to water erosion and wind erosion. Examples of grasses are lovegrass, Indiangrass; examples of legumes are clover and vetch.

Ratings for habitat for burrowing mammals and reptiles indicate the limitation of the soil for maintaining or increasing local populations of specific burrowing animals. The soil properties and features that affect the preservation of these species are flooding, ponding, depth to bedrock or a cemented pan, depth to a high water table, sandy layers, clayey layers, a high content of organic matter, and high concentrations of rock fragments. Examples of burrowing mammals and reptiles are gophers, lizards, rattlesnakes, and armadillos.

Ratings for upland native herbaceous plants indicate the limitation of the soils as a growing medium for a diverse upland herbaceous plant community. This community is adapted to soils that are drier than the common soils in moist riparian and wetland zones but that are not as dry as the soils in upland desert areas. The soil properties and

features that affect the ability of these species to thrive include soil texture, available water capacity, the presence of excess salts in the soil, soil moisture and temperature regimes, depth to a high water table, and rock fragments on the soil surface. Examples of upland wild herbaceous plants used by birds are doveweed croton, spurge, buffalobur, pricklypoppy, broomweed, bundleflower, and bumelia. Examples of grasses for cover and nesting include: sideoats grama, sliver bluestem, tobosagrass, vine mesquite, Texas wintergrass, and slim tridens. Deer utilize Engelmann daisy, bush sunflower, orange zexmenia, bundleflower, knotweed leafflower, purple milkwort, showy mendora, spreading sida, Texas snoutbean, rock daisy, noseburn, Indian mallow, wild mercury, Texas filaree, California filaree, tallow weed, nuttall peavine, deer vetch, huisachedaisy, prostrate spurge, bladderpod, doveweed croton, and common broomweed.

Ratings for *upland shrubs and vines* indicate the limitation of the soils as a growing medium for a diverse upland shrub and vine community. This community is adapted to soils that are drier than those common in the moist riparian and wetland zones but that are not as dry as those in upland desert areas. The soil properties and features that affect the ability of these species to thrive include soil texture, content of organic matter, available water capacity, depth to bedrock or a cemented pan, the presence of excess salts in the soil, soil moisture and temperature regimes, depth to a high water table, and rock fragments on the soil surface. Examples of upland shrubs and vines used by birds are catclaw acacia, catclaw mimosa, green condalia, lotebush, algerita, elbowbush, and wolfberry, sumacs, and hackberry. Deer utilize live oak, shin oak, hackberry, bumelia, Roemer acacia, elbowbush, skunkbush sumac, littleleaf sumac, ephedra, fourwing saltbush, and juniper.

Ratings for *upland deciduous trees* indicate the limitation of the soils as a growing medium for a diverse upland deciduous tree community that meets specific local habitat requirements for targeted and nontargeted wildlife species. Typically, deciduous trees require better soil conditions than geographically related conifers. The soil properties and features that affect the ability of upland deciduous trees to thrive include available water capacity, depth to a high water table, depth to bedrock or a cemented pan, and soil moisture and temperature regimes. Examples of upland deciduous trees are quaking blackjack oak, post oak, live oak, and elm.

Ratings for *riparian herbaceous plants* indicate the limitation of the soils as a growing medium for herbaceous plants that are adapted to soil conditions that are wetter than those common in the drier upland areas. The soils suitable for this habitat generally are on flood plains, in depressions, on bottomland, in drainageways adjacent to streams, or in any other area where the soil is either saturated for some period during the year or is subject to periodic overflow from ponding or flooding. The soil properties and features that affect the ability of riparian herbaceous plants to persist include soil texture, content of organic matter, depth to a high water table, the frequency and duration of ponding and flooding, the presence of excess salts in the soil, rock fragments, and the soil temperature regime. Examples of riparian herbaceous plants are switchgrass, giant sacaton, spikerush, knotgrass, and inland saltgrass

Ratings for *riparian shrubs, vines, and trees* indicate the limitation of the soils as a growing medium for shrubs, vines, and trees that are adapted to soil conditions that are wetter than those common in the drier upland areas. The soils suitable for this habitat generally are on flood plains, in depressions, on bottomland, in drainageways adjacent to streams, in areas of springs and seeps, or in any other area where the soil is either saturated for some period during the year or is subject to periodic overflow from ponding or flooding. The soil properties and features that affect the ability of riparian shrubs, vines, and trees to persist include available water capacity, depth to a high water table, the frequency and duration of ponding and flooding, the presence of excess salts in the soil, and the soil temperature regime. Examples of riparian shrubs, vines, and trees are buttonbush, blackwillow, little walnut, baccharis, and sycamore.

Recreation

Hunting opportunities are available in many areas of the county. Leasing land for hunting rights is an important source of income for many landowners. White-tailed deer, hogs, turkeys, and exotics are the major game species. Fishing opportunities are located along the Llano, James, and San Saba Rivers (fig. 29).

Rock and gem hunters come to Mason County in search of unique rocks, gems, and minerals. A few landowners host rock hunters for a fee.

Area attractions include the Eckert-James River Bat Cave, and scattered area museums, churches, and historic homes.

The soils of the survey area are rated in table 13 and table 14 according to limitations that affect their suitability for recreation. 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).



Figure 29.—The San Saba River flowing through northern Mason County. The rivers and streams in Mason County provide recreational opportunities.

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 table 13 and table 14 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 (fig. 30) 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.



Figure 30.—Mason County Park showing camp areas and picnic areas. The park is located on an area of Fieldcreek-Riverwash complex, 0 to 5 percent slopes, flooded. This part of the park is on the Fieldcreek soils, occasionally flooded component.

Picnic areas (fig. 30) 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 seasonal high water table, ponding, flooding, and texture of the surface layer.

Golf course 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.

Hydric Soils

In this section, hydric soils are defined and described.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for each of the characteristics must be met for areas to be identified as wetlands. Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

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

used to identify a phase of a soil series that normally is also a hydric soil. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2003) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

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

Information regarding hydric soils in the soil survey area, can be found on the internet at <http://soildatamart.nrcs.usda.gov> or the local office of the Natural Resources Conservation Service.

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.

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. Table 15 and table 16 show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

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

Sanitary Facilities

Table 17 and table 18 show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both descriptive 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).

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.

Construction Materials

Table 19 and table 20 provide 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.

Gravel and sand are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 19, only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

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

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

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. (fig. 31) 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).

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.



Figure 31.—An area mined for granite grus. The grus is used mostly as roadfill for local roads, driveways, and county roads.

Water Management

Table 21 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 descriptive 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 (fig. 32) 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.



Figure 32.—A feral hog headed for a drink of water. Ponds provide water for cattle and wildlife, erosion control, and recreational opportunities.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

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

Engineering Soil Properties

Table 22 provides the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

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

Texture is given in the standard terms used by the U.S. Department of Agriculture.

These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters 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 Unified soil classification system (ASTM, 2001) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches 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 particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

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

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

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

The estimates of particle-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is generally omitted in the table.

Physical Soil Properties

Table 23 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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

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

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In table 23, 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 clay affects the physical behavior of a soil. Particle-size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

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

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (Ksat) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity (Ksat). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. Volume change is influenced by the amount and type of clay minerals in the soil.

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

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 23, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in table 23 as the K factor (K_w and K_f) 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 K_w indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

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

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

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

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.
- 4L. Calcareous loams, silt loams, clay loams, and silty clay loams.
4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

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

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

Chemical Soil Properties

Table 24 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/centimeters) 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.

Water Features

Table 25 provides estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

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

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. Table 25 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 gray colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 25 indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

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

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

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

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

Soil Features

Table 26 provides 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.

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.

Physical, Chemical, Clay Mineralogy, and Engineering Index Property Analyses of Selected Soils

The results of physical analysis of several typical pedons in the survey area are shown in table 27, the results of chemical analysis in table 28, and the results of clay mineralogy are shown in table 29. Engineering index properties of selected soils are shown in table 30. The data are for soils sampled at carefully selected sites. Unless

otherwise indicated, the pedons are typical of the series. They are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by USDA-NRCS, National Soil Survey Laboratory at 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 quantities of unit weight were calculated on an oven-dry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods (USDA, 1996).

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

Sand—(0.05- to 2.0-millimeter fraction) weight percentages of 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).

Clay—(fraction less than 0.002 millimeters) pipette extraction, weight percentages of material less than 2 millimeters (3A1).

Coefficient of linear extensibility—change in clod dimension based on whole soil (3D4).

Bulk density—of less than 2 millimeter material, saran-coated clods field moist (3B1a), 1/3 bar (3B1b), oven-dry (3B1c).

Water retained—pressure extraction, percentage of oven-dry weight of less than 2 millimeter material; 1/3 or 1/10 bar (3C1), 15 bars (3C2).

Reaction (pH)—1:1 water dilution (4C1a2a1).

Extractable cations—ammonium acetate pH 7.0, ICP; calcium (6N2e, 6N2f), magnesium (6O2d, 6O2e), sodium (6P2b, 6P2c), potassium (6Q2b, 6Q2c).

Base saturation—ammonium acetate, pH 7.0 (5C1).

Sodium adsorption ratio (4F3b).

X-ray diffraction—thin film on glass, resin pretreatment II (7A2i).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1998 and 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 31 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 Mollisol.

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 Ustoll (Ust, meaning burnt, plus oll, from Mollisol).

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 Haplustolls (Hapl, meaning minimal horizonation, plus ustolls, the suborder of the Mollisols that has an ustic moisture regime).

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 Lithic identifies the subgroup that typifies the great group. An example is Lithic Calcicustolls.

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 clayey-skeletal, smectitic, thermic Lithic Haplustolls.

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

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (Soil Survey Staff, 1999) and in "Keys to Soil Taxonomy" (Soil Survey Staff, 1998). Following the pedon description is the range of important characteristics of the soils in the series.

Acove Series

Depth class: Moderately deep to paralithic bedrock; moderately deep to lithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.2 to 0.6 in/hr (moderately slow)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Dissected plateaus

Landform: Ridges

Position on landform: Summits, shoulders

Parent material: Residuum weathered from sandstone

Slope: 0 to 5 percent

Elevation: 1,200 to 2,000 feet

Mean annual precipitation: 24 to 30 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 210 to 240 days

Map unit(s): ACC, AMC

Taxonomic Class

Fine, mixed, active, thermic Typic Haplustalfs

Typical Pedon

Acove loamy sand (fig. 33) in an area of Acove loamy sand, 1 to 5 percent slopes; from the intersection of Texas Highway 71 and Ranch Road 1851 in McCulloch County, south of the town of Voca, 0.3 mile east on Texas Highway 71, and 100 feet north in rangeland; USGS Voca, TX topographic quadrangle; Latitude 31 degrees, 0 minutes, 11.09 seconds North, and Longitude 99 degrees, 10 minutes, 52.44 seconds West; UTM Easting: 482699 meters; UTM Northing: 3429957 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A1—0 to 6 inches; brown (10YR 5/3), loamy sand, dark brown (10YR 3/3), moist; weak very fine subangular blocky structure; friable, loose, nonsticky, nonplastic; many fine, common medium, and common very fine roots; common very fine irregular pores; strongly acid; clear smooth boundary.

A2—6 to 13 inches; dark yellowish brown (10YR 4/4), loamy sand, dark yellowish brown (10YR 3/4), moist; weak fine subangular blocky structure; friable, loose, nonsticky, nonplastic; common very fine roots; common fine irregular pores; slightly acid; clear wavy boundary.

Bt1—13 to 19 inches; dark yellowish brown (10YR 4/4), sandy loam, dark yellowish brown (10YR 3/4), moist; weak medium subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; common fine roots; common fine irregular pores; very few faint brown (10YR 4/3), moist, clay films on vertical faces of peds; slightly acid; abrupt wavy boundary.

Bt2—19 to 26 inches; brown (10YR 5/3), very flaggy sandy clay, brown (10YR 4/3), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common fine roots; common prominent dark brown (7.5YR 3/3), moist, clay films on rock fragments; 40 percent sandstone fragments, 151 to 380 mm flagstones, flat, subangular, strongly cemented; slightly acid; abrupt wavy boundary.

Bt3—26 to 35 inches; strong brown (7.5YR 5/6), clay, strong brown (7.5YR 4/6), moist; moderate medium angular blocky structure; very firm, moderately hard, very sticky, very plastic; common fine roots; few prominent very dark grayish brown (10YR 3/2), moist, organic stains on vertical faces of peds; common prominent brown (10YR 4/3),



Figure 33.—Profile of Acove loamy sand, 1 to 5 percent slopes. These soils are moderately deep, well drained with a sandy loam surface and clayey subsoil. There is a characteristic stone line within the profile at approximately 15 to 19 inches (38 to 48 cm). (Scale in CM-centimeters)

moist, clay films on vertical faces of peds; few fine faint irregular yellowish red (5YR 4/6), moist, masses of oxidized iron with clear boundaries in matrix; 5 percent sandstone fragments, 2 to 150 mm channers, flat, subangular; slightly acid; abrupt wavy boundary.
Cr—35 to 49 inches; reddish brown (2.5YR 4/4), moderately cemented sandstone bedrock, fractured at intervals of 39 to 78 inches, dark reddish brown (2.5YR 3/4), moist; abrupt wavy boundary.
R—49 to 59 inches; red (2.5YR 5/6), strongly cemented sandstone bedrock, red (2.5YR 4/6), moist; fractured at intervals of 39 to 78 inches.

Range in Characteristics

Depth to paralithic contact: 24 to 40 inches
Solum thickness: 24 to 40 inches
Particle-size control section (weighted average):
 Clay content: 35 to 45 percent
 Coarse fragments: 15 to 35 percent

A horizon

Hue: 7.5YR or 10YR
Value: 4 or 5
Chroma: 2 to 4
Texture of the fine-earth fraction: Loamy sand
Clay content: 5 to 17 percent
Coarse fragments: 0 to 60 percent by volume; 0 to 60 percent gravel; 0 to 60 percent channers; 0 to 60 percent flagstones; gravelly, channery, flaggy, very gravelly, very channery, or very flaggy modifiers
Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon
Reaction: Strongly acid to neutral

Bt1 horizon

Hue: 5YR to 10YR
Value: 4 to 6
Chroma: 4 to 8
Texture of the fine-earth fraction: Fine sandy loam or sandy clay loam
Clay content: 12 to 35 percent
Coarse fragments: 0 to 60 percent by volume, in the form of a stone line, channers, or flagstones; channery, flaggy, very channery, or very flaggy modifiers
Reaction: Slightly acid to neutral

Bt2 and Bt3 horizons

Hue: 5YR to 2.5Y
Value: 4 to 6
Chroma: 4 to 8
Texture of the fine-earth fraction: Sandy clay or clay
Coarse fragments: 5 to 60 percent by volume, channers, or flagstones; channery, flaggy, very channery, or very flaggy modifiers
Clay content: 35 to 55 percent
Reaction: Slightly acid to neutral

Cr layer

Hue: 10R to 5YR
Cementation: Weakly cemented to moderately cemented
Other features: Clay in horizontal cracks up to 2 inches thick

R layer (where present)

Other features: R layer is interbedded with the Cr layer
Cementation: Strongly to indurated sandstone bedrock

Brackett Series

Depth class: Shallow to paralithic bedrock
Drainage class: Well drained
Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)
Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high
Landscape: Dissected plateaus
Landform: Ridges
Position on landform: Backslopes
Parent material: Residuum weathered from limestone
Slope: 12 to 40 percent
Elevation: 1,000 to 2,450 feet
Mean annual precipitation: 24 to 34 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 210 to 270 days
Map unit(s): KTG

Taxonomic Class

Loamy, carbonatic, thermic, shallow Typic Haplustepts

Typical Pedon

Brackett loam in an area of Kerrville, Brackett, and Tarrant soils, 12 to 40 percent slopes, very rocky; from the intersection of Ranch Road 1871 and Mill Creek Road in southwestern Mason County, 3.9 miles west on Ranch Road 1871, and 0.75 mile south in rangeland; USGS Monument Mountain, TX topographic quadrangle; Latitude 30 degrees, 36 minutes, 4.99 seconds North and Longitude 99 degrees, 25 minutes, 57.56 seconds West; UTM Easting: 458525 meters; UTM Northing: 3385507 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; grayish brown (10YR 5/2), loam, dark grayish brown (10YR 4/2), moist; weak fine granular structure; friable, slightly hard, slightly sticky, slightly plastic; 10 percent limestone fragments, 2 to 75 mm gravel, nonflat; violently effervescent; moderately alkaline; clear wavy boundary.

Bk—4 to 13 inches; light gray (10YR 7/2), loam, light gray (10YR 7/2), moist; moderate fine subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; common fine distinct weakly cemented carbonate, finely disseminated on bottom of rock fragments; common medium distinct weakly cemented carbonate masses; 10 percent limestone fragments, 2 to 75 mm gravel, nonflat; violently effervescent; moderately alkaline; very abrupt smooth boundary.

Cr—13 to 28 inches; weakly cemented limestone bedrock, fractured at intervals of 4 to 18 inches; violently effervescent; moderately alkaline.

Range in Characteristics

Depth to paralithic contact: 5 to 20 inches
Calcium carbonate equivalent: 40 to 85 percent by weight
Effervescence: Strong to violent
Reaction: Slightly alkaline or moderately alkaline

Particle-size control section (weighted average):

Silicate clay content: 18 to 30 percent

Carbonate clay content: 2 to 10 percent

A horizon

Hue: 10YR or 2.5Y

Value: 5 to 8

Chroma: 2 to 4

Other features: Where dry value is 5 or more, the organic carbon content is less than 2.5 percent

Texture of the fine-earth fraction: Loam

Pararock and coarse fragments: 0 to 34 percent by volume; 0 to 34 percent limestone gravel or paragravel; 0 to 34 percent limestone cobbles; gravelly, paragravelly, paracobbly, and cobbly modifiers

Calcium carbonate equivalent: 40 to 85 percent by weight

Bk horizon

Hue: 7.5YR to 2.5Y

Value: 5 to 8

Chroma: 2 to 4

Mottle features: Brown or gray mottles in the matrix and along faces of peds and within porous limestone fragments in some pedons

Texture of the fine-earth fraction: Silt loam, loam, silty clay loam, or clay loam

Pararock and coarse fragments: 0 to 34 percent by volume; 0 to 34 percent limestone gravel and paragravel; 0 to 34 percent limestone cobbles and paracobble; gravelly, paragravelly, paracobbly, and cobbly modifiers

Identifiable secondary carbonate: 1 to 4 percent by volume; masses, concretions, or nodules; around rock fragments, in the matrix, and throughout

Cr layer

Hue: 10YR or 2.5Y

Value: 7 or 8

Chroma: 2 to 4

Other features: Secondary carbonate cementation where present, does not meet the thickness or continuity or fracture requirements of a petrocalcic horizon.

Cementation: Weakly cemented to moderately cemented

Bedrock features: Fracture interval—4 to 10 inches apart horizontally; limestone, chalk, or marl.

Campair Series

Depth class: Moderately deep to lithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Dissected plateaus

Landform: Ridges

Position on landform: Shoulders, backslopes, footslopes

Parent material: Residuum weathered from sandstone

Slope: 1 to 5 percent

Elevation: 1,100 to 1,900 feet

Mean annual precipitation: 22 to 28 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 215 to 230 days

Map unit(s): ACC, LOC

Taxonomic Class

Fine-loamy, siliceous, active, thermic Typic Haplustalfs

Typical Pedon

Campair loamy fine sand in an area of Acove-Campair-Loneoak complex, 0 to 5 percent slopes; from the intersection of Texas Highway 29 and Streeter Lane west of the town of Grit, 1.9 miles south and west on Streeter Lane, and 2,000 feet southeast in pasture; USGS Grit, TX topographic quadrangle; Latitude 30 degrees, 47 minutes, 5.70 seconds North and Longitude 99 degrees, 21 minutes, 10.90 seconds West; UTM Easting: 466222 meters; UTM Northing: 3405819 meters; UTM Zone. (Colors are for dry soil unless otherwise noted.)

Ap—0 to 7 inches; pale brown (10YR 6/3), loamy fine sand, brown (10YR 4/3), moist; weak very fine and fine granular structure; loose, nonsticky, nonplastic; common very fine and fine roots; common fine tubular pores; slightly acid; clear smooth boundary.

A—7 to 12 inches; brown (10YR 5/3), loamy fine sand, brown (10YR 4/3), moist; weak very fine and fine subangular blocky structure parting to weak very fine and fine granular structure; friable, soft, nonsticky, nonplastic; common very fine roots; common fine tubular pores; strongly acid; abrupt smooth boundary.

Bt1—12 to 16 inches; brown (10YR 5/3), sandy clay loam, brown (10YR 4/3), moist; weak medium and coarse subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; common fine roots; common very fine and fine tubular pores; very few clay films; common fine distinct strong brown (7.5YR 5/6) masses of oxidized iron with clear boundaries; strongly acid; gradual smooth boundary.

Bt2—16 to 20 inches; dark yellowish brown (10YR 4/4), clay loam, brown (10YR 4/3), moist; moderate medium and coarse subangular blocky structure; friable, hard, moderately sticky, moderately plastic; common fine roots; common very fine and fine tubular pores; few clay films on surfaces along pores and few clay films on all faces of peds; many coarse prominent dark red (2.5YR 3/6) and many coarse distinct strong brown (7.5YR 5/8) masses of oxidized iron with clear boundaries; slightly acid; gradual smooth boundary.

Bt3—20 to 28 inches; 60 percent brown (10YR 5/3) and 40 percent reddish yellow (7.5YR 6/8), clay loam, brown (10YR 4/3) and strong brown (7.5YR 5/8), moist; few dark red (2.5YR 3/6) mottles; moderate medium and coarse subangular blocky structure; very friable, hard, very sticky, very plastic; common very fine and fine roots; common fine tubular pores; few clay films on all faces of peds and few clay films on surfaces along pores; neutral; abrupt smooth boundary.

R—28 to 38 inches; strongly cemented sandstone bedrock, fractured at intervals of 39 to 78 inches.

Range in Characteristics

Depth to lithic contact: 20 to 40 inches

Solum thickness: 20 to 40 inches

Combined thickness of A and E horizons: 10 to 20 inches

Particle-size control section (weighted average):

Clay content: 18 to 34 percent

A or Ap horizon

Hue: 7.5YR or 10YR

Value: 5 or 6

Chroma: 3 or 4

Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Texture of the fine-earth fraction: Loamy fine sand

Reaction: Moderately acid to neutral

E horizon (where present)

Hue: 7.5YR or 10YR

Value: 5 to 7

Chroma: 3 or 4

Texture of the fine-earth fraction: Sand, loamy sand, or loamy fine sand

Reaction: Moderately acid to neutral

Bt horizon

Hue: 5YR to 10YR

Value: 4 to 7

Chroma: 2 to 6

Mottles: In some pedons; 2.5YR; in the lower part of the Bt horizon

Redoximorphic features: Few to many; red, brown, yellow, or gray; in the lower part; some pedons have matrix color of light gray

Texture of the fine-earth fraction: Sandy clay loam or clay loam

Reaction: Moderately acid to neutral

R layer

Bedrock kind: Cambrian age sandstone bedrock with some layers of metamorphic gneiss and quartzite bedrock

Campwood Series

Depth class: Very deep

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.06 to 0.2 in/hr (slow)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately low

Landscape: Dissected plateaus

Landform: Valleys

Position on landform: Footslopes

Parent material: Calcareous clayey alluvium derived from limestone

Slope: 0 to 5 percent

Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 24 to 32 inches

Mean annual air temperature: 64 to 70 degrees F

Frost-free period: 215 to 240 days

Map unit(s): CAC

Taxonomic Class

Fine, smectitic, thermic Typic Haplusterts

Typical Pedon

Campwood clay in an area of Campwood, Sunev, and Valera soils, 0 to 5 percent slopes; from the intersection of U.S. Highway 377 and Long Mountain Road, 1.1 miles west and north on Long Mountain Road, 0.3 mile east on Rooster Trail, and 300 feet southeast in pasture; USGS Long Mountain, TX topographic quadrangle; Latitude 30 degrees, 46 minutes, 34.00 seconds North and Longitude 99 degrees, 28 minutes, 15.37 seconds West; UTM Easting: 454920 meters; UTM Northing: 3404887 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

- A—0 to 15 inches; dark grayish brown (10YR 4/2), clay, very dark grayish brown (10YR 3/2), moist; weak fine subangular blocky structure; firm, hard, very sticky, very plastic; many fine and medium roots; common fine and medium tubular pores; strongly effervescent; moderately alkaline; gradual wavy boundary.
- Bss1—15 to 35 inches; grayish brown (10YR 5/2), clay, very dark grayish brown (10YR 3/2), moist; strong coarse prismatic structure parting to moderate medium angular blocky; very firm, very hard, very sticky, very plastic; many fine and medium roots; common very fine and fine tubular pores; common distinct pressure faces on vertical faces of peds; few very fine carbonate, finely disseminated; strongly effervescent; slightly alkaline; gradual wavy boundary.
- Bss2—35 to 51 inches; brown (10YR 4/3), clay, dark brown (10YR 3/3), moist; strong coarse prismatic structure parting to strong medium angular blocky; very firm, very hard, very sticky, very plastic; common fine and medium roots in cracks; common very fine and fine tubular pores; common distinct slickensides (pedogenic) on vertical faces of peds; common distinct pressure faces on vertical faces of peds; few fine distinct very weakly cemented carbonate masses; few fine distinct moderately cemented carbonate concretions; strongly effervescent; slightly alkaline; gradual smooth boundary.
- Bk1—51 to 64 inches; light brownish gray (10YR 6/2), yellowish brown (10YR 5/4), and light gray (10YR 7/2), clay, grayish brown (10YR 5/2), dark yellowish brown (10YR 4/4), and light brownish gray (10YR 6/2), moist; weak medium subangular blocky structure; very firm, very hard, very sticky, very plastic; common very fine roots in cracks; common very fine and fine tubular pores; few distinct pressure faces on vertical faces of peds; many fine and medium distinct carbonate masses; 2 percent quartz fragments, 2 to 75 mm gravel, nonflat, rounded; violently effervescent; slightly alkaline; clear smooth boundary.
- Bk2—64 to 80 inches; light brownish gray (2.5Y 6/2), clay, grayish brown (2.5Y 5/2), moist; weak medium prismatic structure parting to strong medium angular blocky; very firm, very hard, very sticky, very plastic; few very fine roots in cracks; many fine and medium prominent carbonate masses; violently effervescent; moderately alkaline.

Range in Characteristics

Solum thickness: More than 80 inches

Thickness of the mollic epipedon: 14 to 50 inches

Vertic features: Begin at a depth of 15 to 40 inches, slickensides or wedges; extend to a depth of 80 inches

Other features: In some pedons the cracks may not open to the surface when there is a complete cover of grass. These soils have little or no gilgai microrelief.

Particle-size control section (weighted average):

Clay content: 40 to 60 percent total clay with more than 35 percent silicate clay

Coarse fragments: 0 to 5 percent by volume, 2 to 5 mm limestone

Calcium carbonate equivalent: 10 to 40 percent by weight

Identifiable secondary carbonate: 0 to 5 percent by volume, fine to medium, distinct, nodules and masses

A horizon

Hue: 7.5YR or 10YR

Value: 3 to 5 dry

Chroma: 1 to 3 dry

Texture of the fine-earth fraction: Clay

Clay content: 35 to 55 percent

Effervescence: Slight to strong

Reaction: Slightly alkaline or moderately alkaline

Bw horizon (where present)

Hue: 7.5YR or 10YR

Value: 3 to 5 dry

Chroma: 1 to 3 dry

Texture of the fine-earth fraction: Silty clay or clay

Clay content: 40 to 60 percent

Coarse fragments: 0 to 5 percent by volume, fine limestone gravel

Effervescence: Slight to violent

Reaction: Slightly alkaline or moderately alkaline

Bss horizon

Hue: 5YR to 10YR

Value: 4 to 6 dry

Chroma: 2 to 4 dry

Texture of the fine-earth fraction: Silty clay or clay

Clay content: 40 to 60 percent

Calcium carbonate equivalent: Upper part—10 to 40 percent by weight; lower part—10 to 50 percent by weight

Identifiable secondary carbonate: 0 to 10 percent by volume, fine to medium, distinct, nodules and masses

Effervescence: Slight to violent

Reaction: Slightly alkaline or moderately alkaline

Bk horizon

Hue: 10YR to 2.5Y

Value: 5 to 7 dry

Chroma: 2 to 4 dry

Texture of the fine-earth fraction: Silty clay loam, silty clay, or clay

Clay content: 35 to 60 percent

Coarse fragments: 0 to 5 percent, fine limestone gravel

Calcium carbonate equivalent: 10 to 50 percent by weight

Identifiable secondary carbonate: 5 to 50 percent by volume, fine to medium, distinct, nodules and masses

Effervescence: Strong or violent

Reaction: Slightly alkaline or moderately alkaline

Castell Series

Depth class: Moderately deep to paralithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.06 to 0.2 in/hr (slow)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately low

Landscape: Dissected plateaus

Landform: Hills, undulating plains, ridges

Position on landform: Footslopes

Parent material: Residuum weathered from gneiss

Slope: 0 to 5 percent

Elevation: 1,100 to 1,900 feet

Mean annual precipitation: 24 to 30 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 215 to 230 days

Map unit(s): CeC

Taxonomic Class

Fine, mixed, semiactive, thermic Typic Paleustalfs

Typical Pedon

Castell sandy loam in an area of Castell sandy loam, 0 to 5 percent slopes, rocky; from the intersection of Texas Highway 29 and County Road 102 in Llano County, 0.6 mile west on Texas Highway 29, and 250 feet south in rangeland; USGS Scotts Crossing, TX topographic quadrangle; Latitude 30 degrees, 44 minutes, 56.40 seconds North and Longitude 98 degrees, 49 minutes, 54.48 seconds West; UTM Easting: 516099 meters; UTM Northing: 3401798 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 8 inches; brown (10YR 5/3), sandy loam, dark brown (10YR 3/3), moist; massive; friable, very hard, nonsticky, nonplastic; common fine roots; common fine irregular pores; 5 percent quartz fragments, 2 to 75 mm gravel, nonflat, angular; slightly acid; clear smooth boundary.

Bt1—8 to 17 inches; yellowish brown (10YR 5/4), sandy clay, dark yellowish brown (10YR 4/4), moist; moderate medium subangular blocky structure; firm, very hard, moderately sticky, moderately plastic; common fine roots; common fine irregular pores; 5 percent clay films on top faces of peds; 5 percent quartz fragments, 2 to 75 mm gravel, nonflat; slightly acid; clear smooth boundary.

Bt2—17 to 30 inches; strong brown (7.5YR 4/6), sandy clay, strong brown (7.5YR 4/6), moist; moderate medium subangular blocky structure; firm, very hard, moderately sticky, moderately plastic; few fine roots; few fine irregular pores; 5 percent clay films on top faces of peds; 5 percent quartz fragments, 2 to 75 mm gravel, nonflat; slightly acid; abrupt smooth boundary.

Cr—30 to 42 inches; weakly cemented gneiss bedrock; fractured at intervals of 18 to 39 inches.

Range in Characteristics

Depth to bedrock: 20 to 40 inches

Particle-size control section (weighted average):

Clay content: 35 to 50 percent

Coarse fragments: 0 to 30 percent by volume, feldspar, gneiss, and quartz gravel

Base saturation: 75 to 100 percent

A horizon

Hue: 5YR to 10YR

Value: 4 to 5, 2 to 4 moist

Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Chroma: 2 to 4, dry and moist

Texture of the fine-earth fraction: Sandy loam

Clay content: 6 to 20 percent

Coarse fragments: 0 to 30 percent by volume, feldspar, gneiss, and quartz gravel; gravelly modifiers

Reaction: Moderately acid to neutral

Bt horizon

Hue: 7.5YR or 10YR

Value: 4 to 6, 3 to 6 moist

Chroma: 3 to 6, dry and moist

Texture of the fine-earth fraction: Clay loam, clay, or sandy clay

Clay content: 35 to 50 percent

Coarse fragments: 0 to 30 percent by volume, feldspar, gneiss, and quartz gravel; gravelly modifiers

Relict mottles: None to common, fine and medium; red or brown

Reaction: Moderately acid to slightly alkaline

Cr layer

Bedrock kind: Weathered gneiss (saprolitic) to unweathered and finely fractured gneiss bedrock

Cementation: Extremely weakly cemented to moderately cemented

Vertical fractures: Greater than 4 inches apart horizontally

Cho Series

Depth class: Very shallow and shallow to petrocalcic

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.2 to 0.6 in/hr (moderately slow)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately low

Landscape: Alluvial plain remnants, dissected plateaus

Landform: Knolls

Position on landform: Shoulders and summits

Parent material: Ancient alluvium derived from limestone and sandstone

Slope: 0 to 4 percent

Elevation: 1,200 to 2,000 feet

Mean annual precipitation: 20 to 30 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 210 to 240 days

Map unit(s): MSC

Taxonomic Class

Loamy, carbonatic, thermic, shallow Petrocalcic Calcicustolls

Typical Pedon

Cho loam in an area of Mereta-Cho-Sunev complex, 0 to 5 percent slopes, rocky; from the intersection of U.S. Highway 87 and FM 1871, 16.3 miles south and west on FM 1871, and 200 feet south in rangeland; USGS Monument Mountain, TX topographic quadrangle; Latitude 30 degrees, 37 minutes, 21.00 seconds North and Longitude 99 degrees, 25 minutes, 21.52 seconds West; UTM Easting: 459494 meters; UTM Northing: 3387843 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 6 inches; brown (10YR 5/3), loam, dark brown (10YR 3/3), moist; weak fine subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; common fine roots; common fine irregular pores; strongly effervescent; slightly alkaline; abrupt smooth boundary.

Bkkm—6 to 10 inches; pinkish white (7.5YR 8/2), cemented material, pinkish gray (7.5YR 6/2), moist; massive; very hard; violently effervescent; moderately alkaline; clear smooth boundary.

Bck—10 to 16 inches; pink (5YR 7/3), loam, reddish yellow (5YR 6/6), moist; weak fine subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; common medium irregular moderately cemented carbonate concretions; violently effervescent; moderately alkaline; clear smooth boundary.

CBk1—16 to 20 inches; pink (5YR 7/3), loam, reddish yellow (5YR 6/6), moist; massive; friable, hard, slightly sticky, slightly plastic; common medium irregular moderately cemented carbonate concretions; violently effervescent; moderately alkaline; clear smooth boundary.

CBk2—20 to 40 inches; pink (7.5YR 7/4), loam, reddish yellow (7.5YR 6/6), moist; massive; friable, hard, slightly sticky, slightly plastic; common fine irregular moderately cemented carbonate concretions and common medium irregular carbonate masses; strongly effervescent; moderately alkaline.

Range in Characteristics

Depth to petrocalcic contact: 7 to 20 inches
Particle-size control section (weighted average):
Clay content: 15 to 35 percent total clay

A horizon

Hue: 7.5YR or 10YR
Value: 3 to 5 dry
Chroma: 2 or 3 dry
Texture of the fine-earth fraction: Loam
Clay content: 15 to 35 percent total clay
Coarse fragments: 0 to 34 percent by volume, caliche and limestone gravel and/or 0 to 5 percent, limestone cobbles
Calcium carbonate equivalent: 40 to 65 percent by weight in the fine-earth fraction
Effervescence: Violent
Reaction: Slightly alkaline or moderately alkaline

Bkkm horizon

Hue: 5YR to 10YR
Value: 7 or 8 dry
Chroma: 1 to 4 dry
Cementation: Strongly cemented to indurated, laminar in upper 4 to 5 cm
Effervescence: Violent
Reaction: Slightly alkaline or moderately alkaline

BCK or CBk horizons

Hue: 5YR to 10YR
Value: 7 or 8 dry
Chroma: 1 to 4 dry
Texture of the fine-earth fraction: Loam, clay loam, or silty clay loam
Coarse fragments: 0 to 50 percent by volume, caliche, siliceous, and limestone gravel
Calcium carbonate equivalent: 40 to 85 percent by weight
Effervescence: Violent
Reaction: Slightly alkaline or moderately alkaline

Click Series

Depth class: Deep to strongly contrasting textural stratification; deep to lithic bedrock
Drainage class: Somewhat excessively drained
Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)
Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high
Landscape: Dissected plateaus
Landform: Hills, ridges
Position on landform: Summits, shoulders
Parent material: Residuum over grus derived from granite
Slope: 1 to 5 percent
Elevation: 1,000 to 2,250 feet
Mean annual precipitation: 24 to 30 inches
Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 210 to 240 days

Map unit(s): LRC

Taxonomic Class

Loamy-skeletal, mixed, semiactive, thermic Typic Haplustalfs

Typical Pedon

Click very gravelly coarse sandy loam in an area of Click very gravelly coarse sandy loam, 1 to 8 percent slopes; from the intersection of Ranch Road 152 and County Road 105 near Castell in Llano County, 5.9 miles south on County Road 105, 1.8 miles south and east on County Road 109, and 25 feet northeast in rangeland; USGS House Mountain, TX topographic quadrangle; Latitude 30 degrees, 37 minutes, 15 seconds North and Longitude 98 degrees, 54 minutes, 0 seconds West; UTM Easting: 509584 meters; UTM Northing: 3387586 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

- A—0 to 11 inches; brown (7.5YR 5/4) interior, very gravelly coarse sandy loam, brown (7.5YR 4/4) interior, moist; weak medium subangular blocky structure; very friable, slightly hard, nonsticky, nonplastic; many fine and few coarse roots; common fine irregular and few coarse irregular pores; 40 percent igneous rock fragments, 2 to 75 mm gravel, nonflat; slightly acid; clear wavy boundary.
- Bt1—11 to 19 inches; yellowish red (5YR 5/6) interior, very gravelly sandy loam, yellowish red (5YR 4/6) interior, moist; weak medium subangular blocky structure; very friable, slightly hard, nonsticky, nonplastic; common fine and few coarse roots; common fine irregular and few coarse irregular pores; few distinct clay films on vertical faces of peds; 45 percent igneous rock fragments, 2 to 75 mm gravel, nonflat; slightly acid; clear smooth boundary.
- Bt2—19 to 30 inches; red (2.5YR 5/6) interior, very gravelly sandy loam, red (2.5YR 4/6) interior, moist; weak medium and coarse subangular blocky structure; very friable, slightly hard, nonsticky, nonplastic; few fine and few coarse roots; common fine and medium irregular pores; common distinct clay films on vertical faces of peds; 60 percent igneous rock fragments, 2 to 75 mm gravel; slightly acid; clear wavy boundary.
- Bt3—30 to 45 inches; light red (2.5YR 6/8) interior, very gravelly sandy loam, red (2.5YR 5/8) interior, moist; weak coarse and very coarse subangular blocky structure; very friable, slightly hard, nonsticky, nonplastic; few fine and few medium roots; few distinct clay films between sand grains; common mica flakes; 60 percent igneous rock fragments, 2 to 75 mm gravel, nonflat; neutral; abrupt smooth boundary.
- Bc—45 to 53 inches; red (10R 4/6), extremely gravelly loam, dark red (10R 3/6), moist; moderate very fine subangular blocky structure; firm, very hard, slightly sticky, slightly plastic; few very fine roots in cracks; common very fine and common fine pores; many prominent clay films on rock fragments; 85 percent granite fragments, 2 to 75 mm gravel, nonflat, angular, indurated; moderately acid; very abrupt smooth boundary.
- R—53 to 63 inches; indurated granite bedrock; fractured at intervals of 4 to 18 inches.

Range in Characteristics

Depth to lithic contact: 40 to 60 inches

Solum thickness: 40 to 60 inches to granite bedrock

Particle-size control section (weighted average):

Clay content: 10 to 25 percent

Coarse fragments: 35 to 60 percent by volume, feldspar, and quartz gravel

A horizon

Hue: 7.5YR or 10YR

Value: 4 to 7, 3 to 6 moist

Chroma: 3 to 4, 2 to 4 moist

Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Texture of the fine-earth fraction: Coarse sandy loam

Sand: Coarse and very coarse sand comprises 40 to 60 percent of the sand fraction

Coarse fragments: 0 to 45 percent by volume, feldspar, and quartz gravel; gravelly or very gravelly modifiers

Reaction: Slightly acid to neutral

Bt horizon

Hue: 2.5YR to 7.5YR

Value: 4 to 6, 3 to 5 moist

Chroma: 4 to 8, dry and moist

Texture of the fine-earth fraction: Coarse sandy loam, sandy loam, or sandy clay loam

Clay content of the fine-earth fraction: 12 to 25 percent

Coarse fragments: 25 to 60 percent by volume, feldspar, and quartz gravel; gravelly or very gravelly modifiers

Reaction: Moderately acid to slightly acid

BCt horizon

Hue: 10R to 7.5YR

Value: 4 to 6, 3 to 5 moist

Chroma: 4 to 8, dry and moist

Texture of the fine-earth fraction: Loam or sandy clay loam

Clay content of the fine-earth fraction: 15 to 30 percent

Coarse fragments: 60 to 90 percent by volume, granite, and saprolite gravel; extremely gravelly modifier

Reaction: Moderately acid to slightly acid

R layer

Bedrock kind: Crystalline granite bedrock that is fractured and contains 0 to 5 percent streaks and masses of clayey earth

Cementation: Strongly cemented or indurated

Vertical fractures: Greater than inches apart horizontally

Eckert Series

Depth class: Very shallow and shallow to lithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Dissected plateaus

Landform: Ridges

Position on landform: Summits, shoulders, backslopes

Parent material: Residuum weathered from limestone

Slope: 1 to 20 percent

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 24 to 30 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 210 to 240 days

Map unit(s): ERD, ERG

Taxonomic Class

Loamy-skeletal, mixed, active, thermic Lithic Haplustolls

Typical Pedon

Eckert very cobbly loam in an area of Eckert-Rock outcrop complex, 1 to 8 percent slopes; from the intersection of Ranch Road 783 and Ranch Road 648 in Doss, 3.6 miles north on Ranch Road 783 (to about 700 feet south of the Mason County line), 0.5 mile southeast and northeast on a private road, and 10 feet west in rangeland; USGS Doss, TX topographic quadrangle; Latitude 30 degrees, 29 minutes, 41.55 seconds North and Longitude 99 degrees, 7 minutes, 32.67 seconds West; UTM Easting: 487933 meters; UTM Northing: 3373630 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 12 inches; brown (7.5YR 4/2), very cobbly loam, dark brown (7.5YR 3/2), moist; weak medium granular structure, and weak fine subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; common very fine and common fine roots; common fine irregular pores; limestone fragments, 251 to 600 mm stones, subangular; indurated and limestone fragments, 2 to 75 mm gravel, nonflat, subangular; indurated and limestone fragments, 76 to 250 mm cobbles, nonflat subangular; indurated, slightly effervescent; slightly alkaline; very abrupt smooth boundary.

R—12 to 22 inches; indurated limestone bedrock; fractured at intervals of 18 to 39 inches.

Range in Characteristics

Solum thickness: 4 to 14 inches

Effervescence: None to strong

Reaction: Neutral to moderately alkaline

Particle-size control section (weighted average):

Clay content: 15 to 35 percent

A horizon

Hue: 7.5YR or 10YR

Value: 3 or 4

Chroma: 2 or 3

Texture of the fine-earth fraction: Loam

Coarse fragments: 35 to 70 percent by volume; 0 to 70 percent, limestone gravel; 0 to 70 percent, limestone cobbles; 0 to 70 percent, limestone stones; very or extremely, gravelly, cobbly, or stony modifiers

R layer

Horizon thickness: Greater than 10 inches

Cementation: Strongly cemented or indurated

Bedrock kind: Crystalline dolomitic limestone bedrock, containing appreciable amounts of glauconite

Fieldcreek Series

Depth class: Very deep

Drainage class: Well drained

Permeability class of the most limiting soil layer: 2.0 to 6.0 in/hr (moderately rapid)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: High

Landscape: Valleys

Landform: Flood plains on ephemeral streams, flood plains on perennial streams

Position on landform: Flood-plain step

Parent material: Loamy alluvium derived from igneous, metamorphic, and sedimentary rock

Slope: 0 to 5 percent

Elevation: 1,000 to 1,900 feet

Mean annual precipitation: 24 to 28 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 215 to 230 days
Map unit(s): FRC

Taxonomic Class

Coarse-loamy, mixed, superactive, thermic Cumulic Haplustolls

Typical Pedon

Fieldcreek, fine sandy loam; in an area of Fieldcreek fine sandy loam, occasionally flooded; in rangeland; from the intersection of Highway 71 and Ford Street in Llano, 8.5 miles southeast on Highway 71, 3.1 miles east on County Road 307, and 150 feet north in range; USGS Cap Mountain, TX topographic quadrangle; Latitude 30 degrees, 40 minutes, 39.79 seconds North and Longitude 98 degrees, 30 minutes, 36.00 seconds West; UTM Easting: 546935 meters; UTM Northing: 3393989 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A1—0 to 8 inches; brown (10YR 4/3), fine sandy loam, dark brown (10YR 3/3), moist; weak fine granular structure; very friable, slightly hard, slightly sticky, slightly plastic; many fine roots; common fine pores; 5 percent quartz fragments, 2 to 75 mm gravel, nonflat, rounded; slightly acid; clear smooth boundary.

A2—8 to 25 inches; dark grayish brown (10YR 4/2), loam, very dark grayish brown (10YR 3/2), moist; moderate fine granular structure, and moderate fine subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; common fine roots; many fine and few medium pores; few wormcasts and few mica flakes; slightly acid; gradual smooth boundary.

Bw1—25 to 48 inches; brown (7.5YR 4/4), loam, dark brown (7.5YR 3/4), moist; weak medium prismatic structure parting to weak fine subangular blocky; friable, slightly hard, slightly sticky, slightly plastic; few fine roots; few organic stains; common mica flakes; slightly effervescent; neutral; gradual smooth boundary.

Bw2—48 to 80 inches; brown (7.5YR 5/4), fine sandy loam, brown (7.5YR 4/4), moist; weak medium prismatic structure parting to weak fine subangular blocky; very friable, slightly hard, slightly sticky, slightly plastic; many mica flakes; 10 percent quartz fragments, 2 to 75 mm gravel, nonflat, rounded; strongly effervescent; neutral.

Range in Characteristics

Solum thickness: Greater than 80 inches

Particle-size control section (weighted average):

Clay content: 10 to 18 percent

Coarse fragments: 0 to 10 percent by volume; some pedons have thin gravelly strata below a depth of 40 inches

A horizon

Hue: 7.5YR or 10YR

Value: 3 to 5, 2 to 4 moist

Chroma: 2 or 3, dry and moist

Texture of the fine-earth fraction: Fine sandy loam

Effervescence: None

Reaction: Slightly acid to moderately alkaline

Bw horizon

Hue: 7.5YR or 10YR

Value: 4 to 6, 3 to 5 moist

Chroma: 4 to 6, dry and moist

Texture of the fine-earth fraction: Sandy loam, fine sandy loam, loam, or sandy clay loam

Coarse fragments: 0 to 20 percent by volume; siliceous and feldspar gravel
Identifiable calcium carbonate: 0 to 2 percent by volume; fine; masses; below a depth of 40 inches in some pedons
Effervescence: None to slight
Reaction: Neutral to moderately alkaline

Hensley Series

Depth class: Shallow to lithic bedrock
Drainage class: Well drained
Permeability class of the most limiting soil layer: 0.06 to 0.2 in/hr (slow)
Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately low
Landscape: Dissected plateaus
Landform: Ridges
Position on landform: Summits, shoulders
Parent material: Residuum weathered from limestone
Slope: 1 to 8 percent
Elevation: 1,000 to 2,020 feet
Mean annual precipitation: 24 to 34 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 210 to 250 days
Map unit(s): HeD

Taxonomic Class

Clayey, mixed, active, thermic Lithic Rhodustalfs

Typical Pedon

Hensley loam in an area of Hensley loam, 1 to 8 percent slopes; from the intersection of U.S. Highway 87 and FM 1871 in Mason, 14.7 miles south and west on FM 1871, and 300 feet south in rangeland; USGS Sheep Run Creek, TX topographic quadrangle; Latitude 30 degrees, 38 minutes, 9.20 seconds North and Longitude 99 degrees, 24 minutes, 4.90 seconds West; UTM Easting: 461539 meters; UTM Northing: 3389319 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 6 inches; brown (7.5YR 4/2), loam, dark brown (7.5YR 3/2), moist; weak medium subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; common very fine and common fine roots; common fine irregular pores; 10 percent limestone fragments, 2 to 75 mm gravel, nonflat, subangular, indurated slightly acid; clear wavy boundary.

Bt—6 to 14 inches; red (2.5YR 4/6), clay, dark red (2.5YR 3/6), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common very fine roots; common fine irregular pores; few distinct red (2.5YR 4/8), moist, clay films on vertical faces of peds; common medium faint irregular red (2.5YR 4/8) masses of oxidized iron in matrix; neutral; very abrupt smooth boundary.

R—14 to 24 inches; indurated limestone bedrock; fractured at intervals of 18 to 39 inches.

Range in Characteristics

Solum thickness to bedrock: 10 to 20 inches

Surface fragments: 0 to 50 percent by area, limestone, stones, and boulder. Ironstone fragments mainly less than 3 inches across cover the soil surface. Stony modifiers are recognized.

Clay content: From soil surface to bedrock is more than 35 percent when the solum is less than 14 inches thick

A horizon

Hue: 2.5YR to 7.5YR

Value: 3 to 5, dry and moist

Chroma: 2 to 4, dry and moist

Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Texture of the fine-earth fraction: Loam

Coarse fragments: 0 to 15 percent by volume, limestone and ironstone gravel, cobbles and stones

Effervescence: None to slight

Reaction: Slightly acid to slightly alkaline

Bt horizon

Hue: 2.5YR to 7.5YR

Value: 3 or 4, dry and moist

Chroma: 3 to 6, dry and moist

Texture of the fine-earth fraction: Clay loam or clay

Clay content: 35 to 55 percent

Coarse fragments: 0 to 10 percent by volume, limestone and ironstone gravels

Effervescence: None to slight

Reaction: Neutral to moderately alkaline

R layer

Bedrock kind: Strongly cemented or indurated fractured limestone bedrock

Honeycreek Series

Depth class: Deep to paralithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Dissected plateaus

Landform: Hills, undulating plains, ridges

Position on landform: Footslopes

Parent material: Slope alluvium derived from schist and/or gneiss

Slope: 0 to 5 percent

Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 25 to 30 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 210 to 240 days

Map unit(s): HkC, KAC

Taxonomic Class

Fine-loamy, mixed, superactive, thermic Typic Haplustalfs

Typical Pedon

Honeycreek fine sandy loam in an area of Honeycreek fine sandy loam, 1 to 3 percent slopes; from the intersection of Texas Highway 71 and Texas Highway 16 in Llano, 11.5 miles southeast on Texas Highway 71, 6.0 miles southwest on County Road 308, and 150 feet southwest of intersection of County Road 308 and County Road 315 in rangeland; USGS Click, TX topographic quadrangle; Latitude 30 degrees, 34 minutes, 22.44 seconds North and Longitude 98 degrees, 34 minutes, 23.52 seconds West; UTM

Easting: 540926 meters; UTM Northing: 3382348 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

- A1—0 to 9 inches; strong brown (7.5YR 4/6), fine sandy loam, dark brown (7.5YR 3/4), moist; weak fine subangular blocky structure parting to weak medium subangular blocky; friable, slightly hard, slightly sticky, slightly plastic; common fine and few medium roots; many very fine and many fine pores; neutral; clear smooth boundary.
- A2—9 to 17 inches; reddish brown (5YR 4/4), fine sandy loam, dark reddish brown (5YR 3/4), moist; weak medium subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; few fine and few medium roots; common very fine, fine, and few coarse pores; moderately acid; gradual smooth boundary.
- Bt1—17 to 25 inches; reddish brown (5YR 4/4), fine sandy loam, dark reddish brown (5YR 3/4), moist; moderate coarse subangular blocky structure; firm, slightly hard, slightly sticky, slightly plastic; few fine roots; few fine and few medium pores; few clay bridges; few clay films on surfaces along pores; moderately acid; clear smooth boundary.
- Bt2—25 to 37 inches; reddish brown (5YR 4/4), sandy clay loam, dark reddish brown (5YR 3/4), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common very fine and common fine roots; few clay films; neutral; gradual smooth boundary.
- Bt3—37 to 50 inches; strong brown (7.5YR 5/6), gravelly sandy clay loam, brown (7.5YR 4/4), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; few very fine roots; common very fine and common fine pores; few clay films; 20 percent metamorphic rock fragments, 76 to 250 mm cobbles, nonflat; neutral; clear smooth boundary.
- BCt—50 to 56 inches; reddish yellow (7.5YR 6/6), gravelly fine sandy loam, strong brown (7.5YR 4/6), moist; weak fine subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; few very fine and few fine pores; few clay films; 20 percent metamorphic rock fragments, 76 to 250 mm cobbles, nonflat; neutral; clear smooth boundary.
- Cr—56 to 66 inches; weakly cemented schist bedrock; fractured at intervals of 18 to 39 inches; weak coarse platy structure.

Range in Characteristics

Depth to paralithic contact: 40 to 60 inches

Solum thickness: 20 to 40 inches

Reaction: Slightly acid or neutral throughout

Particle-size control section (weighted average):

Clay content: 18 to 25 percent

Coarse fragments: 0 to 35 percent by volume, quartz gravel

A horizon

Hue: 5YR to 10YR

Value: 4 to 6, 3 to 5 moist

Chroma: 2 to 6, dry and moist

Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Texture of the fine-earth fraction: Fine sandy loam

Clay content: 6 to 16 percent

Bt horizon

Hue: 2.5YR to 7.5YR

Value: 4 to 6, 3 to 5 moist

Chroma: 3 to 6, dry and moist

Mottles: 0 to 10 percent, fine to coarse, distinct to prominent, red, yellow, or brown, on faces of peds, clear to diffuse
Texture of the fine-earth fraction: Sandy loam, fine sandy loam, loam, sandy clay loam, or clay loam
Coarse fragments: Gravelly modifiers
Clay content: 15 to 30 percent

BCt horizon

Hue: 2.5YR to 7.5YR
Value: 4 to 6, 3 to 5 moist
Chroma: 3 to 6, dry and moist
Texture of the fine-earth fraction: Sandy loam, fine sandy loam, loam, or sandy clay loam
Coarse fragments: Gravelly phases

Cr layer

Hue: 7.5YR to 2.5Y
Value: 3 to 8, dry and moist
Chroma: 2 to 6, dry and moist
Bedrock kind: Schist, schistose-gneiss, or gneiss
Cementation: Weakly cemented to moderately cemented
Vertical fractures: Greater than 4 inches apart horizontally
Bed tilt from horizontal: 10 to 45 degrees

Hye Series

Depth class: Moderately deep to lithic bedrock
Drainage class: Well drained
Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)
Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high
Landscape: Dissected plateaus
Landform: Ridges on dissected plateaus
Position on landform: Foothills
Parent material: Residuum weathered from sandstone, slope alluvium derived from sandstone
Slope: 0 to 8 percent
Elevation: 1,000 to 2,200 feet
Mean annual precipitation: 24 to 34 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 215 to 235 days
Map unit(s): HND, HOD, HPC

Taxonomic Class

Fine-loamy, mixed, superactive, thermic Typic Haplustalfs

Typical Pedon

Hye fine sandy loam in an area of Hye-Oben-Loneoak complex, 1 to 8 percent slopes; from the intersection of Ranch Road 783 and Loeffler Lane in Hilda, 1.5 miles east on Loeffler Lane, and 2,500 feet south in pasture; USGS Loyal Valley, TX topographic quadrangle; Latitude 30 degrees, 34 minutes, 36.46 seconds North and Longitude 99 degrees, 5 minutes, 35.14 seconds West; UTM Easting: 491074 meters; UTM Northing: 3382705 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 10 inches; brown (7.5YR 4/4), fine sandy loam, dark brown (7.5YR 3/4), moist; moderate medium subangular blocky structure; friable, soft, nonsticky, nonplastic; common fine and medium roots; common fine irregular pores; slightly acid; clear wavy boundary.

Bt—10 to 36 inches; reddish brown (5YR 4/4), sandy clay loam, dark reddish brown (5YR 3/4), moist; moderate medium subangular blocky structure; firm, hard, slightly sticky, slightly plastic; common fine roots; common fine irregular pores; few fine iron-manganese masses in matrix; neutral; very abrupt smooth boundary.

R—36 to 46 inches; indurated sandstone bedrock; fractured at intervals of 39 to 78 inches.

Range in Characteristics

Solum thickness and depth to sandstone: 20 to 40 inches

Particle-size control section (weighted average):

Coarse fragments: Some pedons have discontinuous stone lines 0.5 to 4 inches thick of sandstone.

Reaction: Slightly acid or neutral

A horizon

Hue: 5YR or 7.5YR

Value: 4 or 5, 3 or 4 moist

Chroma: 2 to 6, dry or moist

Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Texture of the fine-earth fraction: Fine sandy loam

Clay content: 10 to 18 percent

Bt horizon

Hue: 2.5YR to 7.5YR

Value: 4 or 5, 3 or 4 moist

Chroma: 3 to 6, dry or moist

Mottles: Some pedons have brown, yellow, and gray mottles below a depth of 30 inches

Texture of the fine-earth fraction: Fine sandy loam, sandy clay loam, or clay loam

Clay content: 18 to 32 percent

R layer

Bedrock kind: Limestone bedrock

Location: Roughly parallels the surface

Fracture interval: 2 to 12 feet

Cementation: Strongly cemented or indurated

Katemcy Series

Depth class: Moderately deep to paralithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.06 to 0.2 in/hr (slow)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately low

Landscape: Dissected plateaus

Landform: Hills, undulating plains, ridges

Position on landform: Footslopes

Parent material: Residuum weathered from schist and/or slope alluvium derived from schist

Slope: 1 to 5 percent

Elevation: 1,000 to 2,250 feet

Mean annual precipitation: 24 to 30 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 210 to 240 days

Map unit(s): KAC, LKD

Taxonomic Class

Fine, mixed, superactive, thermic Typic Haplustalfs

Typical Pedon

Katemcy sandy loam in an area of Katemcy sandy loam, 1 to 5 percent slopes; from the intersection of Texas Highway 16 and Ranch Road 2323 south of Llano in Llano County, Texas; 11.3 miles southwest on Ranch Road 2323, 0.6 mile north on County Road 106, 2.2 miles north on local road, and 1.0 mile west in range; USGS Scotts Crossing, TX topographic quadrangle; Latitude 30 degrees, 40 minutes, 45.00 seconds North and Longitude 98 degrees, 51 minutes, 30.00 seconds West; UTM Easting: 513569 meters; UTM Northing: 3394055 meters; UTM Zone 14. Llano County, Texas. (Colors are for dry soil unless otherwise noted.)

A1—0 to 3 inches; reddish brown (5YR 5/3), sandy loam, reddish brown (5YR 4/3), moist; weak coarse platy structure; very friable, very hard, nonsticky, nonplastic; many fine and few coarse roots; common fine tubular and common medium tubular pores; 2 percent metamorphic rock fragments, 2 to 75 mm gravel, nonflat; slightly acid; clear smooth boundary.

A2—3 to 9 inches; reddish brown (5YR 5/3), sandy loam, dark reddish brown (5YR 3/3), moist; weak coarse subangular blocky structure; very friable, very hard, nonsticky, nonplastic; many fine and few coarse roots; common fine tubular and common medium tubular pores; 2 percent metamorphic rock fragments, 2 to 75 mm gravel, nonflat; slightly acid; abrupt smooth boundary.

Bt1—9 to 11 inches; reddish brown (5YR 5/3), sandy clay, dark reddish brown (5YR 3/3), moist; weak coarse subangular blocky structure; firm, very hard, moderately sticky, moderately plastic; common fine and few coarse roots; common fine tubular and common medium tubular pores; 5 percent metamorphic rock fragments, 2 to 75 mm gravel, nonflat; neutral; clear smooth boundary.

Bt2—11 to 20 inches; red (2.5YR 4/6), sandy clay, dark red (2.5YR 3/6), moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very firm, very hard, moderately sticky, moderately plastic; common fine and few coarse roots; few fine tubular pores; common distinct clay films on all faces of peds; neutral; gradual smooth boundary.

Bt3—20 to 27 inches; reddish brown (2.5YR 5/4), gravelly sandy clay, reddish brown (2.5YR 4/4), moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very firm, very hard, moderately sticky, moderately plastic; few fine and few coarse roots; few fine and few medium tubular pores; common distinct clay films on all faces of peds; 15 percent schist, mica, 21 to 75 mm, nonflat; neutral; abrupt irregular boundary.

Bc—27 to 38 inches; reddish brown (5YR 5/4) and brown (7.5YR 5/4) channery sandy clay loam, reddish brown (5YR 4/4) interior, brown (7.5YR 4/4) interior, and reddish brown (5YR 4/4) interior, moist; weak medium subangular blocky structure; firm, very hard, moderately sticky, moderately plastic; few fine and few coarse roots; few fine and few medium tubular pores; common distinct clay films on all faces of peds; 20 percent schist, mica, 2 to 150 mm, flat; neutral; abrupt irregular boundary.

Cr—38 to 80 inches; reddish brown (5YR 5/4); weakly cemented schist bedrock; fractured at intervals of 4 to 18 inches; reddish brown (5YR 4/4), moist; few fine roots in cracks.

Range in Characteristics

Depth to paralithic contact: 20 to 40 inches

Solum thickness: 20 to 40 inches

Particle-size control section (weighted average):

Soil Survey of Mason County, Texas

Clay content: 35 to 45 percent

Coarse fragments: 0 to 30 percent by volume; quartz, schist, or gneiss; 0 to 30 percent, gravel; 0 to 30 percent, channers

A horizon

Hue: 5YR to 10YR

Value: 3 to 5, 2 to 4 moist

Chroma: 2 to 4, dry and moist

Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Texture of the fine-earth fraction: Sandy loam

Coarse fragments: 0 to 10 percent by volume

Reaction: Slightly acid to slightly alkaline

Bt horizon

Hue: 2.5YR to 7.5YR

Value: 3 to 6, 2 to 5 moist

Chroma: 3 to 6, dry and moist

Texture of the fine-earth fraction: Sandy clay loam, clay loam, sandy clay, or clay

Clay content: 27 to 45 percent

Coarse fragments: 0 to 30 percent by volume; Upper Bt—0 to 15 percent; lower Bt—0 to 30 percent; gravelly and channery modifiers

Reaction: Slightly acid to slightly alkaline

BCt horizon

Hue: 2.5YR to 7.5YR

Value: 3 to 6, 2 to 5 moist

Chroma: 3 to 6, dry and moist

Texture of the fine-earth fraction: Sandy clay loam or sandy clay

Clay content: 27 to 40 percent

Coarse fragments: 15 to 30 percent by volume; gravelly and channery modifiers

Reaction: Slightly acid to slightly alkaline

Cr layer

Bedrock kind: Finely fractured schist and schistose gneiss bedrock

Cementation: Weakly to moderately cemented

Vertical fractures: Greater than 4 inches apart horizontally

Bed tilt from horizontal: 10 degrees to 60 degrees

Keese Series

Depth class: Shallow to paralithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 2.0 to 6.0 in/hr (moderately rapid)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: High

Landscape: Dissected plateaus

Landform: Hills, ridges

Position on landform: Summits, shoulders, backslopes

Parent material: Residuum weathered from gneiss and/or residuum over grus derived from granite

Slope: 1 to 30 percent

Elevation: 900 to 2,250 feet

Mean annual precipitation: 24 to 30 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 210 to 240 days

Map unit(s): KeD, KLE, KRG, LKD, LND

Taxonomic Class

Loamy, mixed, active, thermic, shallow Typic Haplustepts

Typical Pedon

Keese coarse sandy loam in an area of Keese coarse sandy loam, 1 to 8 percent slopes, stony; from the intersection of Ranch Road 152 and County Road 105 southwest of Castell, 3.3 miles south on County Road 105, and 400 feet east in rangeland; USGS Castell, TX topographic quadrangle; Latitude 30 degrees, 39 minutes, 17.79 seconds North and Longitude 98 degrees, 56 minutes, 37.25 seconds West; UTM Easting: 505396 meters; UTM Northing: 3391363 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 5 inches; brown (7.5YR 4/4), coarse sandy loam, dark brown (7.5YR 3/4), moist; weak medium granular structure; very friable, slightly hard, nonsticky, nonplastic; common fine roots; common fine irregular pores; 8 percent granite fragments, 2 to 75 mm gravel, nonflat; slightly acid; clear smooth boundary.

Bw1—5 to 10 inches; brown (7.5YR 4/4), coarse sandy loam, dark brown (7.5YR 3/4), moist; weak medium subangular blocky structure; friable, slightly hard, nonsticky, nonplastic; common fine roots; common fine irregular pores; 10 percent granite fragments, 2 to 75 mm gravel, nonflat; slightly acid; clear smooth boundary.

Bw2—10 to 14 inches; strong brown (7.5YR 4/6), gravelly coarse sandy loam, strong brown (7.5YR 4/6), moist; weak medium subangular blocky structure; very friable, slightly hard, nonsticky, nonplastic; common fine roots; common fine irregular pores; 20 percent granite fragments, 2 to 75 mm gravel, nonflat; moderately acid; very abrupt smooth boundary.

Cr—14 to 24 inches; weakly cemented granite bedrock; fractured at intervals of 4 to 18 inches.

Range in Characteristics

Depth to paralithic contact: 10 to 20 inches

Solum thickness: 10 to 20 inches

Surface coarse fragments: 2 to 15 percent by area

Particle-size control section (weighted average):

Clay content: 10 to 20 percent

Coarse fragments: 5 to 35 percent by volume, feldspar, and quartz gravel; and 0 to 12 percent by volume, granite and/or gneiss stones

Reaction: Moderately acid to slightly acid

A horizon

Hue: 5YR to 10YR

Value: 5 to 6, 4 to 5 moist

Chroma: 3 to 6, dry and moist

Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Texture of the fine-earth fraction: Coarse sandy loam

Coarse fragments: 5 to 35 percent by volume; granite and/or gneiss gravel

Bw horizon

Hue: 7.5YR or 10YR

Value: 4 to 6, 3 to 5 moist

Chroma: 3 to 6 dry and moist

Texture of the fine-earth fraction: Coarse sandy loam, sandy loam, fine sandy loam

Coarse fragments: 5 to 35 percent by volume; granite and/or gneiss gravel

C horizon (where present)

Hue: 7.5YR or 10YR

Value: 5 or 6, 4 or 5 moist

Chroma: 3 to 6, dry and moist

Texture of the fine-earth fraction: Coarse sandy loam, sandy loam, or fine sandy loam

Coarse fragments: 70 to 90 percent by volume; granite and/or gneiss gravel

Cr layer

Hue: 7.5YR or 10YR

Value: 4 to 6, 3 to 5 moist

Chroma: 2 to 6, dry and moist

Bedrock kind: Granite bedrock and/or tightly packed grus

Cementation: Weakly cemented to strongly cemented, becomes harder with depth

Vertical fractures: Greater than 4 inches apart horizontally

Kerrville Series

Depth class: Moderately deep to lithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Dissected plateaus

Landform: Ridges

Position on landform: Summits, shoulders, backslopes

Parent material: Residuum weathered from limestone

Slope: 1 to 40 percent

Elevation: 1,000 to 2,500 feet

Mean annual precipitation: 25 to 32 inches

Mean annual air temperature: 64 to 70 degrees F

Frost-free period: 220 to 240 days

Map unit(s): KTG, KVE

Taxonomic Class

Fine-loamy, carbonatic, thermic Typic Calcustepts

This is a taxadjunct to the Kerrville Series because it has a fine-loamy particle-size class rather than loamy-skeletal particle-size class.

Typical Pedon

Kerrville very paragravelly loam in an area of Kerrville, Real, and Sunev soils, 1 to 12 percent slopes; from the intersection of Ranch Road 1871 and Mill Creek Road, southwest of Mason, 7.7 miles south on Mill Creek Road, 0.7 mile west on local road, 0.3 mile southwest on local road, 2.5 miles southwest on local road, 0.8 mile northwest on local road, and 1.5 miles north in rangeland; USGS Monument Mountain, TX topographic quadrangle; Latitude 30 degrees, 32 minutes, 20.30 seconds North and Longitude 99 degrees, 26 minutes, 16.60 seconds West; UTM Easting: 457991 meters; UTM Northing: 3378592 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 6 inches; grayish brown (10YR 5/2), very paragravelly loam, dark grayish brown (10YR 4/2), moist; weak medium granular structure; friable, slightly hard, slightly sticky, slightly plastic; common fine roots; common fine irregular pores; 20 percent carbonate rock fragments paragravel, 2 to 75 mm, nonflat; moderately cemented and

25 percent limestone fragments paragravel, 2 to 75 mm, nonflat; moderately cemented; violently effervescent; slightly alkaline; clear smooth boundary.

Bw—6 to 18 inches; very pale brown (10YR 8/3), very paragravelly loam, very pale brown (10YR 7/3), moist; moderate medium subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; common fine roots; common fine irregular pores; 55 percent limestone fragments paragravel, 2 to 75 mm, nonflat; moderately cemented; violently effervescent; slightly alkaline; clear smooth boundary.

Bk—18 to 26 inches; brown (7.5YR 5/4), paragravelly loam, brown (7.5YR 4/4), moist; moderate medium subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; common very fine roots; few fine irregular pores; 30 percent limestone fragments paragravel, 2 to 75 mm, nonflat; violently effervescent; moderately alkaline; abrupt smooth boundary.

R—26 to 35 inches; strongly cemented limestone bedrock; fractured at intervals of 4 to 18 inches.

Range in Characteristics

Depth to lithic contact: 20 to 40 inches

Effervescence: Strong or violent

Reaction: Slightly alkaline or moderately alkaline

Particle-size control section (weighted average):

Carbonate clay content: 2 to 10 percent

Coarse fragments: 15 to 89 percent by volume

Calcium carbonate equivalent: 40 to 85 percent in the fine-earth fraction and increases with depth

A horizon

Hue: 10YR or 2.5Y

Value: 5 to 7 dry, 3 or 4 moist

Chroma: 2 to 4 dry, 2 to 4 moist

Texture of the fine-earth fraction: Loam

Coarse fragments: 15 to 60 percent by volume, limestone gravel

Bw horizon

Hue: 10YR or 2.5Y

Value: 5 to 8

Chroma: 2 to 4

Texture of the fine-earth fraction: Loam, silty clay loam, or clay loam

Rock and pararock fragments: 15 to 60 percent by volume, limestone gravel and paragravel, and cobbles; very cobbly, very gravelly, cobbly, or gravelly modifiers

Bk horizon

Hue: 7.5YR to 2.5Y

Value: 5 to 8

Chroma: 2 to 4

Texture: Loam, silty clay loam, or clay loam

Rock and pararock fragments: 15 to 89 percent by volume, limestone channers and flagstones, gravel, cobble; extremely flaggy, extremely cobbly, extremely gravelly; very flaggy, very cobbly, very gravelly; flaggy, cobbly, gravelly, or very gravelly modifiers

Identifiable calcium carbonate: Nodules, concretion, or masses, throughout or around or on bottom of fragments

Other features: Fragments are mostly white, but mottles or individual fragments may be in shades of yellow, brown, or gray

R layer

Bedrock kind: Limestone and/or interbedded with chalk

Horizon thickness: Greater than 10 inches

Vertical fractures: Greater than 4 inches apart horizontally

Cementation: Strongly cemented or indurated

Identifiable calcium carbonates: In fractures of some pedons

Ligon Series

Depth class: Moderately deep to paralithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.06 to 0.2 in/hr (slow)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately low

Landscape: Dissected plateaus

Landform: Hills, ridges

Position on landform: Summits, shoulders, backslopes

Parent material: Residuum weathered from schist

Slope: 1 to 8 percent

Elevation: 1,000 to 2,250 feet

Mean annual precipitation: 24 to 30 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 215 to 235 days

Map unit(s): LKD, LND

Taxonomic Class

Fine, mixed, superactive, thermic Typic Rhodustalfs

Typical Pedon

Ligon gravelly sandy clay loam in an area of Ligon-Keese complex, 1 to 8 percent slopes, rocky; from the intersection of Texas Highway 71 and Ranch Road 386 near Fredonia, 0.6 mile south on Ranch Road 386, 1.4 miles east on FM 1222, and 1,500 feet south in range; USGS Spy Rock, TX topographic quadrangle; Latitude 30 degrees, 55 minutes, 7.43 seconds North and Longitude 99 degrees, 8 minutes, 32.77 seconds West; UTM Easting: 486391 meters; UTM Northing: 3420604 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 4 inches; reddish brown (5YR 4/3), gravelly sandy clay loam, dark reddish brown (5YR 3/3), moist; weak medium subangular blocky structure; very friable, soft, nonsticky, nonplastic; common fine and common medium roots; common fine irregular pores; 18 percent quartz fragments, 2 to 75 mm gravel, nonflat, subrounded, indurated; neutral; clear wavy boundary.

Bt1—4 to 15 inches; red (2.5YR 4/6), sandy clay, dark red (2.5YR 3/6), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common fine and common medium roots; common fine irregular pores; common distinct clay films on all faces of peds; common fine distinct platy mica flakes with clear boundaries infused into matrix along faces of peds; 5 percent quartz fragments, 2 to 75 mm gravel, nonflat, subrounded, indurated; neutral; gradual wavy boundary.

Bt2—15 to 31 inches; red (2.5YR 4/6), sandy clay, dark red (2.5YR 3/6), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; neutral; gradual wavy boundary.

Cr—31 to 41 inches; light yellowish brown (2.5Y 6/3), weakly cemented schist bedrock, light olive brown (2.5Y 5/3), moist; fractured at intervals of 4 to 18 inches.

Range in Characteristics

Depth to paralithic contact: 20 to 40 inches

Solum thickness: 20 to 40 inches

Particle-size control section (weighted average)

Clay content: 35 to 45 percent

Coarse fragments: 5 to 35 percent by volume, schist, quartz gravel, and cobbles

A horizon

Hue: 2.5YR to 7.5YR

Value: 3 to 5, 2 to 4 moist

Chroma: 3 to 6, dry and moist

Texture of the fine-earth fraction: Sandy clay loam

Coarse fragments: 5 to 40 percent by volume; 0 to 40 percent, schist and quartz gravel; 0 to 40 percent, schist and quartz cobbles; gravelly, very gravelly, and cobbly modifiers

Organic matter content: 0 to 1 percent

Reaction: Moderately acid to slightly alkaline

Bt horizon

Hue: 10R or 2.5YR

Value: 2 to 4, 2 to 3 moist

Chroma: 4 to 6, dry and moist

Texture of the fine-earth fraction: Sandy clay loam, clay loam, sandy clay, or clay

Coarse fragments: 5 to 40 percent by volume; 0 to 40 percent, schist and quartz gravel; 0 to 40 percent, schist and quartz cobbles; gravelly, very gravelly, and cobbly modifiers

Reaction: Moderately acid to slightly alkaline

Cd layer (where present)

Hue: 2.5YR or 5YR

Value: 3 to 5, 2 to 4 moist

Chroma: 3 to 6, dry and moist

Bedrock kind: Weathered schist bedrock that slakes in water

Cementation: Noncemented

Reaction: Moderately acid to slightly alkaline

Cr layer

Bedrock kind: Hornblende schist or schistose-gneiss bedrock

Cementation: Weakly cemented or moderately cemented

Vertical fractures: Greater than 4 inches apart horizontally

Tilt from horizontal: 30 to 60 degrees

Loneoak Series

Depth class: Very deep to lithic bedrock; very deep to paralithic bedrock

Drainage class: Moderately well drained

Permeability class of the most limiting soil layer: 0.2 to 0.6 in/hr (moderately slow)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Dissected plateaus

Landform: Undulating plains, ridges

Position on landform: Footslopes

Parent material: Residuum weathered from sandstone

Slope: 0 to 5 percent

Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 22 to 28 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 215 to 230 days

Map unit(s): ACC, HOD, LOC

Taxonomic Class

Clayey, mixed, active, thermic Arenic Paleustalfs

Typical Pedon

Loneoak loamy sand (fig. 34) in an area of Loneoak-Campair complex, 0 to 5 percent slopes; from the intersection of FM 2242 and U.S. Highway 87 near Loyal Valley, 4.0 miles south on U.S. Highway 87, and 300 feet east in rangeland; USGS Loyal Valley, TX topographic quadrangle; Latitude 30 degrees, 30 minutes, 29.93 seconds North and Longitude 99 degrees, 0 minutes, 40.88 seconds West; UTM Easting: 498910 meters; UTM Northing: 3375113 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A1—0 to 16 inches; dark yellowish brown (10YR 4/4), loamy sand, dark yellowish brown (10YR 3/4), moist; moderate fine granular structure; very friable, loose, nonsticky, nonplastic; common very fine and common fine roots; many very fine low continuity irregular pores; slightly acid; clear smooth boundary.

A2—16 to 22 inches; pale brown (10YR 6/3), loamy sand, brown (10YR 5/3), moist; weak fine subangular blocky structure; friable, slightly hard, nonsticky, nonplastic; common very fine and common fine roots; many very fine low continuity irregular pores; slightly acid; very abrupt smooth boundary.

Bt—22 to 32 inches; light yellowish brown (2.5Y 6/4), clay, light olive brown (2.5Y 5/4), moist; strong coarse prismatic structure parting to strong medium angular blocky; very firm, very hard, very sticky, very plastic; common fine roots between peds; many very fine low continuity irregular pores; common prominent clay films on all faces of peds; common coarse prominent spherical moderately cemented strong brown (7.5YR 5/6), moist, masses of oxidized iron with sharp boundaries; common medium faint irregular yellowish brown (10YR 5/4), moist, masses of oxidized iron with clear boundaries; many medium distinct irregular grayish brown (2.5Y 5/2), moist, masses of reduced iron with sharp boundaries; neutral; clear smooth boundary.

Btss—32 to 49 inches; grayish brown (10YR 5/2), clay, grayish brown (10YR 5/2), moist; strong coarse prismatic structure parting to strong medium angular blocky; very firm, very hard, very sticky, very plastic; common fine roots between peds; common very fine low continuity irregular pores; few distinct slickensides (pedogenic) on bottom faces of peds; common prominent clay films on all faces of peds; common medium prominent spherical moderately cemented strong brown (7.5YR 5/6), moist, masses of oxidized iron with sharp boundaries, common medium faint irregular yellowish brown (10YR 5/6), moist, masses of oxidized iron with clear boundaries; common medium distinct irregular light olive brown (2.5Y 5/4), moist, masses of reduced iron with clear boundaries; neutral; clear smooth boundary.

B't—49 to 61 inches; brownish yellow (10YR 6/6), cobbly clay, yellowish brown (10YR 5/6), moist; moderate coarse prismatic structure parting to strong medium angular blocky; very firm, very hard, very sticky, very plastic; common very fine roots; common very fine low continuity irregular pores; few prominent clay films on vertical faces of peds; common medium distinct irregular dark yellowish brown (10YR 4/6), moist, and yellowish brown (10YR 5/6), dry, masses of reduced iron with clear boundaries; many medium distinct irregular grayish brown (10YR 5/2), moist, and light brownish gray (10YR 6/2), moist, masses of reduced iron with clear boundaries; 15 percent calcareous sandstone fragments, 76 to 250 mm cobbles, nonflat subrounded, strongly cemented; neutral; abrupt smooth boundary.



Figure 34.—Profile of Loneoak loamy sand in an area of Loneoak-Campair complex, 0 to 5 percent slopes. This deep, moderately well drained soil is located on undulating plains of the Hickory Sandstone Formation. The sandy surface ranges from 20 to 35 inches (51 to 89 cm) thick. The clayey subsoil contains 30 to 50 percent clay. (Scale in CM-centimeters)

Cr—61 to 65 inches; weakly cemented sandstone bedrock; fractured at intervals of 4 to 18 inches; neutral; abrupt smooth boundary.

R—65 to 75 inches; strongly cemented sandstone bedrock; fractured at intervals of 4 to 18 inches.

Range in Characteristics

Solum thickness and depth to sandstone bedrock: 60 to 71 inches

Arenic feature: 20 to 35 inches

Paralithic bedrock: 60 to 71 inches

Lithic bedrock: 63 to 77 inches

Particle-size control section (weighted average):

Clay content: 35 to 45 percent

Redox features: Mainly relict. However, in one to three years out of ten the soil is saturated for periods long enough to have reducing conditions.

A horizon

Hue: 7.5YR or 10YR

Value: 4 to 6, 3 to 5 moist

Chroma: 3 or 4, dry and moist

Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Texture of the fine-earth fraction: Loamy sand

Effervescence: None

Reaction: Moderately acid to neutral

E horizon (where present)

Hue: 7.5YR or 10YR

Value: 5 to 7, 4 to 6 moist

Chroma: 2 to 4, dry and moist

Texture of the fine-earth fraction: Sand or loamy sand

Effervescence: None

Reaction: Moderately acid to neutral

Bt horizon

Hue: 7.5YR to 2.5Y

Value: 4 to 7, 3 to 6 moist

Chroma: 2 to 6, dry and moist

Redox concentrations: Few to many, distinct to prominent, red, brown, or yellow

Redox depletions: Few to many, distinct to prominent, gray

Texture of the fine-earth fraction: Upper part—sandy clay or clay; lower part—sandy clay loam

Coarse fragments: 0 to 20 percent by volume; sandstone; in the lower part of the horizon

Identifiable calcium carbonate: 0 to 2 percent by volume; concretions; in the lower part of the horizon.

Other features: Vertic properties may be present in some pedons

Effervescence: None to slight

Reaction: Slightly acid to slightly alkaline

Btss, B't, or Btg horizon (where present)

Hue: 10YR or 2.5Y

Value: 5 to 7, 4 to 6 moist

Chroma: 1 or 6, dry and moist

Color features: Gleyed matrix colors occur in some pedons

Redox concentrations: Few to many; brown, red, or yellow

Texture of the fine-earth fraction: Sandy clay loam, sandy clay, or clay
Coarse fragments: 0 to 20 percent by volume; 0 to 20 percent by volume, 2 to 75 mm, sandstone; 0 to 20 percent by volume, 76 to 250 mm, sandstone; gravelly or cobbly modifiers
Identifiable calcium carbonate: 0 to 2 percent by volume; concretions
Other features: Vertic properties may be present in some pedons
Effervescence: None to slight
Reaction: Slightly acid to slightly alkaline

Cr layer

Bedrock kind: Sandstone bedrock
Colors: Shades of red, yellow, brown, or gray
Cementation: Very weakly cemented to moderately cemented. This material restricts roots except along fractures.
Fracture interval: 4 to more than 24 inches apart

R layer (where present)

Bedrock kind: Sandstone bedrock
Colors: Shades of red, yellow, brown, or gray
Cementation: Strongly cemented or indurated. This material restricts roots except along fractures.
Fracture interval: 4 to more than 24 inches apart

Lou Series

Depth class: Moderately deep to strongly contrasting textural stratification
Drainage class: Well drained
Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)
Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high
Landscape: Dissected plateaus
Landform: Hills, ridges
Position on landform: Summits, shoulders, backslopes
Parent material: Residuum over grus derived from granite
Slope: 1 to 5 percent
Elevation: 1,000 to 2,200 feet
Mean annual precipitation: 24 to 30 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 210 to 240 days
Map unit(s): KLE, LRC

Taxonomic Class

Fine-loamy, mixed, active, thermic Typic Haplustalfs

Typical Pedon

Lou sandy loam in an area of Lou-Click-Voca complex, 0 to 5 percent slopes, rocky; from the intersection of North Art Road and Texas Highway 29 east of Art, 7.6 miles east on Texas Highway 29, 1.8 miles north on East County Line Road, and 300 feet northeast in rangeland; USGS Smoothingiron Mountain, TX topographic quadrangle; Latitude 30 degrees, 45 minutes, 42.00 seconds North and Longitude 98 degrees, 59 minutes, 0.00 seconds West; UTM Easting: 501571 meters; UTM Northing: 3403200 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 8 inches; brown (10YR 4/3), sandy loam, dark brown (10YR 3/3), moist; weak fine granular structure; friable, slightly hard, nonsticky, nonplastic; common very fine

and common fine roots; common fine irregular pores; slightly acid; gradual smooth boundary.

Bt1—8 to 20 inches; brown (10YR 5/3), sandy clay loam, brown (10YR 4/3), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common fine roots; common fine irregular pores; common fine manganese masses throughout; 10 percent granite fragments, 2 to 75 mm gravel, nonflat; moderately acid; clear smooth boundary.

Bt2—20 to 30 inches; gravelly sandy clay loam, brown (7.5YR 4/4) and brown (7.5YR 5/4), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common fine roots; common fine irregular pores; common fine manganese masses throughout; 15 percent granite fragments, 2 to 75 mm gravel, nonflat; moderately acid; abrupt smooth boundary.

BCt—30 to 80 inches; red (10R 4/6), extremely gravelly loam, dark red (10R 3/6), moist; moderate very fine subangular blocky structure; firm, very hard, slightly sticky, slightly plastic; few very fine roots in cracks; common fine and common very fine pores; very many prominent clay films on rock fragments; 90 percent prominent clay films on rock fragments; 85 percent granite fragments, 2 to 75 mm gravel, nonflat, angular, indurated moderately acid.

Range in Characteristics

Solum thickness: More than 60 inches

Particle-size control section (weighted average):

Clay content: 18 to 35 percent

Coarse fragments: 5 to 35 percent total by volume; granite and saprolite; 4 to 28 percent fine gravel; 1 to 7 percent medium and coarse gravel.

A horizon

Hue: 7.5YR or 10YR

Value: 4 to 5, 3 to 4 moist

Chroma: 2 to 4, dry and moist

Texture of the fine-earth fraction: Sandy loam

Clay content: 10 to 17 percent

Coarse fragments: 2 to 20 percent by volume, granite gravel; gravelly modifiers

Other features: The A horizon is hard and massive when dry. A thin E horizon is present in some pedons.

Reaction: Slightly acid or neutral

Bt horizon

Hue: 2.5YR to 10YR

Value: 4 to 6, 3 to 5 moist

Chroma: 3 or 6, dry and moist

Texture of the fine-earth fraction: Coarse sandy loam, sandy loam, or sandy clay loam

Clay content: 18 to 35 percent

Coarse fragments: 5 to 35 percent by volume, granite gravel; gravelly or very gravelly modifiers

Clay films: Few to common, faces of peds, fragments, and pores

Base saturation: 75 to 100 percent

Reaction: Moderately acid to neutral

BCt horizon

Hue: 10R to 7.5YR

Value: 4 to 6, 3 to 5 moist

Chroma: 4 to 8, dry and moist

Texture of the fine-earth fraction: Loam or sandy clay loam

Clay content: 15 to 30 percent

Coarse fragments: 60 to 90 percent by volume, granite and granite saprolite gravel

Reaction: Moderately acid or slightly acid

Luckenbach Series

Depth class: Very deep

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.2 to 0.6 in/hr (moderately slow)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Alluvial plain remnants, dissected plateaus

Landform: Valleys

Position on landform: Footslopes

Parent material: Ancient alluvium derived from limestone and sandstone

Slope: 0 to 5 percent

Elevation: 1,000 to 2,180 feet

Mean annual precipitation: 26 to 34 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 215 to 235 days

Map unit(s): LuC

Taxonomic Class

Fine, mixed, superactive, thermic Typic Argiustolls

Typical Pedon

Luckenbach clay loam (fig. 35) in an area of Luckenbach clay loam, 0 to 5 percent slopes; from the intersection of U.S. Highway 87 and Ranch Road FM 1871 in Mason, 13.3 miles southwest on Ranch Road 1871, 9.7 miles south on Mill Creek Road, 2.1 miles west on local road, and 1,000 feet northwest in pasture; USGS Monument Mountain, TX topographic quadrangle; Latitude 30 degrees, 31 minutes, 18.00 seconds North and Longitude 99 degrees, 26 minutes, 9.89 seconds West; UTM Easting: 458166 meters; UTM Northing: 3376665 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 15 inches; dark grayish brown (10YR 4/2), clay loam, very dark grayish brown (10YR 3/2), moist; moderate fine and medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common very fine and common fine roots; many fine irregular pores; slightly effervescent; neutral; clear smooth boundary.

Bt1—15 to 19 inches; brown (10YR 4/3), clay, dark brown (10YR 3/3), moist; weak fine subangular blocky structure; firm, hard, very sticky, very plastic; common very fine and common fine roots; common fine irregular pores; few distinct clay films on all faces of peds; slightly effervescent; neutral; clear smooth boundary.

Bt2—19 to 29 inches; brown (7.5YR 5/3), clay, brown (7.5YR 4/3), moist; moderate fine subangular blocky structure; very firm, very hard, very sticky, very plastic; common very fine and common fine roots; common fine irregular pores; common distinct clay films on all faces of peds; slightly effervescent; neutral; abrupt smooth boundary.

Bt3—29 to 39 inches; reddish brown (5YR 4/4), clay, reddish brown (5YR 4/4), moist; moderate medium subangular blocky structure; very firm, very hard, very sticky, very plastic; common very fine and common fine roots; common fine irregular pores; few distinct clay films on all faces of peds; strongly effervescent; neutral; abrupt smooth boundary.

Bk—39 to 80 inches; yellowish red (5YR 4/6), clay loam, yellowish red (5YR 4/6), moist; weak fine and medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common fine irregular pores; common fine prominent threadlike



Figure 35.—Profile of Luckenbach clay loam in an area of Luckenbach clay loam, 0 to 5 percent slopes. The topsoil is clay loam. The subsoil starts at about 15 inches (38 cm). Secondary carbonates occur at 39 inches (99 cm). (Scale in CM-centimeters)

pinkish white (5YR 8/2), moist, carbonate masses with clear boundaries on surfaces along pores; common fine prominent irregular moderately cemented pinkish white (5YR 8/2), moist, carbonate concretions with clear boundaries in matrix; many extremely coarse prominent irregular pinkish white (5YR 8/2), moist, carbonate masses with sharp boundaries in matrix; violently effervescent; moderately alkaline.

Range in Characteristics

Soil moisture: Typic ustic moisture regime
Solum thickness: 60 to 80 inches
Thickness of mollic epipedon: 12 to 20 inches
Depth to identifiable secondary carbonates: 18 to 28 inches
Particle-size control section (weighted average):
 Clay content: 35 to 55 percent
 Coarse fragments: 0 to 15 percent by volume

A horizon

Hue: 7.5YR or 10YR
Value: 3 or 4
Chroma: 2 or 3
Texture of the fine-earth fraction: Clay loam
Coarse fragments: 0 to 5 percent by volume; siliceous gravel
Effervescence: None to slight
Reaction: Slightly acid to slightly alkaline

Bt horizon

Hue: 5YR to 10YR
Value: 4 or 5
Chroma: 2 to 4
Texture of the fine-earth fraction: Clay loam, sandy clay, or clay
Clay content: 35 to 55 percent
Coarse fragments: 0 to 15 percent by volume; siliceous gravel
Identifiable calcium carbonate: 0 to 10 percent by volume; concretions and masses
Effervescence: None to slight
Reaction: Neutral to moderately alkaline

Bk or Btk horizons

Hue: 5YR to 2.5Y
Value: 4 to 6
Chroma: 3 to 6
Texture of the fine-earth fraction: Loam, sandy clay loam, clay loam, or clay
Coarse fragments: 5 to 20 percent by volume; limestone and siliceous gravel; gravelly modifier
Identifiable calcium carbonate: 2 to 10 percent by volume; concretions and masses
Effervescence: Strong or violent
Reaction: Slightly alkaline or moderately alkaline

Menard Series

Depth class: Very deep
Drainage class: Well drained
Permeability class of the most limiting soil layer: 0.2 to 0.6 in/hr (moderately slow)
Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high
Landscape: Alluvial plain remnants, dissected plateaus
Landform: Valleys
Position on landform: Footslopes
Parent material: Calcareous slope alluvium over residuum
Slope: 0 to 5 percent
Elevation: 1,000 to 2,500 feet
Mean annual precipitation: 22 to 34 inches

Mean annual air temperature: 64 to 70 degrees F

Frost-free period: 210 to 260 days

Map unit(s): AMC, MPC

Taxonomic Class

Fine-loamy, mixed, active, thermic Typic Haplustalfs

Typical Pedon

Menard sandy loam in an area of Menard-Pedernales complex, 0 to 5 percent slopes; from the intersection of U.S. Highway 377 and Red Lane in Streeter, 5.2 miles west on U.S. Highway 377, and 500 feet north in field; USGS Long Mountain, TX topographic quadrangle; Latitude 30 degrees, 46 minutes, 0.00 seconds North and Longitude 99 degrees, 27 minutes, 48.64 seconds West; UTM Easting: 455643 meters; UTM Northing: 3403835 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 13 inches; dark yellowish brown (10YR 4/4), sandy loam, brown (10YR 4/3), moist; moderate fine subangular blocky structure; friable, slightly hard, nonsticky, nonplastic; common fine, medium, and coarse roots; many fine irregular pores; slightly acid; clear wavy boundary.

Bt1—13 to 22 inches; yellowish red (5YR 4/6), sandy clay loam, yellowish red (5YR 4/6), moist; moderate medium subangular blocky structure; firm, hard, slightly sticky, slightly plastic; common fine and medium roots; common fine irregular pores; neutral; gradual smooth boundary.

Bt2—22 to 38 inches; reddish brown (5YR 5/4) and reddish yellow (5YR 6/6), sandy clay loam, reddish brown (5YR 4/4) and yellowish red (5YR 5/6), moist; weak medium subangular blocky structure; firm, hard, slightly sticky, slightly plastic; common fine and medium roots; common fine irregular pores; 2 percent quartz fragments, 2 to 75 mm gravel, nonflat; neutral; gradual smooth boundary.

Bt3—38 to 50 inches; yellowish red (5YR 5/8), sandy clay loam, yellowish red (5YR 5/8), moist; moderate medium subangular blocky structure; firm, hard, slightly sticky, slightly plastic; common fine roots; few fine irregular pores; 10 percent quartz fragments, 2 to 75 mm gravel, nonflat; slightly effervescent; neutral; clear smooth boundary.

Bk—50 to 73 inches; reddish yellow (7.5YR 6/6), loam, strong brown (7.5YR 5/6), moist; weak fine and medium subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; few fine irregular pores; common fine distinct strongly cemented carbonate concretions and common medium distinct very weakly cemented carbonate masses; strongly effervescent; slightly alkaline; clear smooth boundary.

Bck—73 to 80 inches; strong brown (7.5YR 5/6), loam, strong brown (7.5YR 5/6), moist; weak fine subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; common fine distinct strongly cemented carbonate concretions and common medium distinct very weakly cemented carbonate masses; strongly effervescent; slightly alkaline.

Range in Characteristics

Solum thickness: 60 to 80 inches

A horizon

Hue: 5YR to 10YR

Value: 4 to 6, 3 to 5 moist

Chroma: 2 to 4, dry and moist

Color features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Other features: Some pedons have a thin A2 horizon that is 1 or 2 units higher in value than the A1 horizon.

Texture of the fine-earth fraction: Sandy loam

Effervescence: None
Reaction: Neutral or slightly alkaline

Bt horizon

Hue: 2.5YR to 7.5YR
Value: 4 or 5, 3 or 4 moist
Chroma: 3 to 8, dry and moist
Texture of the fine-earth fraction: Sandy clay loam or clay loam
Clay content: 20 to 35 percent
Coarse fragments: 0 to 15 percent by volume
Effervescence: None to slight
Reaction: Slightly acid to slightly alkaline

Bk, BC, or BCK horizons

Hue: 2.5YR to 10YR
Value: 5 to 8, 4 to 7 moist
Chroma: 3 to 8, dry and moist
Mottles: Some pedons have faint red or yellow mottles
Texture of the fine-earth fraction: Fine sandy loam, loam, sandy clay loam, or clay loam
Identifiable secondary carbonates: 3 to about 15 percent by volume
Effervescence: Slight or strong
Reaction: Slightly alkaline or moderately alkaline

Ck horizon (where present)

Hue: 5YR to 10YR
Value: 6 to 8, 5 to 7 moist
Chroma: 2 to 4, dry and moist
Texture of the fine-earth fraction: Sandy loam, fine sandy loam, loam, sandy clay loam
Coarse fragments: 5 to 35 percent by volume limestone gravel; gravelly modifier; some pedons also contain a few rounded quartz gravel.
Identifiable secondary carbonates: 0 to 35 percent by volume; masses and concretions
Other features: Some pedons are underlain by thin strata of limestone or weakly cemented sandstone below 60 inches
Effervescence: Strong or violent
Reaction: Slightly alkaline or moderately alkaline

Mereta Series

Depth class: Shallow to petrocalcic
Drainage class: Well drained
Permeability class of the most limiting soil layer: 0.2 to 0.6 in/hr (moderately slow)
Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately low
Landscape: Alluvial plain remnants, dissected plateaus
Landform: Knolls
Parent material: Ancient alluvium derived from limestone and sandstone
Slope: 0 to 5 percent
Elevation: 1,100 to 2,100 feet
Mean annual precipitation: 15 to 28 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 210 to 240 days
Map unit(s): MSC

Taxonomic Class

Loamy, mixed, superactive, thermic, shallow Petrocalcic Calciustolls

This is a taxadjunct to the Mereta series because it has a loamy particle-size class instead of a clayey particle-size class.

Typical Pedon

Mereta clay loam in an area of Mereta clay loam, 1 to 3 percent slopes; from the intersection of U.S. Highway 190 and FM 1121 in Rochelle, in McCulloch County, 1.5 miles southwest on U.S. Highway 190, and 250 feet northwest in pasture; USGS Rochelle, TX topographic quadrangle; Latitude 31 degrees, 12 minutes, 27.95 seconds North and Longitude 99 degrees, 13 minutes, 35.93 seconds West; UTM Easting: 478410 meters; UTM Northing: 3452650 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

- Ap—0 to 6 inches; very dark grayish brown (10YR 3/2), clay loam, very dark brown (10YR 2/2), moist; moderate medium subangular blocky structure parting to moderate fine subangular blocky; friable, slightly hard, moderately sticky, moderately plastic; common very fine and common fine roots; many very fine irregular and many fine irregular pores; 5 percent petrocalcic fragments, 2 to 75 mm gravel, nonflat, subrounded, strongly cemented; violently effervescent; moderately alkaline; clear smooth boundary.
- Bw—6 to 16 inches; dark grayish brown (10YR 4/2), clay, very dark grayish brown (10YR 3/2), moist; moderate medium subangular blocky structure; friable, slightly hard, moderately sticky, moderately plastic; common very fine and common fine roots; common very fine irregular and common fine irregular pores; 5 percent petrocalcic fragments, 2 to 75 mm gravel, nonflat, subrounded, strongly cemented; violently effervescent; moderately alkaline; very abrupt smooth boundary.
- Bkkm—16 to 20 inches; very pale brown (10YR 8/2), cemented material, light gray (10YR 7/2), moist; cemented material; massive; strongly cemented; violently effervescent; moderately alkaline; abrupt smooth boundary.
- Bk1—20 to 38 inches; pink (7.5YR 8/4), silt loam, pink (7.5YR 7/4), moist; weak medium subangular blocky structure, and weak medium subangular blocky structure; friable, slightly hard, moderately sticky, moderately plastic; common very fine roots; common very fine pores; common coarse prominent irregular pinkish white (7.5YR 8/2), moist, carbonate masses with sharp boundaries in matrix; common very coarse prominent irregular pinkish white (7.5YR 8/2), moist, carbonate masses with sharp boundaries in matrix; 5 percent limestone fragments, 2 to 75 mm gravel, nonflat, subrounded, indurated; violently effervescent; moderately alkaline; gradual wavy boundary.
- Bk2—38 to 61 inches; light brown (7.5YR 6/4), silt loam, brown (7.5YR 4/4), moist; weak fine and medium subangular blocky structure; friable, slightly hard, moderately sticky, moderately plastic; common very fine roots; common very fine and common fine irregular pores; many coarse prominent irregular pinkish white (7.5YR 8/2), moist, carbonate masses with sharp boundaries in matrix; common very coarse prominent irregular pinkish white (7.5YR 8/2), moist, carbonate masses with sharp boundaries in matrix; 5 percent limestone fragments, 2 to 75 mm gravel, nonflat, subrounded, indurated violently effervescent; moderately alkaline; gradual wavy boundary.
- Bk3—61 to 80 inches; brown (7.5YR 5/4), silty clay loam, brown (7.5YR 4/4), moist; weak medium subangular blocky structure; friable, slightly hard, moderately sticky, moderately plastic; common very fine roots; common very fine irregular pores; common fine prominent irregular pinkish white (7.5YR 8/2), moist, carbonate masses with sharp boundaries in matrix; 5 percent limestone fragments, 2 to 75 mm gravel, nonflat, subrounded, indurated; violently effervescent; moderately alkaline.

Range in Characteristics

Depth to petrocalcic contact: 14 to 20 inches
Cementation: Strongly cemented or indurated
Effervescence: Strong or violent

Reaction: Slightly alkaline or moderately alkaline

Particle-size control section (weighted average):

Clay content: 35 to 45 percent

Coarse fragments: 0 to 10 percent by volume; 2 to 75 mm; cemented calcium carbonate; angular

A horizon

Hue: 7.5YR or 10YR

Value: 3 to 5

Chroma: 2 or 3

Texture of the fine-earth fraction: Clay loam

Bw horizon

Hue: 5YR to 10YR

Value: 4 to 8

Chroma: 2 to 4

Texture: Clay loam, silty clay loam, or clay

Coarse fragments: 0 to 55 percent by volume; cemented calcium carbonate

Bkkm horizon

Hue: 5YR to 10YR

Value: 7 or 8

Chroma: 2 to 3

Cementation: Strongly cemented to indurated, 1 to 5 cm is laminar

Other features: The boundary between the Bw and the Bkkm horizon is clear to abrupt, and wavy to irregular

Bk horizon

Hue: 7.5YR to 2.5Y

Value: 5 to 8

Chroma: 1 to 4

Texture of the fine-earth fraction: Loam, clay loam, or silty clay loam

Identifiable secondary carbonate: 35 to 70 percent by volume; fine to medium; masses and concretions

Coarse fragments: 0 to 35 percent by volume

BCKk or BCK horizons (where present)

Hue: 7.5YR to 2.5Y

Value: 5 to 8

Chroma: 1 to 4

Texture of the fine-earth fraction: Loam, clay loam, or silty clay loam

Identifiable secondary carbonate: 35 to 70 percent by volume; fine to medium; masses and concretions

Coarse fragments: 0 to 35 percent by volume

Nebgen Series

Depth class: Very shallow and shallow to lithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 2.0 to 6.0 in/hr (moderately rapid)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: High

Landscape: Dissected plateaus

Landform: Ridges on ridges

Position on landform: Summits, shoulders, backslopes

Soil Survey of Mason County, Texas

Parent material: Residuum weathered from sandstone

Slope: 1 to 30 percent

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 24 to 28 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 215 to 235 days

Map unit(s): HND, NRE, NRG, YNE, YNG

Taxonomic Class

Loamy, mixed, active, nonacid, thermic Lithic Ustorthents

Typical Pedon

Nebgen sandy loam in an area of Nebgen-Rock outcrop complex, 5 to 30 percent slopes, extremely stony; from the intersection of Texas Highway 16 and Ranch Road 2323 in Llano County, 16.3 miles southwest on Ranch Road 2323, 0.2 mile on east Medlock Road, and 500 feet southwest in rangeland; USGS Enchanted Rock, TX topographic quadrangle; Latitude 30 degrees, 35 minutes, 1.34 seconds North and Longitude 98 degrees, 51 minutes, 31.17 seconds West; UTM Easting: 513552 meters; UTM Northing: 3383476 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A1—0 to 5 inches; brown (7.5YR 4/4), sandy loam, dark brown (7.5YR 3/4), moist; moderate medium granular structure; friable, slightly hard, nonsticky, nonplastic; common fine roots; common fine pores; 5 percent sandstone fragments, 2 to 75 mm gravel, nonflat; slightly acid; clear smooth boundary.

A2—5 to 11 inches; brown (7.5YR 4/4), sandy loam, dark brown (7.5YR 3/4), moist; moderate medium granular structure; friable, slightly hard, nonsticky, nonplastic; common fine roots; common fine pores; 10 percent sandstone fragments, 2 to 75 mm gravel, nonflat; slightly acid; abrupt smooth boundary.

R—11 to 21 inches; indurated sandstone bedrock; fractured at intervals of 4 to 18 inches.

Range in Characteristics

Solum thickness to sandstone bedrock: 4 to 14 inches

Reaction: Slightly acid or neutral throughout

Surface fragments: 1 to 25 percent by area; sandstone, cobbles, and stones

A horizon

Hue: 5YR to 10YR

Value: 3 to 6

Chroma: 3 to 6

Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Texture of the fine-earth fraction: Sandy loam

Base saturation: More than 75 percent

R layer

Kind: Sandstone

Cementation: Strongly cemented or indurated

Colors: Shades of red or brown

Other features: Sandstone or individual strata within the sandstone is calcareous in some pedons.

Oakalla Series

Depth class: Very deep (greater than 60 inches)

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: River valleys

Landform: Flood plains on perennial streams

Parent material: Alluvium derived from limestone

Slope: 0 to 2 percent

Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 24 to 34 inches

Mean annual air temperature: 64 to 70 degrees F

Frost-free period: 210 to 240 days

Map unit(s): OaB

Taxonomic Class

Fine-loamy, carbonatic, thermic Cumulic Haplustolls

Typical Pedon

Oakalla loam in an area of Oakalla loam, 0 to 2 percent slopes, occasionally flooded; from the intersection of Mill Creek Road and Jeffers Road in southwest Mason County, 1.0 mile east on Jeffers Lane, 2.8 miles southeast on East Mill Road, and 400 feet south in rangeland; USGS Monument Mountain SE, TX topographic quadrangle; Latitude 30 degrees, 32 minutes, 14.60 seconds North and Longitude 99 degrees, 21 minutes, 14.71 seconds West; UTM Easting: 466035 meters; UTM Northing: 3378388 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 12 inches; dark grayish brown (10YR 4/2), loam, very dark grayish brown (10YR 3/2), moist; moderate medium subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; many fine and common very fine roots; common fine pores; 1 percent limestone fragments, 2 to 75 mm gravel, nonflat, subrounded, indurated; violently effervescent; slightly alkaline; clear smooth boundary.

Bk1—12 to 37 inches; brown (10YR 4/3), clay loam, dark brown (10YR 3/3), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common very fine and common fine roots; common fine pores; common medium threadlike carbonate masses in matrix; 10 percent limestone fragments, 2 to 75 mm gravel, nonflat, subrounded, indurated; violently effervescent; slightly alkaline; clear smooth boundary.

Bk2—37 to 56 inches; yellowish brown (10YR 5/6), clay loam, dark yellowish brown (10YR 4/6), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common very fine and common fine roots; common very fine pores; common fine carbonate, finely disseminated in matrix and common medium threadlike carbonate masses in matrix; 5 percent limestone fragments, 2 to 75 mm gravel, nonflat, subrounded, indurated; violently effervescent; moderately alkaline; clear smooth boundary.

Bk3—56 to 80 inches; brown (10YR 5/3), clay loam, brown (10YR 4/3), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common very fine and common fine roots; common very fine pores; violently effervescent; moderately alkaline.

Range in Characteristics

Solum thickness: 60 to 80 inches

Soil Survey of Mason County, Texas

Coarse fragments: 0 to 10 percent by volume; 2 to 75 mm; limestone gravel

Thickness of mollic epipedon: More than 20 inches thick

Identifiable secondary carbonate: 0 to 5 by volume; fine to medium; distinct, concretions, masses, or nodules

Particle-size control section (weighted average):

Calcium carbonate equivalent: 40 to 60 percent by weight

A horizon

Hue: 7.5YR or 10YR

Value: 2 to 5, 2 to 3 moist

Chroma: 1 to 3, dry and moist

Texture of the fine-earth fraction: Loam

Carbonate clay: 5 to 12 percent by weight

Bk horizon

Hue: 7.5YR or 10YR

Value: 3 to 7, dry and moist

Chroma: 2 to 6, dry and moist

Texture of the fine-earth fraction: Loam, clay loam, silty clay loam, or fine sandy loam; some pedons have layers with textures of fine sandy loam or clay.

Identifiable secondary carbonates: 0 to 5 percent by volume; fine to medium; distinct, concretions, masses, or nodules

Other features: Some pedons have Ab horizons below 30 inches

Oben Series

Depth class: Very shallow and shallow to paralithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Dissected plateaus

Landform: Ridges on ridges

Position on landform: Summits, shoulders, backslopes

Parent material: Residuum weathered from sandstone

Slope: 1 to 8 percent

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 24 to 30 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 215 to 235 days

Map unit(s): HND, HOD

Taxonomic Class

Loamy, mixed, active, thermic, shallow Typic Haplustalfs

Typical Pedon

Oben fine sandy loam in an area of Oben fine sandy loam, 1 to 3 percent slopes; from the intersection of Texas Highway 16 and Ranch Road 1323 in Gillespie County, 1.4 miles east on Ranch Road 1323, 0.2 mile north on Box Canyon Trail, and 50 feet west in rangeland; USGS Willow City, TX topographic quadrangle; Latitude 30 degrees, 24 minutes, 45.49 seconds North and Longitude 98 degrees, 42 minutes, 52.66 seconds West; UTM Easting: 527409 meters; UTM Northing: 3364545 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

- A—0 to 5 inches; brown (7.5YR 4/4), fine sandy loam, dark brown (7.5YR 3/4), moist; weak medium subangular blocky structure; friable, soft, nonsticky, moderately plastic; many fine and common very fine roots; common fine pores; slightly acid; clear wavy boundary.
- Bt1—5 to 14 inches; brown (7.5YR 4/4), sandy clay loam, dark brown (7.5YR 3/4), moist; moderate medium subangular blocky structure; firm, hard, slightly sticky, slightly plastic; common very fine and common fine roots; common fine pores; few clay films; 10 percent clay films; 5 percent sandstone fragments, 2 to 75 mm gravel, nonflat, subangular, strongly cemented; neutral; clear wavy boundary.
- Bt2—14 to 19 inches; reddish brown (5YR 4/4), parachannery sandy clay loam, dark reddish brown (5YR 3/4), moist; moderate medium subangular blocky structure; firm, hard, slightly sticky, slightly plastic; common very fine and common fine roots; common fine pores; 13 percent sandstone fragments, 151 to 380 mm flagstones, flat, subrounded, weakly cemented and 20 percent sandstone fragments, 2 to 150 mm parachanners, flat, subrounded, weakly cemented; neutral; very abrupt wavy boundary.
- Cr—19 to 29 inches; weakly cemented sandstone bedrock; fractured at intervals of 18 to 39 inches.

Range in Characteristics

Solum thickness to sandstone: 9 to 20 inches

Depth to paralithic contact: 9 to 20 inches

Surface fragments: 0 to 15 percent by area, gravel to stone size

Reaction: Slightly acid or neutral

Particle-size control section (weighted average)

Coarse fragments: 0 to 30 percent by volume, weathered sandstone

Clay content: 16 to 25 percent

A horizon

Hue: 5YR to 7.5YR

Value: 4 to 6, 3 to 5 moist

Chroma: 2 to 4, dry and moist

Color features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Texture of the fine-earth fraction: Fine sandy loam

Bt horizon

Hue: 5YR to 7.5YR

Value: 4 to 6, 3 to 5 moist

Chroma: 2 to 6, dry and moist

Other notes: Some pedons have coarse mottles of hues 2.5YR to 7.5YR; values 4 to 6, 3 to 5 moist; chromas 3 to 6, dry and moist.

Texture of the fine-earth fraction: Fine sandy loam, loam, sandy clay loam, or clay loam

Clay content: 16 to 30 percent

Coarse fragments and pararock fragments: 0 to 35 percent, sandstone paragravel and parachanners; in some pedons, the lower Bt horizon has 15 to 70 percent weakly cemented sandstone fragments; extremely paragravelly, extremely parachannery, very paragravelly, very parachannery, paragravelly, and parachannery modifiers

Cr layer

Hue: 5YR to 10YR

Value: 3 to 6, 3 to 5 moist

Chroma: 2 to 6, dry and moist

Bedrock kind: Noncalcareous sandstone

Cementation: Weakly to strongly cemented

Hardness (Moh's scale): Less than 3

Pedernales Series

Depth class: Very deep

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.2 to 0.6 in/hr (moderately slow)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Alluvial plain remnants, dissected plateaus

Landform: Valleys

Position on landform: Footslopes

Parent material: Calcareous slope alluvium over residuum

Slope: 0 to 5 percent

Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 24 to 32 inches

Mean annual air temperature: 64 to 68 degrees F

Frost-free period: 220 to 240 days

Map unit(s): MPC, PeC

Taxonomic Class

Fine, mixed, active, thermic Typic Paleustalfs

Typical Pedon

Pedernales fine sandy loam (fig. 36) in an area of Pedernales fine sandy loam, 1 to 3 percent slopes; from the intersection of U.S. Highway 87 and Texas Highway 16 in Fredericksburg, 2.4 miles southwest on Texas Highway 16, and 50 feet northwest in pasture; USGS Lady Bird Johnson Park, TX topographic quadrangle; Latitude 30 degrees, 14 minutes, 52.98 seconds North and Longitude 98 degrees, 53 minutes, 48.52 seconds West; UTM Easting: 509928 meters; UTM Northing: 3346276 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

Ap1—0 to 7 inches; dark yellowish brown (10YR 4/4), fine sandy loam, dark yellowish brown (10YR 3/4), moist; weak fine subangular blocky structure; friable, slightly hard, nonsticky, nonplastic; many very fine roots; common very fine moderate continuity irregular pores; neutral; clear smooth boundary.

Ap2—7 to 12 inches; dark yellowish brown (10YR 4/4), fine sandy loam, dark yellowish brown (10YR 3/4), moist; weak fine subangular blocky structure; friable, slightly hard, nonsticky, nonplastic; common fine roots; common coarse moderate continuity irregular pores; neutral; abrupt wavy boundary.

Bt1—12 to 20 inches; reddish brown (5YR 5/4), sandy clay loam, reddish brown (5YR 4/4), moist; strong medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common very fine roots; common very fine moderate continuity irregular pores; few faint reddish brown (5YR 4/4), moist, clay films on vertical faces of peds; common fine prominent irregular black (10YR 2/1), moist, iron-manganese masses with sharp boundaries in cracks; neutral; clear smooth boundary.

Bt2—20 to 30 inches; light yellowish brown (10YR 6/4), sandy clay, yellowish brown (10YR 5/4), moist; strong medium subangular blocky structure; very firm, very hard, moderately sticky, moderately plastic; common very fine roots; common very fine moderate continuity irregular pores; few faint brown (7.5YR 4/3), moist, clay films on vertical faces of peds; common fine prominent irregular moderately cemented iron-manganese concretions with sharp boundaries in matrix, and many medium prominent irregular red (2.5YR 4/6), moist, masses of oxidized iron with clear boundaries in matrix; neutral; clear smooth boundary.

Bt3—30 to 45 inches; light yellowish brown (10YR 6/4), clay, yellowish brown (10YR 5/4), moist; strong medium subangular blocky structure; very firm, very hard, moderately sticky, moderately plastic; common very fine roots; common very fine moderate



Figure 36.—Profile of Pedernales fine sandy loam in an area of Pedernales fine sandy loam, 1 to 3 percent slopes. Pedernales soils are on alluvial plain remnants associated with the Hensell Sand Formation. The loamy surface from 0 to 12 inches (0 to 30 cm) rests on top of a clayey subsoil. Most areas are used for cropland with small grains or forage sorghum. (Scale in CM-centimeters)

continuity irregular pores; few faint yellowish brown (10YR 5/4), moist, clay films on vertical faces of peds; common medium prominent irregular red (2.5YR 4/6), moist, masses of oxidized iron with clear boundaries in matrix; common fine prominent irregular moderately cemented iron-manganese concretions with sharp boundaries in matrix; neutral; clear wavy boundary.

Bk1—45 to 61 inches; very pale brown (10YR 8/4), clay loam, very pale brown (10YR 7/4), moist; weak fine subangular blocky structure; firm, hard, slightly sticky, slightly

plastic; common very fine roots; common very fine moderate continuity irregular pores; common coarse faint irregular moderately cemented very pale brown (10YR 8/2), moist, carbonate concretions with sharp boundaries in matrix, and common coarse faint irregular carbonate masses with diffuse boundaries in matrix; violently effervescent; slightly alkaline; gradual wavy boundary.

Bk2—61 to 80 inches; light gray (2.5Y 7/2), sandy loam, light brownish gray (2.5Y 6/2), moist; weak fine subangular blocky structure; firm, hard, slightly sticky, slightly plastic; common very fine roots; common very fine moderate continuity irregular pores; many coarse distinct irregular very pale brown (10YR 8/2), moist, carbonate masses with diffuse boundaries in matrix; violently effervescent; moderately alkaline.

Range in Characteristics

Solum thickness: 60 to 80 inches

Depth to secondary carbonates: 28 to 50 inches

Particle-size control section (weighted average):

Coarse fragments: 0 to 5 percent by volume; limestone and siliceous; fine and medium gravel

A horizon

Hue: 5YR to 10YR

Value: 4 to 6, 3 to 5 moist

Chroma: 3 to 6, dry and moist

Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Texture of the fine-earth fraction: Fine sandy loam

Effervescence: None

Reaction: Slightly acid to slightly alkaline

E horizon (where present)

Hue: 5YR to 10YR

Value: 5 to 7, 4 to 6 moist

Chroma: 3 to 6, dry and moist

Texture of the fine-earth fraction: Loamy fine sand or fine sandy loam

Effervescence: None

Reaction: Slightly acid to slightly alkaline

Bt horizon

Hue: 2.5YR to 10YR

Value: 4 to 6, 3 to 5 moist

Chroma: 4 to 8, dry and moist

Color notes: Some pedons are red (10R 5/6)

Texture of the fine-earth fraction: Clay loam, sandy clay, or clay

Clay content: 35 to 55 percent and decreases with depth

Redox concentrations: Some pedons have yellow and brown masses of oxidized iron in the lower part of the Bt horizon

Effervescence: None

Reaction: Slightly acid to slightly alkaline, some pedons are moderately alkaline in the lower part

Btk, BCtk, or Bk horizons

Hue: 2.5YR to 2.5Y

Value: 5 to 8, 4 to 7 moist

Chroma: 2 to 6, dry and moist

Texture of the fine-earth fraction: Sandy loam, sandy clay loam, clay loam, sandy clay, or clay

Other features: Some pedons contain thin strata of soft limestone within this horizon
Identifiable calcium carbonate: 5 to 30 percent by volume; concretions, nodules, and masses
Effervescence: Strong to violent
Reaction: Neutral to slightly alkaline, some pedons are moderately alkaline in the lower part

C horizon (where present)

Some pedons have C horizons between 60 and 80 inches. This horizon is composed of massive or weakly cemented sandstone and/or limestone.

Pontotoc Series

Depth class: Very deep to paralithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Dissected plateaus

Landform: Undulating plains, ridges

Position on landform: Footslopes

Parent material: Residuum weathered from sandstone

Slope: 0 to 5 percent

Elevation: 1,000 to 1,900 feet

Mean annual precipitation: 24 to 28 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 215 to 235 days

Map unit(s): HPC

Taxonomic Class

Coarse-loamy, mixed, active, thermic Rhodic Paleustalfs

Typical Pedon

Pontotoc fine sandy loam in an area of Hye-Pontotoc complex, 0 to 5 percent slopes; from the courthouse in Mason, 0.8 mile north on U.S. Highway 87, 0.6 mile west and northwest on county road, 0.4 mile west on private road to field boundary, 350 yards west in cultivated field; USGS Fredonia, TX topographic quadrangle; Latitude 30 degrees, 53 minutes, 53.00 seconds North and Longitude 99 degrees, 6 minutes, 0.40 seconds West; UTM Easting: 490433 meters; UTM Northing: 3418308 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

Ap—0 to 5 inches; dark reddish brown (2.5YR 3/4), fine sandy loam, dark reddish brown (2.5YR 3/4), moist; weak fine granular structure; very friable, slightly hard, nonsticky, nonplastic; many fine roots and common very fine roots; many fine pores; neutral; abrupt smooth boundary.

A—5 to 10 inches; dark reddish brown (2.5YR 3/4), fine sandy loam, dark reddish brown (2.5YR 3/4), moist; weak fine granular structure, and weak fine subangular blocky structure; very friable, slightly hard, nonsticky, nonplastic; common fine roots and common medium roots; many fine pores; 2 percent sandstone fragments, 2 to 75 mm gravel, nonflat; neutral; diffuse smooth boundary.

Bt1—10 to 21 inches; dark reddish brown (2.5YR 3/4), fine sandy loam, dark reddish brown (2.5YR 3/4), moist; weak fine subangular blocky structure; very friable, slightly hard, moderately sticky, moderately plastic; common fine roots and common very fine roots; common fine and medium pores; few percent clay films; common fine distinct strongly cemented iron-manganese nodules and common fine distinct strongly cemented iron-manganese concretions; 10 percent sandstone fragments, 2 to 75 mm gravel, nonflat; slightly acid; diffuse smooth boundary.

Bt2—21 to 33 inches; dark red (2.5YR 3/6), fine sandy loam, dark red (2.5YR 3/6), moist; weak fine subangular blocky structure; friable, hard, moderately sticky, moderately plastic; common fine roots and common very fine roots; many fine and medium pores; few clay films on surfaces along pores; common medium distinct strongly cemented iron-manganese concretions; common coarse distinct strongly cemented iron-manganese nodules; slightly acid; diffuse smooth boundary.

Bt3—33 to 67 inches; dark red (2.5YR 3/6), sandy clay loam; weak fine subangular blocky structure; friable, hard, moderately sticky, moderately plastic; common very fine roots; common fine pores; few clay films on surfaces along pores; few fine distinct strongly cemented iron-manganese nodules; slightly acid; clear smooth boundary.

Cr—67 to 77 inches; moderately cemented sandstone bedrock; fractured at intervals of 18 to 39 inches.

Range in Characteristics

Solum thickness: 60 to 80 inches

Particle-size control section (weighted average):

Clay content: 12 to 18 percent

Coarse fragments: 0 to 10 percent by volume; sandstone cobbles and gravels

A horizon

Hue: 2.5YR or 5YR

Value: 3 or 4

Chroma: 3 to 6

Other features: In pedons where moist value and chroma are 3 or less, the epipedon is not thick enough for a mollic epipedon.

Texture of the fine-earth fraction: Fine sandy loam

Clay content: 8 to 15 percent

Coarse fragments: 0 to 10 percent by volume; sandstone cobbles and gravel

Effervescence: None

Reaction: Slightly acid or neutral

Bt horizon

Hue: 10R or 2.5YR

Value: 3 or 4

Chroma: 4 to 6

Texture of the fine-earth fraction: Sandy loam, fine sandy loam, loam, or sandy clay loam

Clay content: 12 to 27 percent

Coarse fragments: 0 to 10 percent by volume; sandstone gravels and cobbles

Effervescence: None

Reaction: Slightly acid or neutral

Cr layer

Bedrock kind: Sandstone

Cementation: Weakly to moderately

Other features: The sandstone usually contains some glauconite. In some pedons, an interbedded R layer may be present.

Real Series

Depth class: Very shallow and shallow to paralithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Dissected plateaus
Landform: Ridges
Position on landform: Backslopes
Parent material: Residuum weathered from limestone
Slope: 1 to 12 percent
Elevation: 1,000 to 2,100 feet
Mean annual precipitation: 26 to 34 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 220 to 250 days
Map unit(s): KVE

Taxonomic Class

Loamy, carbonatic, thermic, shallow Typic Calciustolls

This is a taxadjunct to the Real series because it has a loamy particle-size class instead of a loamy-skeletal particle-size class.

Typical Pedon

Real very paragravelly loam in an area of Kerrville, Real, and Sunev soils, 1 to 12 percent slopes; from the intersection of Ranch Road 1871 and Mill Creek Road in southwest Mason County, 9.7 miles south on Mill Creek Road, 2.6 miles west on local road, 1.3 miles northwest on local road, and 800 feet west in rangeland; USGS Monument Mountain, TX topographic quadrangle; Latitude 30 degrees, 31 minutes, 41.90 seconds North and Longitude 99 degrees, 27 minutes, 21.33 seconds West; UTM Easting: 456262 meters; UTM Northing: 3377417 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 3 inches; dark grayish brown (10YR 4/2), very paragravelly loam, very dark grayish brown (10YR 3/2), moist; moderate medium granular structure; friable, slightly hard, slightly sticky, slightly plastic; many fine roots; common fine irregular pores; 35 percent carbonate rock fragments paragravel, 2 to 75 mm, nonflat, moderately cemented; violently effervescent; slightly alkaline; clear wavy boundary.

Bk—3 to 12 inches; dark grayish brown (10YR 4/2), very paragravelly clay loam, very dark grayish brown (10YR 3/2), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common fine roots; common fine irregular pores; 45 percent carbonate rock fragments paragravel, 2 to 75 mm, nonflat, moderately cemented; violently effervescent; slightly alkaline; abrupt smooth boundary.

Cr—12 to 22 inches; very pale brown (10YR 7/3), weakly cemented limestone bedrock, pale brown (10YR 6/3), moist; structureless; fractured at intervals of 4 to 18 inches.

Range in Characteristics

Solum thickness to paralithic limestone bedrock: 8 to 19 inches

Effervescence: Strong or violent

Reaction: Slightly alkaline or moderately alkaline

Particle-size control section (weighted average):

Silicate clay content: 22 to 35 percent

Coarse fragments and/or pararock fragments: 35 to 85 percent by volume; limestone, chalk, and caliche gravel and paragravel that are weakly to strongly cemented

Calcium carbonate equivalent: 40 to 70 percent by weight in the fine-earth fraction

A and Ak horizons

Hue: 7.5YR or 10YR

Value: 3 to 5

Chroma: 1 to 3

Texture of the fine-earth fraction: Loam

Silicate clay content: 22 to 35 percent

Carbonate clay content: 0 to 6 percent

Coarse and/or pararock fragments: 5 to 85 percent by volume; limestone and caliche gravel and paragravel that are weakly to strongly cemented; gravelly to extremely gravelly and paragravelly to extremely paragravelly modifiers

Identifiable secondary carbonate: 0 to 10 percent by volume; fine to medium, distinct, masses, coats, and nodules, on bottom surfaces and around rock fragments. Nodules of secondary carbonates are pararock fragments.

Bk horizon (where present)

Hue: 7.5YR or 10YR

Value: 4 to 6

Chroma: 1 to 3

Texture of the fine-earth fraction: Loam or clay loam; and their gravelly to extremely gravelly modifiers

Silicate clay content: 22 to 35 percent

Carbonate clay content: 0 to 6 percent

Pararock fragments: 5 to 85 percent by volume; limestone and caliche that are weakly to strongly cemented

Identifiable secondary carbonate: 0 to 10 percent by volume; fine to medium, distinct, masses, coats, and nodules, on bottom surfaces and around rock fragments. Nodules of secondary carbonates are pararock fragments.

Cr layer

Hue: 10YR to 2.5Y

Value: 6 to 8

Chroma: 1 to 8

Identifiable secondary carbonate: Masses and coats; weakly to moderately; throughout the bedrock. In most pedons, the upper 1.5 to 8 cm is plugged with calcium carbonate, but the continuity, crack spacing and/or thickness or the layer fails the requirements of a petrocalcic horizon.

Roughcreek, taxadjunct

Depth class: Very shallow and shallow to lithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.2 to 0.6 in/hr (moderately slow)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Dissected plateaus

Landform: Ridges

Position on landform: Summits, shoulders, backslopes

Parent material: Residuum weathered from limestone

Slope: 1 to 40 percent

Elevation: 1,000 to 2,400 feet

Mean annual precipitation: 22 to 32 inches

Mean annual air temperature: 66 to 70 degrees F

Frost-free period: 210 to 240 days

Map unit(s): RkE, RRG

Taxonomic Class

Clayey-skeletal, mixed, thermic Lithic Haplustolls

This is a taxadjunct to the Roughcreek series because it classifies as a Haplustolls, rather than an Argiustoll.

Typical Pedon

Roughcreek very cobbly clay in an area of Roughcreek very cobbly clay, 1 to 12 percent slopes, very rocky; from the intersection of U.S. Highway 87 and FM 1871 in Mason, 6.6 miles south on FM 1871, and 2,500 feet northwest in rangeland; USGS Turtle Creek, TX topographic quadrangle; Latitude 30 degrees, 41 minutes, 23.70 seconds North and Longitude 99 degrees, 18 minutes, 21.40 seconds West; UTM Easting: 470700 meters; UTM Northing: 3395273 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 15 inches; very dark grayish brown (10YR 3/2), very cobbly clay, very dark brown (10YR 2/2), moist; strong medium subangular blocky structure parting to strong medium granular structure; firm, hard, moderately sticky, moderately plastic; common fine roots; common fine irregular pores; 10 percent limestone fragments, 76 to 250 mm cobbles, nonflat subangular, indurated and 30 percent cherty limestone fragments, 76 to 250 mm cobbles, nonflat subangular, indurated; slightly acid; abrupt irregular boundary.

R—15 to 25 inches; indurated limestone bedrock; fractured at intervals of 4 to 18 inches.

Range in Characteristics

Solum thickness: 8 to 20 inches

Depth to lithic contact: 8 to 20 inches

Surface fragments: 0 to 90 percent by volume; limestone; 2 to more than 600 mm

Particle-size control section (weighted average):

Clay content: 35 to 60 percent

Reaction: Neutral to moderately alkaline

A horizon

Hue: 10YR

Value: 2 or 3 dry

Chroma: 2 or 3 dry

Texture of the fine-earth fraction: Clay

Clay content: 30 to 50 percent

Coarse fragments: 35 to 75 percent by volume; limestone and chert; 5 to 25 percent gravel; 0 to 50 percent cobbles; 0 to 50 percent stones; very gravelly, very cobbly, or very stony modifiers

Effervescence: None

Reaction: Slightly acid to slightly alkaline

R layer

Bedrock kind: Dolomitic limestone bedrock

Cementation: Strongly cemented or indurated

Roughcreek Series

Depth class: Shallow to lithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.06 to 0.2 in/hr (slow)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately low

Landscape: Dissected plateaus

Landform: Ridges

Position on landform: Summits, shoulders

Parent material: Residuum weathered from limestone

Slope: 1 to 12 percent

Elevation: 1,000 to 2,400 feet

Soil Survey of Mason County, Texas

Mean annual precipitation: 24 to 30 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 215 to 235 days
Map unit(s): RhE

Taxonomic Class

Clayey-skeletal, smectitic, thermic Lithic Argiustolls

Typical Pedon

Roughcreek very gravelly clay loam in an area of Roughcreek very gravelly clay loam, 1 to 12 percent slopes, very rocky; from the intersection of U.S. Highway 87 and Ranch Road 1871 in Mason, 16.6 miles south and west on Ranch Road 1871, 0.8 mile northwest on local road, and 800 feet west in rangeland; USGS Sheep Run Creek, TX topographic quadrangle; Latitude 30 degrees, 38 minutes, 13.27 seconds North and Longitude 99 degrees, 25 minutes, 34.04 seconds West; UTM Easting: 459166 meters; UTM Northing: 3389453 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 6 inches; brown (7.5YR 4/2), very gravelly clay loam, very dark brown (7.5YR 2.5/2), moist; strong medium subangular blocky structure; friable, moderately hard, moderately sticky, moderately plastic; many fine roots and common very fine roots; common fine irregular pores; 40 percent limestone fragments, 2 to 75 mm gravel, nonflat; slightly alkaline; clear smooth boundary.

Bt—6 to 18 inches; reddish brown (2.5YR 5/3), very gravelly clay, dark reddish brown (2.5YR 3/3), moist; strong medium subangular blocky structure; very firm, very hard, very sticky, very plastic; common very fine and common fine roots; common fine irregular pores; few clay films on all faces of peds; 15 percent limestone fragments, 76 to 250 mm cobbles, nonflat, and 40 percent limestone fragments, 2 to 75 mm gravel, nonflat; slightly effervescent; neutral; abrupt wavy boundary.

R—18 to 28 inches; indurated cherty limestone bedrock; fractured at intervals of 4 to 18 inches.

Range in Characteristics

Solum thickness: 10 to 20 inches

Depth to lithic contact: 10 to 20 inches

Surface fragments: 0 to 90 percent by volume; limestone; 2mm to more than 600 mm

Color features: Colors with moist values and chromas of 3 or less extend to a depth of 7 inches or more.

Particle-size control section (weighted average):

Clay content: 40 to 60 percent

A horizon

Hue: 5YR to 10YR

Value: 3 to 5

Chroma: 2 or 3

Texture of the fine-earth fraction: Clay loam

Clay content: 30 to 50 percent

Coarse fragments: 30 to 60 percent by volume; limestone; 10 to 20 percent gravel; 0 to 50 percent cobbles; 0 to 50 percent stones or flagstones; 0 to 50 percent boulders; very gravelly, very cobbly, very stony, very flaggy, or very bouldery modifiers

Effervescence: None

Reaction: Slightly acid to slightly alkaline

Bt horizon

Hue: 2.5YR to 7.5YR

Value: 4 or 5

Chroma: 2 to 6

Texture of the fine-earth fraction: Clay

Clay content: 40 to 60 percent

Coarse fragments: 40 to 80 percent total by volume; limestone; 10 to 50 percent gravel or channers; 0 to 50 percent cobbles; 0 to 50 percent stones or flagstone; 0 to 50 percent boulders; very gravelly, very cobbly, very stony, very flaggy, extremely gravelly, extremely cobbly, extremely stony, extremely flaggy, very bouldery, or extremely bouldery modifiers

Effervescence: None

Reaction: Slightly acid to slightly alkaline

R layer

Bedrock kind: Dolomitic limestone

Cementation: Strongly cemented or indurated

Sunev Series

Depth class: Very deep

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Dissected plateaus

Landform: Ridges, stream terraces, valleys

Position on landform: Footslopes

Parent material: Loamy slope alluvium and/or colluvium derived from limestone

Slope: 0 to 8 percent

Elevation: 1,000 to 2,100 feet

Mean annual precipitation: 28 to 34 inches

Mean annual air temperature: 63 to 70 degrees F

Frost-free period: 230 to 245 days

Map unit(s): CAC, KVE, MSC, SuD

Taxonomic Class

Fine-loamy, carbonatic, thermic Typic Calciustolls

This is a taxadjunct to the Sunev series because it is in a Typic subgroup, instead of a Udic subgroup.

Typical Pedon

Sunev clay loam in an area of Sunev clay loam, 1 to 8 percent slopes; from the intersection of U.S. Highway 87 and Ranch Road 1871 in Mason, 16.9 miles south and west on Ranch Road 1871, and 2,500 feet south in pasture; USGS Monument Mountain, TX topographic quadrangle; Latitude 30 degrees, 36 minutes, 18.00 seconds North and Longitude 99 degrees, 25 minutes, 35.41 seconds West; UTM Easting: 459116 meters; UTM Northing: 3385905 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 12 inches; dark grayish brown (10YR 4/2), clay loam, very dark grayish brown (10YR 3/2), moist; weak fine and medium subangular blocky structure; friable, slightly hard, moderately sticky, moderately plastic; many fine roots and common very fine roots; common fine pores; strongly effervescent; slightly alkaline; clear smooth boundary.

Bk1—12 to 27 inches; yellowish brown (10YR 5/4), clay loam, dark yellowish brown (10YR 4/4), moist; moderate fine and medium subangular blocky structure; friable, slightly hard, moderately sticky, moderately plastic; common very fine and common fine roots;

common fine pores; common fine irregular moderately cemented carbonate concretions; strongly effervescent; slightly alkaline; gradual smooth boundary.

Bk2—27 to 37 inches; brownish yellow (10YR 6/6), clay loam, yellowish brown (10YR 5/6), moist; weak fine subangular blocky structure; friable, slightly hard, moderately sticky, moderately plastic; common very fine and common fine roots; common fine pores; common fine irregular moderately cemented carbonate concretions; strongly effervescent; slightly alkaline; gradual smooth boundary.

Bk3—37 to 50 inches; strong brown (7.5YR 5/6), loam, strong brown (7.5YR 4/6), moist; weak fine subangular blocky structure; friable, slightly hard, slightly sticky, slightly plastic; common very fine and common fine roots; few fine pores; common fine irregular moderately cemented carbonate concretions and common medium irregular carbonate masses; strongly effervescent; moderately alkaline; clear smooth boundary.

BCk1—50 to 57 inches; brown (7.5YR 5/4), loam, brown (7.5YR 4/4), moist; moderate medium angular blocky structure; firm, hard, slightly sticky, slightly plastic; common very fine and common fine roots; few fine pores; common fine irregular moderately cemented carbonate concretions and common medium irregular carbonate masses; slightly effervescent; moderately alkaline; clear smooth boundary.

BCk2—57 to 64 inches; red (2.5YR 5/6), loam, red (2.5YR 4/6), moist; weak fine and medium angular blocky structure; firm, hard, slightly sticky, slightly plastic; common fine irregular moderately cemented carbonate concretions and common medium irregular carbonate masses; slightly effervescent; slightly alkaline; clear smooth boundary.

Ck—64 to 80 inches; reddish yellow (5YR 7/6) and pinkish white (5YR 8/2), very fine sandy loam, reddish yellow (5YR 6/6) and pink (5YR 8/4), moist; massive; friable, slightly hard, nonsticky, nonplastic; many medium irregular carbonate masses; violently effervescent; slightly alkaline.

Range in Characteristics

Solum thickness: 40 to 70 inches

Identifiable secondary carbonates: Fine fragments of snail shells are in all horizons. Films and threads of calcium carbonate are evident in all horizons and increase with depth.

Clay content: Silicate clay content ranges from 18 to 35 percent and carbonate clay from 2 to 10 percent.

Coarse fragments: 0 to 15 percent by volume; siliceous and limestone; 2 to 75 mm

Other features: Weakly cemented limestone occurs below 40 inches in some pedons

Particle-size control section (weighted average):

Calcium carbonate equivalent: 40 to 70 percent by weight

Clay content: Silicate clay content ranges from 18 to 35 percent and carbonate clay from 2 to 10 percent.

A horizon

Hue: 10YR

Value: 3 to 5, 2 or 3 moist

Chroma: 2 or 3, dry and moist

Texture of the fine-earth fraction: Clay loam

Identifiable secondary carbonate: 0 to 2 percent by volume, concretions

Effervescence: Strong or violent

Reaction: Slightly alkaline or moderately alkaline

Bk horizon

Hue: 5YR to 10YR

Value: 4 to 7, 3 to 6 moist

Chroma: 2 to 6, dry and moist

Mottles: 0 to 20 percent; colors are brown to yellow

Texture of the fine-earth fraction: Loam, sandy clay loam, or clay loam

Coarse fragments: 0 to 15 percent by volume; limestone gravel, in lower part of horizon; gravelly and very gravelly modifiers
Other features: Weakly cemented limestone occurs below 40 inches in some pedons
Identifiable secondary carbonates: 5 to 20 percent by volume; concretions, films, threads, and masses
Effervescence: Violent
Reaction: Slightly alkaline or moderately alkaline

BCK or Ck horizons

Hue: 2.5YR to 10YR
Value: 5 to 7, 4 to 6 moist
Chroma: 3 to 6, dry and moist
Mottles: 0 to 20 percent; colors are brown to yellow
Texture of the fine-earth fraction: Loam, sandy clay loam, or clay loam
Coarse fragments: 0 to 50 percent by volume; limestone gravel; gravelly and very gravelly modifiers
Identifiable secondary carbonates: 5 to 20 percent by volume; concretions, films, threads, and masses
Effervescence: Violently
Reaction: Slightly alkaline or moderately alkaline

Tarrant Series

Depth class: Very shallow and shallow to lithic bedrock
Drainage class: Well drained
Permeability class of the most limiting soil layer: 0.2 to 0.6 in/hr (moderately slow)
Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high
Landscape: Dissected plateaus
Landform: Ridges
Position on landform: Summits, shoulders, backslopes
Parent material: Residuum weathered from limestone
Slope: 1 to 40 percent
Elevation: 1,000 to 2,450 feet
Mean annual precipitation: 20 to 34 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 230 to 260 days
Map unit(s): KTG, TRE, TRG

Taxonomic Class

Clayey-skeletal, smectitic, thermic Lithic Calcicustolls

Typical Pedon

Tarrant very cobbly clay in an area of Tarrant-Rock outcrop complex, 1 to 12 percent slopes; from the division of U.S. Highway 377 and Texas Highway 29, 9.6 miles west on Texas Highway 29, 2.7 miles south on Ben Road, and 0.5 mile east in rangeland; USGS Long Mountain, TX topographic quadrangle; Latitude 30 degrees, 49 minutes, 49.00 seconds North and Longitude 99 degrees, 25 minutes, 59.00 seconds West; UTM Easting: 458591 meters; UTM Northing: 3410872 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 8 inches; black (10YR 2/1), very cobbly clay, black (10YR 2/1), moist; strong medium subangular blocky structure parting to moderate medium granular; very firm, moderately hard, moderately sticky, moderately plastic; many medium roots; common fine pores; very few distinct carbonate coats on rock fragments; few fine distinct

moderately cemented carbonate nodules; 15 percent limestone fragments, 2 to 75 mm gravel, nonflat, subrounded, and 20 percent limestone fragments, 76 to 250 mm cobbles, nonflat subangular; slightly effervescent; slightly alkaline; clear wavy boundary.

Bk—8 to 12 inches; brown (10YR 4/3), very cobbly clay, dark brown (10YR 3/3), moist; moderate medium subangular blocky structure; firm, moderately hard, moderately sticky, moderately plastic; common medium roots around fragments; common fine pores; few distinct carbonate coats on rock fragments; common fine distinct carbonate concretions and common fine distinct carbonate nodules; 15 percent limestone fragments, 2 to 75 mm gravel, nonflat, subrounded, and 30 percent limestone fragments, 76 to 250 mm cobbles, nonflat subangular; violently effervescent; slightly alkaline; abrupt wavy boundary.

R—12 to 22 inches; indurated limestone bedrock; fractured at intervals of 4 to 18 inches.

Range in Characteristics

Solum thickness: 6 to 20 inches

Effervescence: Strong or violent

Reaction: Slightly alkaline or moderately alkaline

Particle-size control section (weighted average):

Total clay content: 40 to 60 percent

Coarse fragments: 35 to 85 percent by volume

A horizon

Hue: 7.5YR or 10YR

Value: 2 to 5 dry, 2 or 3 moist

Chroma: 1 to 3, dry and moist

Texture of the fine-earth fraction: Clay

Clay content: 35 to 60 percent

Coarse fragments: 35 to 59 percent total by volume; limestone or quartziferous; 0 to 15 percent gravel; 4 to 35 percent cobble; 4 to 40 percent stones; very cobbly

Identifiable secondary carbonate: 0 to 10 percent by volume; fine to medium, distinct, coats and pendants on bottom surfaces of and around rock fragments

Ak horizon or Bk horizon (where present)

Hue: 7.5YR or 10YR

Value: 3 or 4, dry and moist

Chroma: 3 dry and moist

Texture of the fine-earth fraction: Clay

Clay content: 40 to 60 percent

Coarse fragments: 35 to 85 total by volume; limestone and/or quartziferous; 0 to 19 percent by volume gravel; 10 to 50 percent cobble or flagstones; 15 to 60 percent stones; extremely cobbly, stony, and flaggy modifiers when present are typically immediately above the bedrock; and very or extremely cobbly, stony, or flaggy modifiers

Identifiable secondary carbonates: 0 to 10 percent by volume; fine to medium, distinct, coats and pendants on bottom surfaces of and around rock fragments

R layer

Cementation: Strongly cemented or indurated with weakly to moderately cemented interbeds

Identifiable calcium carbonates: Cemented primary and secondary calcium carbonates in fractures and on rock fragments

Valera Series

Depth class: Moderately deep to lithic bedrock; moderately deep to petrocalcic

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately low

Landscape: Dissected plateaus

Landform: Valleys

Position on landform: Footslopes

Parent material: Slope alluvium derived from limestone

Slope: 0 to 5 percent

Elevation: 1,000 to 2,500 feet

Mean annual precipitation: 16 to 26 inches

Mean annual air temperature: 64 to 70 degrees F

Frost-free period: 220 to 240 days

Map unit(s): CAC

Taxonomic Class

Fine, smectitic, thermic Petrocalcic Calciustolls

Typical Pedon

Valera clay loam in an area of Campwood, Sunev, and Valera soils, 0 to 5 percent slopes; from the intersection of Texas Highway 29 and FM 1221 in Hext, 2.5 miles south and east on FM 1221, 5.5 miles east and south on local road, and 250 feet west in rangeland; USGS Long Mountain, TX topographic quadrangle; Latitude 30 degrees, 47 minutes, 24.53 seconds North and Longitude 99 degrees, 29 minutes, 7.35 seconds West; UTM Easting: 453562 meters; UTM Northing: 3406446 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 14 inches; dark grayish brown (10YR 4/2), clay loam, very dark grayish brown (10YR 3/2), moist; moderate medium subangular blocky structure parting to weak fine granular; friable, moderately hard, very sticky, very plastic; many fine and common medium roots; common fine pores; common fine carbonate, finely disseminated; violently effervescent; slightly alkaline; clear smooth boundary.

Bk—14 to 25 inches; grayish brown (10YR 5/2), clay loam, dark grayish brown (10YR 4/2), moist; moderate medium subangular blocky structure; firm, hard, cemented by carbonates; very sticky, very plastic; common fine roots in cracks; common fine pores; common fine prominent carbonate masses between peds; violently effervescent; slightly alkaline; clear smooth boundary.

Bkm—25 to 29 inches; very pale brown (10YR 8/2), cemented material, very pale brown (10YR 8/3), moist; violent effervescence; moderately alkaline.

R—29 to 39 inches; indurated limestone bedrock; fractured at intervals of 4 to 18 inches.

Range in Characteristics

Depth to petrocalcic contact: 20 to 40 inches

Depth to lithic contact: 20 to 40 inches

Solum thickness: 20 to 40 inches

Crack features: Reversible crust-related; 10 to 20 inches; 1 to 2 cm (less than 1 inch) wide; dry

Coefficient of linear extensibility: Less than 0.07 in all horizons

Effervescence: Strong or violent

Reaction: Slightly alkaline or moderately alkaline

Particle-size control section (weighted average):

Soil Survey of Mason County, Texas

Clay content: 35 to 55 percent

Coarse fragments: 0 to 14 percent by volume; limestone; 2 to 75 mm

A horizon

Hue: 5YR to 10YR

Value: 3 to 5 dry, 3 or 4 moist

Chroma: 1 to 3 dry, 1 or 2 moist

Texture of the fine-earth fraction: Clay loam

Clay content: 35 to 55 percent

Bw or Bk horizons

Hue: 7.5YR or 10YR

Value: 4 to 7 dry, 3 to 5 moist

Chroma: 2 to 4, dry and moist

Texture of the fine-earth fraction: Silty clay loam, clay loam, silty clay, or clay

Total clay content: 35 to 55 percent

Bkm horizon

Hue: 7.5YR or 10YR

Value: 7 or 8, dry and moist

Chroma: 1 to 4, dry and moist

Cementation: Weakly cemented to strongly cemented, with a laminar cap

R layer

Bedrock kind: Limestone bedrock with interbedded caliche, marl, and limestone fragments, and secondary carbonates in fractures

Cementation: Strongly cemented to indurated

Venus Series

Depth class: Very deep

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.6 to 2.0 in/hr (moderate)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately high

Landscape: Dissected plateaus

Landform: Stream terraces, valleys

Position on landform: Footslopes

Parent material: Calcareous loamy slope alluvium and/or alluvium derived from limestone and sandstone

Slope: 0 to 8 percent

Elevation: 1,000 to 2,100 feet

Mean annual precipitation: 28 to 40 inches

Mean annual air temperature: 63 to 70 degrees F

Frost-free period: 220 to 250 days

Map unit(s): VeD

Taxonomic Class

Fine-loamy, mixed, superactive, thermic Typic Calciustolls

This is a taxadjunct to the Venus series because it is in a Typic subgroup, instead of an Udic subgroup.

Typical Pedon

Venus loam in an area of Venus loam, 0 to 8 percent slopes, rocky; from the intersection of U.S. Highway 87 and Ranch Road 1723 near Mason, 2.5 miles south on Ranch Road 1723, 4.8 miles south and west on Ranch Road 2389, 3.9 miles south on Schep Creek Road, and 100 feet west in rangeland; USGS Panther Creek, TX topographic quadrangle; Latitude 30 degrees, 35 minutes, 50.49 seconds North and Longitude 99 degrees, 14 minutes, 48.75 seconds West; UTM Easting: 476333 meters; UTM Northing: 3385006 meters ; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

- A—0 to 10 inches; brown (7.5YR 5/3), loam, dark brown (7.5YR 3/3), moist; weak fine subangular blocky structure parting to weak fine granular structure; friable, moderately hard, slightly sticky, slightly plastic; many fine roots and common very fine roots; many fine pores, 5 percent limestone fragments, 2 to 75 mm gravel, nonflat, rounded, indurated; violently effervescent; slightly alkaline; clear smooth boundary.
- Bk1—10 to 41 inches; brown (7.5YR 5/4), clay loam, dark brown (7.5YR 3/4), moist; moderate medium subangular blocky structure; friable, moderately hard, slightly sticky, slightly plastic; common very fine and common fine roots; common fine pores; common fine threadlike carbonate masses in matrix; 5 percent limestone fragments, 2 to 75 mm gravel, nonflat, rounded, indurated; violently effervescent; moderately alkaline; clear smooth boundary.
- Bk2—41 to 67 inches; brown (7.5YR 5/4), sandy clay loam, brown (7.5YR 4/4), moist; moderate medium subangular blocky structure; firm, hard, slightly sticky, slightly plastic; common very fine and common fine roots; common fine pores; common fine threadlike carbonate masses in matrix; 5 percent limestone fragments, 2 to 75 mm gravel, nonflat, rounded, indurated; violently effervescent; moderately alkaline; gradual smooth boundary.
- Bk3—67 to 80 inches; pink (7.5YR 7/3), sandy clay loam, brown (7.5YR 5/3), moist; moderate medium subangular blocky structure; firm, hard, slightly sticky, slightly plastic; common fine pores; common fine threadlike carbonate masses in matrix; 5 percent limestone fragments, 2 to 75 mm gravel, nonflat, rounded, indurated; violently effervescent; moderately alkaline.

Range in Characteristics

Solum thickness: 60 to 80 inches

Thickness of mollic epipedon: 10 to 20 inches

Coarse fragments: 0 to 10 percent by volume; siliceous gravel; 2 to 75 mm

Calcium carbonate equivalent: 15 to 40 percent

Particle-size control section (weighted average)

Silicate clay content: 18 to 30 percent

A horizon

Hue: 7.5YR to 2.5Y

Value: 4 or 5, 2 or 3 moist

Chroma: 2 or 3, dry and moist

Texture of the fine-earth fraction: Loam

Calcium carbonate concretions: 0 to 2 percent by volume

Effervescence: Slight to violent

Reaction: Slightly alkaline or moderately alkaline

Bk horizon

Hue: 7.5YR to 2.5Y

Value: 4 to 7, 3 to 6 moist

Chroma: 3 to 6, dry and moist

Texture of the fine-earth fraction: Loam, sandy clay loam, or clay loam

Visible secondary carbonates: 5 to 20 percent by volume; concretions, films, threads, and masses

Effervescence: Strong and violent

Reaction: Slightly or moderately alkaline

BCK horizon

Hue: 7.5YR to 2.5Y

Value: 5 to 8; 4 or 6 moist

Chroma: 3 to 6, dry and moist

Texture of the fine-earth fraction: Fine sandy loam, loam, sandy clay loam, or clay loam

Calcium carbonate equivalent: 10 to 60 percent

Other features: Some pedons are underlain by layers of sand and gravel at depths of about 4 to 8 feet

Effervescence: Strong and violent

Reaction: Slightly or moderately alkaline

Voca Series

Depth class: Very deep

Drainage class: Well drained

Permeability class of the most limiting soil layer: 0.06 to 0.2 in/hr (slow)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: Moderately low

Landscape: Dissected plateaus

Landform: Hills, undulating plains, ridges

Position on landform: Footslopes

Parent material: Residuum over grus derived from granite

Slope: 0 to 5 percent

Elevation: 1,000 to 2,000 feet

Mean annual precipitation: 24 to 28 inches

Mean annual air temperature: 64 to 66 degrees F

Frost-free period: 210 to 240 days

Map unit(s): LRC, VoC

Taxonomic Class

Fine, mixed, active, thermic Typic Paleustalfs

Typical Pedon

Voca sandy loam in an area of Voca sandy loam, 0 to 3 percent slopes; from the intersection of Texas Highway 71 and FM 1851 near Voca, 3.6 miles south on FM 1851, 0.3 mile west on private road, and 50 feet north in rangeland; USGS Spy Rock, TX topographic quadrangle; Latitude 30 degrees, 57 minutes, 2.74 seconds North and Longitude 99 degrees, 11 minutes, 29.65 seconds West; UTM Easting: 481702 meters; UTM Northing: 3424161 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A1—0 to 6 inches; brown (7.5YR 5/3), sandy loam, brown (7.5YR 4/3), moist; weak fine subangular blocky structure; friable, slightly hard, nonsticky, nonplastic; many fine, common medium, and many very fine roots; many very fine and many fine pores; 10 percent quartz fragments, 2 to 5 mm fine gravel, nonflat, subrounded, indurated; neutral; clear smooth boundary.

A2—6 to 11 inches; brown (7.5YR 5/4), gravelly sandy loam, brown (7.5YR 4/4), moist; weak medium subangular blocky structure; friable, slightly hard, nonsticky, nonplastic; common fine, common medium, and common very fine roots; common very fine and

common fine pores; 25 percent quartz fragments, 2 to 5 mm fine gravel, nonflat, subrounded, indurated; slightly acid; clear wavy boundary.

Bt1—11 to 17 inches; yellowish red (5YR 5/6), very gravelly sandy clay loam, yellowish red (5YR 4/6), moist; weak medium subangular blocky structure; firm, hard, slightly sticky, slightly plastic; common fine, common medium, and common very fine roots; common very fine and common fine pores; few distinct reddish brown (5YR 4/4), moist, clay films on vertical faces of peds; 45 percent quartz fragments, 2 to 5 mm fine gravel, nonflat, subrounded, indurated; slightly acid; clear wavy boundary.

Bt2—17 to 22 inches; red (2.5YR 5/8), gravelly clay, red (2.5YR 4/8), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common very fine and common fine roots; common very fine and common fine pores; few prominent black (10YR 2/1), moist, organic stains on vertical faces of peds; few distinct reddish brown (5YR 4/4), moist, clay films on vertical faces of peds; 20 percent quartz fragments, 2 to 5 mm fine gravel, nonflat, subrounded, indurated; slightly acid; clear wavy boundary.

Bt3—22 to 34 inches; red (2.5YR 5/8), gravelly clay, red (2.5YR 4/8), moist; moderate medium subangular blocky structure; firm, hard, moderately sticky, moderately plastic; common very fine and common fine roots; common very fine and common fine pores; few prominent reddish brown (5YR 4/4), moist, clay films on vertical faces of peds; common fine prominent platy mica flakes with sharp boundaries in cracks; 20 percent quartz fragments, 2 to 5 mm fine gravel, nonflat, subrounded, indurated; strongly acid; gradual wavy boundary.

Bc1—34 to 80 inches; red (10R 4/6), extremely gravelly coarse sandy loam, dark red (10R 3/6), moist; moderate very fine subangular blocky structure; firm, very hard, slightly sticky, slightly plastic; few very fine roots in cracks; common very fine and common fine pores; very many prominent clay films on rock fragments; 85 percent granite fragments, 2 to 75 mm gravel, nonflat, angular, indurated; moderately acid.

Range in Characteristics

Solum thickness: Greater than 80 inches

Particle-size control section (weighted average):

Clay content: 35 to 50 percent

Coarse fragments: 25 to 35 percent by volume; granite, feldspar, and quartz gravel

A horizon

Hue: 5YR to 10YR

Value: 4 to 6, 3 to 5 moist

Chroma: 2 to 6, dry and moist

Texture of the fine-earth fraction: Sandy loam

Clay content: 10 to 19 percent

Coarse fragments: 5 to 35 percent by volume; quartz gravel

Reaction: Slightly acid to slightly alkaline

Bt horizon

Hue: 10R to 10YR

Value: 3 to 8, 2 to 6 moist

Chroma: 2 to 8, dry and moist

Texture of the fine-earth fraction: Sandy clay loam, clay loam, sandy clay, or clay

Clay content: 35 to 60 percent clay

Coarse fragments: 15 to 50 percent by volume in the upper 20 inches of the Bt; 25 to 60 percent by volume in the lower part of the Bt; granite, feldspar, and quartz gravel

Reaction: Moderately acid to neutral

BCt horizon

Hue: 10R to 5YR

Value: 4 to 6, 3 to 5 moist

Chroma: 3 to 6, dry and moist

Texture of the fine-earth fraction: Coarse sandy loam, loam, or sandy clay loam

Clay content: 15 to 30 percent

Coarse fragments: 60 to 90 percent by volume; granite and saprolite gravel

Reaction: Moderately acid to slightly acid

Yates Series

Depth class: Very shallow and shallow to lithic bedrock

Drainage class: Well drained

Permeability class of the most limiting soil layer: 2.0 to 6.0 in/hr (moderately rapid)

Saturated hydraulic conductivity (Ksat) of the most limiting soil layer: High

Landscape: Dissected plateaus

Landform: Ridges

Position on landform: Summits, shoulders, backslopes

Parent material: Residuum weathered from limestone

Slope: 1 to 40 percent

Elevation: 1,000 to 2,200 feet

Mean annual precipitation: 22 to 30 inches

Mean annual air temperature: 63 to 66 degrees F

Frost-free period: 205 to 235 days

Map unit(s): YNE, YNG

Taxonomic Class

Loamy-skeletal, mixed, semiactive, nonacid, thermic Lithic Ustorthents

Typical Pedon

Yates very gravelly fine sandy loam in an area of Yates-Nebgen-Rock outcrop complex, 1 to 12 percent slopes; from the intersection of Texas Highway 71 and Ranch Road 386 in Fredonia, 2.8 miles south on Ranch Road 386, 1.0 mile east on Oak Grove Road, 0.6 mile north on Eastman Lane Road, and 500 feet west in rangeland; USGS Fredonia, TX topographic quadrangle; Latitude 30 degrees, 54 minutes, 10.00 seconds North and Longitude 99 degrees, 6 minutes, 8.33 seconds West; UTM Easting: 459242 meters; UTM Northing: 3418905 meters; UTM Zone 14. (Colors are for dry soil unless otherwise noted.)

A—0 to 12 inches; yellowish red (5YR 4/6), very gravelly fine sandy loam, yellowish red (5YR 5/6), dry; weak fine granular structure; very friable, slightly hard, nonsticky, nonplastic; common very fine and common fine roots; common fine pores; 35 percent limestone fragments, 76 to 250 mm gravel, nonflat, angular, indurated; slightly alkaline; abrupt smooth boundary.

R—12 to 14 inches; indurated limestone bedrock; fractured at intervals of 18 to 39 inches.

Range in Characteristics

Solum thickness to hard coarsely fractured limestone: 4 to 14 inches

Surface fragments: 10 to 35 percent by volume; limestone

A horizon

Hue: 5YR to 10YR

Value: 3 to 5

Soil Survey of Mason County, Texas

Chroma: 4 to 6

Texture of the fine-earth fraction: Fine sandy loam or loam

Clay content: 10 to 26 percent

Coarse fragments: 35 to 60 by volume; 0 to 60 percent by volume; limestone; very cobbly
or very gravelly modifiers

Effervescence: Noneffervescent to slightly

Reaction: Neutral to moderately alkaline

R layer

Bedrock kind: Limestone bedrock

Fracture interval: 12 to 60 inches

Cementation: Strongly cemented or indurated

Formation of the Soils

In this section, the factors of soil formation to include parent material, climate, plant and animal life, relief, and time are discussed and are related to the formation of the soils in Mason County. Also, the processes of horizon differentiation and the surface geology of the counties are described.

Factors of Soil Formation

Soil is formed by the action of soil-forming processes on material deposited or accumulated by geological forces. The characteristics of a soil depend on the physical and mineralogical composition of the parent material, the climate under which the soil material has accumulated and has existed since accumulation, the plant and animal life on and in the soil, the relief, and the length of time the forces of soil development have acted on the soil material.

Climate and living organisms are active factors of soil formation. They act on the parent material that has accumulated through the weathering of rocks and slowly change it into a natural body that has genetically related horizons. The effects of climate and living organisms are conditioned by relief. The parent material affects the kind of soil profile that forms and, in extreme cases, determines it almost entirely. Finally, time is needed for changing the parent material into soil. Generally, a long time is needed for the development of distinct horizons.

The factors of soil formation are so closely interrelated in their effects on the soil that few generalizations can be made regarding the effect of any one factor unless conditions are specified for the other factors.

Parent Material

Parent material is the unconsolidated organic and inorganic material in which a soil forms. The parent material determines the physical and chemical limits of the soil.

The Cho and Mereta soils have cemented caliche or petrocalcic layers. The parent material for Cho and Mereta is ancient calcareous alluvium. The Click, Lou, and Voca soils have subsoil layers with 60 to 90 percent gravels. The parent material for Click, Lou, and Voca soils is weathered granite and granite grus.

Brackett, Real, and Tarrant soils formed from Cretaceous limestone. These soils are calcareous throughout. Nebgen, Oben, and Hye formed from sandstone. They are neutral to acidic.

Climate

Mason County has a subhumid climate with mild, dry winters and hot summers. The low rainfall, high evaporation rate, temperature, and wind are some of the climatic factors which influence soil formation.

The variable rainfall pattern causes the soil to be alternately wet and dry. When a clayey soil such as Campwood becomes dry, it cracks. Animals, rainfall, and wind deposit surface soil in the cracks. During rains the cracks fill with water, the soil swells as it gets wet, and the cracks close. This alternate shrinking and swelling upon drying and wetting causes a rise and fall in the soil surface, and churning or mixing of the soil that has been termed "self swallowing." The cracks in these soils, initially, allow the soil to take in water rapidly and wet deeply. Deep soil development and gilgai microrelief are the

results of these processes. Water moving through the soil can carry clay particles downward in suspension from the surface layer. The clay particles are deposited in the subsoil as the water flow ceases. As clay accumulates, permeability decreases, slowing future water movement, and deposition of clay accelerates. Castell, Luckenbach, Pedernales, and Voca soils have clayey subsoils.

Rainfall also leaches minerals from the upper layers and deposits them in the lower layers. As a result, Menard, Venus, and many other soils have a layer in which calcium carbonate has accumulated.

Also, the accumulation of organic matter is affected by temperature and moisture. Low rainfall and high temperatures limit the vegetative growth and accumulation of organic matter in the soils. However, in those areas where more soil moisture is present, such as flood plains and depressional areas, the vegetative production and organic matter contents are higher than the surrounding upland soils. Near surface soil temperatures are lower where there is more vegetation, and the rate of decomposition of organic matter is generally slower.

Plant and Animal Life

Plants, animals, earthworms, insects, and micro-organisms are important factors in the formation of soils. The amount of organic matter and nitrogen in the soil, gains or losses in plant nutrients, and changes in soil structure and porosity are among the effects of living organisms.

Vegetation, predominantly grasses and brush, has played a major role in soil formation in Mason County. Decayed roots contribute organic matter to the soils and leave channels and pores that provide passageways for the intake of air and water. Deep rooting brush plants bring nutrients from the subsoil to the surface.

Earthworms, insects, and burrowing animals mix soil materials and create channels for the downward movement of air, water, and plant roots into the soil. Actinomycetes, bacteria, and fungi break down primary forms of organic matter, create humus, and release plant nutrients which improve soil tilth and fertility.

Humans have greatly affected the soils in Mason County. In the past, some rangeland has been overstocked with livestock and native wildlife. This resulted in overgrazing which caused the better grasses, brush, and forbs to decrease, and be replaced with less desirable grasses, brush, and forbs. Overgrazing by livestock and other animals increases the amount of bare ground and soil compaction, thereby increasing runoff and soil erosion.

Farming has resulted in excessive water and wind erosion in some areas. Crop residue management, terraces, grassed waterways, reduced tillage, and vegetated windstrips help control erosion on cropland. Soil compaction because of farm equipment has slowed the movement of air, moisture, and roots in the soil on much of the cropland in the survey area.

Relief

Relief or topography affects soil formation through its influence on drainage, erosion, and plant cover. The degree of development of a soil profile depends on the amount of water that enters the soil, provided other factors of soil formation are equal.

The relief in Mason County ranges from nearly level to very steep. Soil profile development depends on the amount of moisture and the depth to which moisture penetrates. Sloping soils take in less water and normally have a less developed profile than nearly level soils. Many of the more sloping soils erode almost as fast as they form. Eckert, Nebgen, and Yates are sloping soils without a well developed profile. Nearly all rainfall tends to infiltrate into the soil on nearly level soils. These soils have well developed features. The Castell, Luckenbach, Menard, and Pedernales are soils on nearly level surfaces and have well developed profiles.

Time

The characteristics of a soil are determined mainly by the length of time that the soil forming factors have been active. Thousands of years may be required for the formation of well-defined, genetic horizons. Genetically, the soils in Mason County range from very young to old. Differences in the ages of the soils can be noted in their profiles.

The Oakalla and Fieldcreek soils are young soils which developed on recent flood plains. These soils consist of altered alluvial sediments.

Old soils are generally nearly level to gently undulating, and are on stable, upland positions on the landscape. The Cho and Mereta soils are old soils in which calcium carbonate was leached from the upper part of the profile, and accumulated to form a layer of cemented caliche, or petrocalcic.

Another indication of an old soil is an accumulation of clay. Over time, clay particles are transported by water from the upper part of the soil to the lower part. This accumulation of clay is identified as an argillic horizon. Soils with a well developed argillic horizons include Castell, Hye, Katemcy, Ligon, Luckenbach, Pedernales, and Voca.

Processes of Horizon Differentiation

Soils are derived from the decomposition of the mineral particles they contain and from the plant and animal remains added to them. Silicate clays, mineral particles, humus, living organisms, and water have a major influence in determining the characteristics of the soil. (Soil Survey Staff, 1998) Soil layers, or horizons, are formed by additions, removals, transfers, and transformations within the soil profile. These processes include additions or losses of organic, mineral, and gaseous materials to the soil, transfers of material from one point to another within the soil, and physical and chemical transformation of mineral and organic materials within the soil. In most soils, more than one of these processes have been active in the development of horizons and many processes occur simultaneously.

Soil profiles are made up of a series of horizons that extend from the surface to the parent material. The parent material has been influenced little by the processes of soil formation. The horizons that make up a soil profile differ in one or more properties, such as color, texture, structure, consistence, porosity, and reaction.

Most profiles have four major horizons. These are the A, E, B, and C horizons. Some soils do not have E, B, or C horizons.

The A horizon is the surface layer. It is the horizon that has the maximum accumulation of organic matter. Organic matter has accumulated, partially decomposed, and been incorporated into the soil. The accumulation of organic matter in soils is greatest in and above the surface layer. Many of the more stable products of organic matter decomposition remain as finely divided materials that result in darker colors, increased water-holding and cation-exchange capacities, and granulation of the soil.

The content of organic matter in the soils in Mason County ranges from low to medium. Fieldcreek, Oakalla, and Luckenbach soils have accumulated sufficient organic matter to form a dark surface layer. Menard, Katemcy, and Voca soils have a low organic matter and light-colored surface layers.

The E horizon is the subsurface layer. It is directly below the A horizon. It is characterized by the leaching of dissolved or suspended materials. Clay particles, organic matter, and oxides of free iron have been leached from the E horizon, leaving a concentration of light-colored sand and silt particles or other resistant materials. Campair, Loneoak, and Pedernales soils sometimes have well developed E horizons.

The B horizon is the subsoil. It is directly below the A or E horizons. It is the horizon that has the maximum accumulation of dissolved or suspended materials, such as clay and iron. It may also be an altered horizon that has a distinctly different structure than that of the A horizon but shows little evidence of clay translocation or accumulation.

A B horizon that has a significant amount of clay accumulation is called a Bt horizon. Clay accumulates in horizons largely because of translocation from upper to lower

horizons. As water moves downward, it can carry small amounts of clay in suspension. This clay accumulates at depths penetrated by water. It accumulates in fine pores in the soil and as clay films on surfaces of peds. Over long periods of time, at least a few thousand years, such processes can result in distinct horizons. Castell, Pedernales, and Katemcy soils are examples of soils that have strongly developed Bt horizons. Campair, Hye, and Pontotoc soils have a less developed Bt horizons.

A B horizon that has distinct structure or color development with little or no evidence of clay accumulation is called a Bw horizon. Plant roots and other organisms contribute to the rearrangement of soil materials into secondary aggregates. Organic residues and secretions of organisms serve as cementing agents that help stabilize structural aggregates. Soils that have appreciable amounts of clay develop structural aggregates because of drying and wetting and because of shrinking and swelling.

Some soils in Mason County have a high content of clay that has montmorillonite (smectite) as the dominant clay mineral. These soils shrink and develop wide, deep cracks when dry and swell and become very plastic and cohesive when wet. Because of overburden pressure, soil movement, and stress caused by wetting and drying, a platy and wedge-like structure can form in the Bss horizon. Individual structural aggregates have distinct cleavage planes and polished faces known as slickensides. When the soil is dry, soil material from the surface often falls into the wide, deep cracks or is washed into the cracks by rain. When the soil is wet, lateral pressure caused by the swelling can result in surface heaving, which eventually leads to the formation of gilgai microrelief that consists of microhighs and microlows. Campwood soils have Bss horizons that have slickensides.

Another important process in soil formation is the loss of components from the soil. Water can leach many soluble components, such as calcium carbonate, to the lower horizons in the profile. A horizon that has a significant accumulation of calcium carbonate is designated by the addition of the symbol "k." Brackett, Kerrville, Menard, Pedernales, Sunev, and Venus are examples of soils that have accumulations of calcium carbonate in the lower horizons.

The C horizon is relatively unchanged by soil-forming processes, although in some places it is modified by weathering. It is generally below the B horizon.

Surface Geology

Dr. Emilio Mutis-Duplat and Dr. Miles W. Gray, Department of Geology, The University of Texas of the Permian Basin, Odessa, TX, prepared this section.

Over a billion years of geologic time are represented in the rocks that crop out in Mason County. The rocks on the northeastern half of the county are predominantly Precambrian metamorphic and igneous rocks, whereas those on the southwestern half are predominantly sedimentary rocks that range in age from Middle Cambrian through Recent. A general geologic map of Mason County is included in the Llano Sheet of the Geologic Atlas of Texas (Barnes, 1981).

Stratigraphy

Precambrian Rocks

The Precambrian metamorphic rocks belong to the Llano Group that is subdivided, from bottom to top, into three units: Valley Spring Gneiss, Lost Creek Gneiss, and Packsaddle Schist. The metamorphic rocks have been intruded by two kinds of granite: a coarse-grained granite and a fine- to medium-grained granite. Pegmatite dikes, aplite dikes, and quartz masses are very common.

Valley Spring Gneiss

The rocks that belong to the Valley Spring Gneiss are the oldest rocks that crop out in Mason County. They are found primarily on the east-central and northeastern parts of the County. These rocks are mostly gneisses and schists with some migmatites, quartzites, amphibolites, calc-silicate rocks, and marbles. The gneisses are light colored when mafics such as biotite and amphiboles are absent, or dark gray when these mafics are present. In some areas, like the hills northeast of Mason, the gneisses are replaced by quartzites (Mutis-Duplat, 1982). In other areas, like Fly Gap area, the biotite gneisses are iron rich (Droddy, 1978). The schists are hornblende, biotite, or muscovite rich and commonly dark gray. Migmatites, a mixture of metamorphic and igneous rock, are abundant along fold axes. Amphibolites, calc-silicate rocks, and marbles are usually associated with each other. Amphibolites are generally green, whereas calc-silicate rocks and marbles are either light gray or almost white. Well-developed foliation or schistosity are exhibited by most of the rocks within the Valley Spring Gneiss. Weathered surfaces are generally sharp.

The thickness of the Valley Spring Gneiss in Mason County is not less than 10,000 feet.

Lost Creek Gneiss

The Lost Creek Gneiss (fig. 37) crops out of primarily southwest of the Valley Spring Gneiss and west of Fredonia. The most complete description is given by Mutis-Duplat (1982, p.7) as follows: *"The Lost Creek Gneiss is a fine- to medium-grained, nonfoliated to very well foliated quartz-feldspar-hornblende-biotite gneiss grading into augen gneiss and migmatites. The Lost Creek Gneiss lies stratigraphically between the Valley Gneiss and the Packsaddle Schist. In general, the contact with the Valley Spring Gneiss is sharp, but the contact with the Packsaddle Schist varies from sharp to gradational. This definition emphasizes the main characteristics of the Lost Creek Gneiss, i.e., granitic composition, presence of augen gneiss and migmatites, and variation in the development of the foliation."*

Color of the rocks is commonly light pink. The microcline augen may be as much as 1 inch in length. Where foliation is poor or nonexistent, granite-like knobs are common. Migmatites are very well exposed and abundant throughout, particularly along fold axes. Weathered surfaces are generally rounded.

The thickness of the Lost Creek Gneiss in Mason County is about 3,500 feet.



Figure 37.—An exposure of Lost Creek Gneiss in Mason County.

Packsaddle Schist

The youngest Precambrian metamorphic rocks in Mason County belong to the Packsaddle Schist. They are found primarily on either side of U.S. Highway 87, south and southeast of Streeter, and south and west of Fredonia. The outcrops are commonly poor because of weathering. The rocks are primarily fine- to medium-grained, well-foliated quartz-feldspar-biotite or hornblende gneisses and mica and graphite schists, with interlayered amphibolites, calc-silicate rocks, and marbles. The color of the rocks is various shades of green and brown. Some migmatites are observed, particularly in the roadcuts along U.S. Highway 87 southeast of Mason and before the highway crosses Comanche Creek. Marbles are present throughout, particularly south and southeast of Streeter. Dark-gray graphite schist is abundant along the unpaved road southeast of Streeter, where it alternates with marble layers. Most rocks exhibits well-developed foliation and schistosity.

The thickness of the Packsaddle Schist in Mason County is about 7,000 feet.

Igneous Rocks

The coarse-grained granite is typical of the two major igneous bodies in Mason County: the Katemcy batholith (Mutis-Duplat, 1982) and the Art pluton (Salyapongse, 1978). Weathering is common throughout.

The Katemcy batholith crops out east and south of Katemcy and in the Grit area. The granite is pink, coarse grained, and contains microcline phenocrysts as much as 1.5 inches long. At many places the granite crops out in the form of domes and rounded hills.

Art is in the southwestern corner of the Art pluton. The granite is generally pink and coarse grained, with microcline phenocrysts as much as 1 inch long.

Several prominent bodies of fine- to medium-grained granite crop out east of Loyal Valley, south and southeast of Art, south of Mason, west of Grit, and west of Hilda. Small bodies of fine-grained pink or gray granites as well as pegmatite dikes, aplite dikes, and quartz masses are found throughout the metamorphic rocks in Mason County.

Paleozoic Rocks

Cambrian

Unconformably overlying the Precambrian metamorphic and igneous rocks are Cambrian (Middle to Upper Cambrian) sedimentary rocks. From bottom to top the Cambrian rocks include the Riley Formation and the Wilberns Formation. Each one of these formations is in turn subdivided into members. Outcrops of the two formations are found throughout the county.

Riley Formation

From the bottom to the top the Riley Formation includes: Hickory Sandstone Member, Cap Mountain Limestone Member, and Lion Mountain Sandstone Member.

The **Hickory Sandstone Member** was subdivided in the field by Mutis-Duplat (1982) into three units. The lower unit is generally poorly exposed, and is various shades of light or yellowish brown. The sandstone is massive, crossbedded, fine to coarse grained, and friable. In some places a conglomerate is present at the base, with quartz pebbles where it overlies metamorphic rocks, or feldspar pebbles where it overlies igneous rocks. The middle unit forms a belt of low hills and is mostly shades of yellow and dark brown. The sandstone is generally thinly bedded, argillaceous, silty, and locally, micaceous. Crossbedding is observed, but it is not as prominent as in the lower unit. At the top the siliceous cement is replaced gradually by iron-oxide cement. The upper unit of the Hickory Sandstone is poorly exposed. The sandstone shows a dusky-red color that allows immediate recognition, it is massive to thinly bedded, medium to coarse grained,

iron cemented, and friable. At the top the iron cement is gradually replaced by calcite cement.

The **Cap Mountain Limestone Member** conformably overlies the Hickory Sandstone Member. In Mason County it contains more calcite-cemented sandstone than limestone. It is generally brown or light gray, and commonly forms bluffs. South of Mason on both sides of the Llano River and James River the limestone is slightly to highly glauconitic.

The **Lion Mountain Sandstone Member** is a glauconitic sandstone found in very few outcrops. It is a dusky green to grayish olive green where fresh, and fine to medium grained. One of the best outcrops is found along the north-south unpaved road that is a continuation of Highway FM 2389 south of the Llano River.

The thickness of the Riley Formation in Mason County is about 450 feet.

Wilberns Formation

The Wilberns Formation includes from bottom to top: Welge Sandstone Member, Morgan Creek Limestone Member, Point Peak Member, and San Saba Member.

The **Welge Sandstone Member** is characterized by quartz grains with overgrowths that glitter in the sunlight. The sandstone is generally pale to dark yellowish brown, it is medium to coarse grained, and non-glauconitic. At the base a thin limonitic and earthy zone of reworked Lion Mountain Sandstone marks the surface of disconformity on which the Welge Sandstone was deposited.

The **Morgan Creek Limestone Member** is thinly bedded and glauconitic. It is various shades of pink, red, green, and brownish gray. Closer to the base it contains fine- to medium-grained, glauconitic, and calcite-cemented sandstone. The limestone is medium to coarse grained, iron stained, and with the calcite partly dolomitized. Some stromatolitic bioherms are present at the top.

The **Point Peak Member** consists of an alternation of thin beds of calcareous shale and fine-grained glauconitic limestone. It is various shades of light gray, light brown, and yellowish brown. Close to the top, some fine-grained, iron-stained, and compact dolomite is present. Stromatolitic bioherms are locally abundant.

The **San Saba Member** consists of fine- to medium-grained limestone grading upward into massive dolomite. It is various shades of light gray and grayish orange. Some glauconite is observed and stromatolitic bioherms are abundant.

The thickness of the Wilberns Formation in Mason County is about 600 feet.

Ordovician

The Ordovician is represented in Mason County by the Ellenburger Group. (fig. 38) The rocks crop out primarily in the southwestern section and the northwestern corner of the County. The outcrops are commonly good to very good, and the rock is various shades of gray. It is composed of a mixture of limestone and dolomite, and is cherty throughout. Perfect rhombohedra of calcite are very common and found in pockets. The limestone weathers most commonly to a solution pitted or grooved surface with a light bluish-gray color; locally it weathers to almost white.

The thickness of the Ordovician rocks in Mason County is about 800 feet.

Devonian, Mississippian, and Pennsylvanian

Rocks of Devonian, Mississippian, and Pennsylvanian age are limestone throughout. Undivided Devonian and Mississippian limestones crop out on the westernmost central part of Mason County, resting conformably on Ellenburger rocks. The Pennsylvanian rocks include the Marble Falls Limestone at the bottom and the Smithwick Shale at the top.

The **Marble Falls Limestone** conformably overlies the Devonian and Mississippian undivided rocks. A small outcrop of Marble Falls Limestone is also found south of the Mason Mountains and east of U.S. Highway 87, in a small graben in the Katemcy batholith (Mutis-Duplat, 1982, p. 13). The limestone is fine to coarse grained and it is various shades of gray and pale yellowish brown. Some dark gray to black shale is also present.



Figure 38.—Ledges of the Tanyard Formation, part of the Ellenburger Group.

The **Smithwick Formation** conformably overlies the Marble Fall Limestone. It consists of black shale with some limestone beds.

The thickness of the Devonian, Mississippian, and Pennsylvanian rocks in Mason County is estimated to be 250 feet.

Mesozoic Rocks

Cretaceous

The only Mesozoic rocks that crop out in Mason County are Cretaceous in age. From bottom to top they can be subdivided into: Hensell Sand, Comanche Peak Limestone, and Edwards Limestone.

The **Hensell Sand** unconformably overlies Precambrian metamorphic and igneous rocks in the north-central part of Mason County, and Paleozoic rocks in the western and southern parts of the County. The Hensell Sand becomes finer-grained upward, ranging from conglomerate in places at the base, through fine-grained dolomitic sandstone, to some silt and clay at the top. It is various shades of yellow where it rests on sedimentary rocks, and various shades of red (fig. 39) at the base grading upward to shades of yellow where it rests on metamorphic or igneous rocks. The top of the Hensell Sand is located at the base of the first thick bed of limestone observed in the outcrop (Mutis-Duplat, 1982, p.14).

The **Comanche Peak Limestone** conformably overlies the Hensell Sand. It is a fine-grained and somewhat dolomitized limestone. It is various shades of yellow and pale orange. Because it is a soft rock it has been eroded into a steep slope. The top of Comanche Peak Limestone is located at the base of the lowest limestone containing chert nodules (Mutis-Duplat, 1982, p.14).



Figure 39.—An exposure of the Hensell Sand along a creek in Mason County. The red colors indicate the presence of iron and other minerals.

The **Edwards Limestone** rests conformably on the Comanche Peak Limestone. The outcrops are generally poor. The limestone is fine-grained and dolomitized. It is various shades of yellow and brownish gray. The chert that defines the base is present elsewhere in the sequence. "Because it is harder than the underlying Comanche Peak Limestone, the Edwards Limestone flattens out into gently sloping surfaces and the upper surface is generally rocky" (Mutis-Duplat, 1982, p.14).

The thickness of the Cretaceous rocks in Mason County is approximately 220 feet.

Cenozoic Rocks

Recent

Gravels, conglomerates, and alluvial deposits are found primarily along the Llano River and James River as well as several major creeks.

Structural Geology

The structural features in Mason County are Precambrian folds and shear zones, and pre-Cretaceous faults.

Throughout the County the contacts between the Precambrian formations are conformable and no indication has been found that any of these formations had an independent deformation history. Moreover, the crosscutting relationship of the igneous rocks to the fold axes indicates that folding preceded the intrusion of the major igneous bodies (Mutis-Duplat, 1982, p.14).

Folds in the metamorphic rocks are outlined by the stratigraphic sequence and the attitude of the foliation. All folds are asymmetric. The most prominent fold in the County is

a fan anticline northeast of Mason, with Valley Spring Gneiss in the core. Several satellitic and overturned folds developed northeast and southwest of the fan anticline. Most folds have axes that trend northwest, but northeast-trending axes are not uncommon in the northeastern part of the County.

Shear zones are common throughout the metamorphic rocks locally affect some igneous rocks. They are easily recognized by the presence of mylonite and "friction breccias."

All faults are normal faults. Most of them trend northeast; a few, however, trend either north-south or east-west. "The contact between Cambrian and Precambrian rocks is commonly along fault-controlled northeast-trending belts. Faults occur on the eastern side of the belts of Cambrian rocks, and unconformable contacts are exposed on the western sides" (Mutis-Duplat, 1982, p.15). In other cases, Paleozoic rocks are in contact with each other along fault boundaries.

Mineral Resources

The mineral resources of Mason County are limited to nonmetallic construction materials and ground water, except for minor occurrences of potential low-grade iron ore.

There are two major quarries of granite for ornamental purposes. Both are in the Katemcy batholith. One of them is located 3.6 miles west of the intersection of U.S. Highways 377 and 87. The other is located west of Fredonia, along Highway FM 1222.

The use of ground water for irrigation purposes was started immediately following the drought of the early fifties. All irrigation wells drain the water from the lower unit of the Hickory Sandstone. Water for household consumption comes from shallow wells pumped normally by windmills. Most of these wells are located near creeks.

The Gamble prospect is located in the northeast corner of Mason County and most of the iron ore has already been mined. Another potential low-grade iron ore is the upper unit of the Hickory Sandstone. The ore is uneconomic at the present time, and most of it has been or is being used as road material.

References

American Association of State Highway and Transportation Officials (AASHTO). 2000. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2001. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Barnes, V. E., 1981, Geologic Atlas of Texas: Llano sheet: University of Texas, Austin, Bureau of Economic Geology, scale 1:250,000, 1 map, 15 p. text.

Byrd, C. L. 1971. Origin and History of the Uvalde Gravel of Central Texas; Baylor Geological Studies Bull. No. 20, pp. 29-30.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Dictionary of Geological Terms. 1984. 3rd edition. Robert L. Bates and Julia A. Jackson, editors. Anchor Books. New York, NY.

Droddy, M. J., 1978, Metamorphic rocks of the Fly Gap quadrangle, Mason County, Texas: University of Texas, Austin, Ph.D. dissertation, 179 p.

Eicher, D. E. 1976. Geologic Time: 2nd edition. Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. February 24, 1995. Hydric soils of the United States.

Glossary of Geology. 5th edition, 2002. American Geological Institute, Alexandria, VA.

Hurt, G.W., P.M. Whited, and R.F. Pringle, editors. 1998. Version 5.0, 2002. Field indicators of hydric soils in the United States.

Miller, Fred. P., D. E. McCormack, and J. R. Talbot. 1979. Soil surveys: Review of data collection methodologies, confidence limits, and uses. Natl. Acad. Sci. Transp. Res. Board, Transp. Res. Rec. 733, pp. 57-65, illus.

Mutis-Duplat, Emilio, 1982, Geology of the Purdy Hill quadrangle, Mason County, Texas: University of Texas, Austin, Bureau of Economic Geology Geologic Quadrangle Map 52, 1 map, 22 p. text.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Salyapongse, Sirot, 1978, Petrography and petrology of granitic rock of the Llano Uplift, Texas: University of Texas, Austin, M.A. thesis, 140 p.

Soil Survey of Mason County, Texas

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. <http://soils.usda.gov/technical/>

Soil Survey Staff. 1998. Keys to soil taxonomy. 8th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Soil Survey Staff. 2003. Keys to soil taxonomy. 9th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. 1996. Soil survey laboratory methods manual. Soil Survey Investigations Report 42, Version 3.0. <http://soils.usda.gov/technical/>

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

University of Texas. Bureau of Economic Geology. 1976. Geologic Atlas of Texas, Crystal City Eagle Pass sheet.

Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the "National Soil Survey Handbook" (available in local offices of the Natural Resources Conservation Service or on the Internet).

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

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.

Alluvial fan. A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium. Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction toward which a slope faces. Also called slope aspect.

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

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low.....	0 to 3
Low.....	3 to 6
Moderate.....	6 to 9
High.....	9 to 12
Very high.....	more than 12

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp. A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

- 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.
- Base slope (geomorphology).** A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).
- Batholith.** A large, generally discordant plutonic body having an aerial extent of 40 mi² (100 km²) or more and no known floor. [Glossary of Geology]
- Bedding plane.** A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change in the circumstances of deposition and may show a parting, a color difference, a change in particle-size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.
- Bedding system.** A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.
- Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.
- Bedrock-controlled topography.** A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.
- 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.
- Bisequum.** Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.
- Bottom land.** An informal term loosely applied to various portions of a flood plain.
- Boulders.** Rock fragments larger than 2 feet (60 centimeters) in diameter.
- Breaks.** A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.
- Breccia.** A coarse-grained clastic rock, composed of angular broken rock fragments held together by a mineral cement or a fine-grained matrix. (Dictionary of Geological Terms, 1984)
- 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, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.
- 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 general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

- California bearing ratio (CBR).** The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.
- Canopy.** The leafy crown of trees or shrubs. (See Crown.)
- Canyon.** A long, deep, narrow 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, or "chain," of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that 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.
- Cement rock.** Clayey limestone used in the manufacture of cement.
- Channery soil material.** Soil material that has, 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.** See Redoximorphic features.
- 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 dense, compact, slowly permeable subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. A claypan is commonly hard when dry and plastic and sticky when wet.
- Climax plant community.** The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.
- Coarse textured soil.** Sand or loamy sand.
- Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.
- Cobbly soil material.** Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.
- COLE (coefficient of linear extensibility).** See Linear extensibility.
- Colluvium.** Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.
- Complex slope.** Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.
- Complex, soil.** A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at

the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. 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 compounds making up concretions. See Redoximorphic features.

Conglomerate. A coarse grained, clastic sedimentary 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 to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

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

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion (geomorphology). A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations). 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.

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.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

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

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

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, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Diatomaceous earth. A geologic deposit of fine, gray siliceous material composed chiefly or entirely of the remains of diatoms.

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.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

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. A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw. A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Earthy fill. See Mine spoil.

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit. Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

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 (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (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 surface. A land surface shaped by the action of erosion, especially by running water.

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. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

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.

Fan remnant. A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

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.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine-earth fraction. All soil material less than 2 mm, or would pass a 2 mm sieve, or soil material that excludes coarse fragments greater than 2 mm.

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

First bottom. An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material. Material that has, 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. The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms. A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain step. An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial. Of or pertaining to rivers or streams; produced by stream or river action.

Foothills. A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope. The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

- Friction breccias.** A breccias composed of broken or crushed rock fragments resulting from frictional sliding. [Glossary of Geology]
- 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 microlows (microbasins) and microhighs (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.
- Gneiss.** A foliated rock formed by regional metamorphism, in which bands or lenticles of granular minerals alternate with bands or lenticles in which minerals having flaky or elongate prismatic habits predominate. Generally less than 50 percent of the minerals show preferred parallel orientation. Although a gneiss is commonly feldspar- and quartz- rich, the mineral composition is not an essential factor in its definition. Varieties are distinguished by texture (e.g., augen gneiss), characteristic minerals (e.g. hornblende gneiss), or general composition and/or origins (e.g., granite gneiss). [Glossary of Geology]
- Graded stripcropping.** Growing crops in strips that grade toward a protected waterway.
- Granite.** A plutonic rock in which quartz constitutes 10 to 50 percent of the felsic components and in which the alkali feldspar/total feldspar ratio is generally restricted to the range of 65 to 90 percent. [Glossary of Geology]
- 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 (76 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.
- Gravelly soil material.** Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (76 centimeters) in diameter.
- Ground water.** Water filling all the unblocked pores of the material below the water table.
- Grus.** A siliceous sand resulting from the weathering and granular disintegration of a parent rock, usually granite. [Glossary of Geology]
- Gully.** A small channel with steep sides caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.
- Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.
- Hard to reclaim** (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.
- 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.
- Head slope (geomorphology).** A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.
- 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 generic term for an elevated area 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. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope. A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

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:

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

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

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

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

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

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

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

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

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

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

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

Less than 0.2.....	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

interfluve. A landform composed of the relatively undissected upland/or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology). A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland/or can merge, resulting in a strongly convex shape.

Intermittent stream. A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or 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. See Redoximorphic features.

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.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Ksat. Saturated hydraulic conductivity. (See Permeability.)

Landslide. A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

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.

- Linear extensibility.** Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.
- Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.
- Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.
- Loess.** Material transported and deposited by wind and consisting dominantly of silt-sized particles.
- Low strength.** The soil is not strong enough to support loads.
- 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.
- Marl.** An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.
- Mass movement.** A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.
- 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. See Redoximorphic features.
- 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 landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.
- Mine spoil.** An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.
- 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.** A kind of map unit that has little or no natural soil and supports little or no vegetation.
- Moderately coarse textured soil.** Coarse sandy loam, sandy loam, or fine sandy loam.
- Moderately fine textured soil.** Clay loam, sandy clay loam, or silty clay loam.
- Mollic epipedon.** A thick, dark, humus-rich surface horizon (or horizons) that 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).

Mountain. A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. See Redoximorphic features.

Nose slope (geomorphology). A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

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

Paleoterrace. An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

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*.

Pararock fragment. Pararock fragments are unattached, cemented bodies or pieces of material 2 mm in diameter or larger that are extremely weakly cemented to moderately cemented. These fragments are not retained on sieves because they are crushed by grinding during sample preparation

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

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

Pedisediment. A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

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

Percolation. The movement of water through the soil.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic

conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Impermeable	less than 000.0015 inch
Very slow	000.0015 to 00.06 inch
Slow	00.06 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

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

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

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

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

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

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology). A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

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.

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.

Pore linings. See Redoximorphic features.

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.

Precipitation Effectiveness Index (P E Index) is the measure of the long-range effectiveness of precipitation in promoting plant growth for a given location. The formula for calculating PE Index is:

$$P-E \text{ Index} = 10 \sum_{n=1}^{12} (P-E \text{ index})_n$$

The formula is equal to 10 times the sum of the monthly precipitation-evaporation ratios (monthly precipitation amounts divided by monthly evaporation amounts).

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

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

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

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed as 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

Redoximorphic concentrations. See Redoximorphic features.

Redoximorphic depletions. See Redoximorphic features.

Redoximorphic features. Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
 - a. Nodules and concretions, which are cemented bodies that can be removed from the soil intact. Concretions are distinguished from nodules on the basis of internal organization. A concretion typically has concentric layers that are visible to the naked eye. Nodules do not have visible organized internal structure; and
 - b. Masses, which are noncemented concentrations of substances within the soil matrix; and
 - c. Pore linings, i.e., zones of accumulation along pores that may be either coatings on pore surfaces or impregnations from the matrix adjacent to the pores.
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
 - a. Iron depletions, i.e., zones that contain low amounts of iron and manganese oxides but have a clay content similar to that of the adjacent matrix; and
 - b. Clay depletions, i.e., zones that contain low amounts of iron, manganese, and clay (often referred to as silt coatings or skeletons).

3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix. See Redoximorphic features.

Regolith. All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief. The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill. A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser. The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

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

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

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

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

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

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saturated hydraulic conductivity (K-sat). See Permeability.

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.

Schist. A strongly foliated crystalline rock, formed by dynamic metamorphism, that can be readily split into thin flakes or slabs because of the well-developed parallelism of more than 50 percent of the minerals present, particularly those of lamellar or elongate prismatic habit (e.g. mica and hornblende). The mineral composition is not an essential factor in its definition unless specifically included in the rock name (e.g. quartz-muscovite schist). Varieties may also be based on general composition (e.g. calc-silicate schist, amphibole schist) or on texture (e.g., spotted schist). [Glossary of Geology]

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

- 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 that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.
- 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.** The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.
- Shrink-swell (in tables).** The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
- Side slope (geomorphology).** A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.
- Silica.** A combination of silicon and oxygen. The mineral form is called quartz.
- Silica-sesquioxide ratio.** The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.
- Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
- Siltstone.** An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.
- Similar soils.** Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.
- Sinkhole.** A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.
- Site index.** A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.
- Slickensides (pedogenic).** Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.
- Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 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

Slope alluvium. Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in 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	13-30:1
Strong.....	more than 30:1

Sodium adsorption ratio (SAR). 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.

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 and by the passage 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.

Stone line. In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

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.

- Strath terrace.** A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).
- Stream terrace.** One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.
- Stripcropping.** Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.
- Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless soils are either single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).
- Stubble mulch.** Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.
- Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.
- Subsoiling.** Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.
- Substratum.** See Underlying material.
- Subsurface layer.** Any surface soil horizon (A, E, AB, or EB) below the surface layer.
- Summer fallow.** The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.
- Summit.** The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.
- Surface layer.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."
- Surface soil.** The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.
- Taxadjuncts.** Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.
- Terrace (conservation).** An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.
- Terrace (geomorphology).** A steplike surface, bordering a valley floor or shoreline that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.
- 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 that is 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 gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread. The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Upland. An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Underlying material. The part of the soil below the solum.

Valley fill. The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an oven-dry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

Soil Survey of Mason County, Texas

Table 1.--Temperature and Precipitation
(Recorded for the period 1971-2000 at Mason, Texas)

Month	Temperature (Degrees F)						Precipitation (Inches)			
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have		Average number of growing degree days*	Average	2 years in 10 will have		Average number of days w/0.1 or more
				Maximum temperature higher than	Minimum temperature less than			less than	more than	
January	60.0	30.8	45.4	84	12	69	0.91	0.25	1.44	3
February	64.5	34.4	49.5	89	14	98	1.97	0.48	3.15	3
March	72.6	41.9	57.3	93	22	245	1.74	0.54	2.71	3
April	79.7	50.4	65.1	96	30	452	2.05	0.82	3.08	3
May	85.2	59.4	72.3	99	40	691	3.31	1.53	4.84	5
June	91.2	66.5	78.9	102	52	867	4.00	1.50	6.10	5
July	94.9	69.1	82.0	104	58	992	2.00	0.35	3.28	3
August	94.4	67.8	81.1	103	58	964	2.52	0.58	4.06	4
September	89.0	62.6	75.8	101	41	775	3.00	0.89	4.72	4
October	80.1	51.9	66.0	95	32	496	3.01	1.03	4.67	4
November	69.5	41.7	55.6	88	21	209	2.07	0.57	3.27	3
December	61.4	33.4	47.4	83	13	78	1.37	0.21	2.28	2
Yearly:										
Average	78.5	50.8	64.7	---	---	---	---	---	---	---
Extreme	108	3	---	106	8	---	---	---	---	---
Total	---	---	---	---	---	5,936	27.95	21.81	33.71	37

*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 (Threshold: 50.0 degrees F)

Soil Survey of Mason County, Texas

Table 2.--Freeze Dates in Spring and Fall
(Recorded for the period 1971-2000 at Mason, Texas)

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 4	March 21	April 8
2 years in 10 later than--	February 25	March 13	April 1
5 years in 10 later than--	February 10	March 1	March 19
First freezing temperature in fall:			
1 year in 10 earlier than--	November 14	October 29	October 20
2 years in 10 earlier than--	November 21	November 4	October 26
5 years in 10 earlier than--	December 4	November 14	November 6

Table 3.--Growing Season
(Recorded for the period 1971-2000 at Mason, Texas)

Probability	Daily Minimum Temperature		
	Number of days higher than 24°F	Number of days higher than 28°F	Number of days higher than 32°F
	Days	Days	Days
9 years in 10	264	239	207
8 years in 10	274	248	216
5 years in 10	293	264	234
2 years in 10	313	280	252
1 year in 10	323	289	262

Soil Survey of Mason County, Texas

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
ACC	Acove-Campair-Loneoak complex, 0 to 5 percent slopes-----	15,323	2.6
AMC	Acove-Menard complex, 0 to 5 percent slopes-----	3,553	0.6
CAC	Campwood, Sunev, and Valera soils, 0 to 5 percent slopes-----	16,671	2.8
CeC	Castell sandy loam, 0 to 5 percent slopes, rocky-----	27,540	4.6
ERD	Eckert-Rock outcrop complex, 1 to 8 percent slopes-----	83,642	14.0
ERG	Eckert-Rock outcrop complex, 8 to 30 percent slopes-----	35,591	6.0
FRC	Fieldcreek-Riverwash complex, 0 to 5 percent slopes, flooded-----	10,966	1.8
HeD	Hensley loam, 1 to 8 percent slopes-----	10,812	1.8
HkC	Honeycreek fine sandy loam, 0 to 5 percent slopes-----	5,504	0.9
HND	Hye-Nebgen-Oben complex, 1 to 8 percent slopes, rocky-----	14,651	2.5
HOD	Hye-Oben-Loneoak complex, 1 to 8 percent slopes-----	15,693	2.6
HPC	Hye-Pontotoc complex, 0 to 5 percent slopes-----	7,839	1.3
KAC	Katemcy-Honeycreek complex, 0 to 5 percent slopes-----	18,267	3.1
KeD	Keese gravelly sandy loam, 1 to 8 percent slopes, very rocky-----	6,390	1.1
KLE	Keese-Lou-Rock outcrop complex, 1 to 12 percent slopes-----	53,880	9.0
KRG	Keese-Rock outcrop complex, 12 to 35 percent slopes-----	12,257	2.1
KTG	Kerrville, Brackett, and Tarrant soils, 12 to 40 percent slopes, very rocky-----	10,763	1.8
KVE	Kerrville, Real, and Sunev soils, 1 to 12 percent slopes-----	1,932	0.3
LKD	Ligon-Katemcy-Keese complex, 1 to 8 percent slopes, very rocky-----	21,781	3.6
LND	Ligon-Keese complex, 1 to 8 percent slopes, rocky-----	13,391	2.2
LOC	Loneoak-Campair complex, 0 to 5 percent slopes-----	9,702	1.6
LRC	Lou-Click-Voca complex, 0 to 5 percent slopes, rocky-----	11,792	2.0
LuC	Luckenbach clay loam, 0 to 5 percent slopes-----	7,741	1.3
MPC	Menard-Pedernales complex, 0 to 5 percent slopes-----	13,760	2.3
MSC	Mereta-Cho-Sunev complex, 0 to 5 percent slopes, rocky-----	19,748	3.3
NRE	Nebgen-Rock outcrop complex, 1 to 12 percent slopes-----	17,701	3.0
NRG	Nebgen-Rock outcrop complex, 12 to 40 percent slopes-----	6,051	1.0
OaB	Oakalla clay loam, 0 to 2 percent slopes, occasionally flooded-----	6,096	1.0
PeC	Pedernales fine sandy loam, 0 to 5 percent slopes-----	4,435	0.7
RCC	Riverwash-Rock outcrop complex, 0 to 5 percent slopes, frequently flooded	4,475	0.7
RgG	Rock outcrop, granite, 1 to 25 percent slopes-----	1,158	0.2
RhE	Roughcreek very gravelly clay loam, 1 to 12 percent slopes, very rocky---	3,309	0.6
RkE	Roughcreek very cobbly clay, 1 to 12 percent slopes, very rocky-----	5,653	0.9
RRG	Roughcreek-Rock outcrop complex, 12 to 40 percent slopes-----	2,687	0.4
SuD	Sunev clay loam, 1 to 8 percent slopes-----	7,507	1.3
TRE	Tarrant-Rock outcrop complex, 1 to 12 percent slopes-----	28,389	4.8
TRG	Tarrant-Rock outcrop complex, 12 to 40 percent slopes-----	3,663	0.6
VeD	Venus clay loam, 0 to 8 percent slopes, rocky-----	2,453	0.4
VoC	Voca gravelly sandy loam, 0 to 5 percent slopes, rocky-----	19,520	3.3
W	Water-----	254	*
YNE	Yates-Nebgen-Rock outcrop complex, 1 to 12 percent slopes-----	28,067	4.7
YNG	Yates-Nebgen-Rock outcrop complex, 12 to 40 percent slopes-----	6,852	1.1
	Total-----	597,459	100.0

* Less than 0.1 percent.

Soil Survey of Mason County, Texas

Table 5.--Prime and Other Important Farmland

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

Map symbol	Map unit name	Farmland Classification
LuC	Luckenbach clay loam, 0 to 5 percent slopes	All areas are prime farmland
MPC	Menard-Pedernales complex, 0 to 5 percent slopes	All areas are prime farmland
PeC	Pedernales fine sandy loam, 0 to 5 percent slopes	All areas are prime farmland
VeD	Venus clay loam, 0 to 8 percent slopes, rocky	All areas are prime farmland
CAC	Campwood, Sunev, and Valera soils, 0 to 5 percent slopes	Prime farmland if irrigated
HkC	Honeycreek fine sandy loam, 0 to 5 percent slopes	Prime farmland if irrigated
HPC	Hye-Pontotoc complex, 0 to 5 percent slopes	Prime farmland if irrigated
KAC	Katemcy-Honeycreek complex, 0 to 5 percent slopes	Prime farmland if irrigated
SuD	Sunev clay loam, 1 to 8 percent slopes	Prime farmland if irrigated

Soil Survey of Mason County, Texas

Table 6.--Irrigated and Nonirrigated Yields by Map Unit

(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		Grain sorghum		Improved bermudagrass		Oats	
	N	I	N	I	N	I	N	I
			Bu	Bu	AUM	AUM	Bu	Bu
ACC:			---	---	6.00	---	---	---
Acove-----	3e	---						
Campair-----	4e	4e						
Loneoak-----	3e	3e						
AMC:			50.00	---	6.50	---	50.00	---
Acove-----	3e	---						
Menard-----	3e	3e						
CAC:			50.00	---	6.00	---	50.00	---
Campwood-----	3e	3e						
Sunev-----	3e	---						
Valera-----	3e	---						
CeC:			25.00	---	3.00	---	30.00	---
Castell-----	4e	---						
ERD:			---	---	---	---	---	---
Eckert-----	7s	---						
Rock outcrop-----	8s	---						
ERG:			---	---	---	---	---	---
Eckert-----	7s	---						
Rock outcrop-----	8s	---						
FRC:			---	---	6.00	---	50.00	---
Fieldcreek, occasionally flooded---	3e	---						
Fieldcreek, frequently flooded-----	5w	---						
Riverwash-----	8w	---						
HeD:			---	---	---	---	---	---
Hensley-----	6e	---						
HkC:			---	---	3.00	---	---	---
Honeycreek-----	3e	3e						
HND:			---	---	---	---	---	---
Hye-----	4e	---						
Nebgen-----	7s	---						
Oben-----	6e	---						
HOD:			45.00	---	6.00	---	---	---
Hye-----	4e	---						
Oben-----	6e	---						
Loneoak-----	3e	3e						
HPC:			40.00	---	5.00	---	---	---
Hye-----	3e	3e						
Pontotoc-----	4s	4s						
KAC:			25.00	---	2.50	---	---	---
Katemcy-----	3e	3e						
Honeycreek-----	4e	---						

Soil Survey of Mason County, Texas

Table 6.--Irrigated and Nonirrigated Yields by Map Unit--Continued

Map symbol and soil name	Land capability		Grain sorghum		Improved bermudagrass		Oats	
	N	I	N	I	N	I	N	I
			Bu	Bu	AUM	AUM	Bu	Bu
KeD:			---	---	---	---	---	---
Keese-----	7s	---						
KLE:			---	---	---	---	---	---
Keese-----	7s	---						
Lou-----	3e	---						
Rock outcrop-----	8s	---						
KRG:			---	---	---	---	---	---
Rock outcrop-----	8s	---						
Keese, 15 to 30 percent slopes-----	7s	---						
Keese, 12 to 15 percent slopes-----	7s	---						
KTG:			---	---	---	---	---	---
Kerrville-----	7e	---						
Brackett-----	7e	---						
Tarrant-----	7e	---						
KVE:			---	---	---	---	---	---
Kerrville-----	6e	---						
Real-----	6e	---						
Sunev-----	4e	---						
LKD:			---	---	2.00	---	---	---
Ligon-----	4e	---						
Katemcy-----	4e	---						
Keese-----	7s	---						
LND:			---	---	---	---	---	---
Ligon-----	4e	---						
Keese-----	7e	---						
LOC:			---	---	6.00	---	---	---
Loneoak-----	3e	3e						
Campair-----	4e	4e						
LRC:			---	---	---	---	---	---
Lou-----	3e	---						
Click-----	3e	---						
Voca-----	3s	---						
LuC:			54.00	---	5.00	---	50.00	---
Luckenbach-----	3e	3e						
MPC:			30.00	---	5.50	---	35.00	---
Menard-----	3e	3e						
Pedernales-----	3e	3e						
MSC:			---	---	---	---	---	---
Mereta-----	4s	---						
Cho-----	7s	---						
Sunev-----	3e	---						
NRE:			---	---	---	---	---	---
Nebgen-----	7s	---						
Rock outcrop-----	8s	---						

Soil Survey of Mason County, Texas

Table 6.--Irrigated and Nonirrigated Yields by Map Unit--Continued

Map symbol and soil name	Land capability		Grain sorghum		Improved bermudagrass		Oats	
	N	I	N	I	N	I	N	I
NRG:			Bu	Bu	AUM	AUM	Bu	Bu
Nebgen-----	7e	---	---	---	---	---	---	---
Rock outcrop-----	8s	---						
OaB:			35.00	---	4.00	---	40.00	---
Oakalla-----	3e	3e						
PeC:			40.00	---	4.00	---	60.00	---
Pedernales-----	3e	3e						
RCC:			---	---	---	---	---	---
Riverwash-----	8w	---						
Rock outcrop-----	8s	---						
RgG:			---	---	---	---	---	---
Rock outcrop-----	8s	---						
RhE:			---	---	---	---	---	---
Roughcreek-----	6e	---						
RkE:			---	---	---	---	---	---
Roughcreek-----	7s	---						
RRG:			---	---	---	---	---	---
Roughcreek, 15 to 40 percent slopes-----	7s	---						
Roughcreek, 12 to 15 percent slopes-----	7e	---						
Rock outcrop-----	8s	---						
SuD:			30.00	---	3.00	---	---	---
Sunev-----	4e	---						
TRE:			---	---	---	---	---	---
Tarrant-----	7s	---						
Rock outcrop-----	8s	---						
TRG:			---	---	---	---	---	---
Tarrant, 15 to 40 percent slopes-----	7s	---						
Tarrant, 12 to 15 percent slopes-----	7e	---						
Rock outcrop-----	8s	---						
VeD:			70.00	---	7.00	---	60.00	---
Venus, 0 to 3 percent slopes-----	2e	2e						
Venus, 3 to 8 percent slopes-----	4e	---						
VoC:			25.00	---	3.00	---	---	---
Voca-----	3e	---						
W:			---	---	---	---	---	---
Water-----	---	---						
YNE:			---	---	---	---	---	---
Yates-----	7s	---						
Nebgen-----	7s	---						
Rock outcrop-----	8s	---						

Soil Survey of Mason County, Texas

Table 6.--Irrigated and Nonirrigated Yields by Map Unit--Continued

Map symbol and soil name	Land capability		Grain sorghum		Improved bermudagrass		Oats	
	N	I	N	I	N	I	N	I
YNG:			Bu	Bu	AUM	AUM	Bu	Bu
Yates-----	7e	---	---	---	---	---	---	---
Nebgen-----	7s	---						
Rock outcrop-----	8s	---						

Soil Survey of Mason County, Texas

Table 7.--Rangeland Productivity

(Only the soils that support rangeland vegetation suitable for grazing are rated.)

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
ACC:				
Acove-----	Sandy Loam 25-32" PZ	3,200	2,600	1,800
Campair-----	Loamy Sand 25-32" PZ	3,200	2,800	1,800
Loneoak-----	Sandy 25-32" PZ	4,000	3,000	1,500
AMC:				
Acove-----	Sandy Loam 25-32" PZ	3,200	2,600	1,800
Menard-----	Sandy Loam 25-32" PZ	3,500	2,800	2,200
CAC:				
Campwood-----	Clay Loam 23-31" PZ	6,000	4,500	3,000
Sunev-----	Clay Loam 23-31" PZ	7,000	5,500	3,500
Valera-----	Clay Loam 23-31" PZ	4,500	3,000	2,000
CeC:				
Castell-----	Sandy Loam 25-32" PZ	3,200	2,600	1,800
ERD:				
Eckert-----	Stony Loam 23-31" PZ	1,200	900	500
ERG:				
Eckert-----	Stony Loam 23-31" PZ	1,200	900	500
FRC:				
Fieldcreek, occasionally flooded--	Loamy Bottomland 25-32" PZ	5,500	4,500	3,000
Fieldcreek, frequently flooded----	Loamy Bottomland 25-32" PZ	5,500	4,500	3,000
HeD:				
Hensley-----	Redland 23-31" PZ	4,500	3,500	2,500
HkC:				
Honeycreek-----	Sandy Loam 25-32" PZ	3,300	2,700	1,800
HND:				
Hye-----	Red Sandy Loam 25-32" PZ	4,000	3,500	2,000
Nebgen-----	Sandstone Hill 25-32" PZ	3,500	3,000	1,700
Oben-----	Red Sandy Loam 25-32" PZ	3,500	3,000	1,800
HOD:				
Hye-----	Red Sandy Loam 25-32" PZ	4,000	3,500	2,000
Oben-----	Red Sandy Loam 25-32" PZ	3,500	3,000	1,800
Loneoak-----	Sandy 25-32" PZ	4,000	3,000	1,500
HPC:				
Hye-----	Red Sandy Loam 25-32" PZ	4,000	3,500	2,000
Pontotoc-----	Red Sandy Loam 25-32" PZ	4,000	3,500	2,000
KAC:				
Katemcy-----	Red Savannah 25-32" PZ	3,500	2,800	1,500
Honeycreek-----	Sandy Loam 25-32" PZ	3,300	2,700	1,800
KeD:				
Keese-----	Shallow Granite 25-32" PZ	2,500	1,700	1,200
KLE:				
Keese-----	Shallow Granite 25-32" PZ	2,500	1,700	1,200
Lou-----	Granite Grave1 25-32" PZ	2,000	1,800	1,200

Soil Survey of Mason County, Texas

Table 7.--Rangeland Productivity--Continued

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
KRG:				
Keese, 15 to 35 percent slopes----	Granite Hill 25-32" PZ	1,500	1,300	1,000
Keese, 12 to 15 percent slopes----	Granite Hill 25-32" PZ	1,500	1,300	1,000
KTG:				
Kerrville-----	Steep Adobe 23-31" PZ	3,500	2,800	1,500
Brackett-----	Steep Adobe 23-31" PZ	3,000	2,200	1,500
Tarrant-----	Steep Rocky 23-31" PZ	1,800	1,400	800
KVE:				
Kerrville-----	Adobe 23-31" PZ	3,500	2,800	1,500
Real-----	Adobe 23-31" PZ	3,000	2,100	1,200
Sunev-----	Clay Loam 23-31" PZ	7,000	5,500	3,500
LKD:				
Ligon-----	Red Savannah 25-32" PZ	3,400	2,700	1,000
Katemcy-----	Red Savannah 25-32" PZ	3,500	2,800	1,500
Keese-----	Shallow Granite 25-32" PZ	2,500	1,700	1,200
LND:				
Ligon-----	Shallow Ridge 25-32" PZ	3,400	2,700	1,000
Keese-----	Shallow Granite 25-32" PZ	2,500	1,700	1,200
LOC:				
Loneoak-----	Sandy 25-32" PZ	4,000	3,000	1,500
Campair-----	Loamy Sand 25-32" PZ	3,200	2,800	1,800
LRC:				
Lou-----	Granite Gravel 25-32" PZ	2,000	1,800	1,200
Click-----	Granite Gravel 25-32" PZ	2,000	1,750	1,200
Voca-----	Gravelly Sandy Loam 25-32" PZ	3,000	2,000	1,500
LuC:				
Luckenbach-----	Clay Loam 23-31" PZ	5,000	4,000	3,000
MPC:				
Menard-----	Sandy Loam 25-32" PZ	3,500	2,800	2,200
Pedernales-----	Tight Sandy Loam 25-32" PZ	3,500	3,000	1,500
MSC:				
Mereta-----	Shallow 23-31" PZ	3,500	2,800	1,800
Cho-----	Very Shallow 23-31" PZ	2,500	2,000	1,000
Sunev-----	Clay Loam 23-31" PZ	7,000	5,500	3,500
NRE:				
Nebgen-----	Sandstone Hill 25-32" PZ	3,500	3,000	1,700
NRG:				
Nebgen-----	Sandstone Hill 25-32" PZ	3,500	3,000	1,700
OaB:				
Oakalla-----	Loamy Bottomland 23-31" PZ	7,000	5,500	3,500
PeC:				
Pedernales-----	Tight Sandy Loam 25-32" PZ	3,500	3,000	1,500
RhE:				
Roughcreek-----	Low Stony Hill 23-31" PZ	3,500	2,700	2,000

Soil Survey of Mason County, Texas

Table 7.--Rangeland Productivity--Continued

Map symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Normal year	Unfavorable year
		Lb/acre	Lb/acre	Lb/acre
RkE: Roughcreek-----	Low Stony Hill 23-31" PZ	3,000	2,500	1,500
RRG: Roughcreek, 15 to 40 percent slopes-----	Steep Rocky 23-31" PZ	1,800	1,400	800
Roughcreek, 12 to 15 percent slopes-----	Low Stony Hill 23-31" PZ	3,000	2,500	1,500
SuD: Sunev-----	Clay Loam 23-31" PZ	7,000	5,500	3,500
TRE: Tarrant-----	Low Stony Hill 23-31" PZ	2,500	1,800	1,200
TRG: Tarrant, 15 to 40 percent slopes--	Steep Rocky 23-31" PZ	1,800	1,400	800
Tarrant, 12 to 15 percent slopes--	Low Stony Hill 23-31" PZ	2,500	1,800	1,200
VeD: Venus, 0 to 3 percent slopes-----	Clay Loam 23-31" PZ	6,500	5,000	3,000
Venus, 3 to 8 percent slopes-----	Clay Loam 23-31" PZ	6,500	5,000	3,000
VoC: Voca-----	Gravelly Sandy Loam 25-32" PZ	3,000	2,000	1,500
YNE: Yates-----	Very Shallow 23-31" PZ	2,000	1,500	1,000
Nebgen-----	Sandstone Hill 25-32" PZ	3,500	3,000	1,700
YNG: Yates-----	Very Shallow 23-31" PZ	2,000	1,500	1,000
Nebgen-----	Sandstone Hill 25-32" PZ	3,500	3,000	1,700

Soil Survey of Mason County, Texas

Table 8.--Grain and Seed Crops, Domestic Grasses and Legumes, and Irrigated Grain and Seed Crops for Wildlife Habitat

(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	Grain and Seed Crops for Food and Cover		Domestic Grasses and Legumes for Food and Cover		Irrigated Grain and Seed Crops for Food and Cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ACC: Acove-----	42	Very limited Potentially or highly erodible HEL wind Droughty Bedrock	1.00 1.00 0.75 0.08	Very limited Potentially or highly erodible Bedrock	1.00 0.08	Very limited Potentially or highly erodible HEL wind Droughty Bedrock	1.00 1.00 0.75 0.08
Campair-----	19	Very limited Potentially or highly erodible HEL wind Droughty Bedrock Too sandy	1.00 1.00 1.00 0.65 0.50	Very limited Potentially or highly erodible Bedrock Too sandy Droughty	1.00 0.65 0.50 0.02	Very limited Potentially or highly erodible HEL wind Droughty Bedrock	1.00 1.00 1.00 0.65
Loneoak-----	18	Very limited Potentially or highly erodible HEL wind Droughty Too sandy	1.00 1.00 1.00 0.91 0.50	Very limited Potentially or highly erodible Too sandy	1.00 0.50	Very limited Potentially or highly erodible HEL wind Droughty Too sandy	1.00 1.00 0.91 0.50
AMC: Acove-----	56	Somewhat limited Droughty Bedrock	0.75 0.08	Somewhat limited Bedrock	0.08	Somewhat limited Droughty Bedrock	0.75 0.08
Menard-----	30	Not limited		Not limited		Not limited	
CAC: Campwood-----	34	Very limited Too clayey Droughty Percs slowly	1.00 0.08 0.17	Very limited Too clayey Percs slowly	1.00 0.17	Very limited Too clayey Droughty Percs slowly	1.00 0.08 0.17
Sunev-----	33	Somewhat limited Droughty	0.08	Not limited		Somewhat limited Droughty	0.08
Valera-----	15	Very limited Droughty Cemented pan Bedrock Too clayey	1.00 0.96 0.54 0.11	Somewhat limited Cemented pan Droughty Bedrock Too clayey	0.96 0.28 0.54 0.11	Very limited Droughty Cemented pan Bedrock Too clayey	1.00 0.96 0.54 0.11
CeC: Castell-----	85	Very limited Potentially or highly erodible Droughty Percs slowly Bedrock	1.00 1.00 0.33 0.46	Very limited Potentially or highly erodible Percs slowly Bedrock	1.00 0.33 0.46	Very limited Potentially or highly erodible Droughty Percs slowly Bedrock	1.00 1.00 0.33 0.46

Soil Survey of Mason County, Texas

Table 8.--Grain and Seed Crops, Domestic Grasses and Legumes, and Irrigated Grain and Seed Crops for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Grain and Seed Crops for Food and Cover		Domestic Grasses and Legumes for Food and Cover		Irrigated Grain and Seed Crops for Food and Cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ERD: Eckert-----	64	Very limited Droughty Bedrock Potentially or highly erodible HEL wind Too gravelly, cobbly, or stony	 1.00 1.00 1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	 1.00 1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible HEL wind Too gravelly, cobbly, or stony	 1.00 1.00 1.00 1.00 1.00
Rock outcrop-----	25	Not rated		Not rated		Not rated	
ERG: Eckert-----	63	Very limited Droughty Bedrock Potentially or highly erodible HEL wind Too gravelly, cobbly, or stony	 1.00 1.00 1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	 1.00 1.00 1.00 1.00	Very limited Droughty Bedrock Slope Potentially or highly erodible HEL wind	 1.00 1.00 1.00 1.00 1.00
Rock outcrop-----	33	Not rated		Not rated		Not rated	
FRC: Fieldcreek, occasionally flooded-----	52	Somewhat limited Droughty Flooding	 0.32 0.50	Somewhat limited Flooding	 0.50	Somewhat limited Droughty Flooding	 0.32 0.50
Fieldcreek, frequently flooded-	23	Somewhat limited Droughty Flooding	 0.32 0.50	Somewhat limited Flooding	 0.50	Very limited Flooding Droughty	 1.00 0.32
Riverwash-----	15	Not rated		Not rated		Not rated	
HeD: Hensley-----	68	Very limited Droughty Bedrock Potentially or highly erodible HEL wind Too gravelly, cobbly, or stony	 1.00 1.00 1.00 1.00 1.00	Very limited Bedrock Potentially or highly erodible Droughty Too gravelly, cobbly, or stony Percs slowly	 1.00 1.00 1.00 1.00 0.33	Very limited Droughty Bedrock Potentially or highly erodible HEL wind Too gravelly, cobbly, or stony	 1.00 1.00 1.00 1.00 1.00
HkC: Honeycreek-----	71	Somewhat limited Droughty	 0.14	Not limited		Somewhat limited Droughty	 0.14

Soil Survey of Mason County, Texas

Table 8.--Grain and Seed Crops, Domestic Grasses and Legumes, and Irrigated Grain and Seed Crops for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Grain and Seed Crops for Food and Cover		Domestic Grasses and Legumes for Food and Cover		Irrigated Grain and Seed Crops for Food and Cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HND: Hye-----	41	Very limited Potentially or highly erodible HEL wind Droughty Bedrock	1.00 1.00 0.23 0.05	Very limited Potentially or highly erodible Bedrock	1.00 0.05	Very limited Potentially or highly erodible HEL wind Droughty Bedrock	1.00 1.00 0.23 0.05
Nebgen-----	30	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible	1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00
Oben-----	15	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00	Very limited Bedrock Potentially or highly erodible Droughty	1.00 1.00 0.90	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00
HOD: Hye-----	43	Very limited Potentially or highly erodible HEL wind Droughty Bedrock	1.00 1.00 0.23 0.05	Very limited Potentially or highly erodible Bedrock	1.00 0.05	Very limited Potentially or highly erodible HEL wind Droughty Bedrock	1.00 1.00 0.23 0.05
Oben-----	19	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00	Very limited Bedrock Potentially or highly erodible Droughty	1.00 1.00 0.90	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00
Loneoak-----	18	Very limited Potentially or highly erodible HEL wind Droughty Too sandy	1.00 1.00 0.91 0.50	Very limited Potentially or highly erodible Too sandy	1.00 0.50	Very limited Potentially or highly erodible HEL wind Droughty Too sandy	1.00 1.00 0.91 0.50
HPC: Hye-----	48	Somewhat limited Droughty Bedrock	0.23 0.05	Somewhat limited Bedrock	0.05	Somewhat limited Droughty Bedrock	0.23 0.05
Pontotoc-----	34	Somewhat limited Droughty	0.23	Not limited		Somewhat limited Droughty	0.23

Soil Survey of Mason County, Texas

Table 8.--Grain and Seed Crops, Domestic Grasses and Legumes, and Irrigated Grain and Seed Crops for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Grain and Seed Crops for Food and Cover		Domestic Grasses and Legumes for Food and Cover		Irrigated Grain and Seed Crops for Food and Cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KAC:							
Katemcy-----	60	Very limited Potentially or highly erodible Droughty Percs slowly Bedrock	1.00 0.64 0.33 0.01	Very limited Potentially or highly erodible Percs slowly Bedrock	1.00 0.33 0.01	Very limited Potentially or highly erodible Droughty Percs slowly Bedrock	1.00 0.64 0.33 0.01
Honeycreek-----	15	Very limited Potentially or highly erodible Droughty	1.00 0.14	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible Droughty	1.00 0.14
KeD:							
Keese-----	73	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible	1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00
KLE:							
Keese-----	45	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible	1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00
Lou-----	23	Very limited Potentially or highly erodible HEL wind Droughty	1.00 1.00 0.78	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible HEL wind Droughty	1.00 1.00 0.78
Rock outcrop-----	16	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 8.--Grain and Seed Crops, Domestic Grasses and Legumes, and Irrigated Grain and Seed Crops for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Grain and Seed Crops for Food and Cover		Domestic Grasses and Legumes for Food and Cover		Irrigated Grain and Seed Crops for Food and Cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KRG: Rock outcrop-----	36	Not rated		Not rated		Not rated	
Keese, 15 to 30 percent slopes-----	25	Very limited Droughty Bedrock Potentially or highly erodible HEL wind Slope	1.00 1.00 1.00 1.00 0.14	Very limited Droughty Bedrock Potentially or highly erodible Slope Too gravelly, cobbly, or stony	1.00 1.00 1.00 0.14 0.02	Very limited Droughty Bedrock Slope Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00 1.00
Keese, 12 to 15 percent slopes-----	13	Very limited Droughty Bedrock Potentially or highly erodible HEL wind Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 0.02	Very limited Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 0.02	Very limited Droughty Bedrock Slope Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00 1.00
KTG: Kerrville-----	33	Very limited Droughty Potentially or highly erodible Too gravelly, cobbly, or stony Slope Bedrock	1.00 1.00 1.00 0.99 0.82	Very limited Potentially or highly erodible Droughty Too gravelly, cobbly, or stony Slope Bedrock	1.00 1.00 1.00 0.99 0.82	Very limited Droughty Slope Potentially or highly erodible Too gravelly, cobbly, or stony Bedrock	1.00 1.00 1.00 1.00 0.82
Brackett-----	21	Very limited Droughty Bedrock Potentially or highly erodible Slope	1.00 1.00 1.00 0.22	Very limited Droughty Bedrock Potentially or highly erodible Slope	1.00 1.00 1.00 0.22	Very limited Droughty Bedrock Slope Potentially or highly erodible	1.00 1.00 1.00 1.00
Tarrant-----	17	Very limited Too clayey Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Slope Potentially or highly erodible	1.00 1.00 1.00 1.00 1.00

Soil Survey of Mason County, Texas

Table 8.--Grain and Seed Crops, Domestic Grasses and Legumes, and Irrigated Grain and Seed Crops for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Grain and Seed Crops for Food and Cover		Domestic Grasses and Legumes for Food and Cover		Irrigated Grain and Seed Crops for Food and Cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KVE: Kerrville-----	28	Very limited Droughty	1.00	Very limited Potentially or highly erodible	1.00	Very limited Droughty	1.00
		Potentially or highly erodible	1.00	Droughty	1.00	Potentially or highly erodible	1.00
		Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00
		Bedrock	0.82	Bedrock	0.82	Slope Bedrock	0.03 0.82
Real-----	25	Very limited Droughty	1.00	Very limited Droughty	1.00	Very limited Droughty	1.00
		Bedrock	1.00	Bedrock	1.00	Bedrock	1.00
		Potentially or highly erodible	1.00	Potentially or highly erodible	1.00	Potentially or highly erodible	1.00
		Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00	Too gravelly, cobbly, or stony	1.00
Sunev-----	21	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible	1.00
		Droughty	0.08	Droughty		Droughty	0.08
LKD: Ligon-----	42	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible	1.00
		Droughty	0.87	Percs slowly	0.33	Droughty	0.87
		Percs slowly	0.33	Too clayey	0.57	Percs slowly	0.33
		Too clayey	0.57	Bedrock	0.35	Too clayey	0.57
		Bedrock	0.35			Bedrock	0.35
Katemcy-----	29	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible	1.00
		Droughty	0.64	Percs slowly	0.33	Droughty	0.64
		Percs slowly	0.33	Bedrock	0.01	Percs slowly	0.33
		Bedrock	0.01			Bedrock	0.01
Keese-----	15	Very limited Droughty	1.00	Very limited Droughty	1.00	Very limited Droughty	1.00
		Bedrock	1.00	Bedrock	1.00	Bedrock	1.00
		Potentially or highly erodible	1.00	Potentially or highly erodible	1.00	Potentially or highly erodible	1.00
LND: Ligon-----	67	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible	1.00
		Droughty	0.87	Percs slowly	0.33	Droughty	0.87
		Percs slowly	0.33	Too clayey	0.57	Percs slowly	0.33
		Too clayey	0.57	Bedrock	0.35	Too clayey	0.57
		Bedrock	0.35			Bedrock	0.35
Keese-----	22	Very limited Droughty	1.00	Very limited Droughty	1.00	Very limited Droughty	1.00
		Bedrock	1.00	Bedrock	1.00	Bedrock	1.00
		Potentially or highly erodible	1.00	Potentially or highly erodible	1.00	Potentially or highly erodible	1.00

Soil Survey of Mason County, Texas

Table 8.--Grain and Seed Crops, Domestic Grasses and Legumes, and Irrigated Grain and Seed Crops for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Grain and Seed Crops for Food and Cover		Domestic Grasses and Legumes for Food and Cover		Irrigated Grain and Seed Crops for Food and Cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LOC:							
Loneoak-----	51	Very limited HEL wind Droughty Too sandy	1.00 0.91 0.50	Somewhat limited Too sandy	0.50	Very limited HEL wind Droughty Too sandy	1.00 0.91 0.50
Campair-----	37	Very limited HEL wind Droughty Bedrock Too sandy	1.00 1.00 0.65 0.50	Somewhat limited Bedrock Too sandy Droughty	0.65 0.50 0.02	Very limited HEL wind Droughty Bedrock	1.00 1.00 0.65
LRC:							
Lou-----	32	Very limited Potentially or highly erodible Droughty	1.00 0.78	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible Droughty	1.00 0.78
Click-----	29	Very limited Droughty Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00	Very limited Potentially or highly erodible Too gravelly, cobbly, or stony Droughty	1.00 1.00 0.81	Very limited Droughty Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00
Voca-----	23	Very limited Potentially or highly erodible Droughty Percs slowly	1.00 0.95 0.33	Very limited Potentially or highly erodible Percs slowly	1.00 0.33	Very limited Potentially or highly erodible Droughty Percs slowly	1.00 0.95 0.33
LuC:							
Luckenbach-----	76	Somewhat limited Too clayey	0.19	Somewhat limited Too clayey	0.19	Somewhat limited Too clayey	0.19
MPC:							
Menard-----	47	Not limited		Not limited		Not limited	
Pedernales-----	23	Not limited		Not limited		Not limited	

Soil Survey of Mason County, Texas

Table 8.--Grain and Seed Crops, Domestic Grasses and Legumes, and Irrigated Grain and Seed Crops for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Grain and Seed Crops for Food and Cover		Domestic Grasses and Legumes for Food and Cover		Irrigated Grain and Seed Crops for Food and Cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MSC:							
Mereta-----	35	Very limited Droughty Cemented pan	1.00 1.00	Very limited Cemented pan Potentially or highly erodible Droughty	1.00 1.00 0.76	Very limited Droughty Cemented pan	1.00 1.00
		Potentially or highly erodible HEL wind Too clayey	1.00 1.00 0.76	Too clayey	0.76	Potentially or highly erodible HEL wind Too clayey	1.00 1.00 0.76
Cho-----	26	Very limited Droughty Cemented pan Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00	Very limited Droughty Cemented pan Potentially or highly erodible	1.00 1.00 1.00	Very limited Droughty Cemented pan Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00
Sunev-----	17	Very limited Potentially or highly erodible HEL wind Droughty	1.00 1.00 0.08	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible HEL wind Droughty	1.00 1.00 0.08
NRE:							
Nebgen-----	53	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible	1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00
Rock outcrop-----	17	Not rated		Not rated		Not rated	
NRG:							
Nebgen-----	56	Very limited Droughty Bedrock Potentially or highly erodible HEL wind Slope	1.00 1.00 1.00 1.00 0.44	Very limited Droughty Bedrock Potentially or highly erodible Slope	1.00 1.00 1.00 0.44	Very limited Droughty Bedrock Slope Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00 1.00
Rock outcrop-----	34	Not rated		Not rated		Not rated	
OaB:							
Oakalla-----	70	Somewhat limited Flooding	0.50	Somewhat limited Flooding	0.50	Somewhat limited Flooding	0.50
PeC:							
Pedernales-----	75	Not limited		Not limited		Not limited	
RCC:							
Riverwash-----	55	Not rated		Not rated		Not rated	
Rock outcrop-----	20	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 8.--Grain and Seed Crops, Domestic Grasses and Legumes, and Irrigated Grain and Seed Crops for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Grain and Seed Crops for Food and Cover		Domestic Grasses and Legumes for Food and Cover		Irrigated Grain and Seed Crops for Food and Cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RgG: Rock outcrop-----	95	Not rated		Not rated		Not rated	
RhE: Roughcreek-----	72	Very limited Droughty Bedrock	1.00 1.00	Very limited Bedrock Potentially or highly erodible	1.00 1.00	Very limited Droughty Bedrock	1.00 1.00
		Potentially or highly erodible Too gravelly, cobbly, or stony Too clayey	1.00 1.00 0.70	Too gravelly, cobbly, or stony Droughty Too clayey	1.00 0.89 0.70	Potentially or highly erodible Too gravelly, cobbly, or stony Too clayey	1.00 1.00 0.70
RkE: Roughcreek-----	84	Very limited Too clayey Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 1.00
RRG: Roughcreek, 15 to 40 percent slopes--	40	Very limited Too clayey Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Slope Potentially or highly erodible	1.00 1.00 1.00 1.00 1.00
Roughcreek, 12 to 15 percent slopes--	20	Very limited Too clayey Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Slope Potentially or highly erodible	1.00 1.00 1.00 1.00 1.00
Rock outcrop-----	35	Not rated		Not rated		Not rated	
SuD: Sunev-----	70	Very limited Potentially or highly erodible Droughty	1.00 0.08	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible Droughty	1.00 0.08

Soil Survey of Mason County, Texas

Table 8.--Grain and Seed Crops, Domestic Grasses and Legumes, and Irrigated Grain and Seed Crops for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Grain and Seed Crops for Food and Cover		Domestic Grasses and Legumes for Food and Cover		Irrigated Grain and Seed Crops for Food and Cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
TRE:							
Tarrant-----	67	Very limited Too clayey Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 1.00
Rock outcrop-----	14	Not rated		Not rated		Not rated	
TRG:							
Tarrant, 15 to 40 percent slopes-----	48	Very limited Too clayey Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Slope Potentially or highly erodible	1.00 1.00 1.00 1.00 1.00
Tarrant, 12 to 15 percent slopes-----	14	Very limited Too clayey Droughty Bedrock Potentially or highly erodible HEL wind	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 1.00	Very limited Too clayey Droughty Bedrock Slope Potentially or highly erodible	1.00 1.00 1.00 1.00 1.00
Rock outcrop-----	27	Not rated		Not rated		Not rated	
VeD:							
Venus, 0 to 3 percent slopes-----	44	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible	1.00
Venus, 3 to 8 percent slopes-----	27	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible	1.00	Very limited Potentially or highly erodible Slope	1.00 0.03
VoC:							
Voca-----	77	Somewhat limited Droughty Percs slowly	0.95 0.33	Somewhat limited Percs slowly	0.33	Somewhat limited Droughty Percs slowly	0.95 0.33
W:							
Water-----	100	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 8.--Grain and Seed Crops, Domestic Grasses and Legumes, and Irrigated Grain and Seed Crops for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Grain and Seed Crops for Food and Cover		Domestic Grasses and Legumes for Food and Cover		Irrigated Grain and Seed Crops for Food and Cover	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
YNE: Yates-----	60	Very limited Droughty Bedrock Potentially or highly erodible HEL wind Too gravelly, cobbly, or stony	 1.00 1.00 1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony	 1.00 1.00 1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible HEL wind Too gravelly, cobbly, or stony	 1.00 1.00 1.00 1.00 1.00
Nebgen-----	20	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	 1.00 1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible	 1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible HEL wind	 1.00 1.00 1.00 1.00
Rock outcrop-----	15	Not rated		Not rated		Not rated	
YNG: Yates-----	50	Very limited Droughty Bedrock Potentially or highly erodible HEL wind Too gravelly, cobbly, or stony	 1.00 1.00 1.00 1.00 1.00	Very limited Droughty Bedrock Potentially or highly erodible Too gravelly, cobbly, or stony Slope	 1.00 1.00 1.00 1.00 0.08	Very limited Droughty Bedrock Slope Potentially or highly erodible HEL wind	 1.00 1.00 1.00 1.00 1.00
Nebgen-----	25	Very limited Droughty Bedrock Potentially or highly erodible HEL wind Slope	 1.00 1.00 1.00 1.00 0.22	Very limited Droughty Bedrock Potentially or highly erodible Slope	 1.00 1.00 1.00 0.22	Very limited Droughty Bedrock Slope Potentially or highly erodible HEL wind	 1.00 1.00 1.00 1.00 1.00
Rock outcrop-----	20	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 9.--Irrigated Domestic Grasses and Legumes, and Habitat for Burrowing Mammals and Reptiles

(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	Irrigated Domestic Grasses and Legumes for Food and Cover		Habitat for Burrowing Mammals and Reptiles	
		Rating class and limiting features	Value	Rating class and limiting features	Value
ACC:					
Acove-----	42	Very limited Potentially or highly erodible Bedrock	1.00 0.08	Very limited Too clayey	1.00
Campair-----	19	Very limited Potentially or highly erodible Bedrock Droughty	1.00 0.65 0.02	Somewhat limited Too clayey	0.19
Loneoak-----	18	Very limited Potentially or highly erodible Too sandy	1.00 0.50	Not limited	
AMC:					
Acove-----	56	Somewhat limited Bedrock	0.08	Very limited Too clayey	1.00
Menard-----	30	Not limited		Not limited	
CAC:					
Campwood-----	34	Very limited Too clayey Percs slowly	1.00 0.17	Very limited Too clayey	1.00
Sunev-----	33	Not limited		Somewhat limited Too clayey	0.11
Valera-----	15	Somewhat limited Cemented pan Droughty Bedrock Too clayey	0.96 0.28 0.54 0.11	Somewhat limited Too clayey	0.11
CeC:					
Castell-----	85	Very limited Potentially or highly erodible Percs slowly Bedrock	1.00 0.33 0.46	Very limited Too clayey	1.00

Soil Survey of Mason County, Texas

Table 9.--Irrigated Domestic Grasses and Legumes, and Habitat for Burrowing Mammals and Reptiles--Continued

Map symbol and soil name	Pct. of map unit	Irrigated Domestic Grasses and Legumes for Food and Cover		Habitat for Burrowing Mammals and Reptiles	
		Rating class and limiting features	Value	Rating class and limiting features	Value
ERD: Eckert-----	64	Very limited Droughty	1.00	Very limited Content of large stones	1.00
		Bedrock	1.00	10-20" to Bedrock (Hard or Soft)	0.92
		Potentially or highly erodible	1.00		
		Too gravelly, cobbly, or stony	1.00		
Rock outcrop-----	25	Not rated		Not rated	
ERG: Eckert-----	63	Very limited Droughty	1.00	Very limited < 10" to Bedrock (Hard or Soft)	1.00
		Bedrock	1.00	Content of large stones	1.00
		Slope	1.00		
		Potentially or highly erodible	1.00		
		Too gravelly, cobbly, or stony	1.00		
Rock outcrop-----	33	Not rated		Not rated	
FRC: Fieldcreek, occasionally flooded-----	52	Somewhat limited Flooding	0.50	Very limited Flooding	1.00
Fieldcreek, frequently flooded-	23	Very limited Flooding	1.00	Very limited Flooding	1.00
Riverwash-----	15	Not rated		Very limited Flooding	1.00
				Content of large stones	0.68
				Too gravelly	0.27
HeD: Hensley-----	68	Very limited Bedrock	1.00	Very limited Too clayey	1.00
		Potentially or highly erodible	1.00	10-20" to Bedrock (Hard or Soft)	0.61
		Droughty	1.00		
		Too gravelly, cobbly, or stony	1.00		
		Percs slowly	0.33		

Soil Survey of Mason County, Texas

Table 9.--Irrigated Domestic Grasses and Legumes, and Habitat for Burrowing Mammals and Reptiles--Continued

Map symbol and soil name	Pct. of map unit	Irrigated Domestic Grasses and Legumes for Food and Cover		Habitat for Burrowing Mammals and Reptiles	
		Rating class and limiting features	Value	Rating class and limiting features	Value
HkC: Honeycreek-----	71	Not limited		Not limited	
HND: Hye-----	41	Very limited Potentially or highly erodible Bedrock	1.00 0.05	Not limited	
Nebgen-----	30	Very limited Droughty Bedrock Potentially or highly erodible	1.00 1.00 1.00	Somewhat limited 10-20" to Bedrock (Hard or Soft)	0.97
Oben-----	15	Very limited Bedrock Potentially or highly erodible Droughty	1.00 1.00 0.90	Somewhat limited 10-20" to Bedrock (Hard or Soft)	0.01
HOD: Hye-----	43	Very limited Potentially or highly erodible Bedrock	1.00 0.05	Not limited	
Oben-----	19	Very limited Bedrock Potentially or highly erodible Droughty	1.00 1.00 0.90	Somewhat limited 10-20" to Bedrock (Hard or Soft)	0.01
Loneoak-----	18	Very limited Potentially or highly erodible Too sandy	1.00 0.50	Not limited	
HPC: Hye-----	48	Somewhat limited Bedrock	0.05	Not limited	
Pontotoc-----	34	Not limited		Not limited	

Soil Survey of Mason County, Texas

Table 9.--Irrigated Domestic Grasses and Legumes, and Habitat for Burrowing Mammals and Reptiles--Continued

Map symbol and soil name	Pct. of map unit	Irrigated Domestic Grasses and Legumes for Food and Cover		Habitat for Burrowing Mammals and Reptiles	
		Rating class and limiting features	Value	Rating class and limiting features	Value
KAC: Katemcy-----	60	Very limited Potentially or highly erodible Percs slowly Bedrock	1.00 0.33 0.01	Somewhat limited Too clayey	0.36
Honeycreek-----	15	Very limited Potentially or highly erodible	1.00	Not limited	
KeD: Keese-----	73	Very limited Droughty Bedrock Potentially or highly erodible	1.00 1.00 1.00	Somewhat limited 10-20" to Bedrock (Hard or Soft)	0.61
KLE: Keese-----	45	Very limited Droughty Bedrock Potentially or highly erodible	1.00 1.00 1.00	Somewhat limited 10-20" to Bedrock (Hard or Soft)	0.61
Lou-----	23	Very limited Potentially or highly erodible	1.00	Not limited	
Rock outcrop-----	16	Not rated		Not rated	
KRG: Rock outcrop-----	36	Not rated		Not rated	
Keese, 15 to 30 percent slopes-----	25	Very limited Droughty Bedrock Slope Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 0.02	Very limited < 10" to Bedrock (Hard or Soft)	1.00
Keese, 12 to 15 percent slopes-----	13	Very limited Droughty Bedrock Slope Potentially or highly erodible Too gravelly, cobbly, or stony	1.00 1.00 1.00 1.00 0.02	Very limited < 10" to Bedrock (Hard or Soft)	1.00

Soil Survey of Mason County, Texas

Table 9.--Irrigated Domestic Grasses and Legumes, and Habitat for Burrowing Mammals and Reptiles--Continued

Map symbol and soil name	Pct. of map unit	Irrigated Domestic Grasses and Legumes for Food and Cover		Habitat for Burrowing Mammals and Reptiles	
		Rating class and limiting features	Value	Rating class and limiting features	Value
KTG: Kerrville-----	33	Very limited Slope	1.00	Very limited Content of large stones	1.00
		Potentially or highly erodible	1.00		
		Droughty	1.00		
		Too gravelly, cobbly, or stony	1.00		
		Bedrock	0.82		
Brackett-----	21	Very limited Droughty	1.00	Somewhat limited 10-20" to Bedrock (Hard or Soft)	0.84
		Bedrock	1.00		
		Slope	1.00		
		Potentially or highly erodible	1.00		
Tarrant-----	17	Very limited Too clayey	1.00	Very limited Too clayey	1.00
		Droughty	1.00		
		Bedrock	1.00		
		Slope	1.00		
		Potentially or highly erodible	1.00		
KVE: Kerrville-----	28	Very limited Potentially or highly erodible	1.00	Very limited Content of large stones	1.00
		Droughty	1.00		
		Too gravelly, cobbly, or stony	1.00		
		Slope	0.03		
		Bedrock	0.82		
Real-----	25	Very limited Droughty	1.00	Somewhat limited Content of large stones	0.78
		Bedrock	1.00		
		Potentially or highly erodible	1.00		
		Too gravelly, cobbly, or stony	1.00		
Sunev-----	21	Very limited Potentially or highly erodible	1.00	Somewhat limited Too clayey	0.11

Soil Survey of Mason County, Texas

Table 9.--Irrigated Domestic Grasses and Legumes, and Habitat for Burrowing Mammals and Reptiles--Continued

Map symbol and soil name	Pct. of map unit	Irrigated Domestic Grasses and Legumes for Food and Cover		Habitat for Burrowing Mammals and Reptiles	
		Rating class and limiting features	Value	Rating class and limiting features	Value
LKD: Ligon-----	42	Very limited Potentially or highly erodible Percs slowly Too clayey Bedrock	1.00 0.33 0.57 0.35	Very limited Too clayey	1.00
Katemcy-----	29	Very limited Potentially or highly erodible Percs slowly Bedrock	1.00 0.33 0.01	Somewhat limited Too clayey	0.36
Keese-----	15	Very limited Droughty Bedrock Potentially or highly erodible	1.00 1.00 1.00	Somewhat limited 10-20" to Bedrock (Hard or Soft)	0.61
LND: Ligon-----	67	Very limited Potentially or highly erodible Percs slowly Too clayey Bedrock	1.00 0.33 0.57 0.35	Very limited Too clayey	1.00
Keese-----	22	Very limited Droughty Bedrock Potentially or highly erodible	1.00 1.00 1.00	Somewhat limited 10-20" to Bedrock (Hard or Soft)	0.61
LOC: Loneoak-----	51	Somewhat limited Too sandy	0.50	Not limited	
Campair-----	37	Somewhat limited Bedrock Droughty	0.65 0.02	Somewhat limited Too clayey	0.19

Soil Survey of Mason County, Texas

Table 9.--Irrigated Domestic Grasses and Legumes, and Habitat for Burrowing Mammals and Reptiles--Continued

Map symbol and soil name	Pct. of map unit	Irrigated Domestic Grasses and Legumes for Food and Cover		Habitat for Burrowing Mammals and Reptiles	
		Rating class and limiting features	Value	Rating class and limiting features	Value
LRC: Lou-----	32	Very limited Potentially or highly erodible	1.00	Not limited	
Click-----	29	Very limited Potentially or highly erodible Too gravelly, cobble, or stony Droughty	1.00 1.00 0.81	Somewhat limited Too gravelly	0.37
Voca-----	23	Very limited Potentially or highly erodible Percs slowly	1.00 0.33	Very limited Too clayey Too gravelly	1.00 0.04
LuC: Luckenbach-----	76	Somewhat limited Too clayey	0.19	Very limited Too clayey	1.00
MPC: Menard-----	47	Not limited		Not limited	
Pedernales-----	23	Not limited		Somewhat limited Too clayey	0.99
MSC: Mereta-----	35	Very limited Cemented pan Potentially or highly erodible Droughty Too clayey	1.00 1.00 0.76 0.76	Not rated	
Cho-----	26	Very limited Droughty Cemented pan Potentially or highly erodible	1.00 1.00 1.00	Very limited Cemented pan	1.00
Sunev-----	17	Very limited Potentially or highly erodible	1.00	Somewhat limited Too clayey	0.11
NRE: Nebgen-----	53	Very limited Droughty Bedrock Potentially or highly erodible	1.00 1.00	Somewhat limited 10-20" to Bedrock (Hard or Soft)	0.97
Rock outcrop-----	17	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 9.--Irrigated Domestic Grasses and Legumes, and Habitat for Burrowing Mammals and Reptiles--Continued

Map symbol and soil name	Pct. of map unit	Irrigated Domestic Grasses and Legumes for Food and Cover		Habitat for Burrowing Mammals and Reptiles	
		Rating class and limiting features	Value	Rating class and limiting features	Value
NRG: Nebgen-----	56	Very limited Droughty	1.00	Very limited < 10" to Bedrock (Hard or Soft)	1.00
		Bedrock	1.00		
		Slope	1.00		
		Potentially or highly erodible	1.00		
Rock outcrop-----	34	Not rated		Not rated	
OaB: Oakalla-----	70	Somewhat limited Flooding	0.50	Very limited Flooding Too clayey	1.00 0.57
PeC: Pedernales-----	75	Not limited		Somewhat limited Too clayey	0.99
RCC: Riverwash-----	55	Not rated		Very limited Flooding	1.00
				Content of large stones	0.68
				Too gravelly	0.27
Rock outcrop-----	20	Not rated		Not rated	
RgG: Rock outcrop-----	95	Not rated		Not rated	
RhE: Roughcreek-----	72	Very limited Bedrock	1.00	Very limited Too clayey	1.00
		Potentially or highly erodible	1.00	Content of large stones	1.00
		Too gravelly, cobbly, or stony	1.00	Too gravelly	0.17
		Droughty	0.89	10-20" to Bedrock (Hard or Soft)	0.08
		Too clayey	0.70		

Soil Survey of Mason County, Texas

Table 9.--Irrigated Domestic Grasses and Legumes, and Habitat for Burrowing Mammals and Reptiles--Continued

Map symbol and soil name	Pct. of map unit	Irrigated Domestic Grasses and Legumes for Food and Cover		Habitat for Burrowing Mammals and Reptiles	
		Rating class and limiting features	Value	Rating class and limiting features	Value
RkE: Roughcreek-----	84	Very limited Too clayey	1.00	Very limited Too clayey	1.00
		Droughty	1.00	Content of large stones	1.00
		Bedrock	1.00	10-20" to Bedrock (Hard or Soft)	0.46
		Potentially or highly erodible	1.00		
		Too gravelly, cobbly, or stony	1.00		
RRG: Roughcreek, 15 to 40 percent slopes--	40	Very limited Too clayey	1.00	Very limited Too clayey	1.00
		Droughty	1.00	Content of large stones	1.00
		Bedrock	1.00	10-20" to Bedrock (Hard or Soft)	0.97
		Slope	1.00		
		Potentially or highly erodible	1.00		
Roughcreek, 12 to 15 percent slopes--	20	Very limited Too clayey	1.00	Very limited Too clayey	1.00
		Droughty	1.00	Content of large stones	1.00
		Bedrock	1.00	10-20" to Bedrock (Hard or Soft)	0.46
		Slope	1.00		
		Potentially or highly erodible	1.00		
Rock outcrop-----	35	Not rated		Not rated	
SuD: Sunev-----	70	Very limited Potentially or highly erodible	1.00	Somewhat limited Too clayey	0.11

Soil Survey of Mason County, Texas

Table 9.--Irrigated Domestic Grasses and Legumes, and Habitat for Burrowing Mammals and Reptiles--Continued

Map symbol and soil name	Pct. of map unit	Irrigated Domestic Grasses and Legumes for Food and Cover		Habitat for Burrowing Mammals and Reptiles	
		Rating class and limiting features	Value	Rating class and limiting features	Value
TRE: Tarrant-----	67	Very limited Too clayey	1.00	Very limited Too clayey	1.00
		Droughty	1.00	Content of large stones	1.00
		Bedrock	1.00	10-20" to Bedrock (Hard or Soft)	0.92
		Potentially or highly erodible	1.00		
		Too gravelly, cobbly, or stony	1.00		
Rock outcrop-----	14	Not rated		Not rated	
TRG: Tarrant, 15 to 40 percent slopes-----	48	Very limited Too clayey	1.00	Very limited Too clayey	1.00
		Droughty	1.00	Content of large stones	1.00
		Bedrock	1.00	10-20" to Bedrock (Hard or Soft)	0.80
		Slope	1.00		
		Potentially or highly erodible	1.00		
Tarrant, 12 to 15 percent slopes-----	14	Very limited Too clayey	1.00	Very limited Too clayey	1.00
		Droughty	1.00	Content of large stones	1.00
		Bedrock	1.00	10-20" to Bedrock (Hard or Soft)	0.92
		Slope	1.00		
		Potentially or highly erodible	1.00		
Rock outcrop-----	27	Not rated		Not rated	
VeD: Venus, 0 to 3 percent slopes-----	44	Very limited Potentially or highly erodible	1.00	Somewhat limited Too clayey	0.01
Venus, 3 to 8 percent slopes-----	27	Very limited Potentially or highly erodible	1.00	Somewhat limited Too clayey	0.01
		Slope	0.03		

Soil Survey of Mason County, Texas

Table 9.--Irrigated Domestic Grasses and Legumes, and Habitat for Burrowing Mammals and Reptiles--Continued

Map symbol and soil name	Pct. of map unit	Irrigated Domestic Grasses and Legumes for Food and Cover		Habitat for Burrowing Mammals and Reptiles	
		Rating class and limiting features	Value	Rating class and limiting features	Value
VoC: Voca-----	77	Somewhat limited Percs slowly	0.33	Very limited Too clayey Too gravelly	1.00 0.04
W: Water-----	100	Not rated		Not rated	
YNE: Yates-----	60	Very limited Droughty	1.00	Somewhat limited Content of large stones	0.32
		Bedrock	1.00	10-20" to Bedrock (Hard or Soft)	0.92
		Potentially or highly erodible	1.00		
		Too gravelly, cobbly, or stony	1.00		
Nebgen-----	20	Very limited Droughty	1.00	Somewhat limited 10-20" to Bedrock (Hard or Soft)	0.97
		Bedrock	1.00		
		Potentially or highly erodible	1.00		
Rock outcrop-----	15	Not rated		Not rated	
YNG: Yates-----	50	Very limited Droughty	1.00	Very limited Content of large stones	1.00
		Bedrock	1.00	< 10" to Bedrock (Hard or Soft)	1.00
		Slope	1.00		
		Potentially or highly erodible	1.00		
		Too gravelly, cobbly, or stony	1.00		
Nebgen-----	25	Very limited Droughty	1.00	Very limited < 10" to Bedrock (Hard or Soft)	1.00
		Bedrock	1.00		
		Slope	1.00		
		Potentially or highly erodible	1.00		
Rock outcrop-----	20	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 10.--Upland Native Herbaceous Plants, and Upland Shrubs and Vines for Wildlife Habitat

(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	Upland Native Herbaceous Plants		Upland Shrubs and Vines	
		Rating class and limiting features	Value	Rating class and limiting features	Value
ACC:					
Acove-----	42	Not limited		Somewhat limited Bedrock	0.98
Campair-----	19	Somewhat limited Sandy surface	0.60	Somewhat limited Bedrock Sandy surface	0.79 0.60
Loneoak-----	18	Somewhat limited Sandy surface	0.60	Very limited Bedrock Sandy surface	1.00 0.60
AMC:					
Acove-----	56	Not limited		Somewhat limited Bedrock	0.98
Menard-----	30	Not limited		Not limited	
CAC:					
Campwood-----	34	Somewhat limited Too clayey	0.50	Somewhat limited Too clayey	0.50
Sunev-----	33	Not limited		Not limited	
Valera-----	15	Not limited		Somewhat limited Bedrock Cemented pan	0.83 0.32
CeC:					
Castell-----	85	Not limited		Somewhat limited Bedrock	0.86
ERD:					
Eckert-----	64	Somewhat limited Too gravelly, cobbly, or stony Droughty	0.20 0.50	Somewhat limited Too gravelly, cobbly, or stony Droughty Bedrock	0.20 0.50 0.10
Rock outcrop-----	25	Not rated		Not rated	
ERG:					
Eckert-----	63	Somewhat limited Too gravelly, cobbly, or stony Droughty	0.12 0.50	Somewhat limited Too gravelly, cobbly, or stony Droughty Bedrock	0.12 0.50 0.04
Rock outcrop-----	33	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 10.--Upland Native Herbaceous Plants, and Upland Shrubs and Vines for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Native Herbaceous Plants		Upland Shrubs and Vines	
		Rating class and limiting features	Value	Rating class and limiting features	Value
FRC: Fieldcreek, occasionally flooded-----	52	Not limited		Not limited	
Fieldcreek, frequently flooded-	23	Not limited		Not limited	
Riverwash-----	15	Not rated		Somewhat limited Too gravelly, cobble, or stony Droughty	0.62 0.50
HeD: Hensley-----	68	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.17
HkC: Honeycreek-----	71	Not limited		Very limited Bedrock	1.00
HND: Hye-----	41	Not limited		Somewhat limited Bedrock	0.98
Nebgen-----	30	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.08
Oben-----	15	Not limited		Somewhat limited Bedrock	0.36
HOD: Hye-----	43	Not limited		Somewhat limited Bedrock	0.98
Oben-----	19	Not limited		Somewhat limited Bedrock	0.36
Loneoak-----	18	Somewhat limited Sandy surface	0.60	Very limited Bedrock Sandy surface	1.00 0.60
HPC: Hye-----	48	Not limited		Somewhat limited Bedrock	0.98
Pontotoc-----	34	Not limited		Very limited Bedrock	1.00
KAC: Katemcy-----	60	Not limited		Very limited Bedrock	1.00
Honeycreek-----	15	Not limited		Very limited Bedrock	1.00

Soil Survey of Mason County, Texas

Table 10.--Upland Native Herbaceous Plants, and Upland Shrubs and Vines for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Native Herbaceous Plants		Upland Shrubs and Vines	
		Rating class and limiting features	Value	Rating class and limiting features	Value
KeD: Keese-----	73	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.17
KLE: Keese-----	45	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.17
Lou-----	23	Not limited		Not limited	
Rock outcrop-----	16	Not rated		Not rated	
KRG: Rock outcrop-----	36	Not rated		Not rated	
Keese, 15 to 30 percent slopes-----	25	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.04
Keese, 12 to 15 percent slopes-----	13	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.04
KTG: Kerrville-----	33	Somewhat limited Too gravelly, cobbly, or stony	0.12	Somewhat limited Too gravelly, cobbly, or stony Bedrock	0.12 0.70
Brackett-----	21	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.12
Tarrant-----	17	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty	0.27 0.50 0.50	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty Bedrock	0.27 0.50 0.50 0.13
KVE: Kerrville-----	28	Somewhat limited Too gravelly, cobbly, or stony	0.12	Somewhat limited Too gravelly, cobbly, or stony Bedrock	0.12 0.70
Real-----	25	Somewhat limited Too gravelly, cobbly, or stony Droughty	0.15 0.50	Somewhat limited Too gravelly, cobbly, or stony Droughty Bedrock	0.15 0.50 0.10
Sunev-----	21	Not limited		Not limited	

Soil Survey of Mason County, Texas

Table 10.--Upland Native Herbaceous Plants, and Upland Shrubs and Vines for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Native Herbaceous Plants		Upland Shrubs and Vines	
		Rating class and limiting features	Value	Rating class and limiting features	Value
LKD: Ligon-----	42	Not limited		Somewhat limited Bedrock	0.89
Katemcy-----	29	Not limited		Very limited Bedrock	1.00
Keese-----	15	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.17
LND: Ligon-----	67	Not limited		Somewhat limited Bedrock	0.89
Keese-----	22	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.17
LOC: Loneoak-----	51	Somewhat limited Sandy surface	0.60	Very limited Bedrock Sandy surface	1.00 0.60
Campair-----	37	Somewhat limited Sandy surface	0.60	Somewhat limited Bedrock Sandy surface	0.79 0.60
LRC: Lou-----	32	Not limited		Not limited	
Click-----	29	Somewhat limited Too gravelly, cobbly, or stony	0.16	Very limited Bedrock Too gravelly, cobbly, or stony	1.00 0.16
Voca-----	23	Not limited		Not limited	
LuC: Luckenbach-----	76	Not limited		Not limited	
MPC: Menard-----	47	Not limited		Not limited	
Pedernales-----	23	Not limited		Not limited	
MSC: Mereta-----	35	Not limited		Somewhat limited Cemented pan	0.78
Cho-----	26	Somewhat limited Droughty	0.50	Somewhat limited Cemented pan Droughty	0.99 0.50
Sunev-----	17	Not limited		Not limited	

Soil Survey of Mason County, Texas

Table 10.--Upland Native Herbaceous Plants, and Upland Shrubs and Vines for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Native Herbaceous Plants		Upland Shrubs and Vines	
		Rating class and limiting features	Value	Rating class and limiting features	Value
NRE: Nebgen-----	53	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.08
Rock outcrop-----	17	Not rated		Not rated	
NRG: Nebgen-----	56	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.02
Rock outcrop-----	34	Not rated		Not rated	
OaB: Oakalla-----	70	Not limited		Not limited	
PeC: Pedernales-----	75	Not limited		Not limited	
RCC: Riverwash-----	55	Not rated		Somewhat limited Too gravelly, cobbly, or stony Droughty	0.62 0.50
Rock outcrop-----	20	Not rated		Not rated	
RgG: Rock outcrop-----	95	Not rated		Not rated	
RhE: Roughcreek-----	72	Somewhat limited Too gravelly, cobbly, or stony	0.29	Somewhat limited Too gravelly, cobbly, or stony Bedrock	0.29 0.30
RkE: Roughcreek-----	84	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty	0.08 0.50 0.50	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty Bedrock	0.08 0.50 0.50 0.19

Soil Survey of Mason County, Texas

Table 10.--Upland Native Herbaceous Plants, and Upland Shrubs and Vines for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Native Herbaceous Plants		Upland Shrubs and Vines	
		Rating class and limiting features	Value	Rating class and limiting features	Value
RRG: Roughcreek, 15 to 40 percent slopes--	40	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty	0.08 0.50 0.50	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty Bedrock	0.08 0.50 0.50 0.08
Roughcreek, 12 to 15 percent slopes--	20	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty	0.08 0.50 0.50	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty Bedrock	0.08 0.50 0.50 0.19
Rock outcrop-----	35	Not rated		Not rated	
SuD: Sunev-----	70	Not limited		Not limited	
TRE: Tarrant-----	67	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty	0.27 0.50 0.50	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty Bedrock	0.27 0.50 0.50 0.10
Rock outcrop-----	14	Not rated		Not rated	
TRG: Tarrant, 15 to 40 percent slopes-----	48	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty	0.27 0.50 0.50	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty Bedrock	0.27 0.50 0.50 0.13
Tarrant, 12 to 15 percent slopes-----	14	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty	0.27 0.50 0.50	Somewhat limited Too gravelly, cobbly, or stony Too clayey Droughty Bedrock	0.27 0.50 0.50 0.10
Rock outcrop-----	27	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 10.--Upland Native Herbaceous Plants, and Upland Shrubs and Vines for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Native Herbaceous Plants		Upland Shrubs and Vines	
		Rating class and limiting features	Value	Rating class and limiting features	Value
VeD:					
Venus, 0 to 3 percent slopes-----	44	Not limited		Not limited	
Venus, 3 to 8 percent slopes-----	27	Not limited		Not limited	
VoC:					
Voca-----	77	Not limited		Not limited	
W:					
Water-----	100	Not rated		Not rated	
YNE:					
Yates-----	60	Somewhat limited Too gravelly, cobbly, or stony Droughty	0.22 0.50	Somewhat limited Too gravelly, cobbly, or stony Droughty Bedrock	0.22 0.50 0.10
Nebgen-----	20	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.08
Rock outcrop-----	15	Not rated		Not rated	
YNG:					
Yates-----	50	Somewhat limited Too gravelly, cobbly, or stony Droughty	0.74 0.50	Somewhat limited Too gravelly, cobbly, or stony Droughty Bedrock	0.74 0.50 0.06
Nebgen-----	25	Somewhat limited Droughty	0.50	Somewhat limited Droughty Bedrock	0.50 0.02
Rock outcrop-----	20	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 11.--Upland Deciduous Trees for Wildlife Habitat

(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	Upland Deciduous Trees	
		Rating class and limiting features	Value
ACC:			
Acove-----	42	Somewhat limited Too arid Bedrock	0.50 0.08
Campair-----	19	Somewhat limited Bedrock Too arid Droughty	0.65 0.50 0.02
Loneoak-----	18	Somewhat limited Too arid	0.50
AMC:			
Acove-----	56	Somewhat limited Too arid Bedrock	0.50 0.08
Menard-----	30	Somewhat limited Too arid	0.50
CAC:			
Campwood-----	34	Somewhat limited Too arid	0.50
Sunev-----	33	Somewhat limited Too arid	0.50
Valera-----	15	Somewhat limited Cemented pan Droughty Bedrock Too arid	0.96 0.28 0.54 0.50
CeC:			
Castell-----	85	Somewhat limited Too arid Bedrock	0.50 0.46
ERD:			
Eckert-----	64	Very limited Droughty Bedrock Too arid	1.00 1.00 0.50
Rock outcrop-----	25	Not rated	

Soil Survey of Mason County, Texas

Table 11.--Upland Deciduous Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Deciduous Trees	
		Rating class and limiting features	Value
ERG: Eckert-----	63	Very limited Droughty Bedrock Too arid	1.00 1.00 0.50
Rock outcrop-----	33	Not rated	
FRC: Fieldcreek, occasionally flooded-----	52	Somewhat limited Too arid	0.50
Fieldcreek, frequently flooded-	23	Somewhat limited Too arid	0.50
Riverwash-----	15	Not rated	
HeD: Hensley-----	68	Very limited Bedrock Droughty Too arid	1.00 1.00 0.50
HkC: Honeycreek-----	71	Somewhat limited Too arid	0.50
HND: Hye-----	41	Somewhat limited Too arid Bedrock	0.50 0.05
Nebgen-----	30	Very limited Droughty Bedrock Too arid	1.00 1.00 0.50
Oben-----	15	Very limited Bedrock Droughty Too arid	1.00 0.90 0.50

Soil Survey of Mason County, Texas

Table 11.--Upland Deciduous Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Deciduous Trees	
		Rating class and limiting features	Value
HOD: Hye-----	43	Somewhat limited Too arid Bedrock	0.50 0.05
Oben-----	19	Very limited Bedrock Droughty Too arid	1.00 0.90 0.50
Loneoak-----	18	Somewhat limited Too arid	0.50
HPC: Hye-----	48	Somewhat limited Too arid Bedrock	0.50 0.05
Pontotoc-----	34	Somewhat limited Too arid	0.50
KAC: Katemcy-----	60	Somewhat limited Too arid Bedrock	0.50 0.01
Honeycreek-----	15	Somewhat limited Too arid	0.50
KeD: Keese-----	73	Very limited Droughty Bedrock	1.00 1.00
KLE: Keese-----	45	Very limited Droughty Bedrock	1.00 1.00
Lou-----	23	Somewhat limited Too arid	0.50
Rock outcrop-----	16	Not rated	

Soil Survey of Mason County, Texas

Table 11.--Upland Deciduous Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Deciduous Trees	
		Rating class and limiting features	Value
KRG:			
Rock outcrop-----	36	Not rated	
Keese, 15 to 30 percent slopes-----	25	Very limited	
		Droughty	1.00
		Bedrock	1.00
Keese, 12 to 15 percent slopes-----	13	Very limited	
		Droughty	1.00
		Bedrock	1.00
KTG:			
Kerrville-----	33	Very limited	
		Droughty	1.00
		Bedrock	0.82
		Too arid	0.50
Brackett-----	21	Very limited	
		Droughty	1.00
		Bedrock	1.00
		Too arid	0.50
Tarrant-----	17	Very limited	
		Droughty	1.00
		Bedrock	1.00
		Too arid	0.50
KVE:			
Kerrville-----	28	Very limited	
		Droughty	1.00
		Bedrock	0.82
		Too arid	0.50
Real-----	25	Very limited	
		Droughty	1.00
		Bedrock	1.00
		Too arid	0.50
Sunev-----	21	Somewhat limited	
		Too arid	0.50
LKD:			
Ligon-----	42	Somewhat limited	
		Too arid	0.50
		Bedrock	0.35
Katemcy-----	29	Somewhat limited	
		Too arid	0.50
		Bedrock	0.01
Keese-----	15	Very limited	
		Droughty	1.00
		Bedrock	1.00

Soil Survey of Mason County, Texas

Table 11.--Upland Deciduous Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Deciduous Trees	
		Rating class and limiting features	Value
LND: Ligon-----	67	Somewhat limited Too arid Bedrock	0.50 0.35
Keese-----	22	Very limited Droughty Bedrock	1.00 1.00
LOC: Loneoak-----	51	Somewhat limited Too arid	0.50
Campair-----	37	Somewhat limited Bedrock Too arid Droughty	0.65 0.50 0.02
LRC: Lou-----	32	Somewhat limited Too arid	0.50
Click-----	29	Somewhat limited Droughty Too arid	0.81 0.50
Voca-----	23	Somewhat limited Too arid	0.50
LuC: Luckenbach-----	76	Somewhat limited Too arid	0.50
MPC: Menard-----	47	Somewhat limited Too arid	0.50
Pedernales-----	23	Somewhat limited Too arid	0.50
MSC: Mereta-----	35	Very limited Cemented pan Droughty Too arid	1.00 0.76 0.50
Cho-----	26	Very limited Droughty Cemented pan Too arid	1.00 1.00 0.50
Sunev-----	17	Somewhat limited Too arid	0.50

Soil Survey of Mason County, Texas

Table 11.--Upland Deciduous Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Deciduous Trees	
		Rating class and limiting features	Value
NRE:			
Nebgen-----	53	Very limited	
		Droughty	1.00
		Bedrock	1.00
		Too arid	0.50
Rock outcrop-----	17	Not rated	
NRG:			
Nebgen-----	56	Very limited	
		Droughty	1.00
		Bedrock	1.00
		Too arid	0.50
Rock outcrop-----	34	Not rated	
OaB:			
Oakalla-----	70	Somewhat limited	
		Too arid	0.50
PeC:			
Pedernales-----	75	Somewhat limited	
		Too arid	0.50
RCC:			
Riverwash-----	55	Not rated	
Rock outcrop-----	20	Not rated	
RgG:			
Rock outcrop-----	95	Not rated	
RhE:			
Roughcreek-----	72	Very limited	
		Bedrock	1.00
		Droughty	0.89
		Too arid	0.50
RkE:			
Roughcreek-----	84	Very limited	
		Droughty	1.00
		Bedrock	1.00
		Too arid	0.50
RRG:			
Roughcreek, 15 to 40 percent slopes--	40	Very limited	
		Droughty	1.00
		Bedrock	1.00
		Too arid	0.50
Roughcreek, 12 to 15 percent slopes--	20	Very limited	
		Droughty	1.00
		Bedrock	1.00
		Too arid	0.50
Rock outcrop-----	35	Not rated	

Soil Survey of Mason County, Texas

Table 11.--Upland Deciduous Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Deciduous Trees	
		Rating class and limiting features	Value
SuD: Sunev-----	70	Somewhat limited Too arid	0.50
TRE: Tarrant-----	67	Very limited Droughty Bedrock Too arid	1.00 1.00 0.50
Rock outcrop-----	14	Not rated	
TRG: Tarrant, 15 to 40 percent slopes-----	48	Very limited Droughty Bedrock Too arid	1.00 1.00 0.50
Tarrant, 12 to 15 percent slopes-----	14	Very limited Droughty Bedrock Too arid	1.00 1.00 0.50
Rock outcrop-----	27	Not rated	
VeD: Venus, 0 to 3 percent slopes-----	44	Somewhat limited Too arid	0.50
Venus, 3 to 8 percent slopes-----	27	Somewhat limited Too arid	0.50
VoC: Voca-----	77	Somewhat limited Too arid	0.50
W: Water-----	100	Not rated	
YNE: Yates-----	60	Very limited Droughty Bedrock Too arid	1.00 1.00 0.50
Nebgen-----	20	Very limited Droughty Bedrock Too arid	1.00 1.00 0.50
Rock outcrop-----	15	Not rated	

Soil Survey of Mason County, Texas

Table 11.--Upland Deciduous Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Upland Deciduous Trees	
		Rating class and limiting features	Value
YNG: Yates-----	50	Very limited Droughty Bedrock Too arid	 1.00 1.00 0.50
Nebgen-----	25	Very limited Droughty Bedrock Too arid	 1.00 1.00 0.50
Rock outcrop-----	20	Not rated	

Soil Survey of Mason County, Texas

Table 12.--Riparian Herbaceous Plants, and Riparian Shrubs, Vines, and Trees for Wildlife Habitat

(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	Riparian Herbaceous Plants		Riparian Shrubs, Vines, and Trees	
		Rating class and limiting features	Value	Rating class and limiting features	Value
ACC:					
Acove-----	42	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Campair-----	19	Very limited Too dry Infrequent flooding Too sandy	1.00 1.00 0.50	Very limited Too dry Droughty	1.00 0.02
Loneoak-----	18	Very limited Too dry Infrequent flooding Too sandy	1.00 1.00 0.50	Very limited Too dry	1.00
AMC:					
Acove-----	56	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Menard-----	30	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
CAC:					
Campwood-----	34	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Sunev-----	33	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Valera-----	15	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry Droughty	1.00 0.28
CeC:					
Castell-----	85	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00

Soil Survey of Mason County, Texas

Table 12.--Riparian Herbaceous Plants, and Riparian Shrubs, Vines, and Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Riparian Herbaceous Plants		Riparian Shrubs, Vines, and Trees	
		Rating class and limiting features	Value	Rating class and limiting features	Value
ERD: Eckert-----	64	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.74	Very limited Droughty Too dry	1.00 1.00
Rock outcrop-----	25	Not rated		Not rated	
ERG: Eckert-----	63	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.48	Very limited Droughty Too dry	1.00 1.00
Rock outcrop-----	33	Not rated		Not rated	
FRC: Fieldcreek, occasionally flooded-----	52	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Fieldcreek, frequently flooded-	23	Very limited Too dry	1.00	Very limited Too dry	1.00
Riverwash-----	15	Not rated		Not rated	
HeD: Hensley-----	68	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry Droughty	1.00 1.00
HKC: Honeycreek-----	71	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00

Soil Survey of Mason County, Texas

Table 12.--Riparian Herbaceous Plants, and Riparian Shrubs, Vines, and Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Riparian Herbaceous Plants		Riparian Shrubs, Vines, and Trees	
		Rating class and limiting features	Value	Rating class and limiting features	Value
HND: Hye-----	41	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Nebgen-----	30	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
Oben-----	15	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry Droughty	1.00 0.90
HOD: Hye-----	43	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Oben-----	19	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry Droughty	1.00 0.90
Loneoak-----	18	Very limited Too dry Infrequent flooding Too sandy	1.00 1.00 0.50	Very limited Too dry	1.00
HPC: Hye-----	48	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Pontotoc-----	34	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
KAC: Katemcy-----	60	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Honeycreek-----	15	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00

Soil Survey of Mason County, Texas

Table 12.--Riparian Herbaceous Plants, and Riparian Shrubs, Vines, and Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Riparian Herbaceous Plants		Riparian Shrubs, Vines, and Trees	
		Rating class and limiting features	Value	Rating class and limiting features	Value
KeD: Keese-----	73	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
KLE: Keese-----	45	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
Lou-----	23	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Rock outcrop-----	16	Not rated		Not rated	
KRG: Rock outcrop-----	36	Not rated		Not rated	
Keese, 15 to 30 percent slopes-----	25	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
Keese, 12 to 15 percent slopes-----	13	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
KTG: Kerrville-----	33	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.48	Very limited Too dry Droughty	1.00 1.00
Brackett-----	21	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
Tarrant-----	17	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.86	Very limited Droughty Too dry	1.00 1.00

Soil Survey of Mason County, Texas

Table 12.--Riparian Herbaceous Plants, and Riparian Shrubs, Vines, and Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Riparian Herbaceous Plants		Riparian Shrubs, Vines, and Trees	
		Rating class and limiting features	Value	Rating class and limiting features	Value
KVE: Kerrville-----	28	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.48	Very limited Too dry Droughty	1.00 1.00
Real-----	25	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.58	Very limited Droughty Too dry	1.00 1.00
Sunev-----	21	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
LKD: Ligon-----	42	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Katemcy-----	29	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Keese-----	15	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
LND: Ligon-----	67	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Keese-----	22	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
LOC: Loneoak-----	51	Very limited Too dry Infrequent flooding Too sandy	1.00 1.00 0.50	Very limited Too dry	1.00
Campair-----	37	Very limited Too dry Infrequent flooding Too sandy	1.00 1.00 0.50	Very limited Too dry Droughty	1.00 0.02

Soil Survey of Mason County, Texas

Table 12.--Riparian Herbaceous Plants, and Riparian Shrubs, Vines, and Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Riparian Herbaceous Plants		Riparian Shrubs, Vines, and Trees	
		Rating class and limiting features	Value	Rating class and limiting features	Value
LRC: Lou-----	32	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Click-----	29	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.62	Very limited Too dry Droughty	1.00 0.81
Voca-----	23	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
LuC: Luckenbach-----	76	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
MPC: Menard-----	47	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Pedernales-----	23	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
MSC: Mereta-----	35	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry Droughty	1.00 0.76
Cho-----	26	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
Sunev-----	17	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
NRE: Nebgen-----	53	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
Rock outcrop-----	17	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 12.--Riparian Herbaceous Plants, and Riparian Shrubs, Vines, and Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Riparian Herbaceous Plants		Riparian Shrubs, Vines, and Trees	
		Rating class and limiting features	Value	Rating class and limiting features	Value
NRG: Nebgen-----	56	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
Rock outcrop-----	34	Not rated		Not rated	
OaB: Oakalla-----	70	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
PeC: Pedernales-----	75	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
RCC: Riverwash-----	55	Not rated		Not rated	
Rock outcrop-----	20	Not rated		Not rated	
RgG: Rock outcrop-----	95	Not rated		Not rated	
RhE: Roughcreek-----	72	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.89	Very limited Too dry Droughty	1.00 0.89
RkE: Roughcreek-----	84	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.33	Very limited Droughty Too dry	1.00 1.00
RRG: Roughcreek, 15 to 40 percent slopes--	40	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.33	Very limited Droughty Too dry	1.00 1.00
Roughcreek, 12 to 15 percent slopes--	20	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.33	Very limited Droughty Too dry	1.00 1.00
Rock outcrop-----	35	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 12.--Riparian Herbaceous Plants, and Riparian Shrubs, Vines, and Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Riparian Herbaceous Plants		Riparian Shrubs, Vines, and Trees	
		Rating class and limiting features	Value	Rating class and limiting features	Value
SuD: Sunev-----	70	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
TRE: Tarrant-----	67	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.86	Very limited Droughty Too dry	1.00 1.00
Rock outcrop-----	14	Not rated		Not rated	
TRG: Tarrant, 15 to 40 percent slopes-----	48	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.86	Very limited Droughty Too dry	1.00 1.00
Tarrant, 12 to 15 percent slopes-----	14	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.86	Very limited Droughty Too dry	1.00 1.00
Rock outcrop-----	27	Not rated		Not rated	
VeD: Venus, 0 to 3 percent slopes-----	44	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
Venus, 3 to 8 percent slopes-----	27	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
VoC: Voca-----	77	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Too dry	1.00
W: Water-----	100	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 12.--Riparian Herbaceous Plants, and Riparian Shrubs, Vines, and Trees for Wildlife Habitat--Continued

Map symbol and soil name	Pct. of map unit	Riparian Herbaceous Plants		Riparian Shrubs, Vines, and Trees	
		Rating class and limiting features	Value	Rating class and limiting features	Value
YNE: Yates-----	60	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 0.76	Very limited Droughty Too dry	1.00 1.00
Nebgen-----	20	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
Rock outcrop-----	15	Not rated		Not rated	
YNG: Yates-----	50	Very limited Too dry Infrequent flooding Too gravelly, cobbly, or stony	1.00 1.00 1.00	Very limited Droughty Too dry	1.00 1.00
Nebgen-----	25	Very limited Too dry Infrequent flooding	1.00 1.00	Very limited Droughty Too dry	1.00 1.00
Rock outcrop-----	20	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 13.--Camp Areas, Picnic Areas, and Playgrounds

(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
ACC:							
Acove-----	42	Somewhat limited Too sandy	0.66	Somewhat limited Too sandy	0.66	Somewhat limited Depth to bedrock Slope Too sandy	0.08 0.08 0.66
Campair-----	19	Somewhat limited Too sandy	0.92	Somewhat limited Too sandy	0.92	Somewhat limited Too sandy	0.92
Loneoak-----	18	Somewhat limited Too sandy	0.42	Somewhat limited Too sandy	0.42	Somewhat limited Too sandy	0.42
AMC:							
Acove-----	56	Somewhat limited Too sandy	0.66	Somewhat limited Too sandy	0.66	Somewhat limited Too sandy	0.66
Menard-----	30	Not limited		Not limited		Somewhat limited Gravel	0.13
CAC:							
Campwood-----	34	Somewhat limited Too clayey Slow water movement	0.50 0.39	Somewhat limited Too clayey Slow water movement	0.50 0.39	Somewhat limited Too clayey Slow water movement	0.50 0.39
Sunev-----	33	Not limited		Not limited		Somewhat limited Gravel	0.32
Valera-----	15	Somewhat limited Depth to cemented pan	0.84	Somewhat limited Depth to cemented pan	0.84	Somewhat limited Gravel	0.22
CeC:							
Castell-----	85	Somewhat limited Slow water movement	0.39	Somewhat limited Slow water movement	0.39	Somewhat limited Depth to bedrock Slope Gravel Slow water movement	0.46 0.01 0.13 0.39
ERD:							
Eckert-----	64	Very limited Large stones content Depth to bedrock	1.00 1.00	Very limited Large stones content Depth to bedrock	1.00 1.00	Very limited Large stones content Depth to bedrock Slope	1.00 1.00 0.03
Rock outcrop-----	25	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 13.--Camp Areas, Picnic Areas, and Playgrounds--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
ERG: Eckert-----	63	Very limited Large stones content Depth to bedrock Too steep Gravel	1.00 1.00 1.00 0.27	Very limited Large stones content Depth to bedrock Too steep Gravel	1.00 1.00 1.00 0.27	Very limited Large stones content Slope Depth to bedrock Gravel	1.00 1.00 1.00 1.00
Rock outcrop-----	33	Not rated		Not rated		Not rated	
FRC: Fieldcreek, occasionally flooded-----	52	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
Fieldcreek, frequently flooded-	23	Very limited Flooding	1.00	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
Riverwash-----	15	Not rated		Not rated		Not rated	
HeD: Hensley-----	68	Very limited Depth to bedrock Gravel Slow water movement	1.00 0.76 0.39	Very limited Depth to bedrock Gravel Slow water movement	1.00 0.76 0.39	Very limited Gravel Depth to bedrock Slope Slow water movement	1.00 1.00 0.36 0.39
HkC: Honeycreek-----	71	Not limited		Not limited		Somewhat limited Slope	0.03
HND: Hye-----	41	Not limited		Not limited		Somewhat limited Slope Depth to bedrock	0.28 0.05
Nebgen-----	30	Very limited Depth to bedrock Large stones content	1.00 0.19	Very limited Depth to bedrock Large stones content	1.00 0.19	Very limited Depth to bedrock Slope Gravel Large stones content	1.00 1.00 0.08 0.13 0.19
Oben-----	15	Very limited Depth to bedrock Large stones content	1.00 0.19	Very limited Depth to bedrock Large stones content	1.00 0.19	Very limited Depth to bedrock Slope Large stones content	1.00 0.12 0.19

Soil Survey of Mason County, Texas

Table 13.--Camp Areas, Picnic Areas, and Playgrounds--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
HOD: Hye-----	43	Not limited		Not limited		Somewhat limited Slope Depth to bedrock	0.06 0.05
Oben-----	19	Very limited Depth to bedrock Large stones content	1.00 0.19	Very limited Depth to bedrock Large stones content	1.00 0.19	Very limited Depth to bedrock Slope Large stones content	1.00 0.15 0.19
Loneoak-----	18	Somewhat limited Too sandy	0.42	Somewhat limited Too sandy	0.42	Somewhat limited Slope Too sandy	0.01 0.42
HPC: Hye-----	48	Not limited		Not limited		Somewhat limited Depth to bedrock Slope	0.05 0.03
Pontotoc-----	34	Not limited		Not limited		Not limited	
KAC: Katemcy-----	60	Somewhat limited Slow water movement	0.39	Somewhat limited Slow water movement	0.39	Somewhat limited Depth to bedrock Slope Gravel Slow water movement	0.01 0.03 0.13 0.39
Honeycreek-----	15	Not limited		Not limited		Somewhat limited Slope	0.01
KeD: Keese-----	73	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Slope Gravel	1.00 0.28 0.22
KLE: Keese-----	45	Very limited Depth to bedrock Large stones content	1.00 0.76	Very limited Depth to bedrock Large stones content	1.00 0.76	Very limited Depth to bedrock Large stones content Gravel Slope	1.00 0.76 0.22 0.03
Lou-----	23	Not limited		Not limited		Not limited	
Rock outcrop-----	16	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 13.--Camp Areas, Picnic Areas, and Playgrounds--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
KRG: Rock outcrop-----	36	Not rated		Not rated		Not rated	
Keese, 15 to 30 percent slopes-----	25	Very limited Too steep Depth to bedrock	1.00 1.00	Very limited Too steep Depth to bedrock	1.00 1.00	Very limited Slope Depth to bedrock Gravel	1.00 1.00 0.90
Keese, 12 to 15 percent slopes-----	13	Very limited Depth to bedrock Slope	1.00 0.96	Very limited Depth to bedrock Slope	1.00 0.96	Very limited Slope Depth to bedrock	1.00 1.00
KTG: Kerrville-----	33	Very limited Too steep Gravel Large stones content	1.00 0.27 0.01	Very limited Too steep Gravel Large stones content	1.00 0.27 0.01	Very limited Slope Gravel Depth to bedrock Large stones content	1.00 1.00 1.00 0.82 0.01
Brackett-----	21	Very limited Large stones content Too steep Depth to bedrock	1.00 1.00 1.00	Very limited Large stones content Too steep Depth to bedrock	1.00 1.00 1.00	Very limited Large stones content Slope Depth to bedrock	1.00 1.00 1.00
Tarrant-----	17	Very limited Too steep Depth to bedrock Large stones content Too clayey	1.00 1.00 0.77 0.50	Very limited Too steep Depth to bedrock Large stones content Too clayey	1.00 1.00 0.77 0.50	Very limited Slope Depth to bedrock Large stones content Too clayey	1.00 1.00 0.77 0.50
KVE: Kerrville-----	28	Somewhat limited Gravel Large stones content	0.27 0.01	Somewhat limited Gravel Large stones content	0.27 0.01	Very limited Gravel Depth to bedrock Slope Large stones content	1.00 0.82 0.72 0.01
Real-----	25	Very limited Depth to bedrock Gravel	1.00 0.42	Very limited Depth to bedrock Gravel	1.00 0.42	Very limited Gravel Depth to bedrock Slope	1.00 1.00 0.28
Sunev-----	21	Not limited		Not limited		Somewhat limited Gravel Slope	0.32 0.03

Soil Survey of Mason County, Texas

Table 13.--Camp Areas, Picnic Areas, and Playgrounds--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
LKD: Ligon-----	42	Somewhat limited Slow water movement	0.39	Somewhat limited Slow water movement	0.39	Very limited Gravel	1.00
						Depth to bedrock	0.35
						Slope	0.12
						Slow water movement	0.39
Katemcy-----	29	Somewhat limited Slow water movement	0.39	Somewhat limited Slow water movement	0.39	Somewhat limited Depth to bedrock	0.01
						Slope	0.01
						Gravel	0.13
						Slow water movement	0.39
Keese-----	15	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
						Gravel	0.22
						Slope	0.28
LND: Ligon-----	67	Very limited Large stones content Slow water movement	1.00 0.39	Very limited Large stones content Slow water movement	1.00 0.39	Very limited Large stones content Gravel	1.00 1.00
						Depth to bedrock	0.35
						Slope	0.15
						Slow water movement	0.39
Keese-----	22	Very limited Depth to bedrock Large stones content	1.00 0.76	Very limited Depth to bedrock Large stones content	1.00 0.76	Very limited Depth to bedrock Large stones content	1.00 0.76
						Slope	0.28
						Gravel	0.22
LOC: Loneoak-----	51	Somewhat limited Too sandy	0.42	Somewhat limited Too sandy	0.42	Somewhat limited Too sandy	0.42
Campair-----	37	Somewhat limited Too sandy	0.92	Somewhat limited Too sandy	0.92	Somewhat limited Depth to bedrock Too sandy Slope	0.65 0.92 0.06
LRC: Lou-----	32	Not limited		Not limited		Not limited	
Click-----	29	Very limited Gravel	1.00	Very limited Gravel	1.00	Very limited Gravel Slope	1.00 0.03
Voca-----	23	Somewhat limited Slow water movement	0.39	Somewhat limited Slow water movement	0.39	Somewhat limited Gravel	0.32
						Slow water movement	0.39
						Slope	0.01

Soil Survey of Mason County, Texas

Table 13.--Camp Areas, Picnic Areas, and Playgrounds--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
LuC: Luckenbach-----	76	Not limited		Not limited		Not limited	
MPC: Menard-----	47	Not limited		Not limited		Somewhat limited Gravel	0.13
Pedernales-----	23	Somewhat limited Too sandy	0.34	Somewhat limited Too sandy	0.34	Somewhat limited Too sandy	0.34
MSC: Mereta-----	35	Very limited Depth to cemented pan	1.00	Very limited Depth to cemented pan	1.00	Very limited Depth to cemented pan Gravel Slope	1.00 0.09 0.03
Cho-----	26	Very limited Depth to cemented pan	1.00	Very limited Depth to cemented pan	1.00	Very limited Depth to cemented pan Slope	1.00 0.01
Sunev-----	17	Not limited		Not limited		Somewhat limited Gravel	0.32
NRE: Nebgen-----	53	Very limited Depth to bedrock Large stones content	1.00 0.19	Very limited Depth to bedrock Large stones content	1.00 0.19	Very limited Depth to bedrock Large stones content Slope Gravel	1.00 0.19 0.03 0.13
Rock outcrop-----	17	Not rated		Not rated		Not rated	
NRG: Nebgen-----	56	Very limited Depth to bedrock Too steep Large stones content	1.00 1.00 1.00	Very limited Depth to bedrock Too steep Large stones content	1.00 1.00 1.00	Very limited Slope Depth to bedrock Large stones content Gravel	1.00 1.00 1.00 1.00 0.13
Rock outcrop-----	34	Not rated		Not rated		Not rated	
OaB: Oakalla-----	70	Very limited Flooding	1.00	Not limited		Somewhat limited Flooding	0.60
PeC: Pedernales-----	75	Somewhat limited Too sandy	0.34	Somewhat limited Too sandy	0.34	Somewhat limited Too sandy	0.34
RCC: Riverwash-----	55	Not rated		Not rated		Not rated	
Rock outcrop-----	20	Not rated		Not rated		Not rated	
RgG: Rock outcrop-----	95	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 13.--Camp Areas, Picnic Areas, and Playgrounds--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
RhE: Roughcreek-----	72	Very limited Gravel Depth to bedrock Large stones content Slow water movement	1.00 1.00 0.19 0.39	Very limited Gravel Depth to bedrock Large stones content Slow water movement	1.00 1.00 0.19 0.39	Very limited Gravel Depth to bedrock Slope Large stones content Slow water movement	1.00 1.00 0.28 0.19 0.39
RkE: Roughcreek-----	84	Very limited Large stones content Depth to bedrock Too clayey	1.00 1.00 0.50	Very limited Large stones content Depth to bedrock Too clayey	1.00 1.00 0.50	Very limited Large stones content Depth to bedrock Gravel Slope Too clayey	1.00 1.00 0.23 0.12 0.50
RRG: Roughcreek, 15 to 40 percent slopes--	40	Very limited Too steep Large stones content Depth to bedrock Too clayey	1.00 1.00 1.00 0.50	Very limited Large stones content Too steep Depth to bedrock Too clayey	1.00 1.00 1.00 0.50	Very limited Large stones content Slope Depth to bedrock Gravel Too clayey	1.00 1.00 1.00 0.23 0.50
Roughcreek, 12 to 15 percent slopes--	20	Very limited Large stones content Depth to bedrock Slope Too clayey	1.00 1.00 0.96 0.50	Very limited Large stones content Depth to bedrock Slope Too clayey	1.00 1.00 0.96 0.50	Very limited Large stones content Slope Depth to bedrock Gravel Too clayey	1.00 1.00 1.00 0.23 0.50
Rock outcrop-----	35	Not rated		Not rated		Not rated	
SuD: Sunev-----	70	Not limited		Not limited		Somewhat limited Slope Gravel	0.59 0.32
TRE: Tarrant-----	67	Very limited Large stones content Depth to bedrock Too clayey	1.00 1.00 0.50	Very limited Large stones content Depth to bedrock Too clayey	1.00 1.00 0.50	Very limited Large stones content Depth to bedrock Slope Too clayey	1.00 1.00 0.12 0.50
Rock outcrop-----	14	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 13.--Camp Areas, Picnic Areas, and Playgrounds--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
TRG: Tarrant, 15 to 40 percent slopes-----	48	Very limited Too steep Depth to bedrock Large stones content Too clayey	1.00 1.00 0.77 0.50	Very limited Too steep Depth to bedrock Large stones content Too clayey	1.00 1.00 0.77 0.50	Very limited Slope Depth to bedrock Large stones content Too clayey	1.00 1.00 0.77 0.50
Tarrant, 12 to 15 percent slopes-----	14	Very limited Large stones content Depth to bedrock Slope Too clayey	1.00 1.00 0.74 0.50	Very limited Large stones content Depth to bedrock Slope Too clayey	1.00 1.00 0.74 0.50	Very limited Large stones content Slope Depth to bedrock Too clayey	1.00 1.00 1.00 0.50
Rock outcrop-----	27	Not rated		Not rated		Not rated	
VeD: Venus, 0 to 3 percent slopes-----	44	Not limited		Not limited		Not limited	
Venus, 3 to 8 percent slopes-----	27	Not limited		Not limited		Somewhat limited Slope	0.72
VoC: Voca-----	77	Somewhat limited Slow water movement	0.39	Somewhat limited Slow water movement	0.39	Somewhat limited Gravel Slow water movement	0.32 0.39
W: Water-----	100	Not rated		Not rated		Not rated	
YNE: Yates-----	60	Very limited Large stones content Depth to bedrock Gravel	1.00 1.00 1.00	Very limited Large stones content Depth to bedrock Gravel	1.00 1.00 1.00	Very limited Large stones content Gravel Depth to bedrock Slope	1.00 1.00 1.00 0.03
Nebgen-----	20	Very limited Depth to bedrock Large stones content	1.00 0.19	Very limited Depth to bedrock Large stones content	1.00 0.19	Very limited Depth to bedrock Large stones content Slope Gravel	1.00 0.19 0.18 0.13
Rock outcrop-----	15	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 13.--Camp Areas, Picnic Areas, and Playgrounds--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
YNG:							
Yates-----	50	Very limited Large stones content Depth to bedrock Too steep Gravel	1.00 1.00 1.00 0.79	Very limited Large stones content Depth to bedrock Too steep Gravel	1.00 1.00 1.00 0.79	Very limited Large stones content Slope Depth to bedrock Gravel	1.00 1.00 1.00 1.00 1.00
Nebgen-----	25	Very limited Depth to bedrock Too steep Large stones content	1.00 1.00 1.00	Very limited Depth to bedrock Too steep Large stones content	1.00 1.00 1.00	Very limited Slope Depth to bedrock Large stones content Gravel	1.00 1.00 1.00 1.00 0.13
Rock outcrop-----	20	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 14.--Paths, Trails, and Golf Course Fairways

(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 course fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ACC:							
Acove-----	42	Somewhat limited Too sandy	0.66	Somewhat limited Too sandy	0.66	Somewhat limited Depth to bedrock	0.08
Campair-----	19	Somewhat limited Too sandy	0.92	Somewhat limited Too sandy	0.92	Somewhat limited Depth to bedrock Droughty	0.65 0.03
Loneoak-----	18	Somewhat limited Too sandy	0.42	Somewhat limited Too sandy	0.42	Not limited	
AMC:							
Acove-----	56	Somewhat limited Too sandy	0.66	Somewhat limited Too sandy	0.66	Somewhat limited Depth to bedrock	0.08
Menard-----	30	Not limited		Not limited		Somewhat limited Large stones	0.03
CAC:							
Campwood-----	34	Somewhat limited Too clayey	0.50	Somewhat limited Too clayey	0.50	Very limited Too clayey	1.00
Sunev-----	33	Not limited		Not limited		Very limited Carbonate content	1.00
Valera-----	15	Not limited		Not limited		Somewhat limited Depth to bedrock Droughty Depth to cemented pan	0.54 0.30 0.84
CeC:							
Castell-----	85	Not limited		Not limited		Somewhat limited Depth to bedrock Large stones	0.46 0.03
ERD:							
Eckert-----	64	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Very limited Depth to bedrock Large stones Droughty	1.00 1.00 1.00
Rock outcrop-----	25	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 14.--Paths, Trails, and Golf Course Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf course fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ERG:							
Eckert-----	63	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Very limited Depth to bedrock	1.00
						Droughty	1.00
						Too steep	1.00
						Large stones	0.99
						Gravel	0.27
Rock outcrop-----	33	Not rated		Not rated		Not rated	
FRC:							
Fieldcreek, occasionally flooded-----	52	Not limited		Not limited		Somewhat limited Flooding	0.60
Fieldcreek, frequently flooded-	23	Somewhat limited Flooding	0.40	Somewhat limited Flooding	0.40	Very limited Flooding	1.00
Riverwash-----	15	Not rated		Not rated		Very limited Flooding	1.00
						Droughty	1.00
						Gravel	1.00
						Large stones	0.61
HeD:							
Hensley-----	68	Not limited		Not limited		Very limited Depth to bedrock	1.00
						Droughty	1.00
						Gravel	0.76
						Large stones	0.03
HkC:							
Honeycreek-----	71	Not limited		Not limited		Not limited	
HND:							
Hye-----	41	Not limited		Not limited		Somewhat limited Depth to bedrock	0.05
Nebgen-----	30	Somewhat limited Large stones content	0.19	Somewhat limited Large stones content	0.19	Very limited Depth to bedrock	1.00
						Droughty	1.00
						Large stones	0.03
Oben-----	15	Somewhat limited Large stones content	0.19	Somewhat limited Large stones content	0.19	Very limited Depth to bedrock	1.00
						Droughty	0.90

Soil Survey of Mason County, Texas

Table 14.--Paths, Trails, and Golf Course Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf course fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HOD:							
Hye-----	43	Not limited		Not limited		Somewhat limited Depth to bedrock	0.05
Oben-----	19	Somewhat limited Large stones content	0.19	Somewhat limited Large stones content	0.19	Very limited Depth to bedrock Droughty	1.00 0.90
Loneoak-----	18	Somewhat limited Too sandy	0.42	Somewhat limited Too sandy	0.42	Not limited	
HPC:							
Hye-----	48	Not limited		Not limited		Somewhat limited Depth to bedrock	0.05
Pontotoc-----	34	Not limited		Not limited		Not limited	
KAC:							
Katemcy-----	60	Not limited		Not limited		Somewhat limited Depth to bedrock Large stones	0.01 0.03
Honeycreek-----	15	Not limited		Not limited		Not limited	
KeD:							
Keese-----	73	Not limited		Not limited		Very limited Depth to bedrock Droughty	1.00 1.00
KLE:							
Keese-----	45	Somewhat limited Large stones content	0.76	Somewhat limited Large stones content	0.76	Very limited Depth to bedrock Droughty	1.00 1.00
Lou-----	23	Not limited		Not limited		Not limited	
Rock outcrop-----	16	Not rated		Not rated		Not rated	
KRG:							
Rock outcrop-----	36	Not rated		Not rated		Not rated	
Keese, 15 to 30 percent slopes-----	25	Somewhat limited Slope	0.32	Not limited		Very limited Depth to bedrock Too steep Droughty	1.00 1.00 1.00
Keese, 12 to 15 percent slopes-----	13	Not limited		Not limited		Very limited Depth to bedrock Droughty Slope	1.00 1.00 0.96

Soil Survey of Mason County, Texas

Table 14.--Paths, Trails, and Golf Course Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf course fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KTG:							
Kerrville-----	33	Very limited Slope Large stones content	1.00 0.01	Somewhat limited Slope Large stones content	0.14 0.01	Very limited Too steep Droughty Carbonate content Large stones Depth to bedrock	1.00 1.00 1.00 1.00 0.99 0.82
Brackett-----	21	Very limited Large stones content Slope	1.00 0.50	Very limited Large stones content	1.00	Very limited Depth to bedrock Droughty Too steep Carbonate content	1.00 1.00 1.00 1.00 1.00
Tarrant-----	17	Somewhat limited Large stones content Slope Too clayey	0.77 0.76 0.50	Somewhat limited Large stones content Too clayey	0.77 0.50	Very limited Depth to bedrock Large stones Droughty Too steep Too clayey	1.00 1.00 1.00 1.00 1.00 1.00
KVE:							
Kerrville-----	28	Somewhat limited Large stones content	0.01	Somewhat limited Large stones content	0.01	Very limited Droughty Carbonate content Large stones Depth to bedrock Gravel	1.00 1.00 1.00 0.99 0.82 0.27
Real-----	25	Not limited		Not limited		Very limited Depth to bedrock Droughty Carbonate content Large stones Gravel	1.00 1.00 1.00 0.97 0.42
Sunev-----	21	Not limited		Not limited		Very limited Carbonate content	1.00
LKD:							
Ligon-----	42	Not limited		Not limited		Somewhat limited Depth to bedrock	0.35
Katemcy-----	29	Not limited		Not limited		Somewhat limited Depth to bedrock Large stones	0.01 0.03
Keese-----	15	Not limited		Not limited		Very limited Depth to bedrock Droughty	1.00 1.00

Soil Survey of Mason County, Texas

Table 14.--Paths, Trails, and Golf Course Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf course fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LND:							
Ligon-----	67	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Somewhat limited Depth to bedrock	0.35
Keese-----	22	Somewhat limited Large stones content	0.76	Somewhat limited Large stones content	0.76	Very limited Depth to bedrock Droughty	1.00 1.00
LOC:							
Loneoak-----	51	Somewhat limited Too sandy	0.42	Somewhat limited Too sandy	0.42	Not limited	
Campair-----	37	Somewhat limited Too sandy	0.92	Somewhat limited Too sandy	0.92	Somewhat limited Depth to bedrock Droughty	0.65 0.03
LRC:							
Lou-----	32	Not limited		Not limited		Not limited	
Click-----	29	Not limited		Not limited		Very limited Gravel Droughty Large stones	1.00 0.81 0.03
Voca-----	23	Not limited		Not limited		Not limited	
LuC:							
Luckenbach-----	76	Not limited		Not limited		Not limited	
MPC:							
Menard-----	47	Not limited		Not limited		Somewhat limited Large stones	0.03
Pedernales-----	23	Somewhat limited Too sandy	0.34	Somewhat limited Too sandy	0.34	Not limited	
MSC:							
Mereta-----	35	Not limited		Not limited		Very limited Depth to cemented pan Droughty Large stones	1.00 0.77 0.16
Cho-----	26	Not limited		Not limited		Very limited Depth to cemented pan Droughty Carbonate content	1.00 1.00 1.00
Sunev-----	17	Not limited		Not limited		Very limited Carbonate content	1.00

Soil Survey of Mason County, Texas

Table 14.--Paths, Trails, and Golf Course Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf course fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
NRE: Nebgen-----	53	Somewhat limited Large stones content	0.19	Somewhat limited Large stones content	0.19	Very limited Depth to bedrock	1.00
						Droughty Large stones	1.00 0.03
Rock outcrop-----	17	Not rated		Not rated		Not rated	
NRG: Nebgen-----	56	Very limited Large stones content Slope	1.00 0.82	Very limited Large stones content	1.00	Very limited Depth to bedrock	1.00
						Droughty Too steep Large stones	1.00 1.00 0.03
Rock outcrop-----	34	Not rated		Not rated		Not rated	
OaB: Oakalla-----	70	Not limited		Not limited		Somewhat limited Flooding	0.60
PeC: Pedernales-----	75	Somewhat limited Too sandy	0.34	Somewhat limited Too sandy	0.34	Not limited	
RCC: Riverwash-----	55	Not rated		Not rated		Very limited Flooding Droughty Gravel Large stones	1.00 1.00 1.00 0.61
Rock outcrop-----	20	Not rated		Not rated		Not rated	
RgG: Rock outcrop-----	95	Not rated		Not rated		Not rated	
RhE: Roughcreek-----	72	Somewhat limited Large stones content	0.19	Somewhat limited Large stones content	0.19	Very limited Depth to bedrock	1.00
						Gravel Droughty Large stones	1.00 0.90 0.16
RkE: Roughcreek-----	84	Very limited Large stones content Too clayey	1.00 0.50	Very limited Large stones content Too clayey	1.00 0.50	Very limited Depth to bedrock	1.00
						Droughty Large stones Too clayey	1.00 1.00 1.00

Soil Survey of Mason County, Texas

Table 14.--Paths, Trails, and Golf Course Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf course fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RRG: Roughcreek, 15 to 40 percent slopes--	40	Very limited Large stones content Slope Too clayey	1.00 0.68 0.50	Very limited Large stones content Too clayey	1.00 0.50	Very limited Depth to bedrock Too steep Droughty Large stones Too clayey	1.00 1.00 1.00 1.00
Roughcreek, 12 to 15 percent slopes--	20	Very limited Large stones content Too clayey	1.00 0.50	Very limited Large stones content Too clayey	1.00 0.50	Very limited Depth to bedrock Droughty Large stones Too clayey Slope	1.00 1.00 1.00 1.00 0.96
Rock outcrop-----	35	Not rated		Not rated		Not rated	
SuD: Sunev-----	70	Not limited		Not limited		Very limited Carbonate content	1.00
TRE: Tarrant-----	67	Very limited Large stones content Too clayey	1.00 0.50	Very limited Large stones content Too clayey	1.00 0.50	Very limited Depth to bedrock Large stones Droughty Too clayey	1.00 1.00 1.00 1.00
Rock outcrop-----	14	Not rated		Not rated		Not rated	
TRG: Tarrant, 15 to 40 percent slopes----	48	Somewhat limited Slope Large stones content Too clayey	0.82 0.77 0.50	Somewhat limited Large stones content Too clayey	0.77 0.50	Very limited Depth to bedrock Too steep Large stones Droughty Too clayey	1.00 1.00 1.00 1.00 1.00
Tarrant, 12 to 15 percent slopes----	14	Very limited Large stones content Too clayey	1.00 0.50	Very limited Large stones content Too clayey	1.00 0.50	Very limited Depth to bedrock Large stones Droughty Too clayey Slope	1.00 1.00 1.00 1.00 0.74
Rock outcrop-----	27	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 14.--Paths, Trails, and Golf Course Fairways--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf course fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
VeD: Venus, 0 to 3 percent slopes-----	44	Not limited		Not limited		Not limited	
Venus, 3 to 8 percent slopes-----	27	Not limited		Not limited		Not limited	
VoC: Voca-----	77	Not limited		Not limited		Not limited	
W: Water-----	100	Not rated		Not rated		Not rated	
YNE: Yates-----	60	Very limited Large stones content	1.00	Very limited Large stones content	1.00	Very limited Depth to bedrock Droughty Gravel Large stones	1.00 1.00 0.38
Nebgen-----	20	Somewhat limited Large stones content	0.19	Somewhat limited Large stones content	0.19	Very limited Depth to bedrock Droughty Large stones	1.00 1.00 0.03
Rock outcrop-----	15	Not rated		Not rated		Not rated	
YNG: Yates-----	50	Very limited Large stones content Slope	1.00 0.18	Very limited Large stones content	1.00	Very limited Depth to bedrock Droughty Large stones Too steep Gravel	1.00 1.00 1.00 0.79
Nebgen-----	25	Very limited Large stones content Slope	1.00 0.50	Very limited Large stones content	1.00	Very limited Depth to bedrock Droughty Too steep Large stones	1.00 1.00 0.03
Rock outcrop-----	20	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 15.--Dwellings and Small Commercial Buildings

(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 W/O 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
ACC:							
Acove-----	42	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Depth to hard bedrock Depth to soft bedrock	0.50 0.50 0.08	Somewhat limited Shrink-swell	0.50
Campair-----	19	Somewhat limited Depth to hard bedrock	0.64	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock	0.64
Loneoak-----	18	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
AMC:							
Acove-----	56	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Depth to hard bedrock Depth to soft bedrock	0.50 0.50 0.08	Somewhat limited Shrink-swell	0.50
Menard-----	30	Not limited		Not limited		Not limited	
CAC:							
Campwood-----	34	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00	Very limited Shrink-swell	1.00
Sunev-----	33	Not limited		Not limited		Not limited	
Valera-----	15	Somewhat limited Depth to hard bedrock	0.54	Very limited Depth to hard bedrock Depth to thin cemented pan	1.00 0.84	Somewhat limited Depth to hard bedrock	0.54
CeC:							
Castell-----	85	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Depth to soft bedrock	0.50 0.46	Somewhat limited Shrink-swell	0.50
ERD:							
Eckert-----	64	Very limited Depth to hard bedrock Large stones	1.00 1.00	Very limited Depth to hard bedrock Large stones	1.00 1.00	Very limited Depth to hard bedrock Large stones	1.00 1.00
Rock outcrop-----	25	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings W/O 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
ERG:							
Eckert-----	63	Very limited Depth to hard bedrock Too steep Large stones	1.00 1.00 0.03	Very limited Depth to hard bedrock Too steep Large stones	1.00 1.00 0.03	Very limited Slope Depth to hard bedrock Large stones	1.00 1.00 0.03
Rock outcrop-----	33	Not rated		Not rated		Not rated	
FRC:							
Fieldcreek, occasionally flooded-----	52	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
Fieldcreek, frequently flooded-	23	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
Riverwash-----	15	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
HeD:							
Hensley-----	68	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50	Very limited Depth to hard bedrock Shrink-swell	1.00 0.50
HkC:							
Honeycreek-----	71	Not limited		Not limited		Not limited	
HND:							
Hye-----	41	Somewhat limited Depth to hard bedrock	0.05	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock	0.05
Nebgen-----	30	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00
Oben-----	15	Somewhat limited Depth to soft bedrock	0.50	Very limited Depth to soft bedrock	1.00	Somewhat limited Depth to soft bedrock	1.00
HOD:							
Hye-----	43	Somewhat limited Depth to hard bedrock	0.05	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock	0.05
Oben-----	19	Somewhat limited Depth to soft bedrock	0.50	Very limited Depth to soft bedrock	1.00	Somewhat limited Depth to soft bedrock	1.00
Loneoak-----	18	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50

Soil Survey of Mason County, Texas

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings W/O 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
HPC:							
Hye-----	48	Somewhat limited Depth to hard bedrock	0.05	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock	0.05
Pontotoc-----	34	Not limited		Not limited		Not limited	
KAC:							
Katemcy-----	60	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Depth to soft bedrock	0.50 0.01	Somewhat limited Shrink-swell	0.50
Honeycreek-----	15	Not limited		Not limited		Not limited	
KeD:							
Keese-----	73	Somewhat limited Depth to soft bedrock	0.50	Very limited Depth to soft bedrock	1.00	Somewhat limited Depth to soft bedrock	1.00
KLE:							
Keese-----	45	Somewhat limited Depth to soft bedrock	0.50	Very limited Depth to soft bedrock	1.00	Somewhat limited Depth to soft bedrock	1.00
Lou-----	23	Not limited		Not limited		Not limited	
Rock outcrop-----	16	Not rated		Not rated		Not rated	
KRG:							
Rock outcrop-----	36	Not rated		Not rated		Not rated	
Keese, 15 to 30 percent slopes-----	25	Very limited Too steep Depth to soft bedrock	1.00 0.50	Very limited Too steep Depth to soft bedrock	1.00 1.00	Very limited Slope Depth to soft bedrock	1.00 1.00
Keese, 12 to 15 percent slopes-----	13	Somewhat limited Slope Depth to soft bedrock	0.96 0.50	Very limited Depth to soft bedrock Slope	1.00 0.96	Very limited Slope Depth to soft bedrock	1.00 1.00

Soil Survey of Mason County, Texas

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings W/O 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
KTG:							
Kerrville-----	33	Very limited Too steep Depth to hard bedrock	1.00 0.82	Very limited Too steep Depth to hard bedrock	1.00 1.00	Very limited Slope Depth to hard bedrock	1.00 0.82
Brackett-----	21	Very limited Too steep Depth to soft bedrock	1.00 0.50	Very limited Depth to soft bedrock Too steep	1.00 1.00	Very limited Slope Depth to soft bedrock	1.00 1.00
Tarrant-----	17	Very limited Depth to hard bedrock Too steep Large stones Shrink-swell	1.00 1.00 1.00 0.50	Very limited Depth to hard bedrock Too steep Large stones Shrink-swell	1.00 1.00 1.00 0.50	Very limited Slope Depth to hard bedrock Large stones Shrink-swell	1.00 1.00 1.00 0.50
KVE:							
Kerrville-----	28	Somewhat limited Depth to hard bedrock	0.82	Very limited Depth to hard bedrock	1.00	Somewhat limited Slope Depth to hard bedrock	0.03 0.82
Real-----	25	Somewhat limited Depth to soft bedrock	0.50	Very limited Depth to soft bedrock	1.00	Somewhat limited Depth to soft bedrock	1.00
Sunev-----	21	Not limited		Not limited		Not limited	
LKD:							
Ligon-----	42	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Depth to soft bedrock	0.50 0.35	Somewhat limited Shrink-swell	0.50
Katemcy-----	29	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Depth to soft bedrock	0.50 0.01	Somewhat limited Shrink-swell	0.50
Keese-----	15	Somewhat limited Depth to soft bedrock	0.50	Very limited Depth to soft bedrock	1.00	Somewhat limited Depth to soft bedrock	1.00
LND:							
Ligon-----	67	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell Depth to soft bedrock	0.50 0.35	Somewhat limited Shrink-swell	0.50
Keese-----	22	Somewhat limited Depth to soft bedrock	0.50	Very limited Depth to soft bedrock	1.00	Somewhat limited Depth to soft bedrock	1.00

Soil Survey of Mason County, Texas

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings W/O 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
LOC:							
Loneoak-----	51	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
Campair-----	37	Somewhat limited Depth to hard bedrock	0.64	Very limited Depth to hard bedrock	1.00	Somewhat limited Depth to hard bedrock	0.64
LRC:							
Lou-----	32	Not limited		Not limited		Not limited	
Click-----	29	Not limited		Somewhat limited Depth to hard bedrock	0.18	Not limited	
Voca-----	23	Very limited Shrink-swell	1.00	Not limited		Very limited Shrink-swell	1.00
LuC:							
Luckenbach-----	76	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
MPC:							
Menard-----	47	Not limited		Not limited		Not limited	
Pedernales-----	23	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
MSC:							
Mereta-----	35	Very limited Shrink-swell	1.00	Very limited Shrink-swell Depth to thin cemented pan	1.00 1.00	Very limited Shrink-swell Depth to thin cemented pan	1.00 1.00
Cho-----	26	Somewhat limited Shrink-swell	0.50	Very limited Depth to thin cemented pan Shrink-swell	1.00 0.50	Somewhat limited Depth to thin cemented pan Shrink-swell	1.00 0.50
Sunev-----	17	Not limited		Not limited		Not limited	
NRE:							
Nebgen-----	53	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00
Rock outcrop-----	17	Not rated		Not rated		Not rated	
NRG:							
Nebgen-----	56	Very limited Depth to hard bedrock Too steep	1.00 1.00	Very limited Depth to hard bedrock Too steep	1.00 1.00	Very limited Slope Depth to hard bedrock	1.00 1.00
Rock outcrop-----	34	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings W/O 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
OaB: Oakalla-----	70	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50	Very limited Flooding Shrink-swell	1.00 0.50
PeC: Pedernales-----	75	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50	Somewhat limited Shrink-swell	0.50
RCC: Riverwash-----	55	Very limited Flooding	1.00	Very limited Flooding	1.00	Very limited Flooding	1.00
Rock outcrop-----	20	Not rated		Not rated		Not rated	
RgG: Rock outcrop-----	95	Not rated		Not rated		Not rated	
RhE: Roughcreek-----	72	Very limited Shrink-swell Depth to hard bedrock	1.00 1.00	Very limited Shrink-swell Depth to hard bedrock	1.00 1.00	Very limited Shrink-swell Depth to hard bedrock	1.00 1.00
RkE: Roughcreek-----	84	Very limited Depth to hard bedrock Large stones Shrink-swell	1.00 0.92 0.50	Very limited Depth to hard bedrock Large stones Shrink-swell	1.00 0.92 0.50	Very limited Depth to hard bedrock Large stones Shrink-swell	1.00 0.92 0.50
RRG: Roughcreek, 15 to 40 percent slopes--	40	Very limited Too steep Depth to hard bedrock Large stones Shrink-swell	1.00 1.00 0.92 0.50	Very limited Too steep Depth to hard bedrock Large stones Shrink-swell	1.00 1.00 0.92 0.50	Very limited Slope Depth to hard bedrock Large stones Shrink-swell	1.00 1.00 0.92 0.50
Roughcreek, 12 to 15 percent slopes--	20	Very limited Depth to hard bedrock Slope Large stones Shrink-swell	1.00 0.96 0.92 0.50	Very limited Depth to hard bedrock Slope Large stones Shrink-swell	1.00 0.96 0.92 0.50	Very limited Slope Depth to hard bedrock Large stones Shrink-swell	1.00 1.00 0.92 0.50
Rock outcrop-----	35	Not rated		Not rated		Not rated	
SuD: Sunev-----	70	Not limited		Not limited		Not limited	

Soil Survey of Mason County, Texas

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings W/O 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
TRE:							
Tarrant-----	67	Very limited Depth to hard bedrock Large stones Shrink-swell	1.00 1.00 0.50	Very limited Depth to hard bedrock Large stones Shrink-swell	1.00 1.00 0.50	Very limited Depth to hard bedrock Large stones Shrink-swell	1.00 1.00 0.50
Rock outcrop-----	14	Not rated		Not rated		Not rated	
TRG:							
Tarrant, 15 to 40 percent slopes-----	48	Very limited Too steep Depth to hard bedrock Large stones Shrink-swell	1.00 1.00 1.00 0.50	Very limited Too steep Depth to hard bedrock Large stones Shrink-swell	1.00 1.00 1.00 0.50	Very limited Slope Depth to hard bedrock Large stones Shrink-swell	1.00 1.00 1.00 0.50
Tarrant, 12 to 15 percent slopes-----	14	Very limited Depth to hard bedrock Large stones Slope Shrink-swell	1.00 1.00 0.74 0.50	Very limited Depth to hard bedrock Large stones Slope Shrink-swell	1.00 1.00 0.74 0.50	Very limited Slope Depth to hard bedrock Large stones Shrink-swell	1.00 1.00 1.00 0.50
Rock outcrop-----	27	Not rated		Not rated		Not rated	
VeD:							
Venus, 0 to 3 percent slopes-----	44	Not limited		Not limited		Not limited	
Venus, 3 to 8 percent slopes-----	27	Not limited		Not limited		Somewhat limited Slope	0.03
VoC:							
Voca-----	77	Very limited Shrink-swell	1.00	Not limited		Very limited Shrink-swell	1.00
W:							
Water-----	100	Not rated		Not rated		Not rated	
YNE:							
Yates-----	60	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock	1.00
Nebgen-----	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
Rock outcrop-----	15	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 15.--Dwellings and Small Commercial Buildings--Continued

Map symbol and soil name	Pct. of map unit	Dwellings W/O 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
YNG:							
Yates-----	50	Very limited Depth to hard bedrock Too steep Large stones	1.00 1.00 0.68	Very limited Depth to hard bedrock Too steep Large stones	1.00 1.00 0.68	Very limited Slope Depth to hard bedrock Large stones	1.00 1.00 0.68
Nebgen-----	25	Very limited Depth to hard bedrock Too steep	1.00 1.00	Very limited Depth to hard bedrock Too steep	1.00 1.00	Very limited Slope Depth to hard bedrock	1.00 1.00
Rock outcrop-----	20	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping

(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
ACC:							
Acove-----	42	Very limited Low strength Shrink-swell	1.00 0.50	Somewhat limited Too clayey Depth to hard bedrock Unstable excavation walls Depth to soft bedrock	0.54 0.50 0.10 0.08	Somewhat limited Depth to bedrock	0.08
Campair-----	19	Very limited Low strength Depth to hard bedrock	1.00 0.64	Very limited Depth to hard bedrock Unstable excavation walls	1.00 0.10	Somewhat limited Depth to bedrock Droughty	0.65 0.03
Loneoak-----	18	Very limited Low strength Shrink-swell	1.00 0.50	Very limited Unstable excavation walls Too clayey	1.00 0.50	Not limited	
AMC:							
Acove-----	56	Very limited Low strength Shrink-swell	1.00 0.50	Somewhat limited Too clayey Depth to hard bedrock Unstable excavation walls Depth to soft bedrock	0.54 0.50 0.10 0.08	Somewhat limited Depth to bedrock	0.08
Menard-----	30	Not limited		Somewhat limited Unstable excavation walls	0.10	Somewhat limited Large stones	0.03
CAC:							
Campwood-----	34	Very limited Shrink-swell Low strength	1.00 1.00	Very limited Unstable excavation walls Too clayey	1.00 0.28	Very limited Too clayey	1.00
Sunev-----	33	Somewhat limited Low strength	0.78	Somewhat limited Unstable excavation walls	0.10	Very limited Carbonate content	1.00
Valera-----	15	Somewhat limited Low strength Depth to hard bedrock	0.78 0.54	Very limited Depth to hard bedrock Depth to thin cemented pan Unstable excavation walls	1.00 0.84 0.10	Somewhat limited Depth to bedrock Droughty Depth to cemented pan	0.54 0.30 0.84

Soil Survey of Mason County, Texas

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
CeC:							
Castell-----	85	Somewhat limited Shrink-swell	0.50	Somewhat limited Too clayey Depth to soft bedrock Unstable excavation walls	0.12 0.46 0.10	Somewhat limited Depth to bedrock Large stones	0.46 0.03
ERD:							
Eckert-----	64	Very limited Depth to hard bedrock Large stones	1.00 1.00	Very limited Depth to hard bedrock Large stones Unstable excavation walls	1.00 1.00 1.00 0.10	Very limited Depth to bedrock Large stones Droughty	1.00 1.00 1.00
Rock outcrop-----	25	Not rated		Not rated		Not rated	
ERG:							
Eckert-----	63	Very limited Depth to hard bedrock Too steep Large stones	1.00 1.00 0.03	Very limited Depth to hard bedrock Too steep Large stones Unstable excavation walls	1.00 1.00 0.03 0.50	Very limited Depth to bedrock Droughty Too steep Large stones Gravel	1.00 1.00 1.00 0.99 0.27
Rock outcrop-----	33	Not rated		Not rated		Not rated	
FRC:							
Fieldcreek, occasionally flooded-----	52	Very limited Flooding	1.00	Somewhat limited Flooding Unstable excavation walls	0.60 0.10	Somewhat limited Flooding	0.60
Fieldcreek, frequently flooded-	23	Very limited Flooding	1.00	Somewhat limited Flooding Unstable excavation walls	0.80 0.10	Very limited Flooding	1.00
Riverwash-----	15	Very limited Flooding	1.00	Very limited Unstable excavation walls Flooding	1.00 0.80	Very limited Flooding Droughty Gravel Large stones	1.00 1.00 1.00 0.61
HeD:							
Hensley-----	68	Very limited Depth to hard bedrock Low strength Shrink-swell	1.00 1.00 0.50	Very limited Depth to hard bedrock Unstable excavation walls	1.00 0.10	Very limited Depth to bedrock Droughty Gravel Large stones	1.00 1.00 1.00 0.76 0.03

Soil Survey of Mason County, Texas

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
HKC: Honeycreek-----	71	Not limited		Very limited Unstable excavation walls	1.00	Not limited	
HND: Hye-----	41	Somewhat limited Depth to hard bedrock	0.05	Very limited Depth to hard bedrock Unstable excavation walls	1.00 0.10	Somewhat limited Depth to bedrock	0.05
Nebgen-----	30	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock Unstable excavation walls	1.00 0.10	Very limited Depth to bedrock Droughty Large stones	1.00 1.00 0.03
Oben-----	15	Somewhat limited Depth to soft bedrock	1.00	Very limited Depth to soft bedrock Unstable excavation walls	1.00 0.10	Very limited Depth to bedrock Droughty	1.00 0.90
HOD: Hye-----	43	Somewhat limited Depth to hard bedrock	0.05	Very limited Depth to hard bedrock Unstable excavation walls	1.00 0.10	Somewhat limited Depth to bedrock	0.05
Oben-----	19	Somewhat limited Depth to soft bedrock	1.00	Very limited Depth to soft bedrock Unstable excavation walls	1.00 0.10	Very limited Depth to bedrock Droughty	1.00 0.90
Loneoak-----	18	Very limited Low strength Shrink-swell	1.00 0.50	Very limited Unstable excavation walls Too clayey	1.00 0.50	Not limited	
HPC: Hye-----	48	Somewhat limited Depth to hard bedrock	0.05	Very limited Depth to hard bedrock Unstable excavation walls	1.00 0.10	Somewhat limited Depth to bedrock	0.05
Pontotoc-----	34	Not limited		Somewhat limited Unstable excavation walls	0.10	Not limited	

Soil Survey of Mason County, Texas

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
KAC:							
Katemcy-----	60	Very limited Low strength	1.00	Very limited Unstable excavation walls	1.00	Somewhat limited Depth to bedrock	0.01
		Shrink-swell	0.50	Too clayey Depth to soft bedrock	0.28 0.01	Large stones	0.03
Honeycreek-----	15	Not limited		Very limited Unstable excavation walls	1.00	Not limited	
KeD:							
Keese-----	73	Somewhat limited Depth to soft bedrock	1.00	Very limited Depth to soft bedrock Unstable excavation walls	1.00 0.10	Very limited Depth to bedrock Droughty	1.00 1.00
KLE:							
Keese-----	45	Somewhat limited Depth to soft bedrock	1.00	Very limited Depth to soft bedrock Unstable excavation walls	1.00 0.10	Very limited Depth to bedrock Droughty	1.00 1.00
Lou-----	23	Not limited		Very limited Unstable excavation walls	1.00	Not limited	
Rock outcrop-----	16	Not rated		Not rated		Not rated	
KRG:							
Rock outcrop-----	36	Not rated		Not rated		Not rated	
Keese, 15 to 30 percent slopes-----	25	Very limited Too steep	1.00	Very limited Depth to soft bedrock	1.00	Very limited Depth to bedrock	1.00
		Depth to soft bedrock	1.00	Too steep Unstable excavation walls	1.00 0.50	Too steep Droughty	1.00 1.00
Keese, 12 to 15 percent slopes-----	13	Somewhat limited Depth to soft bedrock Slope	1.00 0.96	Very limited Depth to soft bedrock Slope Unstable excavation walls	1.00 0.96 0.50	Very limited Depth to bedrock Droughty Slope	1.00 1.00 0.96

Soil Survey of Mason County, Texas

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
KTG:							
Kerrville-----	33	Very limited		Very limited		Very limited	
		Too steep	1.00	Depth to hard bedrock	1.00	Too steep	1.00
		Depth to hard bedrock	0.82	Too steep	1.00	Droughty	1.00
				Unstable excavation walls	0.10	Carbonate content	1.00
						Large stones	0.99
						Depth to bedrock	0.82
Brackett-----	21	Very limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Too steep	1.00	Too steep	1.00	Droughty	1.00
				Unstable excavation walls	0.10	Too steep	1.00
						Carbonate content	1.00
Tarrant-----	17	Very limited		Very limited		Very limited	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Too steep	1.00	Too steep	1.00	Large stones	1.00
		Large stones	1.00	Large stones	1.00	Droughty	1.00
		Low strength	1.00	Unstable excavation walls	0.10	Too steep	1.00
		Shrink-swell	0.50			Too clayey	1.00
KVE:							
Kerrville-----	28	Somewhat limited		Very limited		Very limited	
		Depth to hard bedrock	0.82	Depth to hard bedrock	1.00	Droughty	1.00
				Unstable excavation walls	0.10	Carbonate content	1.00
						Large stones	0.99
						Depth to bedrock	0.82
						Gravel	0.27
Real-----	25	Somewhat limited		Very limited		Very limited	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
				Unstable excavation walls	0.10	Droughty	1.00
						Carbonate content	1.00
						Large stones	0.97
						Gravel	0.42
Sunev-----	21	Somewhat limited		Somewhat limited		Very limited	
		Low strength	0.78	Unstable excavation walls	0.10	Carbonate content	1.00

Soil Survey of Mason County, Texas

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
LKD: Ligon-----	42	Somewhat limited Shrink-swell	0.50	Somewhat limited Too clayey Depth to soft bedrock Unstable excavation walls	0.12 0.35 0.10	Somewhat limited Depth to bedrock	0.35
Katemcy-----	29	Very limited Low strength Shrink-swell	1.00 0.50	Very limited Unstable excavation walls Too clayey Depth to soft bedrock	1.00 0.28 0.01	Somewhat limited Depth to bedrock Large stones	0.01 0.03
Keese-----	15	Somewhat limited Depth to soft bedrock	1.00	Very limited Depth to soft bedrock Unstable excavation walls	1.00 0.10	Very limited Depth to bedrock Droughty	1.00 1.00
LND: Ligon-----	67	Somewhat limited Shrink-swell	0.50	Somewhat limited Too clayey Depth to soft bedrock Unstable excavation walls	0.12 0.35 0.10	Somewhat limited Depth to bedrock	0.35
Keese-----	22	Somewhat limited Depth to soft bedrock	1.00	Very limited Depth to soft bedrock Unstable excavation walls	1.00 0.10	Very limited Depth to bedrock Droughty	1.00 1.00
LOC: Loneoak-----	51	Very limited Low strength Shrink-swell	1.00 0.50	Very limited Unstable excavation walls Too clayey	1.00 0.50	Not limited	
Campair-----	37	Very limited Low strength Depth to hard bedrock	1.00 0.64	Very limited Depth to hard bedrock Unstable excavation walls	1.00 0.10	Somewhat limited Depth to bedrock Droughty	0.65 0.03

Soil Survey of Mason County, Texas

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
LRC:							
Lou-----	32	Not limited		Very limited Unstable excavation walls	1.00	Not limited	
Click-----	29	Not limited		Very limited Unstable excavation walls Depth to hard bedrock	1.00 0.18	Very limited Gravel Droughty Large stones	1.00 0.81 0.03
Voca-----	23	Very limited Shrink-swell Low strength	1.00 1.00	Very limited Unstable excavation walls Too clayey	1.00 0.54	Not limited	
LuC:							
Luckenbach-----	76	Very limited Low strength Shrink-swell	1.00 0.50	Somewhat limited Too clayey Unstable excavation walls	0.12 0.10	Not limited	
MPC:							
Menard-----	47	Not limited		Somewhat limited Unstable excavation walls	0.10	Somewhat limited Large stones	0.03
Pedernales-----	23	Very limited Low strength Shrink-swell	1.00 0.50	Somewhat limited Unstable excavation walls	0.10	Not limited	
MSC:							
Mereta-----	35	Very limited Shrink-swell Depth to thin cemented pan Low strength	1.00 1.00 1.00	Very limited Depth to thin cemented pan Unstable excavation walls	1.00 0.10	Very limited Depth to cemented pan Droughty Large stones	1.00 0.77 0.16
Cho-----	26	Very limited Depth to thin cemented pan Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited Depth to thin cemented pan Unstable excavation walls	1.00 0.50	Very limited Depth to cemented pan Droughty Carbonate content	1.00 1.00 1.00
Sunev-----	17	Somewhat limited Low strength	0.78	Somewhat limited Unstable excavation walls	0.10	Very limited Carbonate content	1.00

Soil Survey of Mason County, Texas

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
NRE:							
Nebgen-----	53	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock Unstable excavation walls	1.00 0.10	Very limited Depth to bedrock Droughty Large stones	1.00 1.00 0.03
Rock outcrop-----	17	Not rated		Not rated		Not rated	
NRG:							
Nebgen-----	56	Very limited Depth to hard bedrock Too steep	1.00 1.00	Very limited Depth to hard bedrock Too steep Unstable excavation walls	1.00 1.00 0.50	Very limited Depth to bedrock Droughty Too steep Large stones	1.00 1.00 1.00 0.03
Rock outcrop-----	34	Not rated		Not rated		Not rated	
OaB:							
Oakalla-----	70	Very limited Flooding Low strength Shrink-swell	1.00 1.00 0.50	Somewhat limited Flooding Unstable excavation walls	0.60 0.10	Somewhat limited Flooding	0.60
PeC:							
Pedernales-----	75	Very limited Low strength Shrink-swell	1.00 0.50	Somewhat limited Unstable excavation walls	0.10	Not limited	
RCC:							
Riverwash-----	55	Very limited Flooding	1.00	Very limited Unstable excavation walls Flooding	1.00 0.80	Very limited Flooding Droughty Gravel Large stones	1.00 1.00 1.00 0.61
Rock outcrop-----	20	Not rated		Not rated		Not rated	
RgG:							
Rock outcrop-----	95	Not rated		Not rated		Not rated	
RhE:							
Roughcreek-----	72	Very limited Depth to hard bedrock Shrink-swell Low strength	1.00 1.00 1.00	Very limited Depth to hard bedrock Unstable excavation walls	1.00 0.10	Very limited Depth to bedrock Gravel Droughty Large stones	1.00 1.00 0.90 0.16

Soil Survey of Mason County, Texas

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
RkE:							
Roughcreek-----	84	Very limited Depth to hard bedrock Low strength Large stones Shrink-swell	1.00 1.00 0.92 0.50	Very limited Depth to hard bedrock Large stones Unstable excavation walls	1.00 0.92 0.10	Very limited Depth to bedrock Droughty Large stones Too clayey	1.00 1.00 1.00 1.00
RRG:							
Roughcreek, 15 to 40 percent slopes--	40	Very limited Depth to hard bedrock Too steep Low strength Large stones Shrink-swell	1.00 1.00 1.00 0.92 0.50	Very limited Depth to hard bedrock Too steep Large stones Unstable excavation walls	1.00 1.00 0.92 0.10	Very limited Depth to bedrock Too steep Droughty Large stones Too clayey	1.00 1.00 1.00 1.00 1.00
Roughcreek, 12 to 15 percent slopes--	20	Very limited Depth to hard bedrock Low strength Slope Large stones Shrink-swell	1.00 1.00 0.96 0.92 0.50	Very limited Depth to hard bedrock Slope Large stones Unstable excavation walls	1.00 0.96 0.92 0.10	Very limited Depth to bedrock Droughty Large stones Too clayey Slope	1.00 1.00 1.00 1.00 0.96
Rock outcrop-----	35	Not rated		Not rated		Not rated	
SuD:							
Sunev-----	70	Somewhat limited Low strength	0.78	Somewhat limited Unstable excavation walls	0.10	Very limited Carbonate content	1.00
TRE:							
Tarrant-----	67	Very limited Depth to hard bedrock Large stones Low strength Shrink-swell	1.00 1.00 1.00 0.50	Very limited Depth to hard bedrock Large stones Unstable excavation walls	1.00 1.00 0.10	Very limited Depth to bedrock Large stones Droughty Too clayey	1.00 1.00 1.00 1.00
Rock outcrop-----	14	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
TRG:							
Tarrant, 15 to 40 percent slopes-----	48	Very limited Depth to hard bedrock Too steep Large stones Low strength Shrink-swell	1.00 1.00 1.00 1.00 0.50	Very limited Depth to hard bedrock Too steep Large stones Unstable excavation walls	1.00 1.00 1.00 0.10	Very limited Depth to bedrock Too steep Large stones Droughty Too clayey	1.00 1.00 1.00 1.00 1.00
Tarrant, 12 to 15 percent slopes-----	14	Very limited Depth to hard bedrock Large stones Low strength Slope Shrink-swell	1.00 1.00 1.00 0.74 0.50	Very limited Depth to hard bedrock Large stones Slope Unstable excavation walls	1.00 1.00 0.74 0.10	Very limited Depth to bedrock Large stones Droughty Too clayey Slope	1.00 1.00 1.00 1.00 0.74
Rock outcrop-----	27	Not rated		Not rated		Not rated	
VeD:							
Venus, 0 to 3 percent slopes-----	44	Somewhat limited Low strength	0.22	Somewhat limited Unstable excavation walls	0.10	Not limited	
Venus, 3 to 8 percent slopes-----	27	Somewhat limited Low strength	0.22	Somewhat limited Unstable excavation walls	0.10	Not limited	
VoC:							
Voca-----	77	Very limited Shrink-swell Low strength	1.00 1.00	Very limited Unstable excavation walls Too clayey	1.00 0.54	Not limited	
W:							
Water-----	100	Not rated		Not rated		Not rated	
YNE:							
Yates-----	60	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock Unstable excavation walls	1.00 0.10	Very limited Depth to bedrock Droughty Gravel Large stones	1.00 1.00 1.00 1.00 0.38
Nebgen-----	20	Very limited Depth to hard bedrock	1.00	Very limited Depth to hard bedrock Unstable excavation walls	1.00 0.10	Very limited Depth to bedrock Droughty Large stones	1.00 1.00 0.03
Rock outcrop-----	15	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 16.--Roads and Streets, Shallow Excavations, and Lawns and Landscaping--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
YNG:							
Yates-----	50	Very limited Depth to hard bedrock Too steep Large stones	1.00 1.00 0.68	Very limited Depth to hard bedrock Too steep Large stones Unstable excavation walls	1.00 1.00 0.68 0.10	Very limited Depth to bedrock Droughty Large stones Too steep Gravel	1.00 1.00 1.00 1.00 0.79
Nebgen-----	25	Very limited Depth to hard bedrock Too steep	1.00 1.00	Very limited Depth to hard bedrock Too steep Unstable excavation walls	1.00 1.00 0.50	Very limited Depth to bedrock Droughty Too steep Large stones	1.00 1.00 1.00 0.03
Rock outcrop-----	20	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 17.--Sewage Disposal

(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
ACC:					
Acove-----	42	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Slow water movement	1.00	Seepage Slope Depth to hard bedrock	1.00 0.05 0.50
Campair-----	19	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Slow water movement	0.50	Seepage	0.50
Loneoak-----	18	Very limited Slow water movement Depth to bedrock	1.00 0.22	Very limited Seepage	1.00
AMC:					
Acove-----	56	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Slow water movement	1.00	Seepage Depth to hard bedrock	1.00 0.50
Menard-----	30	Very limited Slow water movement	1.00	Very limited Seepage	1.00
CAC:					
Campwood-----	34	Very limited Slow water movement	1.00	Not limited	
Sunev-----	33	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage	0.50
Valera-----	15	Very limited Depth to cemented pan Depth to bedrock	1.00 1.00	Very limited Depth to hard bedrock Depth to cemented pan	1.00 1.00
		Slow water movement	0.50	Seepage	0.50
CeC:					
Castell-----	85	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Slow water movement	1.00	Seepage Slope	0.21 0.01

Soil Survey of Mason County, Texas

Table 17.--Sewage Disposal--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
ERD: Eckert-----	64	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Large stones	1.00	Large stones	1.00
				Seepage	0.21
				Slope	0.02
Rock outcrop-----	25	Not rated		Not rated	
ERG: Eckert-----	63	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Too steep	1.00	Slope	1.00
		Large stones	0.03	Large stones	0.56
				Seepage	0.21
Rock outcrop-----	33	Not rated		Not rated	
FRC: Fieldcreek, occasionally flooded-----	52	Very limited Flooding	1.00	Very limited Flooding	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Fieldcreek, frequently flooded-	23	Very limited Flooding	1.00	Very limited Flooding	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
Riverwash-----	15	Very limited Flooding	1.00	Not rated	
		Seepage, bottom layer	1.00		
		Filtering capacity	1.00		
HeD: Hensley-----	68	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
				Slope	0.23
				Seepage	0.21
HkC: Honeycreek-----	71	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage	0.50
		Depth to bedrock	0.47	Slope	0.02
				Depth to soft bedrock	0.05

Soil Survey of Mason County, Texas

Table 17.--Sewage Disposal--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
HND: Hye-----	41	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Slow water movement	0.50	Seepage Slope	0.50 0.18
Nebgen-----	30	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Seepage, bottom layer	1.00	Seepage Slope	0.27 0.05
Oben-----	15	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
				Seepage Slope	0.50 0.08
HOD: Hye-----	43	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Slow water movement	0.50	Seepage Slope	0.50 0.04
Oben-----	19	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
				Seepage Slope	0.50 0.10
Loneoak-----	18	Very limited Slow water movement Depth to bedrock	1.00 0.22	Very limited Seepage	1.00
HPC: Hye-----	48	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Slow water movement	0.50	Seepage Slope	0.50 0.02
Pontotoc-----	34	Somewhat limited Slow water movement Depth to bedrock	0.50 0.04	Very limited Seepage	1.00
KAC: Katemcy-----	60	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Slow water movement	1.00	Slope	0.02
Honeycreek-----	15	Somewhat limited Slow water movement Depth to bedrock	0.50 0.47	Somewhat limited Seepage Depth to soft bedrock	0.50 0.05

Soil Survey of Mason County, Texas

Table 17.--Sewage Disposal--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
KeD:					
Keese-----	73	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
				Slope	0.18
KLE:					
Keese-----	45	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Seepage, bottom layer	1.00	Seepage	1.00
				Slope	0.02
Lou-----	23	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage	0.50
Rock outcrop-----	16	Not rated		Not rated	
KRG:					
Rock outcrop-----	36	Not rated		Not rated	
Keese, 15 to 30 percent slopes-----	25	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Too steep	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	0.21
Keese, 12 to 15 percent slopes-----	13	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Seepage, bottom layer	1.00	Slope	1.00
		Slope	0.96	Seepage	0.18
KTG:					
Kerrville-----	33	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Too steep	1.00	Slope	1.00
		Slow water movement	0.50	Seepage	0.50
				Large stones	0.29
Brackett-----	21	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock	1.00
		Too steep	1.00	Slope	1.00
				Seepage	0.50
Tarrant-----	17	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Too steep	1.00	Slope	1.00
		Large stones	1.00	Large stones	1.00
				Seepage	0.21

Soil Survey of Mason County, Texas

Table 17.--Sewage Disposal--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
KVE: Kerrville-----	28	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Slow water movement	0.50	Slope Seepage Large stones	0.50 0.50 0.29
Real-----	25	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock Seepage Slope Large stones	1.00 0.27 0.18 0.03
Sunev-----	21	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage Slope	0.50 0.02
LKD: Ligon-----	42	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock Seepage Slope	1.00 0.21 0.08
Katemcy-----	29	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock Slope	1.00 0.01
Keese-----	15	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock Seepage Slope	1.00 1.00 0.18
		Seepage, bottom layer	1.00		
LND: Ligon-----	67	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock Seepage Slope	1.00 0.21 0.10
		Slow water movement	1.00		
Keese-----	22	Very limited Depth to bedrock	1.00	Very limited Depth to soft bedrock Seepage Slope	1.00 1.00 0.18
		Seepage, bottom layer	1.00		
LOC: Loneoak-----	51	Very limited Slow water movement	1.00	Very limited Seepage	1.00
		Depth to bedrock	0.22		
Campair-----	37	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 0.50 0.04
		Slow water movement	0.50		

Soil Survey of Mason County, Texas

Table 17.--Sewage Disposal--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
LRC:					
Lou-----	32	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage	0.50
Click-----	29	Very limited Seepage, bottom layer Depth to bedrock	1.00 0.63	Very limited Seepage Slope Depth to hard bedrock	1.00 0.02 0.18
Voca-----	23	Very limited Slow water movement	1.00	Somewhat limited Seepage Slope	0.50 0.01
LuC:					
Luckenbach-----	76	Very limited Slow water movement	1.00	Somewhat limited Seepage	0.50
MPC:					
Menard-----	47	Very limited Slow water movement	1.00	Very limited Seepage	1.00
Pedernales-----	23	Very limited Slow water movement	1.00	Somewhat limited Seepage	0.50
MSC:					
Mereta-----	35	Very limited Depth to cemented pan	1.00	Very limited Depth to cemented pan Seepage Slope	1.00 0.50 0.02
Cho-----	26	Very limited Depth to cemented pan	1.00	Very limited Depth to cemented pan Seepage	1.00 0.50
Sunev-----	17	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage	0.50
NRE:					
Nebgen-----	53	Very limited Depth to bedrock Seepage, bottom layer	1.00 1.00	Very limited Depth to hard bedrock Seepage Slope	1.00 0.27 0.02
Rock outcrop-----	17	Not rated		Not rated	
NRG:					
Nebgen-----	56	Very limited Depth to bedrock Too steep Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to hard bedrock Slope Seepage	1.00 1.00 0.27
Rock outcrop-----	34	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 17.--Sewage Disposal--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
OaB: Oakalla-----	70	Very limited Flooding Slow water movement	1.00 0.50	Very limited Flooding Seepage	1.00 0.50
PeC: Pedernales-----	75	Very limited Slow water movement	1.00	Somewhat limited Seepage	0.50
RCC: Riverwash-----	55	Very limited Flooding Seepage, bottom layer Filtering capacity	1.00 1.00 1.00	Not rated	
Rock outcrop-----	20	Not rated		Not rated	
RgG: Rock outcrop-----	95	Not rated		Not rated	
RhE: Roughcreek-----	72	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock Seepage Slope Large stones	1.00 0.21 0.18 0.04
RkE: Roughcreek-----	84	Very limited Depth to bedrock Large stones	1.00 0.92	Very limited Depth to hard bedrock Large stones Seepage Slope	1.00 1.00 0.21 0.08
RRG: Roughcreek, 15 to 40 percent slopes--	40	Very limited Depth to bedrock Too steep Large stones	1.00 1.00 0.92	Very limited Depth to hard bedrock Slope Large stones Seepage	1.00 1.00 1.00 0.21
Roughcreek, 12 to 15 percent slopes--	20	Very limited Depth to bedrock Slope Large stones	1.00 0.96 0.92	Very limited Depth to hard bedrock Slope Large stones Seepage	1.00 1.00 1.00 0.21
Rock outcrop-----	35	Not rated		Not rated	
SuD: Sunev-----	70	Somewhat limited Slow water movement	0.50	Somewhat limited Seepage Slope	0.50 0.39

Soil Survey of Mason County, Texas

Table 17.--Sewage Disposal--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
TRE:					
Tarrant-----	67	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Large stones	1.00	Large stones Seepage Slope	1.00 0.21 0.08
Rock outcrop-----	14	Not rated		Not rated	
TRG:					
Tarrant, 15 to 40 percent slopes-----	48	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Too steep Large stones	1.00 1.00	Slope Large stones Seepage	1.00 1.00 0.21
Tarrant, 12 to 15 percent slopes-----	14	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Large stones Slope	1.00 0.74	Slope Large stones Seepage	1.00 1.00 0.21
Rock outcrop-----	27	Not rated		Not rated	
VeD:					
Venus, 0 to 3 percent slopes-----	44	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage	1.00
Venus, 3 to 8 percent slopes-----	27	Very limited Seepage, bottom layer Slow water movement	1.00 0.50	Very limited Seepage Slope	1.00 0.50
VoC:					
Voca-----	77	Very limited Slow water movement	1.00	Somewhat limited Seepage	0.50
W:					
Water-----	100	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 17.--Sewage Disposal--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
YNE:					
Yates-----	60	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Seepage, bottom layer	1.00	Seepage	0.21
				Slope	0.02
Nebgen-----	20	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Seepage, bottom layer	1.00	Seepage	0.27
				Slope	0.12
Rock outcrop-----	15	Not rated		Not rated	
YNG:					
Yates-----	50	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Too steep	1.00	Slope	1.00
		Large stones	0.68	Large stones	1.00
				Seepage	0.21
Nebgen-----	25	Very limited Depth to bedrock	1.00	Very limited Depth to hard bedrock	1.00
		Too steep	1.00	Slope	1.00
		Seepage, bottom layer	1.00	Seepage	0.27
Rock outcrop-----	20	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 18.--Landfills

(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
ACC:							
Acove-----	42	Very limited Depth to bedrock Too clayey	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 1.00
Campair-----	19	Very limited Depth to bedrock Too clayey	1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
Loneoak-----	18	Very limited Depth to bedrock Too clayey	1.00 1.00	Very limited Seepage	1.00	Very limited Too clayey	1.00
AMC:							
Acove-----	56	Very limited Depth to bedrock Too clayey	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 1.00
Menard-----	30	Not limited		Not limited		Not limited	
CAC:							
Campwood-----	34	Very limited Too clayey	1.00	Not limited		Very limited Too clayey Hard to compact	1.00 1.00
Sunev-----	33	Not limited		Not limited		Very limited Carbonate content Too clayey	1.00 0.50
Valera-----	15	Very limited Depth to bedrock Too clayey Depth to thin cemented pan	1.00 0.50 0.50	Very limited Depth to cemented pan Depth to bedrock	1.00 1.00	Very limited Depth to cemented pan Depth to bedrock Too clayey	1.00 1.00 1.00 0.50
CeC:							
Castell-----	85	Very limited Depth to bedrock Too clayey	1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
ERD:							
Eckert-----	64	Very limited Depth to bedrock Large stones	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Large stones	1.00 1.00
Rock outcrop-----	25	Not rated		Very limited Depth to bedrock Not rated	1.00 1.00	Not rated	

Soil Survey of Mason County, Texas

Table 18.--Landfills--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
ERG:							
Eckert-----	63	Very limited Depth to bedrock Too steep Large stones	1.00 1.00 0.03	Very limited Depth to bedrock Too steep	1.00 1.00	Very limited Depth to bedrock Too steep Large stones Gravel content	1.00 1.00 0.03 0.27
Rock outcrop-----	33	Not rated		Very limited Depth to bedrock Not rated Too steep	1.00 1.00 1.00	Not rated	
FRC:							
Fieldcreek, occasionally flooded-----	52	Very limited Flooding Seepage, bottom layer	1.00 1.00	Very limited Flooding Seepage	1.00 1.00	Somewhat limited Seepage	0.50
Fieldcreek, frequently flooded-	23	Very limited Flooding Seepage, bottom layer	1.00 1.00	Very limited Flooding Seepage	1.00 1.00	Somewhat limited Seepage	0.50
Riverwash-----	15	Very limited Flooding Seepage, bottom layer	1.00 1.00	Very limited Flooding Seepage Not rated	1.00 1.00 1.00	Not rated	
HeD:							
Hensley-----	68	Very limited Depth to bedrock Too clayey	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 1.00
HkC:							
Honeycreek-----	71	Very limited Depth to bedrock	1.00	Somewhat limited Depth to bedrock	0.05	Somewhat limited Depth to bedrock	0.05
HND:							
Hye-----	41	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
Nebgen-----	30	Very limited Depth to bedrock Seepage, bottom layer	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Seepage	1.00 0.50
Oben-----	15	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00

Soil Survey of Mason County, Texas

Table 18.--Landfills--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
HOD:							
Hye-----	43	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
Oben-----	19	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
Loneoak-----	18	Very limited Depth to bedrock Too clayey	1.00 1.00	Very limited Seepage	1.00	Very limited Too clayey	1.00
HPC:							
Hye-----	48	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
Pontotoc-----	34	Very limited Depth to bedrock	1.00	Very limited Seepage	1.00	Not limited	
KAC:							
Katemcy-----	60	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Hard to compact	1.00 1.00
Honeycreek-----	15	Very limited Depth to bedrock	1.00	Somewhat limited Depth to bedrock	0.05	Somewhat limited Depth to bedrock	0.05
KeD:							
Keese-----	73	Very limited Depth to bedrock Seepage, bottom layer	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Seepage	1.00 0.50
KLE:							
Keese-----	45	Very limited Depth to bedrock Seepage, bottom layer	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Seepage	1.00 0.50
Lou-----	23	Not limited		Not limited		Somewhat limited Gravel content	0.62
Rock outcrop-----	16	Not rated		Very limited Depth to bedrock Not rated	1.00 1.00	Not rated	

Soil Survey of Mason County, Texas

Table 18.--Landfills--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
KRG: Rock outcrop-----	36	Not rated		Very limited Depth to bedrock Not rated Too steep	1.00 1.00 1.00	Not rated	
Keese, 15 to 30 percent slopes-----	25	Very limited Too steep Depth to bedrock Seepage, bottom layer	1.00 1.00 1.00	Very limited Too steep Depth to bedrock	1.00 1.00 1.00	Very limited Too steep Depth to bedrock Seepage	1.00 1.00 1.00 0.50
Keese, 12 to 15 percent slopes-----	13	Very limited Depth to bedrock Seepage, bottom layer Slope	1.00 1.00 0.96	Very limited Depth to bedrock Slope	1.00 1.00 0.96	Very limited Depth to bedrock Slope Seepage	1.00 1.00 0.96 0.50
KTG: Kerrville-----	33	Very limited Too steep Depth to bedrock	1.00 1.00	Very limited Too steep Depth to bedrock	1.00 1.00	Very limited Too steep Depth to bedrock Carbonate content Gravel content	1.00 1.00 1.00 0.28
Brackett-----	21	Very limited Depth to bedrock Too steep	1.00 1.00	Very limited Depth to bedrock Too steep	1.00 1.00	Very limited Depth to bedrock Too steep Carbonate content	1.00 1.00 1.00 1.00
Tarrant-----	17	Very limited Depth to bedrock Too clayey Too steep Large stones	1.00 1.00 1.00 1.00	Very limited Depth to bedrock Too steep	1.00 1.00	Very limited Depth to bedrock Too clayey Hard to compact Too steep Large stones	1.00 1.00 1.00 1.00 1.00
KVE: Kerrville-----	28	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Carbonate content Gravel content	1.00 1.00 0.28
Real-----	25	Very limited Depth to bedrock Too clayey	1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Gravel content Too clayey	1.00 0.51 0.50
Sunev-----	21	Not limited		Not limited		Very limited Carbonate content Too clayey	1.00 0.50

Soil Survey of Mason County, Texas

Table 18.--Landfills--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
LKD:							
Ligon-----	42	Very limited Depth to bedrock Too clayey	1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
Katemcy-----	29	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Hard to compact	1.00 1.00
Keese-----	15	Very limited Depth to bedrock Seepage, bottom layer	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Seepage	1.00 0.50
LND:							
Ligon-----	67	Very limited Depth to bedrock Too clayey	1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
Keese-----	22	Very limited Depth to bedrock Seepage, bottom layer	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Seepage	1.00 0.50
LOC:							
Loneoak-----	51	Very limited Depth to bedrock Too clayey	1.00 1.00	Very limited Seepage	1.00	Very limited Too clayey	1.00
Campair-----	37	Very limited Depth to bedrock Too clayey	1.00 0.50	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey	1.00 0.50
LRC:							
Lou-----	32	Not limited		Not limited		Somewhat limited Gravel content	0.62
Click-----	29	Very limited Depth to bedrock Seepage, bottom layer	1.00 1.00	Very limited Seepage Depth to bedrock	1.00 0.18	Very limited Gravel content Seepage Depth to bedrock	1.00 0.50 0.18
Voca-----	23	Not limited		Not limited		Very limited Gravel content	1.00
LuC:							
Luckenbach-----	76	Somewhat limited Too clayey	0.50	Not limited		Very limited Too clayey	1.00
MPC:							
Menard-----	47	Not limited		Not limited		Not limited	
Pedernales-----	23	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50

Soil Survey of Mason County, Texas

Table 18.--Landfills--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
MSC:							
Mereta-----	35	Very limited Too clayey	1.00	Very limited Depth to cemented pan	1.00	Very limited Depth to cemented pan	1.00
		Depth to thin cemented pan	0.50			Too clayey	1.00
Cho-----	26	Somewhat limited Depth to thin cemented pan	0.50	Very limited Depth to cemented pan	1.00	Very limited Depth to cemented pan	1.00
						Carbonate content	1.00
Sunev-----	17	Not limited		Not limited		Very limited Carbonate content	1.00
						Too clayey	0.50
NRE:							
Nebgen-----	53	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
		Seepage, bottom layer	1.00			Seepage	0.50
Rock outcrop-----	17	Not rated		Very limited Depth to bedrock	1.00	Not rated	
				Not rated	1.00		
NRG:							
Nebgen-----	56	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock	1.00
		Too steep	1.00	Too steep	1.00	Too steep	1.00
		Seepage, bottom layer	1.00			Seepage	0.50
Rock outcrop-----	34	Not rated		Very limited Depth to bedrock	1.00	Not rated	
				Not rated	1.00		
				Too steep	1.00		
OaB:							
Oakalla-----	70	Very limited Flooding	1.00	Very limited Flooding	1.00	Somewhat limited Too clayey	0.50
		Too clayey	0.50				
PeC:							
Pedernales-----	75	Somewhat limited Too clayey	0.50	Not limited		Somewhat limited Too clayey	0.50
RCC:							
Riverwash-----	55	Very limited Flooding	1.00	Very limited Flooding	1.00	Not rated	
		Seepage, bottom layer	1.00	Seepage	1.00		
				Not rated	1.00		
Rock outcrop-----	20	Not rated		Very limited Flooding	1.00	Not rated	
				Depth to bedrock	1.00		
				Not rated	1.00		

Soil Survey of Mason County, Texas

Table 18.--Landfills--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
RgG: Rock outcrop-----	95	Not rated		Very limited Depth to bedrock Not rated	1.00 1.00	Not rated	
RhE: Roughcreek-----	72	Very limited Depth to bedrock Too clayey	1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey Gravel content	1.00 1.00 1.00
RkE: Roughcreek-----	84	Very limited Depth to bedrock Too clayey Large stones	1.00 1.00 0.92	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey Hard to compact Large stones	1.00 1.00 1.00 0.92
RRG: Roughcreek, 15 to 40 percent slopes--	40	Very limited Too steep Depth to bedrock Too clayey Large stones	1.00 1.00 1.00 0.92	Very limited Too steep Depth to bedrock	1.00 1.00	Very limited Too steep Depth to bedrock Too clayey Hard to compact Large stones	1.00 1.00 1.00 1.00 1.00 0.92
Roughcreek, 12 to 15 percent slopes--	20	Very limited Depth to bedrock Too clayey Slope Large stones	1.00 1.00 0.96 0.92	Very limited Depth to bedrock Slope	1.00 0.96	Very limited Depth to bedrock Too clayey Hard to compact Slope Large stones	1.00 1.00 1.00 0.96 0.92
Rock outcrop-----	35	Not rated		Very limited Depth to bedrock Not rated Too steep	1.00 1.00 1.00	Not rated	
SuD: Sunev-----	70	Not limited		Not limited		Very limited Carbonate content Too clayey	1.00 0.50
TRE: Tarrant-----	67	Very limited Depth to bedrock Too clayey Large stones	1.00 1.00 1.00	Very limited Depth to bedrock	1.00	Very limited Depth to bedrock Too clayey Hard to compact Large stones	1.00 1.00 1.00 1.00
Rock outcrop-----	14	Not rated		Very limited Depth to bedrock Not rated	1.00 1.00	Not rated	

Soil Survey of Mason County, Texas

Table 18.--Landfills--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
TRG: Tarrant, 15 to 40 percent slopes-----	48	Very limited Too steep Depth to bedrock Too clayey Large stones	 1.00 1.00 1.00 1.00	Very limited Too steep Depth to bedrock	 1.00 1.00	Very limited Too steep Depth to bedrock Too clayey Hard to compact Large stones	 1.00 1.00 1.00 1.00 1.00
Tarrant, 12 to 15 percent slopes-----	14	Very limited Depth to bedrock Too clayey Large stones Slope	 1.00 1.00 1.00 0.74	Very limited Depth to bedrock Slope	 1.00 0.74	Very limited Depth to bedrock Too clayey Hard to compact Large stones Slope	 1.00 1.00 1.00 1.00 0.74
Rock outcrop-----	27	Not rated		Very limited Depth to bedrock Not rated Too steep	 1.00 1.00 1.00	Not rated	
VeD: Venus, 0 to 3 percent slopes-----	44	Very limited Seepage, bottom layer Too clayey	 1.00 0.50	Not limited		Somewhat limited Seepage Too clayey	 0.50 0.50
Venus, 3 to 8 percent slopes-----	27	Very limited Seepage, bottom layer Too clayey	 1.00 0.50	Not limited		Somewhat limited Seepage Too clayey	 0.50 0.50
VoC: Voca-----	77	Not limited		Not limited		Very limited Gravel content	 1.00
W: Water-----	100	Not rated		Not rated		Not rated	
YNE: Yates-----	60	Very limited Depth to bedrock Seepage, bottom layer	 1.00 1.00	Very limited Depth to bedrock	 1.00	Very limited Depth to bedrock Gravel content Seepage	 1.00 1.00 0.50
Nebgen-----	20	Very limited Depth to bedrock Seepage, bottom layer	 1.00 1.00	Very limited Depth to bedrock	 1.00	Very limited Depth to bedrock Seepage	 1.00 0.50
Rock outcrop-----	15	Not rated		Very limited Depth to bedrock Not rated	 1.00 1.00	Not rated	

Soil Survey of Mason County, Texas

Table 18.--Landfills--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
YNG:							
Yates-----	50	Very limited Depth to bedrock Too steep Too clayey Too sandy Large stones	1.00 1.00 1.00 1.00 0.68	Very limited Depth to bedrock Too steep	1.00 1.00	Very limited Depth to bedrock Too steep Too sandy Too clayey Large stones	1.00 1.00 1.00 1.00 0.68
Nebgen-----	25	Very limited Depth to bedrock Too steep Seepage, bottom layer	1.00 1.00 1.00	Very limited Depth to bedrock Too steep	1.00 1.00	Very limited Depth to bedrock Too steep Seepage	1.00 1.00 0.50
Rock outcrop-----	20	Not rated		Very limited Depth to bedrock Not rated Too steep	1.00 1.00 1.00	Not rated	

Soil Survey of Mason County, Texas

Table 19.--Source of Gravel and Sand

(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	Gravel Source		Sand Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value
ACC:					
Acove-----	42	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Campair-----	19	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Loneoak-----	18	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
AMC:					
Acove-----	56	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Menard-----	30	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CAC:					
Campwood-----	34	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Sunev-----	33	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Valera-----	15	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
CeC:					
Castell-----	85	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
ERD:					
Eckert-----	64	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	

Soil Survey of Mason County, Texas

Table 19.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Gravel Source		Sand Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value
ERG:					
Eckert-----	63	Poor Thickest layer Bottom layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Rock outcrop-----	33	Not rated		Not rated	
FRC:					
Fieldcreek, occasionally flooded-----	52	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Fieldcreek, frequently flooded-	23	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Riverwash-----	15	Not rated		Not rated	
HeD:					
Hensley-----	68	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
HKC:					
Honeycreek-----	71	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
HND:					
Hye-----	41	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Nebgen-----	30	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.04
Oben-----	15	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
HOD:					
Hye-----	43	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Oben-----	19	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Loneoak-----	18	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

Soil Survey of Mason County, Texas

Table 19.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Gravel Source		Sand Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value
HPC: Hye-----	48	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Pontotoc-----	34	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
KAC: Katemcy-----	60	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Honeycreek-----	15	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
KeD: Keese-----	73	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.06
KLE: Keese-----	45	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.06
Lou-----	23	Fair Thickest layer Bottom layer	0.00 0.29	Poor Bottom layer Thickest layer	0.00 0.00
Rock outcrop-----	16	Not rated		Not rated	
KRG: Rock outcrop-----	36	Not rated		Not rated	
Keese, 15 to 30 percent slopes-----	25	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.04
Keese, 12 to 15 percent slopes-----	13	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.04
KTG: Kerrville-----	33	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Brackett-----	21	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Tarrant-----	17	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

Soil Survey of Mason County, Texas

Table 19.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Gravel Source		Sand Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value
KVE:					
Kerrville-----	28	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Real-----	25	Poor		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.00	Thickest layer	0.00
Sunev-----	21	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LKD:					
Ligon-----	42	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Katemcy-----	29	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Keese-----	15	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.06
LND:					
Ligon-----	67	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Keese-----	22	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.06
LOC:					
Loneoak-----	51	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
Campair-----	37	Poor		Poor	
		Bottom layer	0.00	Bottom layer	0.00
		Thickest layer	0.00	Thickest layer	0.00
LRC:					
Lou-----	32	Fair		Poor	
		Thickest layer	0.00	Bottom layer	0.00
		Bottom layer	0.29	Thickest layer	0.00
Click-----	29	Fair		Poor	
		Bottom layer	0.29	Bottom layer	0.00
		Thickest layer	0.32	Thickest layer	0.00
Voca-----	23	Poor		Fair	
		Bottom layer	0.00	Thickest layer	0.00
		Thickest layer	0.00	Bottom layer	0.08

Soil Survey of Mason County, Texas

Table 19.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Gravel Source		Sand Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value
LuC: Luckenbach-----	76	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
MPC: Menard-----	47	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Pedernales-----	23	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
MSC: Mereta-----	35	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Cho-----	26	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Sunev-----	17	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
NRE: Nebgen-----	53	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.04
Rock outcrop-----	17	Not rated		Not rated	
NRG: Nebgen-----	56	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.04
Rock outcrop-----	34	Not rated		Not rated	
OaB: Oakalla-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
PeC: Pedernales-----	75	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
RCC: Riverwash-----	55	Not rated		Not rated	
Rock outcrop-----	20	Not rated		Not rated	
RgG: Rock outcrop-----	95	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 19.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Gravel Source		Sand Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value
RhE: Roughcreek-----	72	Fair Thickest layer Bottom layer	0.00 0.37	Poor Bottom layer Thickest layer	0.00 0.00
RkE: Roughcreek-----	84	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
RRG: Roughcreek, 15 to 40 percent slopes--	40	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Roughcreek, 12 to 15 percent slopes--	20	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Rock outcrop-----	35	Not rated		Not rated	
SuD: Sunev-----	70	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
TRE: Tarrant-----	67	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Rock outcrop-----	14	Not rated		Not rated	
TRG: Tarrant, 15 to 40 percent slopes-----	48	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Tarrant, 12 to 15 percent slopes-----	14	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Rock outcrop-----	27	Not rated		Not rated	
VeD: Venus, 0 to 3 percent slopes-----	44	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Venus, 3 to 8 percent slopes-----	27	Poor Bottom layer Thickest layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00

Soil Survey of Mason County, Texas

Table 19.--Source of Gravel and Sand--Continued

Map symbol and soil name	Pct. of map unit	Gravel Source		Sand Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value
VoC: Voca-----	77	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.08
W: Water-----	100	Not rated		Not rated	
YNE: Yates-----	60	Poor Thickest layer Bottom layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Nebgen-----	20	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.04
Rock outcrop-----	15	Not rated		Not rated	
YNG: Yates-----	50	Poor Thickest layer Bottom layer	0.00 0.00	Poor Bottom layer Thickest layer	0.00 0.00
Nebgen-----	25	Poor Bottom layer Thickest layer	0.00 0.00	Fair Thickest layer Bottom layer	0.00 0.04
Rock outcrop-----	20	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 20.--Source of Reclamation Material, Roadfill, and Topsoil

(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	Reclamation Material Source		Roadfill Source		Topsoil Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
ACC:							
Acove-----	42	Poor Too clayey Organic matter content low Droughty	0.00 0.12 0.62	Poor Depth to bedrock Stones Low strength	0.00 0.91 0.00	Poor Too clayey Depth to bedrock Rock fragments	0.00 0.92 0.98
Campair-----	19	Poor Wind erosion Droughty Water erosion	0.00 0.13 0.99	Poor Depth to bedrock Low strength	0.00 0.00	Fair Depth to bedrock Too clayey	0.35 0.93
Loneoak-----	18	Poor Wind erosion Too sandy Organic matter content low	0.00 0.30 0.60	Poor Low strength Shrink-swell	0.00 0.97	Poor Hard to reclaim (rock fragments) Too sandy	0.00 0.30
AMC:							
Acove-----	56	Poor Too clayey Organic matter content low Droughty	0.00 0.12 0.62	Poor Depth to bedrock Stones Low strength	0.00 0.91 0.00	Poor Too clayey Depth to bedrock Rock fragments	0.00 0.92 0.98
Menard-----	30	Fair Organic matter content low Carbonate content	0.18 0.92	Good		Good	
CAC:							
Campwood-----	34	Poor Too clayey Carbonate content	0.00 0.61	Poor Low strength Shrink-swell	0.00 0.12	Poor Too clayey	0.00
Sunev-----	33	Poor Carbonate content Organic matter content low Salinity	0.00 0.60 0.88	Fair Low strength	0.78	Fair Carbonate content	0.13
Valera-----	15	Fair Droughty Depth to cemented pan Carbonate content	0.01 0.16 0.32	Poor Depth to cemented pan Depth to bedrock Low strength	0.00 0.00 0.22	Fair Depth to cemented pan Depth to bedrock Carbonate content	0.16 0.46 0.81

Soil Survey of Mason County, Texas

Table 20.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Reclamation Material Source		Roadfill Source		Topsoil Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CeC: Castell-----	85	Poor Too clayey Organic matter content low Droughty	0.00 0.32 0.23	Poor Depth to bedrock Shrink-swell	0.00 0.00 0.87	Poor Too clayey Depth to bedrock	0.00 0.54
ERD: Eckert-----	64	Poor Droughty Depth to bedrock Stone content	0.00 0.00 0.00	Poor Depth to bedrock Cobble content Stones	0.00 0.00 0.00	Poor Rock fragments Depth to bedrock	0.00 0.00
Rock outcrop-----	25	Not rated		Not rated		Not rated	
ERG: Eckert-----	63	Poor Droughty Depth to bedrock	0.00 0.00	Poor Depth to bedrock Cobble content	0.00 0.68	Poor Rock fragments Depth to bedrock Slope	0.00 0.00 0.00
Rock outcrop-----	33	Not rated		Not rated		Not rated	
FRC: Fieldcreek, occasionally flooded-----	52	Fair Too acid	0.99	Good		Good	
Fieldcreek, frequently flooded-	23	Good		Good		Good	
Riverwash-----	15	Poor Droughty Organic matter content low	0.00 0.50	Good		Poor Hard to reclaim (rock fragments) Rock fragments	0.00 0.00
HeD: Hensley-----	68	Poor Droughty Depth to bedrock Too clayey	0.00 0.00 0.00	Poor Depth to bedrock Low strength Shrink-swell	0.00 0.00 0.87	Poor Depth to bedrock Too clayey Rock fragments	0.00 0.00 0.97
HkC: Honeycreek-----	71	Good		Fair Depth to bedrock	0.95	Fair Hard to reclaim (rock fragments)	0.97

Soil Survey of Mason County, Texas

Table 20.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Reclamation Material Source		Roadfill Source		Topsoil Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HND: Hye-----	41	Fair Organic matter content low Droughty Depth to bedrock	0.12 0.90 0.95	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.95
Nebgen-----	30	Poor Droughty Depth to bedrock Organic matter content low	0.00 0.00 0.88	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments	0.00 0.88
Oben-----	15	Poor Droughty Depth to bedrock Organic matter content low	0.00 0.00 0.60	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments	0.00 0.89
HOD: Hye-----	43	Fair Organic matter content low Droughty Depth to bedrock	0.12 0.90 0.95	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.95
Oben-----	19	Poor Droughty Depth to bedrock Organic matter content low	0.00 0.00 0.60	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments	0.00 0.89
Loneoak-----	18	Poor Wind erosion Too sandy Organic matter content low	0.00 0.30 0.60	Poor Low strength Shrink-swell	0.00 0.97	Poor Hard to reclaim (rock fragments) Too sandy	0.00 0.30
HPC: Hye-----	48	Fair Organic matter content low Droughty Depth to bedrock	0.12 0.90 0.95	Poor Depth to bedrock	0.00	Fair Depth to bedrock	0.95
Pontotoc-----	34	Fair Organic matter content low	0.12	Good		Good	
KAC: Katemcy-----	60	Fair Droughty Organic matter content low Too clayey	0.70 0.60 0.88	Poor Depth to bedrock Shrink-swell Low strength	0.00 0.71 0.00	Poor Rock fragments Too clayey Depth to bedrock	0.00 0.58 0.99
Honeycreek-----	15	Good		Fair Depth to bedrock	0.95	Fair Hard to reclaim (rock fragments)	0.97

Soil Survey of Mason County, Texas

Table 20.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Reclamation Material Source		Roadfill Source		Topsoil Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KeD: Keese-----	73	Poor Droughty Depth to bedrock Too acid	0.00 0.00 0.88	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments	0.00 0.88
KLE: Keese-----	45	Poor Droughty Depth to bedrock Too acid	0.00 0.00 0.88	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments	0.00 0.88
Lou-----	23	Poor Stone content	0.00	Fair Stones	0.98	Poor Hard to reclaim (rock fragments)	0.00
Rock outcrop-----	16	Not rated		Not rated		Not rated	
KRG: Rock outcrop-----	36	Not rated		Not rated		Not rated	
Keese, 15 to 30 percent slopes-----	25	Poor Droughty Depth to bedrock Organic matter content low	0.00 0.00 0.88	Poor Depth to bedrock Slope	0.00 0.68	Poor Depth to bedrock Slope Rock fragments	0.00 0.00 0.24
Keese, 12 to 15 percent slopes-----	13	Poor Droughty Depth to bedrock Organic matter content low	0.00 0.00 0.88	Poor Depth to bedrock	0.00	Poor Depth to bedrock Slope Rock fragments	0.00 0.04 0.24
KTG: Kerrville-----	33	Poor Droughty Carbonate content Depth to bedrock	0.00 0.00 0.18	Poor Depth to bedrock Slope Cobble content	0.00 0.00 0.98	Poor Carbonate content Rock fragments Slope	0.00 0.00 0.00
Brackett-----	21	Poor Droughty Carbonate content Depth to bedrock	0.00 0.00 0.00	Poor Depth to bedrock Slope	0.00 0.50	Poor Carbonate content Depth to bedrock Slope	0.00 0.00 0.00
Tarrant-----	17	Poor Too clayey Droughty Depth to bedrock	0.00 0.00 0.00	Poor Depth to bedrock Cobble content Low strength	0.00 0.00 0.00	Poor Too clayey Rock fragments Depth to bedrock	0.00 0.00 0.00

Soil Survey of Mason County, Texas

Table 20.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Reclamation Material Source		Roadfill Source		Topsoil Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
KVE: Kerrville-----	28	Poor Droughty Carbonate content Depth to bedrock	0.00 0.00 0.18	Poor Depth to bedrock Cobble content	0.00 0.98	Poor Carbonate content Rock fragments Depth to bedrock	0.00 0.00 0.18
Real-----	25	Poor Droughty Carbonate content Depth to bedrock	0.00 0.00 0.00	Poor Depth to bedrock Stones	0.00 0.57	Poor Depth to bedrock Rock fragments Carbonate content	0.00 0.00 0.36
Sunev-----	21	Poor Carbonate content Organic matter content low Salinity	0.00 0.60 0.88	Fair Low strength	0.78	Fair Carbonate content	0.13
LKD: Ligon-----	42	Poor Too clayey Organic matter content low Droughty	0.00 0.32 0.50	Poor Depth to bedrock Shrink-swell	0.00 0.87	Poor Too clayey Depth to bedrock	0.00 0.65
Katemcy-----	29	Fair Droughty Organic matter content low Too clayey	0.70 0.60 0.88	Poor Depth to bedrock Shrink-swell Low strength	0.00 0.71 0.00	Poor Rock fragments Too clayey Depth to bedrock	0.00 0.58 0.99
Keese-----	15	Poor Droughty Depth to bedrock Too acid	0.00 0.00 0.88	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments	0.00 0.88
LND: Ligon-----	67	Poor Too clayey Organic matter content low Droughty	0.00 0.32 0.50	Poor Depth to bedrock Shrink-swell	0.00 0.87	Poor Too clayey Depth to bedrock	0.00 0.65
Keese-----	22	Poor Droughty Depth to bedrock Too acid	0.00 0.00 0.88	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments	0.00 0.88
LOC: Loneoak-----	51	Poor Wind erosion Too sandy Organic matter content low	0.00 0.30 0.60	Poor Low strength Shrink-swell	0.00 0.97	Poor Hard to reclaim (rock fragments) Too sandy	0.00 0.30
Campair-----	37	Poor Wind erosion Droughty Water erosion	0.00 0.13 0.99	Poor Depth to bedrock Low strength	0.00 0.00	Fair Depth to bedrock Too clayey	0.35 0.93

Soil Survey of Mason County, Texas

Table 20.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Reclamation Material Source		Roadfill Source		Topsoil Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
LRC: Lou-----	32	Poor Stone content	0.00	Fair Stones	0.98	Poor Hard to reclaim (rock fragments)	0.00
Click-----	29	Fair Droughty	0.09	Fair Depth to bedrock	0.82	Poor Hard to reclaim (rock fragments)	0.00
		Organic matter content low	0.88			Rock fragments	0.00
Voca-----	23	Poor Too clayey	0.00	Fair Shrink-swell	0.94	Poor Hard to reclaim (rock fragments)	0.00
		Too acid	0.84			Too clayey Rock fragments	0.00
LuC: Luckenbach-----	76	Poor Too clayey Water erosion Carbonate content	0.00 0.99 0.16	Poor Low strength Shrink-swell	0.00 0.92	Poor Too clayey Rock fragments	0.00 0.97
MPC: Menard-----	47	Fair Organic matter content low Carbonate content	0.18 0.92	Good		Good	
Pedernales-----	23	Poor Too clayey Carbonate content Organic matter content low	0.02 0.00 0.60	Poor Low strength Shrink-swell	0.00 0.98	Fair Too clayey Rock fragments	0.01 0.40
MSC: Mereta-----	35	Poor Droughty	0.00	Poor Depth to cemented pan	0.00	Poor Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Low strength	0.00	Too clayey	0.00
		Carbonate content	0.32	Shrink-swell	0.12	Rock fragments	0.40
Cho-----	26	Poor Droughty	0.00	Poor Depth to cemented pan	0.00	Poor Depth to cemented pan	0.00
		Carbonate content	0.00			Carbonate content	0.92
		Depth to cemented pan	0.00				
Sunev-----	17	Poor Carbonate content Organic matter content low Salinity	0.00 0.60 0.88	Fair Low strength	0.78	Fair Carbonate content	0.13

Soil Survey of Mason County, Texas

Table 20.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Reclamation Material Source		Roadfill Source		Topsoil Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
NRE: Nebgen-----	53	Poor Droughty Depth to bedrock Organic matter content low	0.00 0.00 0.88	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments	0.00 0.88
Rock outcrop-----	17	Not rated		Not rated		Not rated	
NRG: Nebgen-----	56	Poor Droughty Depth to bedrock Organic matter content low	0.00 0.00 0.88	Poor Depth to bedrock Slope	0.00 0.18	Poor Depth to bedrock Slope Rock fragments	0.00 0.00 0.88
Rock outcrop-----	34	Not rated		Not rated		Not rated	
OaB: Oakalla-----	70	Poor Carbonate content Too clayey	0.00 0.68	Poor Low strength Shrink-swell	0.00 0.89	Fair Carbonate content Too clayey	0.06 0.68
PeC: Pedernales-----	75	Poor Too clayey Carbonate content Organic matter content low	0.02 0.00 0.60	Poor Low strength Shrink-swell	0.00 0.98	Fair Too clayey Rock fragments	0.01 0.40
RCC: Riverwash-----	55	Poor Droughty Organic matter content low	0.00 0.50	Good		Poor Hard to reclaim (rock fragments) Rock fragments	0.00 0.00
Rock outcrop-----	20	Not rated		Not rated		Not rated	
RgG: Rock outcrop-----	95	Not rated		Not rated		Not rated	
RhE: Roughcreek-----	72	Poor Too clayey Droughty Depth to bedrock	0.00 0.00 0.00	Poor Depth to bedrock Low strength Shrink-swell	0.00 0.00 0.12	Poor Too clayey Rock fragments Depth to bedrock	0.00 0.00 0.00
RKE: Roughcreek-----	84	Poor Too clayey Droughty Depth to bedrock	0.00 0.00 0.00	Poor Depth to bedrock Low strength Stones	0.00 0.00 0.00	Poor Too clayey Depth to bedrock Rock fragments	0.00 0.00 0.00

Soil Survey of Mason County, Texas

Table 20.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Reclamation Material Source		Roadfill Source		Topsoil Source	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RRG:							
Roughcreek, 15 to 40 percent slopes--	40	Poor Too clayey Droughty Depth to bedrock	0.00 0.00 0.00	Poor Depth to bedrock Low strength Stones	0.00 0.00 0.00	Poor Too clayey Depth to bedrock Slope	0.00 0.00 0.00
Roughcreek, 12 to 15 percent slopes--	20	Poor Too clayey Droughty Depth to bedrock	0.00 0.00 0.00	Poor Depth to bedrock Low strength Stones	0.00 0.00 0.00	Poor Too clayey Depth to bedrock Slope	0.00 0.00 0.04
Rock outcrop-----	35	Not rated		Not rated		Not rated	
SuD: Sunev-----	70	Poor Carbonate content Organic matter content low Salinity	0.00 0.60 0.88	Fair Low strength	0.78	Fair Carbonate content	0.13
TRE:							
Tarrant-----	67	Poor Too clayey Droughty Depth to bedrock	0.00 0.00 0.00	Poor Depth to bedrock Cobble content Low strength	0.00 0.00 0.00	Poor Too clayey Rock fragments Depth to bedrock	0.00 0.00 0.00
Rock outcrop-----	14	Not rated		Not rated		Not rated	
TRG:							
Tarrant, 15 to 40 percent slopes-----	48	Poor Too clayey Droughty Depth to bedrock	0.00 0.00 0.00	Poor Depth to bedrock Cobble content Low strength	0.00 0.00 0.00	Poor Too clayey Rock fragments Depth to bedrock	0.00 0.00 0.00
Tarrant, 12 to 15 percent slopes-----	14	Poor Too clayey Droughty Depth to bedrock	0.00 0.00 0.00	Poor Depth to bedrock Cobble content Low strength	0.00 0.00 0.00	Poor Too clayey Rock fragments Depth to bedrock	0.00 0.00 0.00
Rock outcrop-----	27	Not rated		Not rated		Not rated	
VeD:							
Venus, 0 to 3 percent slopes-----	44	Poor Carbonate content	0.00	Good		Fair Carbonate content	0.61
Venus, 3 to 8 percent slopes-----	27	Poor Carbonate content	0.00	Good		Fair Carbonate content	0.61
VoC:							
Voca-----	77	Poor Too clayey Too acid	0.00 0.84	Fair Shrink-swell	0.94	Poor Hard to reclaim (rock fragments) Too clayey Rock fragments	0.00 0.00 0.00

Soil Survey of Mason County, Texas

Table 20.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

Map symbol and soil name	Pct. of map unit	Reclamation Material Source		Roadfill Source		Topsoil Source	
		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	
YNE: Yates-----	60	Poor Droughty Depth to bedrock Organic matter content low	0.00 0.00 0.88	Poor Depth to bedrock	0.00	Poor Rock fragments Depth to bedrock	0.00 0.00
Nebgen-----	20	Poor Droughty Depth to bedrock Organic matter content low	0.00 0.00 0.88	Poor Depth to bedrock	0.00	Poor Depth to bedrock Rock fragments	0.00 0.88
Rock outcrop-----	15	Not rated		Not rated		Not rated	
YNG: Yates-----	50	Poor Droughty Depth to bedrock Cobble content	0.00 0.00 0.68	Poor Depth to bedrock Cobble content Slope	0.00 0.00 0.82	Poor Rock fragments Depth to bedrock Slope	0.00 0.00 0.00
Nebgen-----	25	Poor Droughty Depth to bedrock Organic matter content low	0.00 0.00 0.88	Poor Depth to bedrock Slope	0.00 0.50	Poor Depth to bedrock Slope Rock fragments	0.00 0.00 0.88
Rock outcrop-----	20	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 21.--Ponds and Embankments

(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
ACC:							
Acove-----	42	Somewhat limited Seepage Depth to bedrock	0.53 0.12	Somewhat limited Thin layer	0.68	Very limited Depth to water	1.00
Campair-----	19	Somewhat limited Seepage Depth to bedrock	0.70 0.91	Somewhat limited Piping Thin layer	0.98 0.91	Very limited Depth to water	1.00
Loneoak-----	18	Very limited Seepage	1.00	Not limited		Very limited Depth to water	1.00
AMC:							
Acove-----	56	Somewhat limited Seepage Depth to bedrock	0.53 0.12	Somewhat limited Thin layer	0.68	Very limited Depth to water	1.00
Menard-----	30	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.33	Very limited Depth to water	1.00
CAC:							
Campwood-----	34	Not limited		Somewhat limited Hard to pack	0.72	Very limited Depth to water	1.00
Sunev-----	33	Somewhat limited Seepage	0.72	Very limited Piping Salinity	1.00 0.12	Very limited Depth to water	1.00
Valera-----	15	Somewhat limited Seepage Depth to cemented pan Depth to bedrock	0.70 0.96 0.88	Somewhat limited Thin layer Piping	0.96 0.07	Very limited Depth to water	1.00
CeC:							
Castell-----	85	Somewhat limited Seepage Depth to bedrock	0.45 0.11	Somewhat limited Thin layer	0.86	Very limited Depth to water	1.00
ERD:							
Eckert-----	64	Very limited Depth to bedrock Seepage	1.00 0.45	Very limited Piping Thin layer Large stones	1.00 1.00 1.00	Very limited Depth to water	1.00
Rock outcrop-----	25	Very limited Depth to bedrock Not rated Slope	1.00 1.00 0.50	Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 21.--Ponds and Embankments--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
ERG:							
Eckert-----	63	Very limited Slope Depth to bedrock	1.00 1.00	Very limited Thin layer Large stones	1.00 0.03	Very limited Depth to water	1.00
Rock outcrop-----	33	Very limited Slope Depth to bedrock Not rated	1.00 1.00 1.00	Not rated		Not rated	
FRC:							
Fieldcreek, occasionally flooded-----	52	Very limited Seepage	1.00	Very limited Piping	1.00	Very limited Depth to water	1.00
Fieldcreek, frequently flooded-	23	Very limited Seepage	1.00	Very limited Piping	1.00	Very limited Depth to water	1.00
Riverwash-----	15	Very limited Seepage Not rated	1.00 1.00	Very limited Seepage	1.00	Very limited Depth to water	1.00
HeD:							
Hensley-----	68	Very limited Depth to bedrock Seepage Slope	1.00 0.45 0.04	Very limited Thin layer	1.00	Very limited Depth to water	1.00
HkC:							
Honeycreek-----	71	Somewhat limited Seepage	0.70	Somewhat limited Thin layer	0.01	Very limited Depth to water	1.00
HND:							
Hye-----	41	Somewhat limited Seepage Slope Depth to bedrock	0.70 0.02 0.65	Somewhat limited Thin layer	0.65	Very limited Depth to water	1.00
Nebgen-----	30	Very limited Depth to bedrock Seepage	1.00 0.53	Very limited Seepage Thin layer	1.00 1.00	Very limited Depth to water	1.00
Oben-----	15	Somewhat limited Seepage Depth to bedrock	0.53 0.50	Very limited Thin layer Piping	1.00 0.97	Very limited Depth to water	1.00
HOD:							
Hye-----	43	Somewhat limited Seepage Depth to bedrock	0.70 0.65	Somewhat limited Thin layer	0.65	Very limited Depth to water	1.00
Oben-----	19	Somewhat limited Seepage Depth to bedrock	0.53 0.50	Very limited Thin layer Piping	1.00 0.97	Very limited Depth to water	1.00
Loneoak-----	18	Very limited Seepage	1.00	Not limited		Very limited Depth to water	1.00

Soil Survey of Mason County, Texas

Table 21.--Ponds and Embankments--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
HPC:							
Hye-----	48	Somewhat limited Seepage Depth to bedrock	0.70 0.65	Somewhat limited Thin layer	0.65	Very limited Depth to water	1.00
Pontotoc-----	34	Very limited Seepage	1.00	Not limited		Very limited Depth to water	1.00
KAC:							
Katemcy-----	60	Somewhat limited Seepage Depth to bedrock	0.03 0.02	Somewhat limited Thin layer	0.56	Very limited Depth to water	1.00
Honeycreek-----	15	Somewhat limited Seepage	0.70	Somewhat limited Thin layer	0.01	Very limited Depth to water	1.00
KeD:							
Keese-----	73	Somewhat limited Seepage Slope Depth to bedrock	0.45 0.02 0.69	Very limited Seepage Thin layer	1.00 1.00	Very limited Depth to water	1.00
KLE:							
Keese-----	45	Somewhat limited Seepage Depth to bedrock	0.45 0.69	Very limited Seepage Thin layer	1.00 1.00	Very limited Depth to water	1.00
Lou-----	23	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
Rock outcrop-----	16	Very limited Depth to bedrock Not rated Slope	1.00 1.00 0.18	Not rated		Not rated	
KRG:							
Rock outcrop-----	36	Very limited Slope Depth to bedrock Not rated	1.00 1.00 1.00	Not rated		Not rated	
Keese, 15 to 30 percent slopes-----	25	Very limited Slope Depth to bedrock	1.00 0.87	Very limited Thin layer	1.00	Very limited Depth to water	1.00
Keese, 12 to 15 percent slopes-----	13	Very limited Slope Depth to bedrock	1.00 0.87	Very limited Thin layer	1.00	Very limited Depth to water	1.00

Soil Survey of Mason County, Texas

Table 21.--Ponds and Embankments--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
KTG:							
Kerrville-----	33	Very limited Slope Seepage Depth to bedrock	1.00 0.70 0.95	Somewhat limited Thin layer	0.95	Very limited Depth to water	1.00
Brackett-----	21	Very limited Slope Seepage Depth to bedrock	1.00 0.45 0.75	Very limited Thin layer Piping	1.00 1.00	Very limited Depth to water	1.00
Tarrant-----	17	Very limited Slope Depth to bedrock Seepage	1.00 1.00 0.45	Very limited Thin layer Large stones Hard to pack	1.00 1.00 0.85	Very limited Depth to water	1.00
KVE:							
Kerrville-----	28	Somewhat limited Seepage Slope Depth to bedrock	0.70 0.18 0.95	Somewhat limited Thin layer	0.95	Very limited Depth to water	1.00
Real-----	25	Somewhat limited Seepage Slope Depth to bedrock	0.53 0.02 0.78	Very limited Thin layer	1.00	Very limited Depth to water	1.00
Sunev-----	21	Somewhat limited Seepage	0.72	Very limited Piping Salinity	1.00 0.12	Very limited Depth to water	1.00
LKD:							
Ligon-----	42	Somewhat limited Seepage Depth to bedrock	0.45 0.09	Somewhat limited Hard to pack Thin layer	0.48 0.83	Very limited Depth to water	1.00
Katemcy-----	29	Somewhat limited Seepage Depth to bedrock	0.03 0.02	Somewhat limited Thin layer	0.56	Very limited Depth to water	1.00
Keese-----	15	Somewhat limited Seepage Depth to bedrock Slope	0.45 0.69 0.02	Very limited Seepage Thin layer	1.00 1.00	Very limited Depth to water	1.00
LND:							
Ligon-----	67	Somewhat limited Seepage Depth to bedrock	0.45 0.09	Somewhat limited Hard to pack Thin layer	0.48 0.83	Very limited Depth to water	1.00
Keese-----	22	Somewhat limited Seepage Slope Depth to bedrock	0.45 0.02 0.69	Very limited Seepage Thin layer	1.00 1.00	Very limited Depth to water	1.00
LOC:							
Loneoak-----	51	Very limited Seepage	1.00	Not limited		Very limited Depth to water	1.00
Campair-----	37	Somewhat limited Seepage Depth to bedrock	0.70 0.91	Somewhat limited Piping Thin layer	0.98 0.91	Very limited Depth to water	1.00

Soil Survey of Mason County, Texas

Table 21.--Ponds and Embankments--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
LRC:							
Lou-----	32	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
Click-----	29	Very limited Seepage Depth to bedrock	1.00 0.04	Very limited Seepage Thin layer	1.00 0.04	Very limited Depth to water	1.00
Voca-----	23	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
LuC:							
Luckenbach-----	76	Somewhat limited Seepage	0.03	Not limited		Very limited Depth to water	1.00
MPC:							
Menard-----	47	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.33	Very limited Depth to water	1.00
Pedernales-----	23	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
MSC:							
Mereta-----	35	Very limited Depth to cemented pan Seepage	1.00 0.70	Very limited Thin layer Hard to pack	1.00 0.60	Very limited Depth to water	1.00
Cho-----	26	Very limited Depth to cemented pan Seepage	1.00 0.70	Very limited Seepage Thin layer	1.00 1.00	Very limited Depth to water	1.00
Sunev-----	17	Somewhat limited Seepage	0.72	Very limited Piping Salinity	1.00 0.12	Very limited Depth to water	1.00
NRE:							
Nebgen-----	53	Very limited Depth to bedrock Seepage	1.00 0.53	Very limited Seepage Thin layer	1.00 1.00	Very limited Depth to water	1.00
Rock outcrop-----	17	Very limited Depth to bedrock Not rated Slope	1.00 1.00 0.18	Not rated		Not rated	
NRG:							
Nebgen-----	56	Very limited Slope Depth to bedrock	1.00 1.00	Very limited Thin layer	1.00	Very limited Depth to water	1.00
Rock outcrop-----	34	Very limited Slope Depth to bedrock Not rated	1.00 1.00 1.00	Not rated		Not rated	
OaB:							
Oakalla-----	70	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00

Soil Survey of Mason County, Texas

Table 21.--Ponds and Embankments--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
PeC: Pedernales-----	75	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
RCC: Riverwash-----	55	Very limited Seepage Not rated	1.00 1.00	Very limited Seepage	1.00	Very limited Depth to water	1.00
Rock outcrop-----	20	Very limited Depth to bedrock Not rated	1.00 1.00	Not rated		Not rated	
RgG: Rock outcrop-----	95	Very limited Depth to bedrock Not rated Slope	1.00 1.00 0.82	Not rated		Not rated	
RhE: Roughcreek-----	72	Very limited Depth to bedrock Seepage Slope	1.00 0.45 0.02	Very limited Thin layer Seepage	1.00 0.80	Very limited Depth to water	1.00
RkE: Roughcreek-----	84	Very limited Depth to bedrock Seepage	1.00 0.45	Very limited Thin layer Large stones Hard to pack	1.00 0.92 0.68	Very limited Depth to water	1.00
RRG: Roughcreek, 15 to 40 percent slopes--	40	Very limited Slope Depth to bedrock Seepage	1.00 1.00 0.45	Very limited Thin layer Large stones Hard to pack	1.00 0.92 0.68	Very limited Depth to water	1.00
Roughcreek, 12 to 15 percent slopes--	20	Very limited Slope Depth to bedrock Seepage	1.00 1.00 0.45	Very limited Thin layer Large stones Hard to pack	1.00 0.92 0.68	Very limited Depth to water	1.00
Rock outcrop-----	35	Very limited Slope Depth to bedrock Not rated	1.00 1.00 1.00	Not rated		Not rated	
SuD: Sunev-----	70	Somewhat limited Seepage Slope	0.72 0.12	Very limited Piping Salinity	1.00 0.12	Very limited Depth to water	1.00

Soil Survey of Mason County, Texas

Table 21.--Ponds and Embankments--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
TRE:							
Tarrant-----	67	Very limited Depth to bedrock Seepage	1.00 0.45	Very limited Thin layer Large stones Hard to pack	1.00 1.00 0.85	Very limited Depth to water	1.00
Rock outcrop-----	14	Very limited Depth to bedrock Not rated Seepage Slope	1.00 1.00 0.45 0.32	Not rated		Not rated	
TRG:							
Tarrant, 15 to 40 percent slopes-----	48	Very limited Slope Depth to bedrock Seepage	1.00 1.00 0.45	Very limited Thin layer Large stones Hard to pack	1.00 1.00 0.85	Very limited Depth to water	1.00
Tarrant, 12 to 15 percent slopes-----	14	Very limited Slope Depth to bedrock Seepage	1.00 1.00 0.45	Very limited Thin layer Large stones Hard to pack	1.00 1.00 0.85	Very limited Depth to water	1.00
Rock outcrop-----	27	Very limited Slope Depth to bedrock Not rated	1.00 1.00 1.00	Not rated		Not rated	
VeD:							
Venus, 0 to 3 percent slopes-----	44	Very limited Seepage	1.00	Somewhat limited Piping	0.94	Very limited Depth to water	1.00
Venus, 3 to 8 percent slopes-----	27	Very limited Seepage Slope	1.00 0.18	Somewhat limited Piping	0.94	Very limited Depth to water	1.00
VoC:							
Voca-----	77	Somewhat limited Seepage	0.70	Not limited		Very limited Depth to water	1.00
W:							
Water-----	100	Not rated		Not rated		Not rated	

Soil Survey of Mason County, Texas

Table 21.--Ponds and Embankments--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
YNE:							
Yates-----	60	Very limited Depth to bedrock Seepage	1.00 0.45	Very limited Thin layer Seepage	1.00 0.25	Very limited Depth to water	1.00
Nebgen-----	20	Very limited Depth to bedrock Seepage	1.00 0.53	Very limited Seepage Thin layer	1.00 1.00	Very limited Depth to water	1.00
Rock outcrop-----	15	Very limited Depth to bedrock Not rated Seepage Slope	1.00 1.00 0.45 0.02	Not rated		Not rated	
YNG:							
Yates-----	50	Very limited Slope Depth to bedrock Seepage	1.00 1.00 0.45	Very limited Thin layer Large stones	1.00 0.68	Very limited Depth to water	1.00
Nebgen-----	25	Very limited Slope Depth to bedrock	1.00 1.00	Very limited Thin layer	1.00	Very limited Depth to water	1.00
Rock outcrop-----	20	Very limited Slope Depth to bedrock Not rated Seepage	1.00 1.00 1.00 0.45	Not rated		Not rated	

Table 22.--Engineering Soil Properties

(Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash.)

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	
ACC: Acove-----	0-13	*Sandy loam	*SM, SC, SP-SM, SC-SM	*A-2-4, A-4, A-6, A-1-b	0-10	0-10	91-100	65-100	46-82	16-36	0-25	2-11
	13-19	*Sandy clay loam, Flaggy sandy clay loam, very flaggy fine sandy loam, gravelly sandy clay loam, flaggy fine sandy loam, very flaggy sandy clay loam, fine sandy loam, very gravelly fine sandy loam, very gravelly sandy clay loam, channery sandy clay loam, very channery fine sandy loam, channery fine sandy loam, very channery sandy clay loam, gravelly fine sandy loam	*SC, GP-GC, SC-SM, CL, SM	*A-2-6, A-6, A-7-6, A-2-4, A-4	0-35	0-35	84-100	58-100	46-98	18-51	28-40	11-21
	19-35	*Flaggy clay, Channery clay, very channery sandy clay, sandy clay, channery sandy clay, very channery clay, very flaggy sandy clay, clay, flaggy sandy clay, very flaggy clay	*CL, GC, SC, CH	*A-7-6, A-6	13-39	10-34	93-100	93-100	64-89	42-65	39-55	21-32
	35-59	*Bedrock			---	---	---	---	---	---	---	---
Campair-----	0-12	*Loamy fine sand	*SC-SM, SM	*A-2-4, A-4 A-2-6	0	0	93-100	93-100	83-99	21-32	16-30	NP-7
	12-16	*Sandy clay loam, Clay loam	*CL, SC	*A-6, A-4, A-2-6	0	0	86-100	86-100	69-95	38-59	25-39	13-25
	16-28	*Clay loam	*CL	*A-6, A-4	0	0	86-100	85-100	74-95	57-75	25-39	18-25
	28-38	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
ACC: Loneoak-----	0-22	*Loamy sand	*SM, SP-SM, SW-SM, SC-SM	*A-2-4, A-3	0	0	93-100	93-100	73-84	27-35	16-25	1-6
	22-49	*Clay, Sandy clay, cobble sandy clay loam, cobble clay loam, cobble clay, cobble sandy clay, sandy clay loam, clay loam	*CH, SC, GC, CL	*A-7-6, A-6	0	0-27	73-100	72-100	61-100	49-88	39-55	26-40
	49-61	*Cobble clay, Sandy clay, cobble sandy clay loam, cobble clay loam, clay, cobble sandy clay, sandy clay loam, clay loam	*CH, CL, SC, GC	*A-7-6, A-6, A-7-5	0	0-31	70-100	69-100	57-100	49-91	39-55	26-40
	61-75	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
AMC: Acove-----	0-13	*Sandy loam	*SM, SC SP-SM, SC-SM	*A-2-4, A-4, A-6, A-1-b	0-10	0-10	91-100	65-100	46-82	16-36	0-25	2-11
	13-19	*Sandy clay loam, Flaggy sandy clay loam, very flaggy fine sandy loam, gravelly sandy clay loam, flaggy fine sandy loam, very flaggy sandy clay loam, fine sandy loam, very gravelly fine sandy loam, very gravelly sandy clay loam, channery sandy clay loam, very channery fine sandy loam, channery fine sandy loam, very channery sandy clay loam, gravelly fine sandy loam	*SC, GP-GC, SC-SM, CL, SM	*A-2-6, A-6, A-7-6, A-2-4, A-4	0-35	0-35	84-100	58-100	46-98	18-51	28-40	11-21
	19-35	*Flaggy clay, Channery clay, very channery sandy clay, sandy clay, channery sandy clay, very channery clay, very flaggy sandy clay, clay, flaggy sandy clay, very flaggy clay	*CL, GC, SC, CH	*A-7-6, A-6	13-39	10-34	93-100	93-100	64-89	42-65	39-55	21-32
	35-59	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
AMC: Menard-----	0-13	*Sandy loam	*SM, SC, SP-SM, SC-SM	*A-4, A-2-4	0	0	84-100	84-100	58-84	26-46	16-25	3-10
	13-50	*Sandy clay loam, Clay loam	*SC, CL	*A-6, A-2-4, A-2-6	0	0	78-100	77-100	61-94	34-59	26-39	10-22
	50-80	*Loam, Gravelly fine sandy loam, gravelly sandy clay loam, gravelly loam, gravelly sandy loam, gravelly clay loam, sandy clay loam, clay loam, sandy loam, fine sandy loam	*CL, SM, SC	*A-6, A-4	0	0	78-100	77-100	64-100	48-92	20-35	8-20
CAC: Campwood-----	0-15	*Clay	*CH,	*A-7-6, A-7-5	0	0	100	91-100	77-100	66-87	47-65	25-40
	15-51	*Clay, Silty clay	*CH, CL	*A-7-6, A-7-5	0	0	100	91-100	77-100	66-92	51-74	28-50
	51-80	*Clay, Silty clay, silty clay loam	*CH, CL	*A-7-6, A-6, A-7-5	0	0	91-100	83-100	66-100	56-92	36-60	25-45
Sunev-----	0-12	*Clay loam	*CL, CH	*A-6	0	0	89-100	88-100	77-100	60-81	30-39	12-32
	12-37	*Clay loam, Loam, sandy clay loam	*CL, CH, SC	*A-6, A-7-6, A-4	0	0	77-100	76-100	62-100	47-82	25-40	8-20
	37-64	*Loam, Clay loam, sandy clay loam	*CL, SC	*A-6, A-4	0	0	77-100	76-100	65-100	49-84	28-39	8-20
	64-80	*Very fine sandy loam, Clay loam, loam, sandy clay loam	*CL-ML, GC, SM, CL, ML	A-6, A-7-6, A-4, A-2-4	0	0	38-100	35-100	35-100	21-75	25-42	9-20
Valera-----	0-14	*Clay loam	*CH, CL	*A-7-6, A-6	0	0	77-100	76-100	67-100	52-81	41-62	20-38
	14-25	*Clay loam, Silty clay loam, clay, silty clay	*CH, CL	*A-7-6, A-6, A-4	0	0	79-100	78-100	64-95	50-78	41-62	20-38
	25-29	*Cemented material			---	---	---	---	---	---	---	---
	29-39	*Bedrock			---	---	---	---	---	---	---	---

410

Table 22.--Engineering Soil 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	
CeC: Castell-----	0-8	*Sandy loam	*SM, SP-SM, SC-SM	*A-4, A-2-4, A-1-b	0	0	63-100	62-100	43-84	19-46	16-25	3-13
	8-30	*Sandy clay, Clay loam, clay, gravelly clay loam, gravelly sandy clay, gravelly clay	*CH, GC, SC, CL	*A-7-6, A-2-7	0	0	58-100	57-100	43-95	27-67	45-65	21-39
	30-42	*Bedrock			---	---	---	---	---	---	---	---
ERD: Eckert-----	0-12	*Very cobbly loam	*GM, CL, GC, CL-ML	*A-4, A-2-4, A-1-a, A-6	0-37	14-74	29-78	26-77	21-73	15-55	16-30	9-18
	12-22	*Bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---
ERG: Eckert-----	0-9	*Very gravelly loam	*GM, SC, GC, CL	*A-4, A-2-4, A-6	0-37	14-74	29-78	26-77	21-73	15-55	16-30	9-18
	9-19	*Bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
FRC: Fieldcreek, occasionally flooded-----	0-8	*Fine sandy loam	*SC-SM, SM, CL-ML	*A-4, A-2-4	0	0	83-100	82-100	71-99	30-49	16-30	4-13
	8-25	*Loam, Gravelly sandy loam, gravelly fine sandy loam, gravelly loam, sandy loam, fine sandy loam	*CL-ML, SM, SC-SM, CL, SC	*A-4, A-6	0	0	83-100	83-100	69-99	48-73	16-28	6-17
	25-48	*Loam, Gravelly fine sandy loam, sandy clay loam, gravelly sandy clay loam, gravelly sandy loam, sandy loam, fine sandy loam, gravelly loam	*CL-ML, SM, SC-SM, CL, SC	*A-4, A-6, A-2-4	0	0	84-100	83-100	69-99	48-73	16-28	6-17
	48-80	*Fine sandy loam, Gravelly fine sandy loam, sandy clay loam, gravelly sandy clay loam, gravelly sandy loam, sandy loam, fine sandy loam, gravelly loam	*SC-SM, SM, ML, CL-ML, SC	*A-2-4, A-6, A-4	0	0	68-100	67-100	58-99	25-49	16-28	4-13
Fieldcreek, frequently flooded-----	0-8	*Fine sandy loam	*SC-SM, SM, CL-ML	*A-4, A-2-4	0	0	83-100	82-100	71-99	30-49	16-30	4-13
	8-25	*Loam	*CL-ML, SM, SC-SM, CL, SC	*A-4	0	0	83-100	83-100	69-99	48-73	16-28	6-17
	25-48	*Loam	*CL-ML, SM, SC-SM, CL, SC	*A-4, A-6, A-2-4	0	0	84-100	83-100	69-99	48-73	16-28	6-17
	48-80	*Fine sandy loam	*SC-SM, SM, ML, CL-ML	*A-2-4, A-6, A-4	0	0	68-100	67-100	58-99	25-49	16-28	4-13
Riverwash-----	0-80	*Extremely gravelly coarse sandy loam	*GP-GM,	*A-1-a	0-9	1-24	46-51	10-51	6-32	4-19	16-25	NP-3

Table 22.--Engineering Soil 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	
HeD: Hensley-----	0-6	*Loam	*CL, SC-SM, SC	*A-6, A-4, A-2-6	0	0	77-100	76-100	65-100	49-85	20-35	5-16
	6-14	*Clay, Clay loam	*CH, CL	*A-7-6, A-6	0	0	84-100	84-100	71-100	57-88	35-55	18-35
	14-24	*Bedrock			---	---	---	---	---	---	---	---
HkC: Honeycreek-----	0-17	*Fine sandy loam	*SM, SC-SM, CL-ML	*A-4, A-2-4	0	0-1	77-100	76-100	65-95	27-45	21-28	3-10
	17-25	*Fine sandy loam, Sandy loam	*SM, ML, SC-SM, CL	*A-4, A-2-4	0	0	60-100	58-100	53-96	24-47	23-30	9-13
	25-37	*Sandy clay loam, Gravelly clay loam, gravelly fine sandy loam, fine sandy loam, clay loam, gravelly sandy clay loam	*CL, SM, SC-SM, SC, GC	*A-6, A-4, A-2-6, A-2-4	0	0	52-100	50-100	40-92	21-55	25-39	12-21
	37-50	*Gravelly sandy clay loam, Gravelly loam, gravelly fine sandy loam, sandy loam, sandy clay loam, gravelly sandy loam, clay loam, gravelly clay loam, fine sandy loam	*SC, SM, SC-SM, CL, GC	*A-6, A-2-4, A-4	0	0	53-100	51-100	42-93	22-55	25-39	12-21
	50-56	*Gravelly fine sandy loam	*SM, GM, SC-SM	*A-4, A-2-4	0	0	53-100	51-100	44-98	21-54	20-39	3-12
	56-66	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
HND:												
Hye-----	0-10	*Fine sandy loam	*SC-SM, SM,	*A-4, A-2-4,	0	0-4	86-100	85-100	76-97	33-47	20-30	4-10
	10-36	*Sandy clay loam, Clay loam, fine sandy loam	*CL, SC-SM, SM, SC	*A-6, A-4, A-2-6, A-2-4	0	0-4	86-100	86-100	68-94	36-57	27-39	8-21
	36-46	*Bedrock			---	---	---	---	---	---	---	---
Nebgen-----	0-11	*Sandy loam	*SM, SP-SM, SC-SM	*A-2-4	0	0-7	80-100	79-100	55-84	25-46	15-25	3-13
	11-21	*Bedrock			---	---	---	---	---	---	---	---
Oben-----	0-5	*Fine sandy loam	*SC-SM, SM	*A-4, A-2-4,	0	0-22	78-100	78-100	69-97	30-47	16-28	6-12
	5-14	*Sandy clay loam, Loam, fine sandy loam, clay loam, gravelly clay loam, gravelly sandy clay loam, gravelly loam, gravelly fine sandy loam	*SC, SC-SM, SM, CL	*A-6, A-2-4, A-4	0	0-19	77-100	76-100	62-90	32-51	26-36	8-15
	14-19	*Parachannery sandy clay loam, Fine sandy loam, loam, sandy clay loam, clay loam, gravelly loam, gravelly sandy clay loam, gravelly clay loam, gravelly fine sandy loam	*SC, SC-SM, SM, CL	*A-6, A-4	0	0	100	100	81-93	43-55	26-36	8-15
	19-29	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
HOD: Hye-----	0-10	*Fine sandy loam	*SC-SM, SM, SC	*A-4, A-2-4, A-2	0	0-4	86-100	85-100	76-97	33-47	20-30	4-10
	10-36	*Sandy clay loam, Clay loam, fine sandy loam	*CL, SC-SM, SM, SC	*A-6, A-4, A-2-6, A-2-4	0	0-4	86-100	86-100	68-94	36-57	27-39	8-21
	36-46	*Bedrock			---	---	---	---	---	---	---	---
Oben-----	0-5	*Fine sandy loam	*SC-SM, SM	*A-4, A-2-4, A-2	0	0-22	78-100	78-100	69-97	30-47	16-28	6-12
	5-14	*Sandy clay loam, Loam, fine sandy loam, clay loam, gravelly clay loam, gravelly sandy clay loam, gravelly fine sandy loam	*SC, SC-SM, SM, CL	*A-6, A-2-4, A-4	0	0-19	77-100	76-100	62-90	32-51	26-36	8-15
	14-19	*Parachannery sandy clay loam, Fine sandy loam, loam, sandy clay loam, clay loam, gravelly loam, gravelly sandy clay loam, gravelly clay loam, gravelly fine sandy loam	*SC, SC-SM, SM, CL	*A-6, A-4	0	0	100	100	81-93	43-55	26-36	8-15
	19-29	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
HOD: Loneoak-----	0-22	*Loamy sand	*SM, SP-SM, SW-SM, SC-SM	*A-2-4, A-3	0	0	93-100	93-100	73-84	27-35	16-25	1-6
	22-49	*Clay, Sandy clay, cobble sandy clay loam, cobble clay loam, cobble clay, cobble sandy clay, sandy clay loam, clay loam	*CH, SC, GC, CL	*A-7-6, A-6	0	0-27	73-100	72-100	61-100	49-88	39-55	26-40
	49-61	*Cobble clay, Sandy clay, cobble sandy clay loam, cobble clay loam, clay, cobble sandy clay, sandy clay loam, clay loam	*CH, CL, SC, GC	*A-7-6, A-6, A-7-5	0	0-31	70-100	69-100	57-100	49-91	39-55	26-40
	61-75	*Bedrock			---	---	---	---	---	---	---	---
HPC: Hye-----	0-10	*Fine sandy loam	*SC-SM, SM,	*A-4, A-2-4,	0	0-4	86-100	85-100	76-97	33-47	20-30	4-10
	10-36	*Sandy clay loam, Clay loam, fine sandy loam	*CL, SC-SM, SM, SC	*A-6, A-4, A-2-6, A-2-4	0	0-4	86-100	86-100	68-94	36-57	27-39	8-21
	36-46	*Bedrock			---	---	---	---	---	---	---	---
Pontotoc-----	0-5	*Fine sandy loam	*SM, CL-ML, SC-SM	*A-4, A-2-4,	0	0	87-100	86-100	76-95	38-51	0-25	4-10
	5-10	*Fine sandy loam, Loamy sand, sandy loam	*SM, CL-ML, SC-SM	*A-4, A-2-4,	0	0	87-100	86-100	76-95	38-51	0-25	4-10
	10-33	*Fine sandy loam, Sandy clay loam	*SM, SC, SC-SM	*A-4, A-2-4, A-6	0	0	86-100	86-100	77-97	34-47	23-39	6-19
	33-67	*Sandy clay loam, Fine sandy loam, loam	*CL, SM, SC-SM, SC	*A-6, A-4, A-2-6, A-2-4	0	0	86-100	85-100	68-94	36-57	23-39	6-19
	67-77	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
KAC: Katemcy-----	0-9	*Sandy loam	*SM, SP-SM, SC-SM	*A-4, A-2-4	0	0-16	84-100	84-100	58-84	26-46	21-29	4-11
	9-20	*Sandy clay, Channery sandy clay, channery clay, channery sandy clay loam, gravelly clay, gravelly clay loam, channery clay loam, clay loam, sandy clay loam, clay, gravelly sandy clay loam, gravelly sandy clay	*CH, SC, CL	*A-7-6, A-6 A-2-6, A-2-7	0	0-28	65-100	56-100	42-95	26-67	38-67	20-44
	20-27	*Gravelly sandy clay, Channery sandy clay, channery sandy clay loam, gravelly sandy clay loam, sandy clay, sandy clay loam	*CH, GC, SC	*A-7-6, A-6 A-2-6, A-2-7	0	0-29	48-100	46-100	32-96	19-67	38-67	20-44
	27-38	*Channery sandy clay loam, Gravelly sandy clay loam, sandy clay loam, gravelly sandy clay, cobbly sandy clay, sandy clay	*SC, GC, CL, CH	*A-7-6, A-2-6, A-6	0	0-24	53-100	52-100	41-94	23-60	38-67	20-44
	38-80	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
KAC: Honeycreek-----	0-17	*Fine sandy loam	*SM, SC-SM, CL-ML	*A-4, A-2-4	0	0-1	77-100	76-100	65-95	27-45	21-28	3-10
	17-25	*Fine sandy loam, Sandy loam	*SM, ML, SC-SM, CL	*A-4, A-2-4	0	0	60-100	58-100	53-96	24-47	23-30	9-13
	25-37	*Sandy clay loam, Gravelly loam, loam, gravelly fine sandy loam, clay loam, gravelly sandy clay loam, fine sandy loam, gravelly clay loam	*CL, SM, SC-SM, SC, GC	*A-6, A-4, A-2-6, A-2-4	0	0	52-100	50-100	40-92	21-55	25-39	12-21
	37-50	*Gravelly sandy clay loam, Gravelly loam, loam, gravelly fine sandy loam, sandy loam, sandy clay loam, gravelly sandy loam, clay loam, gravelly clay loam, fine sandy loam	*SC, SM, SC-SM, CL, GC	*A-6, A-2-4, A-4	0	0	53-100	51-100	42-93	22-55	25-39	12-21
	50-56	*Gravelly fine sandy loam	*SM, GM, SC-SM	*A-4, A-2-4	0	0	53-100	51-100	44-98	21-54	20-39	3-12
	56-66	*Bedrock			---	---	---	---	---	---	---	---
KeD: Keese-----	0-5	*Coarse sandy loam	*SM, SC-SM	*A-2-4, A-4, A-1-b	0	0	77-92	76-91	45-63	25-39	16-25	NP-7
	5-10	*Coarse sandy loam	*SM, GM, SC-SM	*A-1-b, A-4, A-2-4	0-16	0	53-92	51-91	30-63	17-39	16-25	NP-7
	10-14	*Gravelly coarse sandy loam, Sandy loam, coarse sandy loam, gravelly sandy loam	*SM, GM, GC-GM, SW-SM	*A-1-b, A-4, A-2-4, A-1	0-16	0	59-92	57-92	34-64	19-40	16-25	NP-7
	14-24	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
KLE: Keese-----	0-5	*Coarse sandy loam	*SM, SC-SM	*A-2-4, A-4, A-1-b	0	0	77-92	76-91	45-63	25-39	16-25	NP-7
	5-10	*Coarse sandy loam	*SM, GM, SC-SM	*A-1-b, A-4, A-2-4	0-16	0	53-92	51-91	30-63	17-39	16-25	NP-7
	10-14	*Gravelly coarse sandy loam, Sandy loam, coarse sandy loam, gravelly sandy loam	*SM, GM, GC-GM, SW-SM	*A-1-b, A-4, A-2-4, A-1	0-16	0	59-92	57-92	34-64	19-40	16-25	NP-7
	14-24	*Bedrock			---	---	---	---	---	---	---	---
Lou-----	0-8	*Sandy loam	*SM, SC-SM	*A-4, A-2-4,	0	0	76-100	75-100	67-96	29-46	18-30	6-11
	8-20	*Sandy clay loam, Gravelly sandy clay loam, gravelly coarse sandy loam, gravelly sandy loam, sandy loam, coarse sandy loam	*SC, CL, GC	*A-6, A-4, A-2-6, A-2-4	0	0	52-92	50-91	40-88	21-54	30-39	12-24
	20-30	*Gravelly sandy clay loam, Gravelly sandy loam, gravelly coarse sandy loam	*SC, SM, SC-SM, CL, GC	*A-6, A-2-7, A-2-6	0	0	54-92	52-92	41-87	22-54	30-39	12-24
	30-80	*Extremely gravelly loam, Extremely gravelly sandy clay loam	*GW-GC, GW, GC	*A-2-6, A-2-7, A-2-4	0	0	9-30	6-27	5-25	3-19	30-39	12-24
Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---
KRG: Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---
Keese, 15 to 30 percent slopes-	0-9	*Gravelly sandy loam	*SM, SW-SM, SC-SM	*A-2-4, A-4, A-1-b	1-9	1-12	73-94	71-94	49-79	22-43	16-25	NP-7
	9-19	*Bedrock			---	---	---	---	---	---	---	---
Keese, 12 to 15 percent slopes-	0-9	*Gravelly sandy loam	*SM, SW-SM, SC-SM	*A-2-4, A-4, A-1-b	1-9	1-12	73-94	71-94	49-79	22-43	16-25	NP-7
	9-19	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
KTG: Kerrville-----	0-6	*Very paragravelly loam	*CL, SC, GC	*A-6, A-4	0	0	100	100	84-99	63-78	25-39	10-26
	6-18	*Very paragravelly loam	*CL, SC, GC	*A-6, A-4	0	0	100	100	84-99	63-78	25-39	10-23
	18-26	*Paragravelly loam, Extremely paraflaggy silty clay loam, paraflaggy clay loam, very paragravelly loam, paraflaggy silty clay loam, very paragravelly silty clay loam, extremely paraflaggy clay loam, very paraflaggy clay loam, extremely paraflaggy loam, paraflaggy loam, extremely paragravelly silty clay loam, paragravelly clay loam, very paraflaggy loam, paragravelly silty clay loam, very paraflaggy silty clay loam, clay loam, extremely paragravelly clay loam, very paragravelly clay loam, extremely paragravelly loam	*CL, SC, MH, SM, GM, ML	*A-6, A-7-5, A-4	0	0	100	100	88-100	67-85	22-38	10-22
		26-35	*Bedrock			---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
KTG: Brackett-----	0-4	*Loam	*CL, SC-SM, SC, CL-ML	*A-6, A-4	0	0	100	100	81-96	56-71	25-39	10-26
	4-13	*Loam, Paragravelly loam, gravelly silt loam, paragravelly clay loam, paragravelly silt loam, paragravelly silty clay loam, gravelly silty clay loam, silty clay loam, clay loam, silt loam, gravelly clay loam, gravelly loam	*CL, GC-GM, GC, SC-SM, CL-ML, SC	*A-6, A-2-4, A-4	0	0-14	53-100	51-100	41-96	29-71	25-39	10-23
	13-28	*Bedrock			---	---	---	---	---	---	---	---
Tarrant-----	0-8	*Very cobbly clay	*GC, MH, SC, CH	*A-7-6, A-7-5	0-50	0-53	57-100	56-100	46-100	39-91	51-75	25-44
	8-13	*Very cobbly clay, Extremely cobbly clay, very stony clay, very flaggy clay, extremely stony clay, extremely flaggy clay	*GC, MH, SC, CH	*A-7-6, A-2-7, A-7-5	0-65	0-100	30-100	27-100	22-100	19-91	51-75	25-44
	13-23	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
KVE: Kerrville-----	0-6	*Very paragravelly loam	*CL, SC, GC	*A-6, A-4	0	0	100	100	84-99	63-78	25-39	10-26
	6-18	*Very paragravelly loam	*CL, SC, GC	*A-6, A-4	0	0	100	100	84-99	63-78	25-39	10-23
	18-26	*Paragravelly loam, Extremely paraflaggy silty clay loam, paraflaggy clay loam, very paragravelly loam, paraflaggy silty clay loam, very paragravelly silty clay loam, extremely paraflaggy clay loam, very paraflaggy clay loam, extremely paraflaggy loam, paraflaggy loam, extremely paragravelly silty clay loam, paragravelly clay loam, very paraflaggy loam, paragravelly silty clay loam, very paraflaggy silty clay loam, clay loam, extremely paragravelly clay loam, very paragravelly clay loam, extremely paragravelly loam	*CL, SC, MH, SM, GM, ML	*A-6, A-7-5, A-4	0	0	100	100	88-100	67-85	22-38	10-22
		26-35	*Bedrock			---	---	---	---	---	---	---
Real-----	0-3	*Very paragravelly loam	*CL, MH, CH, SC	*A-6, A-4, A-2	0	0	100	100	80-100	58-78	30-39	8-25
	3-12	*Very paragravelly clay loam, Extremely paragravelly loam, very paragravelly loam, extremely paragravelly clay loam	*CL, ML, MH, GC, GM	*A-7-6, A-7-5, A-6, A-4	0	0	100	100	83-98	63-78	30-55	8-25
	12-22	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
KVE: Sunev-----	0-12	*Clay loam	*CL	*A-6	0	0	89-100	88-100	77-100	60-81	30-39	12-32
	12-37	*Clay loam, Loam, sandy clay loam	*CL, CH, SC	*A-6, A-7-6, A-4	0	0	77-100	76-100	62-100	47-82	25-40	8-20
	37-64	*Loam, Clay loam, sandy clay loam	*CL, SC	*A-6, A-4	0	0	77-100	76-100	65-100	49-84	28-39	8-20
	64-80	*Very fine sandy loam, Clay loam, loam, sandy clay loam	*SM, ML, CL, CL-ML	*A-4, A-7-6, A-6, A-2-4	0	0	38-100	35-100	35-100	21-75	25-42	9-20
LKD: Ligon-----	0-4	*Gravelly sandy clay loam	*SC, GC-GM	*A-6, A-1-b, A-2-6	0	0	54-78	52-77	41-67	24-41	21-39	4-22
	4-31	*Sandy clay, Very gravelly clay loam, cobbly sandy clay loam, cobbly sandy clay, gravelly clay loam, gravelly clay, very gravelly sandy clay loam, very gravelly sandy clay, gravelly sandy clay, clay loam, clay, sandy clay loam, gravelly sandy clay, cobbly clay loam, cobbly clay, gravelly sandy clay loam	*CH, GC, SC, CL	*A-7-6, A-2-6, A-2-7	0	0-14	64-100	63-100	47-95	29-67	38-52	20-32
	31-41	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
LKD: Katemcy-----	0-9	*Sandy loam	*SM, SP-SM, SC-SM	*A-4, A-2-4	0	0-16	84-100	84-100	58-84	26-46	21-29	4-11
	9-20	*Sandy clay, Channery clay loam, gravelly clay, channery clay, channery sandy clay loam, channery sandy clay, gravelly clay loam, clay loam, sandy clay loam, clay, gravelly sandy clay loam, gravelly sandy clay	*CH, SC, CL	*A-7-6, A-2-6, A-2-7	0	0-28	65-100	56-100	42-95	26-67	38-67	20-44
	20-27	*Gravelly sandy clay, Channery sandy clay, gravelly sandy clay loam, channery sandy clay loam, sandy clay, sandy clay loam	*CH, GC, SC	*A-7-6, A-2-6, A-2-7	0	0-29	48-100	46-100	32-96	19-67	38-67	20-44
	27-38	*Channery sandy clay loam, Gravelly sandy clay loam, sandy clay loam, gravelly sandy clay, cobbly sandy clay, sandy clay	*SC, GC, CL, CH	*A-7-6, A-2-6, A-6	0	0-24	53-100	52-100	41-94	23-60	38-67	20-44
	38-80	*Bedrock			---	---	---	---	---	---	---	---
Keese-----	0-5	*Coarse sandy loam	*SM, SC-SM	*A-2-4, A-4, A-1-b	0	0	77-92	76-91	45-63	25-39	16-25	NP-7
	5-10	*Coarse sandy loam	*SM, GM, SC-SM	*A-1-b, A-4, A-2-4	0-16	0	53-92	51-91	30-63	17-39	16-25	NP-7
	10-14	*Gravelly coarse sandy loam, Sandy loam, coarse sandy loam, gravelly sandy loam	*SM, GM, GC-GM, SW-SM	*A-1-b, A-4, A-2-4	0-16	0	59-92	57-92	34-64	19-40	16-25	NP-7
	14-24	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
LND: Ligon-----	0-4	*Gravelly sandy clay loam	*SC, GC-GM	*A-6, A-1-b, A-2-6	0	0	54-78	52-77	41-67	24-41	21-39	4-22
	4-31	*Sandy clay, Very gravelly clay loam, very gravelly clay, cobbly sandy clay loam, cobbly sandy clay, gravelly clay loam, gravelly clay, very gravelly sandy clay loam, very gravelly sandy clay, clay loam, clay, sandy clay loam, gravelly sandy clay, cobbly clay loam, cobbly clay, gravelly sandy clay loam	*CH, GC, SC, CL	*A-7-6, A-2-6, A-2-7	0	0-14	64-100	63-100	47-95	29-67	38-52	20-32
	31-41	*Bedrock			---	---	---	---	---	---	---	---
Keese-----	0-5	*Coarse sandy loam	*SM, SC-SM	*A-2-4, A-4, A-1-b	0	0	77-92	76-91	45-63	25-39	16-25	NP-7
	5-10	*Coarse sandy loam	*SM, SC-SM	*A-1-b, A-4, A-2-4	0-16	0	53-92	51-91	30-63	17-39	16-25	NP-7
	10-14	*Gravelly coarse sandy loam, Sandy loam, coarse sandy loam, gravelly sandy loam	*SM, GM, GC-GM, SW-SM	*A-1-b, A-4, A-2-4	0-16	0	59-92	57-92	34-64	19-40	16-25	NP-7
	14-24	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
LOC: Loneoak-----	0-22	*Loamy sand	*SM, SP-SM, SW-SM, SC-SM	*A-2-4, A-3	0	0	93-100	93-100	73-84	27-35	16-25	1-6
	22-49	*Clay, Sandy clay, cobble sandy clay loam, cobble clay loam, cobble clay, cobble sandy clay, sandy clay loam, clay loam	*CH, SC, GC, CL	*A-7-6, A-6	0	0-27	73-100	72-100	61-100	49-88	39-55	26-40
	49-61	*Cobble clay, Sandy clay, cobble sandy clay loam, cobble clay loam, clay, cobble sandy clay, sandy clay loam, clay loam	*CH, CL, SC, GC	*A-7-6, A-6, A-7-5	0	0-31	70-100	69-100	57-100	49-91	39-55	26-40
	61-75	*Bedrock			---	---	---	---	---	---	---	---
Campair-----	0-12	*Loamy fine sand	*SC-SM, SM	*A-2-4, A-2-6, A-4	0	0	93-100	93-100	83-99	21-32	16-30	NP-7
	12-16	*Sandy clay loam, Clay loam	*CL, SC	*A-6, A-2-6	0	0	86-100	86-100	68-94	40-62	25-39	13-25
	16-28	*Clay loam	*CL,	*A-6, A-4	0	0	86-100	85-100	74-95	57-75	25-39	18-25
	28-38	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
LRC: Lou-----	0-8	*Sandy loam	*SM, SC-SM	*A-4, A-2-4, A-2	0	0	76-100	75-100	67-96	29-46	18-30	6-11
	8-20	*Sandy clay loam, Gravelly sandy clay loam, gravelly coarse sandy loam, gravelly sandy loam, sandy loam, coarse sandy loam	*SC, CL, GC	*A-6, A-4, A-2-6, A-2-4	0	0	52-92	50-91	40-88	21-54	30-39	12-24
	20-30	*Gravelly sandy clay loam, Gravelly sandy loam, gravelly coarse sandy loam	*SC, SM, SC-SM, CL, GC	*A-6, A-2-7, A-2-6	0	0	54-92	52-92	41-87	22-54	30-39	12-24
	30-80	*Extremely gravelly loam, Extremely gravelly sandy clay loam	*GW-GC, GW, GC	*A-2-6, A-2-7, A-2-4	0	0	9-30	6-27	5-25	3-19	30-39	12-24
Click-----	0-11	*Very gravelly coarse sandy loam	*GM, SM, GC-GM	*A-1-b, A-2-6	0	0	41-71	39-70	29-59	13-32	15-23	NP-7
	11-45	*Very gravelly sandy loam, Gravelly sandy loam, gravelly sandy clay loam, very gravelly sandy loam, very gravelly sandy clay loam	*GC-GM, GC, GP-GM, GP-GC	*A-2-4, A-2-6, A-1-b, A-1-a	0	0	31-54	28-52	20-47	10-28	18-28	3-17
	45-53	*Extremely gravelly loam, Extremely gravelly sandy clay loam	*GW-GC, GW, GC	*A-2-4, A-1-a, A-2-7, A-2-6	0	0	9-44	6-42	5-40	4-31	18-28	13-21
	53-63	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
LRC: Voca-----	0-6	*Sandy loam	*SM, SC-SM, GC-GM	*A-2-4, A-4, A-1-a	0	0	78-92	77-92	58-82	29-48	0-25	1-12
	6-11	*Very gravelly sandy loam, Gravelly sandy loam, coarse sandy loam, fine sandy loam, loam, gravelly fine sandy loam, gravelly loam, sandy loam	*SM, GM, SC-SM	*A-1-b, A-4, A-2-4	0	0	54-92	52-92	31-67	16-42	0-25	2-13
	11-17	*Very gravelly sandy clay loam, Very gravelly clay loam, gravelly sandy clay loam, gravelly sandy clay, gravelly clay, very gravelly clay, gravelly clay loam, very gravelly sandy clay	*GC, CL, SC	*A-2-7, A-2-6	0	0	34-77	31-76	24-76	13-50	32-55	27-40
	17-34	*Gravelly clay, Gravelly clay loam, very gravelly sandy clay, gravelly sandy clay, very gravelly clay loam, gravelly clay, very gravelly clay	*CH, SC, GC	*A-7-6, A-2-7	0	0	30-77	27-76	19-72	13-57	45-60	25-35
	34-80	*Extremely gravelly coarse sandy loam, Extremely gravelly loam, extremely gravelly sandy clay loam	*GW, GP-GC, GC	*A-2-7, A-2-4, A-2-6	0	0	9-30	6-27	3-17	1-10	45-60	25-35

Table 22.--Engineering Soil 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	
LuC: Luckenbach-----	0-15	*Clay loam	*CL	*A-6, A-7-6	0	0	92-100	91-100	79-95	61-75	29-40	14-25
	15-39	*Clay, Sandy clay, clay loam	*CH, CL	*A-7-6, A-6	0	0	77-100	76-100	64-100	52-88	40-55	22-35
	39-80	*Clay loam, Gravelly loam, sandy clay loam, gravelly sandy clay loam, gravelly clay loam, loam	*CL, CH, GC	*A-6, A-7-6	0	0	71-100	69-100	58-100	46-86	35-45	20-30
MPC: Menard-----	0-13	*Sandy loam	*SM, SC-SM, SP-SM	*A-4, A-2-4	0	0	84-100	84-100	58-84	26-46	16-25	3-10
	13-50	*Sandy clay loam, Clay loam	*SC, CL	*A-6, A-2-4, A-2-6	0	0	78-100	77-100	61-94	34-59	26-39	10-22
	50-80	*Loam, Gravelly fine sandy loam, gravelly sandy clay loam, gravelly loam, gravelly sandy loam, gravelly clay loam, sandy clay loam, clay loam, sandy loam, fine sandy loam	*CL, SM, SC	*A-6, A-4	0	0	78-100	77-100	64-100	48-92	20-35	8-20
Pedernales-----	0-12	*Fine sandy loam	*SM, SC-SM, ML, CL-ML	*A-2-4, A-6, A-4	0	0	92-100	91-100	78-100	27-44	0-25	2-13
	12-45	*Clay loam, Sandy clay loam, sandy clay, clay	*CH, CL	*A-7-6, A-6	0	0	92-100	91-100	78-100	52-77	38-60	20-36
	45-61	*Clay loam	*CL, CH	*A-7-6, A-6	0	0	92-100	91-100	82-98	64-78	32-55	13-30
	61-80	*Sandy loam, Clay loam, sandy clay loam	*SM, CL, SC, CH	*A-4, A-6	0	0	92-100	92-100	84-100	50-75	32-39	13-30

Table 22.--Engineering Soil 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	
MSC: Mereta-----	0-6	*Clay loam	*CL, MH, CH	*A-7-6, A-6, A-7-5	0	0	82-100	81-100	71-100	60-94	39-50	19-28
	6-16	*Clay, Very gravelly silty clay loam, gravelly clay loam, very gravelly clay loam, very gravelly clay, clay loam, silty clay loam, gravelly clay, gravelly silty clay loam	*CH, MH, GC, CL	*A-7-6, A-2-6, A-2-7, A-7-5	0	0	33-100	30-100	25-100	22-92	39-52	19-30
	16-20	*Cemented material			---	---	---	---	---	---	---	---
	20-61	*Silt loam, Silty clay loam, gravelly clay loam, very gravelly loam, loam, clay loam, gravelly silty clay loam	*CL, GC, ML, CH	*A-6, A-4, A-7-6	0	0	52-100	50-100	45-100	39-100	38-50	18-28
	61-80	*Silty clay loam, clay loam	*CL, CH	*A-7-6, A-6	0	0	51-100	49-100	46-100	41-100	38-50	18-28
Cho-----	0-6	*Loam	*CL, SC	*A-6,	0	0-7	78-100	77-100	64-100	48-92	30-39	11-26
	6-10	*Cemented material			---	---	---	---	---	---	---	---
	10-40	*Loam, Very gravelly loam, gravelly clay loam, very gravelly clay loam, very gravelly silty clay loam, clay loam, silty clay loam, gravelly silty clay loam, gravelly loam	*CL, SC, SC-SM, GC, GC-GM	*A-6, A-2-6, A-1-b, A-7-6, A-4	0	0	39-100	36-100	30-99	23-77	24-47	5-22
Sunev-----	0-12	*Clay loam	*CL	*A-6	0	0	89-100	88-100	77-100	60-81	30-39	12-32
	12-37	*Clay loam, Loam, sandy clay loam	*CL, CH, SC	*A-6, A-7-6, A-4	0	0	77-100	76-100	62-100	47-82	25-40	8-20
	37-64	*Loam, clay loam, sandy clay loam	*CL, SC	*A-6, A-4	0	0	77-100	76-100	65-100	49-84	28-39	8-20
	64-80	*Very fine sandy loam, Clay loam, loam, sandy clay loam	*SM, ML, GC, CL, CL-ML	*A-4, A-7-6, A-6, A-2-4	0	0	38-100	35-100	35-100	21-75	25-42	9-20

Table 22.--Engineering Soil 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	
NRE: Nebgen-----	0-11	*Sandy loam	*SM, SP-SM, SC-SM	*A-2-4, A-4	0	0-7	80-100	79-100	55-84	25-46	15-25	3-13
	11-21	*Bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---
NRG: Nebgen-----	0-8	*Sandy loam	*SM, SP-SM, SC-SM	*A-4, A-2-4	0	0-14	80-100	79-100	55-84	25-46	15-25	3-13
	8-18	*Bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---
OaB: Oakalla-----	0-12	*Loam	*CL, SC, CL-ML	*A-6, A-4	0	0	83-100	82-100	67-99	49-77	25-39	14-33
	12-37	*Clay loam	*CL, MH, CH	*A-6, A-7-5, A-7-6	0	0	82-100	82-100	69-97	53-78	28-58	13-38
	37-80	*Clay loam	*CL, MH, CH	*A-6, A-7-5, A-7-6	0	0	82-100	82-100	69-97	53-78	25-55	8-35
PeC: Pedernales-----	0-12	*Fine sandy loam	*SM, SC-SM, ML, CL-ML	*A-2-4, A-4	0	0	92-100	91-100	78-100	27-44	0-25	2-13
	12-45	*Sandy clay loam, clay loam, sandy clay, clay	*CH, CL	*A-7-6, A-6	0	0	92-100	91-100	78-100	52-77	38-60	20-36
	45-61	*Clay loam	*CL, CH	*A-7-6, A-6	0	0	92-100	91-100	82-98	64-78	32-55	13-30
	61-80	*Sandy loam, clay loam, sandy clay loam	*SM, CL, SC	*A-4, A-6	0	0	92-100	92-100	84-100	50-75	32-39	13-30
RCC: Riverwash-----	0-80	*Extremely gravelly coarse sandy loam	*GP-GM,	*A-1-a	0-9	1-24	46-51	10-51	6-32	4-19	16-25	NP-3
Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---
RgG: Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
RhE: Roughcreek-----	0-6	*Very gravelly clay loam	*GC	*A-2-7	0	0	30-52	27-50	23-49	18-39	40-60	20-35
	6-18	*Very gravelly clay, Extremely cobbly clay, very flaggy clay, extremely flaggy clay, very cobbly clay, extremely gravelly clay, very stony clay, extremely stony clay	*GC	*A-2-7, A-7-6	0-88	18-69	22-78	18-77	15-77	13-70	51-75	35-50
	18-28	*Bedrock			---	---	---	---	---	---	---	---
RkE: Roughcreek-----	0-15	*Very cobbly clay	*GC, CH	*A-7-6, A-7-5	0-24	21-61	61-100	59-100	47-99	38-83	41-60	24-40
	15-25	*Bedrock			---	---	---	---	---	---	---	---
RRG: Roughcreek, 15 to 40 percent slopes-----	0-11	*Very cobbly clay	*GC, CH	*A-7-6, A-7-5	0-24	21-61	61-100	59-100	55-97	44-79	41-60	24-40
	11-21	*Bedrock			---	---	---	---	---	---	---	---
Roughcreek, 12 to 15 percent slopes-----	0-15	*Very cobbly clay	*GC, CH	*A-7-6, A-7-5	0-30	10-50	70-95	50-95	45-95	45-94	41-60	24-40
	15-25	*Bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---
SuD: Sunev-----	0-12	*Clay loam	*CL	*A-6	0	0	89-100	88-100	77-100	60-81	30-39	12-32
	12-37	*Clay loam, Loam, sandy clay loam	*CL, CH, SC	*A-6, A-7-6, A-4	0	0	77-100	76-100	62-100	47-82	25-40	8-20
	37-64	*Loam, Clay loam, sandy clay loam	*CL, SC	*A-6, A-4	0	0	77-100	76-100	65-100	49-84	28-39	8-20
	64-80	*Very fine sandy loam, Clay loam, loam, sandy clay loam	*CL-ML, SM, CL, ML	*A-4, A-7-6, A-6, A-2-4	0	0	38-100	35-100	35-100	21-75	25-42	9-20

Table 22.--Engineering Soil 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	
TRE:												
Tarrant-----	0-8	*Very cobbly clay	*GC, SC, CH	*A-7-6, A-7-5	0-44	0-53	57-100	56-100	46-100	39-91	51-75	25-44
	8-12	*Very cobbly clay, Extremely cobbly clay, very stony clay, very flaggy clay, extremely stony clay, extremely flaggy clay	*GC, SC, CH	*A-7-6, A-2-7, A-7-5	0-65	0-100	30-100	27-100	22-100	19-91	51-75	25-44
	12-22	*Bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---
TRG:												
Tarrant, 15 to 40 percent slopes-----	0-8	*Very cobbly clay	*GC, SC, CH	*A-7-6, A-7-5	0-50	0-53	57-100	56-100	46-100	39-91	51-75	25-44
	8-12	*Very cobbly clay, Extremely cobbly clay, very stony clay, very flaggy clay, extremely stony clay, extremely flaggy clay	*GC, SC, CH	*A-7-6, A-2-7, A-7-5	0-65	0-100	30-100	27-100	22-100	19-91	51-75	25-44
	12-22	*Bedrock			---	---	---	---	---	---	---	---
Tarrant, 12 to 15 percent slopes-----	0-8	*Very cobbly clay	*GC, SC, CH	*A-7-6, A-7-5	0-5	33-77	55-100	51-100	48-99	36-95	51-75	25-44
	8-12	*Very cobbly clay, Extremely cobbly clay, very stony clay, very flaggy clay, extremely stony clay, extremely flaggy clay	*GC, SC, CH	*A-7-6, A-7-5	0-5	33-77	55-100	51-100	48-99	36-95	51-75	25-44
	12-22	*Bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
VeD: Venus, 0 to 3 percent slopes-	0-10	*Loam	*CL, SC-SM, SC, CL-ML	*A-6, A-4	0	0	83-100	82-100	67-99	49-77	20-39	5-22
	10-41	*Clay loam, Loam, sandy clay loam	*CL, CL-ML	*A-6, A-7-6, A-4	0	0	83-100	82-100	67-93	50-73	20-40	5-24
	41-80	*Sandy clay loam, Loam, clay loam	*SC, SC-SM, CL-ML, CL	*A-6, A-4, A-2-6, A-2-4	0	0	83-100	82-100	65-94	33-56	20-39	5-20
Venus, 3 to 8 percent slopes-	0-10	*Loam	*CL, SC-SM, SC, CL-ML	*A-6, A-7-6, A-4	0	0	83-100	82-100	67-99	49-77	20-39	5-22
	10-41	*Clay loam, Loam, sandy clay loam	*CL, CL-ML	*A-6, A-7-6, A-4	0	0	83-100	82-100	67-93	50-73	20-40	5-24
	41-80	*Sandy clay loam, Loam, clay loam	*SC, SC-SM, CL-ML, CL	*A-6, A-4, A-2-6, A-2-4	0	0	83-100	82-100	65-94	33-56	20-39	5-20

Table 22.--Engineering Soil Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
VoC: Voca-----	0-6	*Sandy loam	*SM, SC-SM, GC-GM	*A-2-4, A-4, A-1-a	0	0	78-92	77-92	58-82	29-48	0-25	1-12
	6-11	*Gravelly sandy loam, gravelly coarse sandy loam, coarse sandy loam, fine sandy loam, loam, gravelly fine sandy loam, gravelly loam, sandy loam	*SM, GM, SC-SM	*A-1-b, A-4, A-2-4	0	0	54-92	52-92	31-67	16-42	0-25	2-13
	11-17	*Very gravelly sandy clay loam, Very gravelly clay loam, gravelly sandy clay loam, gravelly sandy clay, gravelly clay, very gravelly clay, gravelly clay loam, very gravelly sandy clay	*GC, CL, SC	*A-2-7, A-2-6	0	0	34-77	31-76	24-76	13-50	32-55	27-40
	17-34	*Gravelly clay, Gravelly clay loam, very gravelly sandy clay, gravelly sandy clay, very gravelly clay loam, gravelly clay, very gravelly clay	*CH, SC, GC	*A-7-6, A-2-7	0	0	30-77	27-76	19-72	13-57	45-60	25-35
	34-80	*Extremely gravelly coarse sandy loam, Extremely gravelly loam, extremely gravelly sandy clay loam	*GW, GP-GC, GC	*A-2-7, A-2-4, A-2-6	0	0	9-30	6-27	3-17	1-10	45-60	25-35
W: Water-----	---	---	---	---	---	---	---	---	---	---	---	---

Table 22.--Engineering Soil 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	
YNE: Yates-----	0-12	*Very gravelly fine sandy loam	*GM, GW-GM, GW-GC, GP-GM, GC-GM	*A-2-4, A-1-a, A-4, A-1-b	0-73	0-73	43-100	21-100	18-100	7-55	20-35	5-15
	12-22	*Bedrock			---	---	---	---	---	---	---	---
Nebgen-----	0-11	*Sandy loam	*SM, SP-SM, SC-SM	*A-2-4,	0	0-7	80-100	79-100	55-84	25-46	15-25	3-13
	11-21	*Bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---
YNG: Yates-----	0-10	*Very gravelly loam	*GP-GM, CL, GM, GP-GC	*A-2-4, A-6, A-1-a, A-2-6	0-73	0-73	43-100	21-100	17-97	12-72	20-35	5-15
	10-20	*Bedrock			---	---	---	---	---	---	---	---
Nebgen-----	0-8	*Sandy loam	*SM, SP-SM, SC-SM	*A-4, A-2-4	0	0-14	80-100	79-100	55-84	25-46	15-25	3-13
	8-18	*Bedrock			---	---	---	---	---	---	---	---
Rock outcrop----	0-80	*Bedrock			---	---	---	---	---	---	---	---

Table 23.--Physical Soil Properties

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
								Kw	Kf	T		
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
ACC:												
Acove-----	0-13	5-20	1.40-1.60	2-6	0.09-0.13	0.0-2.9	0.5-1.0	.20	.24	3	3	86
	13-19	12-32	1.35-1.55	0.6-2	0.12-0.17	0.0-2.9	0.0-0.5	.32	.32			
	19-35	35-55	1.35-1.55	0.2-0.6	0.10-0.18	3.0-5.9	0.0-0.5	.20	.32			
	35-59	---	---	0.2-2	---	---	---	---	---			
Campair-----	0-12	3-12	1.55-1.65	2-6	0.07-0.11	0.0-2.9	0.5-1.0	.28	.28	2	1	134
	12-16	20-35	1.35-1.69	0.6-2	0.12-0.17	0.0-2.9	0.5-1.0	.32	.32			
	16-28	27-35	1.35-1.55	0.6-2	0.15-0.18	0.0-2.9	1.0-3.0	.37	.37			
	28-38	---	---	0.2-2	---	---	---	---	---			
Loneoak-----	0-22	0-10	1.55-1.69	6-20	0.04-0.09	0.0-2.9	0.1-1.0	.15	.15	4	1	160
	22-49	35-55	1.35-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.32	.32			
	49-61	40-60	1.10-1.40	0.2-0.6	0.05-0.10	3.0-5.9	0.1-1.0	.20	.32			
	61-75	---	---	0.06-0.6	---	---	---	---	---			
AMC:												
Acove-----	0-13	5-20	1.40-1.60	2-6	0.09-0.13	0.0-2.9	0.5-1.0	.20	.24	3	3	86
	13-19	12-32	1.35-1.55	0.6-2	0.12-0.17	0.0-2.9	0.0-0.5	.32	.32			
	19-35	35-57	1.35-1.55	0.2-0.6	0.10-0.18	3.0-5.9	0.0-0.5	.20	.32			
	35-59	---	---	0.2-2	---	---	---	---	---			
Menard-----	0-13	6-20	1.40-1.60	2-6	0.09-0.13	0.0-2.9	0.5-1.0	.20	.24	5	3	86
	13-50	20-35	1.45-1.65	0.6-2	0.15-0.19	0.0-2.9	0.1-0.5	.32	.32			
	50-80	20-50	1.45-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.28	.28			

Table 23.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								Kw	Kf	T		
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
CAC:												
Campwood-----	0-15	40-55	1.15-1.55	0.06-0.2	0.10-0.18	6.0-8.9	1.0-5.0	.32	.32	5	4	86
	15-51	40-60	1.15-1.55	0.06-0.2	0.10-0.18	6.0-8.9	1.0-5.0	.32	.32			
	51-80	35-60	1.15-1.55	0.06-0.2	0.10-0.18	6.0-8.9	1.0-5.0	.32	.32			
Sunev-----	0-12	27-40	1.30-1.50	0.6-2	0.11-0.16	3.0-5.9	1.0-3.0	.28	.32	5	4L	86
	12-37	20-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
	37-64	20-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
	64-80	15-30	1.40-1.50	0.6-2	0.07-0.13	0.0-2.9	0.0-0.8	.43	.43			
Valera-----	0-14	27-40	1.30-1.50	0.6-2	0.11-0.16	3.0-5.9	1.0-3.0	.28	.32	2	4	86
	14-25	27-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
	25-29	---	---	0.06-0.6	---	---	---	---	---			
	29-39	---	---	0.2-2	---	---	---	---	---			
CeC:												
Castell-----	0-8	6-20	1.40-1.60	2-6	0.09-0.13	0.0-2.9	0.5-1.0	.20	.24	3	3	86
	8-30	35-55	1.35-1.60	0.06-0.2	0.10-0.17	3.0-5.9	0.3-0.5	.32	.32			
	30-42	---	---	0.06-2	---	---	0.1-0.5	---	---			
ERD:												
Eckert-----	0-12	15-27	1.30-1.45	0.6-2	0.10-0.15	0.0-2.9	1.0-3.0	.15	.32	1	8	0
	12-22	---	---	0.06-2	---	---	---	---	---			
Rock outcrop-----	0-80	---	---	0.00-0.06	---	---	---	---	---	-	---	---
ERG:												
Eckert-----	0-12	15-27	1.30-1.45	0.6-2	0.10-0.15	0.0-2.9	1.0-3.0	.10	.32	1	8	0
	12-22	---	---	0.06-2	---	---	---	---	---			
Rock outcrop-----	0-80	---	---	0.00-0.06	---	---	---	---	---	-	---	---

Table 23.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability (Ksat)	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
								Kw	Kf	T		
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
FRC: Fieldcreek, occasionally flooded-----	0-8	8-20	1.20-1.45	2-6	0.11-0.15	0.0-2.9	1.0-3.0	.24	.24	5	3	86
	8-25	10-25	1.30-1.50	2-6	0.11-0.15	0.0-2.9	1.0-3.0	.24	.24			
	25-48	10-25	1.30-1.55	2-6	0.11-0.15	0.0-2.9	0.5-2.0	.24	.24			
	48-80	8-20	1.20-1.45	2-6	0.11-0.15	0.0-2.9	1.0-3.0	.24	.24			
Fieldcreek, frequently flooded-	0-8	8-20	1.20-1.45	2-6	0.11-0.15	0.0-2.9	1.0-3.0	.24	.24	5	3	86
	8-25	10-25	1.30-1.50	2-6	0.11-0.15	0.0-2.9	1.0-3.0	.24	.24			
	25-48	10-25	1.30-1.55	2-6	0.11-0.15	0.0-2.9	0.5-2.0	.24	.24			
	48-80	8-20	1.20-1.45	2-6	0.11-0.15	0.0-2.9	1.0-3.0	.24	.24			
Riverwash-----	0-80	0-2	1.20-1.70	6-20	0.00-0.05	0.0-2.9	0.0-1.0	.02	.02	5	8	0
HeD: Hensley-----	0-6	20-40	1.35-1.55	0.2-0.6	0.03-0.07	0.0-2.9	1.0-3.0	.17	.32	1	8	0
	6-14	35-55	1.40-1.65	0.06-0.2	0.12-0.20	3.0-5.9	0.1-1.0	.32	.32			
	14-24	---	---	0.06-2	---	---	---	---	---			
HkC: Honeycreek-----	0-9	10-18	1.45-1.55	0.6-2	0.10-0.15	0.0-2.9	0.5-2.0	.24	.24	4	3	86
	9-25	12-20	1.45-1.55	0.6-2	0.10-0.15	0.0-2.9	0.5-2.0	.24	.24			
	25-37	18-32	1.35-1.55	0.6-2	0.12-0.17	0.0-2.9	0.0-0.5	.32	.32			
	37-50	18-30	1.40-1.60	0.6-2	0.11-0.17	0.0-2.9	0.1-1.0	.24	.28			
	50-56	5-18	1.40-1.60	0.6-2	0.10-0.15	0.0-2.9	0.1-1.0	.10	.28			
	56-66	---	---	0.06-2	---	---	---	---	---			
HND: Hye-----	0-10	10-18	1.30-1.50	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.24	.24	3	3	86
	10-36	18-32	1.35-1.55	0.6-2	0.12-0.17	0.0-2.9	0.0-0.5	.32	.32			
	36-46	---	---	0.2-2	---	---	0.0-0.5	---	---			
Nebgen-----	0-11	6-20	1.40-1.60	2-6	0.09-0.13	0.0-2.9	0.5-1.0	.20	.24	1	8	0
	11-21	---	---	0.2-2	---	---	---	---	---			
Oben-----	0-5	10-18	1.30-1.50	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.24	.24	2	8	0
	5-14	16-25	1.45-1.65	0.6-2	0.08-0.16	0.0-2.9	0.1-1.0	.32	.32			
	14-19	18-30	1.40-1.60	0.6-2	0.11-0.17	0.0-2.9	0.1-1.0	.24	.28			
	19-29	---	---	0.2-2	---	---	---	---	---			

Table 23.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								Kw	Kf	T		
HOD:	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
Hye-----	0-10	10-18	1.30-1.50	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.24	.24	3	3	86
	10-36	18-32	1.35-1.55	0.6-2	0.12-0.17	0.0-2.9	0.0-0.5	.32	.32			
	36-46	---	---	0.2-2	---	---	0.0-0.5	---	---			
Oben-----	0-5	10-18	1.30-1.50	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.24	.24	2	8	0
	5-14	16-25	1.45-1.65	0.6-2	0.08-0.16	0.0-2.9	0.1-1.0	.32	.32			
	14-19	18-30	1.40-1.60	0.6-2	0.11-0.17	0.0-2.9	0.1-1.0	.24	.28			
	19-29	---	---	0.2-2	---	---	---	---	---			
Loneoak-----	0-22	0-10	1.55-1.69	6-20	0.04-0.09	0.0-2.9	0.1-1.0	.15	.15	4	1	160
	22-49	35-55	1.35-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.32	.32			
	49-61	40-60	1.10-1.40	0.2-0.6	0.05-0.10	3.0-5.9	0.1-1.0	.20	.32			
	61-75	---	---	0.06-0.6	---	---	---	---	---			
HPC:												
Hye-----	0-10	10-18	1.30-1.50	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.24	.24	3	3	86
	10-36	18-32	1.35-1.55	0.6-2	0.12-0.17	0.0-2.9	0.0-0.5	.32	.32			
	36-46	---	---	0.2-2	---	---	0.0-0.5	---	---			
Pontotoc-----	0-5	8-15	1.50-1.70	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.24	.28	5	3	86
	5-10	8-15	1.50-1.70	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.24	.28			
	10-33	10-18	1.30-1.50	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.24	.24			
	33-67	18-32	1.35-1.55	0.6-2	0.12-0.17	0.0-2.9	0.0-0.5	.32	.32			
	67-77	---	---	0.2-2	---	---	0.0-0.5	---	---			
KAC:												
Katemcy-----	0-9	6-20	1.40-1.60	2-6	0.09-0.13	0.0-2.9	0.5-1.0	.20	.24	3	3	86
	9-20	35-55	1.35-1.60	0.06-0.2	0.10-0.17	3.0-5.9	0.3-0.5	.32	.32			
	20-27	35-60	1.35-1.55	0.06-0.2	0.10-0.15	6.0-8.9	0.5-1.0	.15	.32			
	27-38	25-40	1.40-1.65	0.2-0.6	0.09-0.15	3.0-5.9	0.1-1.0	.24	.32			
	38-80	---	---	0.06-0.2	---	---	---	---	---			
Honeycreek-----	0-9	10-18	1.45-1.55	0.6-2	0.10-0.15	0.0-2.9	0.5-2.0	.24	.24	4	3	86
	9-25	12-20	1.45-1.55	0.6-2	0.10-0.15	0.0-2.9	0.5-2.0	.24	.24			
	25-37	18-32	1.35-1.55	0.6-2	0.12-0.17	0.0-2.9	0.0-0.5	.32	.32			
	37-50	18-30	1.40-1.60	0.6-2	0.11-0.17	0.0-2.9	0.1-1.0	.24	.28			
	50-56	5-18	1.40-1.60	0.6-2	0.10-0.15	0.0-2.9	0.1-1.0	.10	.28			
	56-66	---	---	0.06-2	---	---	---	---	---			

Table 23.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								Kw	Kf	T		
KeD:	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
Keese-----	0-10	10-17	1.40-1.60	2-6	0.10-0.14	0.0-2.9	1.0-2.0	.20	.20	2	8	0
	10-14	5-20	1.45-1.80	2-6	0.05-0.10	0.0-2.9	0.5-1.0	.10	.20			
	14-24	---	---	0.06-2	---	---	---	---	---			
KLE:												
Keese-----	0-10	10-17	1.40-1.60	2-6	0.10-0.14	0.0-2.9	1.0-2.0	.20	.20	2	8	0
	10-14	5-20	1.45-1.80	2-6	0.05-0.10	0.0-2.9	0.5-1.0	.10	.20			
	14-24	---	---	0.06-2	---	---	---	---	---			
Lou-----	0-8	10-18	1.30-1.50	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.24	.24	3	3	86
	8-20	18-32	1.35-1.55	0.6-2	0.12-0.17	0.0-2.9	0.0-0.5	.32	.32			
	20-30	18-35	1.45-1.65	0.6-2	0.08-0.12	0.0-2.9	0.1-0.5	.28	.28			
	30-80	20-30	1.35-1.55	0.6-2	0.06-0.11	0.0-2.9	0.5-2.0	.15	.32			
Rock outcrop-----	0-80	---	---	0.00- 0.00	---	---	---	---	---	-	---	---
KRG:												
Rock outcrop-----	0-80	---	---	0.00- 0.00	---	---	---	---	---	-	---	---
Keese, 15 to 30 percent slopes-----	0-10	5-20	1.45-1.80	2-6	0.05-0.10	0.0-2.9	0.5-1.0	.10	.20	2	8	0
	10-24	---	---	0.06-2	---	---	---	---	---			
Keese, 12 to 15 percent slopes-----	0-10	5-20	1.45-1.80	2-6	0.05-0.10	0.0-2.9	0.5-1.0	.10	.20	2	8	0
	10-24	---	---	0.00-2	---	---	---	---	---			
KTG:												
Kerrville-----	0-18	20-35	1.30-1.45	0.6-2	0.05-0.10	0.0-2.9	1.0-3.0	.10	.32	2	8	0
	18-26	22-40	1.25-1.55	0.6-2	0.05-0.10	0.0-2.9	2.0-10	.15	.28			
	26-35	---	---	0.06-2	---	---	---	---	---			
Brackett-----	0-4	10-25	1.30-1.50	0.6-2	0.12-0.16	0.0-2.9	0.5-1.0	.32	.32	2	8	0
	4-13	10-25	1.30-1.50	0.6-2	0.12-0.16	0.0-2.9	0.5-1.0	.32	.32			
	13-28	---	---	0.06-2	---	---	---	---	---			
Tarrant-----	0-12	40-60	1.10-1.40	0.2-0.6	0.05-0.10	3.0-5.9	2.0-7.0	.15	.32	1	8	0
	12-22	---	---	0.06-2	---	---	---	---	---			

Table 23.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								Kw	Kf	T		
KVE:	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
Kerrville-----	0-18	20-35	1.30-1.45	0.6-2	0.05-0.10	0.0-2.9	1.0-3.0	.10	.32	2	8	0
	18-26	22-40	1.25-1.55	0.6-2	0.05-0.10	0.0-2.9	2.0-10	.15	.28			
	26-35	---	---	0.06-2	---	---	---	---	---			
Real-----	0-3	15-35	1.30-1.50	0.6-2	0.05-0.10	0.0-2.9	1.0-4.0	.10	.37	2	8	0
	3-12	20-35	1.35-1.55	0.6-2	0.10-0.15	0.0-2.9	2.0-10	.10	.32			
	12-22	---	---	0.2-2	---	---	---	---	---			
Sunev-----	0-12	27-40	1.30-1.50	0.6-2	0.11-0.16	3.0-5.9	1.0-3.0	.28	.32	5	4L	86
	12-37	20-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
	37-64	20-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
	64-80	15-30	1.40-1.50	0.6-2	0.07-0.13	0.0-2.9	0.0-0.8	.43	.43			
LKD:												
Ligon-----	0-4	28-55	1.45-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.20	.32	3	8	0
	4-31	35-55	1.35-1.60	0.06-0.2	0.10-0.17	3.0-5.9	0.3-0.5	.32	.32			
	31-41	---	---	0.06-2	---	---	---	---	---			
Katemcy-----	0-9	6-20	1.40-1.60	2-6	0.09-0.13	0.0-2.9	0.5-1.0	.20	.24	3	3	86
	9-20	35-55	1.35-1.60	0.06-0.2	0.10-0.17	3.0-5.9	0.3-0.5	.32	.32			
	20-27	35-60	1.35-1.55	0.06-0.2	0.10-0.15	6.0-8.9	0.5-1.0	.15	.32			
	27-38	25-40	1.40-1.65	0.2-0.6	0.09-0.15	3.0-5.9	0.1-1.0	.24	.32			
	38-80	---	---	0.06-0.2	---	---	---	---	---			
Keese-----	0-10	10-17	1.40-1.60	2-6	0.10-0.14	0.0-2.9	1.0-2.0	.20	.20	2	8	0
	10-14	5-20	1.45-1.80	2-6	0.05-0.10	0.0-2.9	0.5-1.0	.10	.20			
	14-24	---	---	0.06-2	---	---	---	---	---			
LND:												
Ligon-----	0-4	28-55	1.45-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.20	.32	3	8	0
	4-31	35-55	1.35-1.60	0.06-0.2	0.10-0.17	3.0-5.9	0.3-0.5	.32	.32			
	31-41	---	---	0.06-2	---	---	---	---	---			
Keese-----	0-10	10-17	1.40-1.60	2-6	0.10-0.14	0.0-2.9	1.0-2.0	.20	.20	2	8	0
	10-14	5-20	1.45-1.80	2-6	0.05-0.10	0.0-2.9	0.5-1.0	.10	.20			
	14-24	---	---	0.06-2	---	---	---	---	---			

Table 23.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								Kw	Kf	T		
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
LOC: Loneoak-----	0-22	0-10	1.55-1.69	6-20	0.04-0.09	0.0-2.9	0.1-1.0	.15	.15	4	1	160
	22-49	35-55	1.35-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.32	.32			
	49-61	40-60	1.10-1.40	0.2-0.6	0.05-0.10	3.0-5.9	0.1-1.0	.20	.32			
	61-75	---	---	0.06-0.6	---	---	---	---	---			
Campair-----	0-12	3-12	1.55-1.65	2-6	0.07-0.11	0.0-2.9	0.5-1.0	.28	.28	2	1	134
	12-16	20-35	1.35-1.69	0.6-2	0.12-0.17	0.0-2.9	0.5-1.0	.32	.32			
	16-28	27-35	1.35-1.55	0.6-2	0.15-0.18	0.0-2.9	1.0-3.0	.37	.37			
	28-38	---	---	0.2-2	---	---	---	---	---			
LRC: Lou-----	0-8	10-18	1.30-1.50	2-6	0.11-0.15	0.0-2.9	0.5-1.0	.24	.24	3	3	86
	8-20	18-32	1.35-1.55	0.6-2	0.12-0.17	0.0-2.9	0.0-0.5	.32	.32			
	20-30	18-35	1.45-1.65	0.6-2	0.08-0.12	0.0-2.9	0.1-0.5	.28	.28			
	30-80	20-30	1.35-1.55	0.6-2	0.06-0.11	0.0-2.9	0.5-2.0	.15	.32			
Click-----	0-11	7-18	1.45-1.60	2-6	0.05-0.10	0.0-2.9	0.5-1.0	.10	.28	4	8	0
	11-45	7-25	1.45-1.65	2-6	0.04-0.08	0.0-2.9	0.5-1.0	.05	.20			
	45-53	20-30	1.35-1.55	0.06-20	0.06-0.11	0.0-2.9	0.5-2.0	.15	.32			
	53-63	---	---	0.06-20	---	---	0.1-0.5	---	---			
Voca-----	0-6	4-18	1.45-1.60	2-6	0.05-0.10	0.0-2.9	0.5-1.0	.10	.28	4	8	56
	6-11	5-19	1.45-1.60	2-6	0.08-0.12	0.0-2.9	0.5-2.0	.20	.28			
	11-17	20-45	1.30-1.60	0.6-2	0.08-0.12	2.9-5.9	1.0-2.0	.10	.32			
	17-34	35-60	1.35-1.55	0.06-0.2	0.10-0.15	6.0-8.9	0.5-1.0	.15	.32			
	34-80	15-25	1.35-1.55	0.6-2	0.06-0.11	0.0-2.9	0.5-2.0	.15	.32			
LuC: Luckenbach-----	0-15	27-35	1.35-1.55	0.6-2	0.15-0.18	0.0-2.9	1.0-3.0	.37	.37	5	6	48
	15-39	35-55	1.35-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.32	.32			
	39-80	30-50	1.40-1.60	0.2-0.6	0.10-0.15	3.0-5.9	0.1-1.0	.28	.32			
MPC: Menard-----	0-13	6-20	1.40-1.60	2-6	0.09-0.13	0.0-2.9	0.5-1.0	.20	.24	5	3	86
	13-50	20-35	1.45-1.65	0.6-2	0.15-0.19	0.0-2.9	0.1-0.5	.32	.32			
	50-80	20-50	1.45-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.28	.28			
Pedernales-----	0-12	5-20	1.40-1.50	0.6-2	0.12-0.15	0.0-2.9	0.5-1.0	.28	.28	5	3	86
	12-45	35-55	1.35-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.32	.32			
	45-61	27-35	1.35-1.55	0.6-2	0.15-0.18	0.0-2.9	0.1-1.0	.37	.37			
	61-80	15-35	1.45-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.32	.32			

Table 23.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								Kw	Kf	T		
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
MSC: Mereta-----	0-6	30-50	1.10-1.40	0.2-0.6	0.15-0.20	6.0-8.9	2.0-7.0	.32	.32	2	4	86
	6-16	30-50	1.25-1.50	0.2-0.6	0.13-0.18	6.0-8.9	2.0-7.0	.32	.32			
	16-20	---	---	0.06-0.6	---	---	---	---	---			
	20-61	15-50	1.30-1.50	0.6-2	0.14-0.18	6.0-8.9	0.5-1.0	.37	.37			
	61-80	27-45	1.25-1.45	0.6-2	0.15-0.20	3.0-5.9	0.5-4.0	.32	.32			
Cho-----	0-6	20-50	1.45-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.28	.28	2	4L	86
	6-10	---	---	0.06-2	---	---	---	---	---			
	10-40	20-35	1.40-1.60	0.6-2	0.05-0.10	0.0-2.9	0.1-1.0	.15	.32			
Sunev-----	0-12	27-40	1.30-1.50	0.6-2	0.11-0.16	3.0-5.9	1.0-3.0	.28	.32	5	4L	86
	12-37	20-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
	37-64	20-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
	64-80	15-30	1.40-1.50	0.6-2	0.07-0.13	0.0-2.9	0.0-0.8	.43	.43			
NRE: Nebgen-----	0-11	6-20	1.40-1.60	2-6	0.09-0.13	0.0-2.9	0.5-1.0	.20	.24	1	8	0
	11-21	---	---	0.2-2	---	---	---	---	---			
Rock outcrop-----	0-80	---	---	0.00-0.2	---	---	---	---	---	-	---	---
NRG: Nebgen-----	0-11	6-20	1.40-1.60	2-6	0.09-0.13	0.0-2.9	0.5-1.0	.20	.24	1	8	0
	11-21	---	---	0.2-2	---	---	---	---	---			
Rock outcrop-----	0-80	---	---	0.00-0.2	---	---	---	---	---	-	---	---
OaB: Oakalla-----	0-12	18-35	1.20-1.50	0.6-2	0.15-0.20	0.0-2.9	0.5-2.0	.28	.28	5	4L	86
	12-37	27-40	1.30-1.45	0.6-2	0.14-0.19	3.0-5.9	1.0-7.0	.32	.32			
	37-80	27-40	1.30-1.45	0.6-2	0.14-0.19	3.0-5.9	1.0-7.0	.32	.32			
PeC: Pedernales-----	0-12	5-20	1.40-1.50	0.6-2	0.12-0.15	0.0-2.9	0.5-1.0	.28	.28	5	3	86
	12-45	35-55	1.35-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.32	.32			
	45-61	27-35	1.35-1.55	0.6-2	0.15-0.18	0.0-2.9	0.1-1.0	.37	.37			
	61-80	15-35	1.45-1.60	0.2-0.6	0.13-0.18	3.0-5.9	0.1-1.0	.32	.32			

Table 23.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								Kw	Kf	T		
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
RCC:												
Riverwash-----	0-80	0-2	1.20-1.70	6-20	0.00-0.05	0.0-2.9	0.0-1.0	.02	.02	5	8	0
Rock outcrop-----	0-80	---	---	0.00-0.06	---	---	---	---	---	-	---	---
RgG:												
Rock outcrop-----	0-80	---	---	0.00-0.001	---	---	---	---	---	-	---	---
RhE:												
Roughcreek-----	0-6	30-40	1.35-1.55	0.2-0.6	0.10-0.16	6.0-8.9	1.0-3.0	.10	.32	1	8	0
	6-18	40-60	1.40-1.60	0.06-0.2	0.10-0.18	6.0-8.9	0.5-1.0	.10	.32			
	18-28	---	---	0.06-2	---	---	---	---	---			
RkE:												
Roughcreek-----	0-15	40-60	1.35-1.55	0.2-0.6	0.05-0.12	3.0-5.9	2.0-11	.15	.32	1	8	0
	15-25	---	---	0.06-2	---	---	---	---	---			
RRG:												
Roughcreek, 15 to 40 percent slopes--	0-11	40-45	1.35-1.55	0.2-0.6	0.05-0.12	3.0-5.9	2.0-11	.15	.32	1	8	0
	11-21	---	---	0.06-2	---	---	---	---	---			
Roughcreek, 12 to 15 percent slopes--	0-15	40-45	1.35-1.55	0.2-0.6	0.05-0.12	3.0-5.9	2.0-11	.15	.32	1	8	0
	15-25	---	---	0.06-2	---	---	---	---	---			
Rock outcrop-----	0-80	---	---	0.00-0.06	---	---	---	---	---	-	---	---
SuD:												
Sunev-----	0-12	27-40	1.30-1.50	0.6-2	0.11-0.16	3.0-5.9	1.0-3.0	.28	.32	5	4L	86
	12-37	20-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
	37-64	20-40	1.40-1.60	0.6-2	0.11-0.16	0.0-2.9	0.1-1.0	.28	.32			
	64-80	15-30	1.40-1.50	0.6-2	0.07-0.13	0.0-2.9	0.0-0.8	.43	.43			
TRE:												
Tarrant-----	0-12	40-60	1.10-1.40	0.2-0.6	0.05-0.10	3.0-5.9	2.0-7.0	.15	.32	1	8	0
	12-22	---	---	0.06-2	---	---	---	---	---			
Rock outcrop-----	0-80	---	---	0.06-2	---	---	---	---	---	-	---	---

Table 23.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								Kw	Kf	T		
TRG:	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
Tarrant, 15 to 40 percent slopes-----	0-12 12-22	40-60 ---	1.10-1.40 ---	0.2-0.6 0.06-2	0.05-0.10 ---	3.0-5.9 ---	2.0-7.0 ---	.15 ---	.32 ---	1	8	0
Tarrant, 12 to 15 percent slopes-----	0-12 12-22	40-60 ---	1.10-1.40 ---	0.2-0.6 0.06-2	0.05-0.10 ---	3.0-5.9 ---	2.0-7.0 ---	.15 ---	.32 ---	1	8	0
Rock outcrop-----	0-80	---	---	0.00-0.06	---	---	---	---	---	-	---	---
VeD:												
Venus, 0 to 3 percent slopes-----	0-10 10-41 41-80	18-35 18-30 15-30	1.20-1.50 1.20-1.50 1.20-1.50	0.6-2 0.6-2 2-6	0.15-0.20 0.15-0.20 0.08-0.15	0.0-2.9 0.0-2.9 0.0-2.9	0.5-2.0 1.0-2.0 0.5-1.0	.28 .28 .28	.28 .28 .32	5	4L	86
Venus, 3 to 8 percent slopes-----	0-10 10-41 41-80	18-35 18-30 15-30	1.20-1.50 1.20-1.50 1.20-1.50	0.6-2 0.6-2 2-6	0.15-0.20 0.15-0.20 0.08-0.15	0.0-2.9 0.0-2.9 0.0-2.9	0.5-2.0 1.0-2.0 0.5-1.0	.28 .28 .28	.28 .28 .32	5	4L	86
VoC:												
Voca-----	0-6 6-11 11-17 17-34 34-80	4-18 5-19 20-45 35-60 15-25	1.45-1.60 1.45-1.60 1.30-1.60 1.35-1.55 1.35-1.55	2-6 2-6 0.6-2 0.06-0.2 0.6-2	0.05-0.10 0.08-0.12 0.08-0.12 0.10-0.15 0.06-0.11	0.0-2.9 0.0-2.9 2.9-5.9 6.0-8.9 0.0-2.9	0.5-1.0 0.5-2.0 1.0-2.0 0.5-1.0 0.5-2.0	.10 .20 .10 .15 .15	.28 .28 .32 .32 .32	4	8	56
W:												
Water-----	---	---	---	---	---	---	---	---	---	-	---	---
YNE:												
Yates-----	0-12 12-14	5-27 ---	1.35-1.55 ---	2-6 0.06-2	0.05-0.10 ---	0.0-2.9 ---	0.5-1.0 ---	.10 ---	.28 ---	1	8	0
Nebgen-----	0-11 11-21	6-20 ---	1.40-1.60 ---	2-6 0.2-2	0.09-0.13 ---	0.0-2.9 ---	0.5-1.0 ---	.20 ---	.24 ---	1	8	0
Rock outcrop-----	0-80	---	---	0.06-2	---	---	---	---	---	-	---	---

Table 23.--Physical Soil Properties--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
								Kw	Kf	T		
YNG:	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
Yates-----	0-12 12-14	7-25 ---	1.30-1.55 ---	0.6-2 0.06-2	0.05-0.10 ---	0.0-2.9 ---	0.5-1.0 ---	.24 ---	.32 ---	1	8	0
Nebgen-----	0-11 11-21	6-20 ---	1.40-1.60 ---	2-6 0.2-2	0.09-0.13 ---	0.0-2.9 ---	0.5-1.0 ---	.20 ---	.24 ---	1	8	0
Rock outcrop-----	0-80	---	---	0.06-2	---	---	---	---	---	-	---	---

Soil Survey of Mason County, Texas

Table 24.--Chemical Soil Properties

(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
	Inches	meq/100 g	pH	Pct	Pct	dS/m	
ACC:							
Acove-----	0-13	2.0-10	5.1-7.3	0	0	0.0-2.0	0
	13-19	10-20	5.6-7.3	0	0	0.0-2.0	0
	19-35	20-30	5.6-7.3	0	0	0	0
	35-59	---	---	---	---	---	---
Campair-----	0-12	2.0-10	5.5-6.7	0	0	0.0-2.0	0
	12-16	5.0-15	5.8-7.3	0	0	0	0-2
	16-28	10-20	5.6-7.3	0	0	0.0-2.0	0
	28-38	---	---	---	---	---	---
Loneoak-----	0-22	1.0-5.0	5.6-7.3	0	0	0.0-2.0	0-2
	22-49	15-25	5.6-7.3	0	0	0.0-2.0	0
	49-61	32-60	6.1-7.8	0-2	0	0.0-2.0	0
	61-75	---	---	---	---	---	---
AMC:							
Acove-----	0-13	2.0-10	5.1-7.3	0	0	0.0-2.0	0
	13-19	10-20	5.6-7.3	0	0	0.0-2.0	0
	19-35	20-30	5.6-7.3	0	0	0	0
	35-59	---	---	---	---	---	---
Menard-----	0-13	2.0-10	6.6-7.8	0	0	0.0-2.0	0
	13-50	10-20	6.1-7.8	0-5	0	0.0-2.0	0
	50-80	10-25	7.9-8.4	5-35	0	0	0-2
CAC:							
Campwood-----	0-15	35-60	7.4-8.4	0-18	0	0.0-2.0	0
	15-51	35-60	7.4-8.4	4-25	0	0.0-2.0	0
	51-80	35-60	7.4-8.4	5-40	0	0.0-2.0	0
Sunev-----	0-12	15-25	7.9-8.4	5-45	0	0	0
	12-37	15-25	7.9-8.4	10-70	0	0	0
	37-64	15-25	7.9-8.4	40-70	0	0	0
	64-80	9.0-13	7.9-8.4	40-75	0-2	4.0-16.0	2-13
Valera-----	0-14	15-25	7.4-8.4	5-45	0	0	0
	14-25	15-25	7.4-8.4	10-50	0	0	0
	25-39	---	---	---	---	---	---
CeC:							
Castell-----	0-8	2.0-10	5.6-7.3	0	0	0.0-2.0	0
	8-30	20-40	5.6-7.8	0	0	0.0-2.0	0-1
	30-42	---	---	---	---	---	---
ERD:							
Eckert-----	0-12	7.0-15	6.6-8.4	0-5	0	0.0-2.0	0
	12-22	---	---	---	---	---	---
Rock outcrop-----	0-80	---	---	---	---	---	---

Soil Survey of Mason County, Texas

Table 24.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	pH	Pct	Pct	dS/m	
ERG:							
Eckert-----	0-12	7.0-15	6.6-8.4	0-5	0	0.0-2.0	0
	12-22	---	---	---	---	---	---
Rock outcrop-----	0-80	---	---	---	---	---	---
FRC:							
Fieldcreek, occasionally flooded	0-8	10-20	6.1-7.8	0	0	0	0
	8-25	10-20	6.1-7.8	0	0	0	0
	25-48	5.0-15	6.6-8.4	0-2	0	0	0
	48-80	10-20	6.6-8.4	0-2	0	0	0
Fieldcreek, frequently flooded--	0-8	10-20	6.1-7.8	0	0	0	0
	8-25	10-20	6.1-7.8	0	0	0	0
	25-48	5.0-15	6.6-8.4	0-2	0	0	0
	48-80	10-20	6.6-8.4	0-2	0	0	0
Riverwash-----	0-80	0.0-0.0	7.9-8.4	0	0	0	0-2
HeD:							
Hensley-----	0-6	15-25	6.1-7.8	0	0	0	0
	6-14	15-30	6.6-8.4	0	0	0.0-2.0	0
	14-24	---	---	---	---	---	---
HkC:							
Honeycreek-----	0-9	5.0-10	6.1-7.3	0	0	0	0
	9-25	5.0-15	6.1-7.3	0	0	0	0
	25-37	10-20	6.1-7.8	0	0	0.0-2.0	0
	37-50	10-20	6.1-7.8	0	0	0	0
	50-56	2.0-10	6.5-7.8	0-5	0	0.0-2.0	0
	56-66	---	---	---	---	---	---
HND:							
Hye-----	0-10	5.0-15	6.1-7.3	0	0	0.0-2.0	0
	10-36	10-20	6.1-7.3	0	0	0.0-2.0	0
	36-46	---	---	---	---	---	---
Nebgen-----	0-11	2.0-10	6.1-7.3	0	0	0.0-2.0	0
	11-21	---	---	---	---	---	---
Oben-----	0-5	5.0-15	6.1-7.3	0	0	0.0-2.0	0
	5-14	5.0-15	6.1-7.3	0	0	0.0-2.0	0
	14-19	10-20	6.1-7.3	0	0	0	0
	19-29	---	---	---	---	---	---
HOD:							
Hye-----	0-10	5.0-15	6.1-7.3	0	0	0.0-2.0	0
	10-36	10-20	6.1-7.3	0	0	0.0-2.0	0
	36-46	---	---	---	---	---	---
Oben-----	0-5	5.0-15	6.1-7.3	0	0	0.0-2.0	0
	5-14	5.0-15	6.1-7.3	0	0	0.0-2.0	0
	14-19	10-20	6.1-7.3	0	0	0	0
	19-29	---	---	---	---	---	---
Loneoak-----	0-22	1.0-5.0	5.6-7.3	0	0	0.0-2.0	0-2
	22-49	15-25	5.6-7.3	0	0	0.0-2.0	0
	49-61	32-60	6.1-7.8	0-2	0	0.0-2.0	0
	61-75	---	---	---	---	---	---

Soil Survey of Mason County, Texas

Table 24.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	pH	Pct	Pct	dS/m	
HPC:							
Hye-----	0-10	5.0-15	6.1-7.3	0	0	0.0-2.0	0
	10-36	10-20	6.1-7.3	0	0	0.0-2.0	0
	36-46	---	---	---	---	---	---
Pontotoc-----	0-5	2.0-10	6.1-7.3	0	0	0	0
	5-10	2.0-10	6.1-7.3	0	0	0	0
	10-33	5.0-15	6.1-7.3	0	0	0.0-2.0	0
	33-67	10-20	6.1-7.3	0	0	0.0-2.0	0
	67-77	---	---	---	---	---	---
KAC:							
Katemcy-----	0-9	2.0-10	6.1-7.8	0	0	0.0-2.0	0
	9-20	20-40	6.1-7.8	0	0	0.0-2.0	0-1
	20-27	30-45	6.1-7.8	0	0	0	0
	27-38	20-30	6.1-7.8	0	0	0	0
	38-80	---	---	---	---	---	---
Honeycreek-----	0-9	5.0-10	6.1-7.3	0	0	0	0
	9-25	5.0-15	6.1-7.3	0	0	0	0
	25-37	10-20	6.1-7.8	0	0	0.0-2.0	0
	37-50	10-20	6.1-7.8	0	0	0	0
	50-56	2.0-10	6.5-7.8	0-5	0	0.0-2.0	0
	56-66	---	---	---	---	---	---
KeD:							
Keese-----	0-10	2.0-10	5.6-6.5	0	0	0	0
	10-14	2.0-7.0	5.6-6.5	0	0	0	0-2
	14-24	---	---	---	---	---	---
KLE:							
Keese-----	0-10	2.0-10	5.6-6.8	0	0	0	0
	10-14	2.0-7.0	5.6-6.5	0	0	0	0-2
	14-24	---	---	---	---	---	---
Lou-----	0-8	5.0-15	6.1-7.3	0	0	0.0-2.0	0
	8-20	10-20	6.1-7.3	0	0	0.0-2.0	0
	20-30	9.0-18	6.1-7.3	0	0	0.0-2.0	0
	30-80	15-25	6.1-7.3	0	0	0.0-2.0	0-2
Rock outcrop-----	0-80	---	---	---	---	---	---
KRG:							
Rock outcrop-----	0-80	---	---	---	---	---	---
Keese, 15 to 30 percent slopes-----	0-10	2.0-7.0	5.6-6.5	0	0	0	0-2
	10-24	---	---	---	---	---	---
Keese, 12 to 15 percent slopes-----	0-10	2.0-7.0	5.6-6.8	0	0	0	0-2
	10-24	---	---	---	---	---	---

Soil Survey of Mason County, Texas

Table 24.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	pH	Pct	Pct	dS/m	
KTG:							
Kerrville-----	0-18	10-20	7.4-8.4	40-60	0	0	0
	18-26	10-30	7.4-8.4	40-70	0	0	0
	26-35	---	---	---	---	---	---
Brackett-----	0-4	5.0-15	7.4-8.4	40-75	0	0	0
	4-13	5.0-15	7.4-8.4	40-75	0	0	0
	13-28	---	---	---	---	---	---
Tarrant-----	0-13	32-60	7.4-8.4	8-45	0	0.0-2.0	0
	13-23	---	---	---	---	---	---
KVE:							
Kerrville-----	0-18	10-20	7.4-8.4	40-60	0	0	0
	18-26	10-30	7.4-8.4	40-70	0	0	0
	26-35	---	---	---	---	---	---
Real-----	0-3	10-20	7.9-8.4	40-70	0	0	0
	3-12	10-25	7.9-8.4	10-30	0	0	0
	12-22	---	---	---	---	---	---
Sunev-----	0-12	15-25	7.9-8.4	5-45	0	0	0
	12-37	15-25	7.9-8.4	10-70	0	0	0
	37-64	15-25	7.9-8.4	40-70	0	0	0
	64-80	9.0-13	7.9-8.4	40-75	0-2	4.0-16.0	2-13
LKD:							
Ligon-----	0-4	30-45	5.9-7.8	0	0	0	0-2
	4-31	20-40	5.9-7.8	0	0	0.0-2.0	0-1
	31-41	---	---	---	---	---	---
Katemcy-----	0-9	2.0-10	6.1-7.8	0	0	0.0-2.0	0
	9-20	20-40	6.1-7.8	0-2	0	0.0-2.0	0-1
	20-27	30-45	6.1-7.8	0	0	0	0
	27-38	20-30	6.1-7.8	0	0	0	0
	38-80	---	---	---	---	---	---
Keese-----	0-10	2.0-10	5.6-6.5	0	0	0	0
	10-14	2.0-7.0	5.6-6.5	0	0	0	0-2
	14-24	---	---	---	---	---	---
LND:							
Ligon-----	0-4	30-45	5.9-7.8	0	0	0	0-2
	4-31	20-40	5.9-7.8	0	0	0.0-2.0	0-1
	31-41	---	---	---	---	---	---
Keese-----	0-10	2.0-10	5.6-6.5	0	0	0	0
	10-14	2.0-7.0	5.6-6.5	0	0	0	0-2
	14-24	---	---	---	---	---	---
LOC:							
Loneoak-----	0-22	1.0-5.0	5.6-7.3	0	0	0.0-2.0	0-2
	22-49	15-25	5.6-7.3	0	0	0.0-2.0	0
	49-61	32-60	6.1-7.8	0-2	0	0.0-2.0	0
	61-75	---	---	---	---	---	---
Campair-----	0-12	2.0-10	5.5-6.7	0	0	0.0-2.0	0
	12-16	5.0-15	5.8-7.3	0	0	0	0-2
	16-28	10-20	5.6-7.3	0	0	0.0-2.0	0
	28-38	---	---	---	---	---	---

Soil Survey of Mason County, Texas

Table 24.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	pH	Pct	Pct	dS/m	
LRC:							
Lou-----	0-8	5.0-15	6.1-7.3	0	0	0.0-2.0	0
	8-20	10-20	6.1-7.3	0	0	0.0-2.0	0
	20-30	9.0-18	6.1-7.3	0	0	0.0-2.0	0
	30-80	15-25	6.1-7.3	0	0	0.0-2.0	0-2
Click-----	0-11	3.0-10	6.1-7.3	0	0	0.0-2.0	0
	11-45	2.0-10	6.1-7.3	0	0	0.0-2.0	0-2
	45-53	15-25	6.1-7.3	0	0	0.0-2.0	0-2
	53-63	---	---	---	---	---	---
Voca-----	0-6	3.0-10	6.1-7.8	0	0	0.0-2.0	0
	6-11	10-15	5.6-7.3	0	0	0	0
	11-17	10-17	5.6-7.3	0	0	0.0-2.0	0-2
	17-34	20-45	5.1-7.3	0	0	0	0
	34-80	15-25	5.6-7.3	0	0	0.0-2.0	0-2
LuC:							
Luckenbach-----	0-15	10-20	6.1-7.8	0-15	0	0.0-2.0	0
	15-39	15-25	7.4-8.4	0-20	0	0.0-2.0	0
	39-80	15-25	7.9-8.4	15-60	0	0.0-2.0	0
MPC:							
Menard-----	0-13	2.0-10	6.6-7.8	0	0	0.0-2.0	0
	13-50	10-20	6.1-7.8	0-5	0	0.0-2.0	0
	50-80	10-25	7.9-8.4	5-35	0	0	0-2
Pedernales-----	0-12	5.0-15	6.1-7.8	0	0	0	0
	12-45	15-25	6.1-7.8	0-15	0	0.0-2.0	0
	45-61	10-20	6.1-7.8	5-50	0	0.0-2.0	0
	61-80	30-45	7.9-8.4	5-35	0	0	0-2
MSC:							
Mereta-----	0-6	20-40	7.9-8.4	2-40	0	0.0-2.0	0
	6-16	19-39	7.9-8.4	0	0	0	0
	16-20	---	---	---	---	---	---
	20-61	5.0-30	7.9-8.4	20-40	0	0	0
	61-80	10-40	7.9-8.4	15-40	0	0	0
Cho-----	0-6	10-25	7.9-8.4	5-35	0	0	0-2
	6-10	---	---	---	0	0	0
	10-40	10-20	7.9-8.4	40-85	0	0	0
Sunev-----	0-12	15-25	7.9-8.4	5-45	0	0	0
	12-37	15-25	7.9-8.4	10-70	0	0	0
	37-64	15-25	7.9-8.4	40-70	0	0	0
	64-80	9.0-13	7.9-8.4	40-75	0-2	4.0-16.0	2-13
NRE:							
Nebgen-----	0-11	2.0-10	6.1-7.3	0	0	0.0-2.0	0
	11-21	---	---	---	---	---	---
Rock outcrop-----	0-80	---	---	---	---	---	---
NRG:							
Nebgen-----	0-11	2.0-10	6.1-7.3	0	0	0.0-2.0	0
	11-21	---	---	---	---	---	---
Rock outcrop-----	0-80	---	---	---	---	---	---

Soil Survey of Mason County, Texas

Table 24.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	pH	Pct	Pct	dS/m	
OaB:							
Oakalla-----	0-12	15-25	7.9-8.4	15-40	0	0	0
	12-37	10-20	7.9-8.4	20-60	0	0	0
	37-80	10-20	7.9-8.4	20-60	0	0	0
PeC:							
Pedernales-----	0-12	5.0-15	6.1-7.8	0	0	0	0
	12-45	15-25	6.1-7.8	0-15	0	0.0-2.0	0
	45-61	10-20	6.1-7.8	5-50	0	0.0-2.0	0
	61-80	30-45	7.9-8.4	5-35	0	0	0-2
RCC:							
Riverwash-----	0-80	0.0-0.0	7.9-8.4	0	0	0	0-2
Rock outcrop-----	0-80	---	---	---	---	---	---
RgG:							
Rock outcrop-----	0-80	---	---	---	---	---	---
RhE:							
Roughcreek-----	0-6	20-45	6.1-7.8	0-5	0	0	0
	6-18	20-45	6.1-7.8	0-5	0	0	0
	18-28	---	---	---	---	---	---
RkE:							
Roughcreek-----	0-15	40-70	6.1-7.8	0	0	0.0-2.0	0
	15-25	---	---	---	---	---	---
RRG:							
Roughcreek, 15 to 40 percent slopes-----	0-11	40-70	6.1-7.8	0-8	0	0.0-2.0	0
	11-21	---	---	---	---	---	---
Roughcreek, 12 to 15 percent slopes-----	0-15	40-70	6.6-8.4	1-8	0	0.0-2.0	0
	15-25	---	---	---	---	---	---
Rock outcrop-----	0-80	---	---	---	---	---	---
SuD:							
Sunev-----	0-12	15-25	7.9-8.4	5-45	0	0	0
	12-37	15-25	7.9-8.4	10-70	0	0	0
	37-64	15-25	7.9-8.4	40-70	0	0	0
	64-80	9.0-13	7.9-8.4	40-75	0-2	4.0-16.0	2-13
TRE:							
Tarrant-----	0-12	32-60	7.4-8.4	10-40	0	0.0-2.0	0
	12-22	---	---	---	---	---	---
Rock outcrop-----	0-80	---	---	---	---	---	---
TRG:							
Tarrant, 15 to 40 percent slopes-----	0-12	32-60	7.4-8.4	8-45	0	0.0-2.0	0
	12-22	---	---	---	---	---	---
Tarrant, 12 to 15 percent slopes-----	0-12	32-60	7.4-8.4	10-40	0	0.0-2.0	0
	12-22	---	---	---	---	---	---
Rock outcrop-----	0-80	---	---	---	---	---	---

Soil Survey of Mason County, Texas

Table 24.--Chemical Soil Properties--Continued

Map symbol and soil name	Depth	Cation exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	Inches	meq/100 g	pH	Pct	Pct	dS/m	
VeD:							
Venus, 0 to 3 percent slopes-----	0-10	15-25	7.9-8.4	5-35	0	0	0
	10-41	10-20	7.9-8.4	15-40	0	0	0
	41-80	15-30	7.9-8.4	25-55	0	0.0-2.0	0
Venus, 3 to 8 percent slopes-----	0-10	15-25	7.9-8.4	5-35	0	0	0
	10-41	10-20	7.9-8.4	15-40	0	0	0
	41-80	15-30	7.9-8.4	25-55	0	0.0-2.0	0
VoC:							
Voca-----	0-6	3.0-10	6.1-7.8	0	0	0.0-2.0	0
	6-11	10-15	5.6-7.3	0	0	0	0
	11-17	10-17	5.6-7.3	0	0	0.0-2.0	0-2
	17-34	20-45	5.1-7.3	0	0	0	0
	34-80	15-25	5.6-7.3	0	0	0.0-2.0	0-2
W:							
Water-----	---	---	---	---	---	---	---
YNE:							
Yates-----	0-12	2.0-15	6.6-7.8	0-10	0	0.0-2.0	0
	12-14	---	---	---	---	---	---
Nebgen-----	0-11	2.0-10	6.1-7.3	0	0	0.0-2.0	0
	11-21	---	---	---	---	---	---
Rock outcrop-----	0-80	---	---	---	---	---	---
YNG:							
Yates-----	0-12	2.0-15	6.6-8.4	0-15	0	0	0
	12-14	---	---	---	---	---	---
Nebgen-----	0-11	2.0-10	6.1-7.3	0	0	0.0-2.0	0
	11-21	---	---	---	---	---	---
Rock outcrop-----	0-80	---	---	---	---	---	---

Table 25.--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				
ACC:										
Acove-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
Campair-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
Loneoak-----	A	Very low	Jan-Dec	---	---	---	---	None	---	None
AMC:										
Acove-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
Menard-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
CAC:										
Campwood-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
Sunev-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
Valera-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
CeC:										
Castell-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
ERD:										
Eckert-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	D	High	Jan-Dec	---	---	---	---	None	---	None
ERG:										
Eckert-----	D	Medium	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
FRC:										
Fieldcreek, occasionally flooded-----	A	Very low	Apr-Oct	---	---	---	---	None	Brief	Occasional
Fieldcreek, frequently flooded-----	A	Very low	Apr-Oct	---	---	---	---	None	Brief	Frequent
Riverwash-----	A	Negligible	Apr-Oct	---	---	---	---	None	Brief	Frequent
HeD:										
Hensley-----	D	Low	Jan-Dec	---	---	---	---	None	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Month	Water Table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
HkC: Honeycreek-----	B	Low	Jan-Dec	Ft ---	Ft ---	Ft ---	---	None	---	None
HND: Hye-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
Nebgen-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Oben-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
HOD: Hye-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
Oben-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Loneoak-----	A	Very low	Jan-Dec	---	---	---	---	None	---	None
HPC: Hye-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
Pontotoc-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
KAC: Katemcy-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Honeycreek-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
KeD: Keese-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
KLE: Keese-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Lou-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
KRG: Rock outcrop-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
Keese, 15 to 30 percent slopes-----	D	Medium	Jan-Dec	---	---	---	---	None	---	None
Keese, 12 to 15 percent slopes-----	D	Medium	Jan-Dec	---	---	---	---	None	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Month	Water Table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
KTG:										
Kerrville-----	C	High	Jan-Dec	---	---	---	---	None	---	None
Brackett-----	D	High	Jan-Dec	---	---	---	---	None	---	None
Tarrant-----	D	High	Jan-Dec	---	---	---	---	None	---	None
KVE:										
Kerrville-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
Real-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Sunev-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
LKD:										
Ligon-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Katemcy-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Keese-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
LND:										
Ligon-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Keese-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
LOC:										
Loneoak-----	A	Very low	Jan-Dec	---	---	---	---	None	---	None
Campair-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
LRC:										
Lou-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
Click-----	A	Very low	Jan-Dec	---	---	---	---	None	---	None
Voca-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
LuC:										
Luckenbach-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
MPC:										
Menard-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
Pedernales-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
MSC:										
Mereta-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Cho-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Sunev-----	B	Low	Jan-Dec	---	---	---	---	None	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Month	Water Table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
				Ft	Ft	Ft				
NRE:										
Nebgen-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	D	High	Jan-Dec	---	---	---	---	None	---	None
NRG:										
Nebgen-----	D	High	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
OaB:										
Oakalla-----	B	Low	Apr-Oct	---	---	---	---	None	Brief	Occasional
PeC:										
Pedernales-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
RCC:										
Riverwash-----	A	Very low	Apr-Oct	---	---	---	---	None	Brief	Frequent
Rock outcrop-----	D	Very low	Apr-Oct	---	---	---	---	None	Brief	Frequent
RgG:										
Rock outcrop-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
RhE:										
Roughcreek-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
RkE:										
Roughcreek-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
RRG:										
Roughcreek, 15 to 40 percent slopes-----	D	High	Jan-Dec	---	---	---	---	None	---	None
Roughcreek, 12 to 15 percent slopes-----	D	Medium	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
SuD:										
Sunev-----	B	Low	Jan-Dec	---	---	---	---	None	---	None

Table 25.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Surface runoff	Month	Water Table		Ponding			Flooding	
				Upper limit	Lower limit	Surface water depth	Duration	Frequency	Duration	Frequency
TRE:				Ft	Ft	Ft				
Tarrant-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	D	High	Jan-Dec	---	---	---	---	None	---	None
TRG:										
Tarrant, 15 to 40 percent slopes-----	D	High	Jan-Dec	---	---	---	---	None	---	None
Tarrant, 12 to 15 percent slopes-----	D	Medium	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None
VeD:										
Venus, 0 to 3 percent slopes-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
Venus, 3 to 8 percent slopes-----	B	Low	Jan-Dec	---	---	---	---	None	---	None
VoC:										
Voca-----	C	Low	Jan-Dec	---	---	---	---	None	---	None
W:										
Water-----	---	---	Jan-Dec	---	---	---	---	---	---	---
YNE:										
Yates-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Nebgen-----	D	Low	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	D	High	Jan-Dec	---	---	---	---	None	---	None
YNG:										
Yates-----	D	Medium	Jan-Dec	---	---	---	---	None	---	None
Nebgen-----	D	High	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop-----	D	Very high	Jan-Dec	---	---	---	---	None	---	None

Soil Survey of Mason County, Texas

Table 26.--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				Risk of corrosion	
	Kind	Depth to top In	Thickness In	Hardness	Uncoated steel	Concrete
ACC:						
Acove-----	Paralithic bedrock	24-40	---	Weakly cemented	High	Low
	Lithic bedrock	40-60	---	Strongly cemented		
Campair-----	Lithic bedrock	20-40	---	Strongly cemented	High	Moderate
Loneoak-----	Paralithic bedrock	60-71	---	Weakly cemented	High	Moderate
	Lithic bedrock	63-75	---	Strongly cemented		
AMC:						
Acove-----	Paralithic bedrock	24-40	---	Weakly cemented	High	Low
	Lithic bedrock	40-60	---	Strongly cemented		
Menard-----	---	---	---	---	Moderate	Low
CAC:						
Campwood-----	---	---	---	---	High	Low
Sunev-----	---	---	---	---	High	Low
Valera-----	Petrocalcic Lithic bedrock	20-40 21-52	4-17 ---	Strongly cemented Indurated	High	Low
CeC:						
Castell-----	Paralithic bedrock	20-40	---	Moderately cemented	High	Low
ERD:						
Eckert-----	Lithic bedrock	4-20	---	Indurated	Low	Low
Rock outcrop-----	Lithic bedrock	0-2	---	Indurated	High	Low
ERG:						
Eckert-----	Lithic bedrock	4-14	---	Indurated	Low	Low
Rock outcrop-----	Lithic bedrock	0-2	---	Indurated	High	Low
FRC:						
Fieldcreek, occasionally flooded--	---	---	---	---	Moderate	Low
Fieldcreek, frequently flooded-----	---	---	---	---	Moderate	Low
Riverwash-----	---	---	---	---	Low	Low
HeD:						
Hensley-----	Lithic bedrock	10-20	---	Indurated	High	Low
HkC:						
Honeycreek-----	Paralithic bedrock	40-60	---	Weakly cemented	Low	Low
HND:						
Hye-----	Lithic bedrock	20-40	---	Indurated	Moderate	Low
Nebgen-----	Lithic bedrock	4-14	---	Indurated	Low	Low
Oben-----	Paralithic bedrock	9-20	---	Weakly cemented	Low	Low

Soil Survey of Mason County, Texas

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Risk of corrosion		
	Kind	Depth to top	Thickness	Hardness	Uncoated steel	Concrete
		In	In			
HOD: Hye-----	Lithic bedrock	20-40	---	Indurated	Moderate	Low
Oben-----	Paralithic bedrock	9-20	---	Weakly cemented	Low	Low
Loneoak-----	Paralithic bedrock	60-71	---	Weakly cemented	High	Moderate
	Lithic bedrock	63-75	---	Strongly cemented		
HPC: Hye-----	Lithic bedrock	20-40	---	Indurated	Moderate	Low
Pontotoc-----	Paralithic bedrock	60-80	---	Weakly cemented	Low	Low
KAC: Katemcy-----	Paralithic bedrock	20-40	---	Moderately cemented	High	Low
Honeycreek-----	Paralithic bedrock	40-60	---	Weakly cemented	Low	Low
KeD: Keese-----	Paralithic bedrock	10-20	---	Moderately cemented	Low	Low
KLE: Keese-----	Paralithic bedrock	11-20	---	Moderately cemented	Low	Low
Lou-----	Strongly contrasting textural stratification	20-40	---	Noncemented	Moderate	Low
Rock outcrop-----	Lithic bedrock	0-2	---	Indurated	High	Low
KRG: Rock outcrop-----	Lithic bedrock	0-2	---	Indurated	High	Low
Keese, 15 to 30 percent slopes-----	Paralithic bedrock	5-20	---	Moderately cemented	Low	Low
Keese, 12 to 15 percent slopes-----	Paralithic bedrock	5-20	---	Moderately cemented	Low	Low
KTG: Kerrville-----	Lithic bedrock	20-40	---	Indurated	High	Low
Brackett-----	Paralithic bedrock	10-20	---	Weakly cemented	High	Low
Tarrant-----	Lithic bedrock	6-20	---	Indurated	High	Low
KVE: Kerrville-----	Lithic bedrock	20-40	---	Indurated	High	Low
Real-----	Paralithic bedrock	8-20	---	Weakly cemented	High	Low
Sunev-----	---	---	---	---	High	Low

Soil Survey of Mason County, Texas

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Risk of corrosion		
	Kind	Depth to top	Thickness	Hardness	Uncoated steel	Concrete
		In	In			
LKD: Ligon-----	Paralithic bedrock	20-40	---	Weakly cemented	Moderate	Low
Katemcy-----	Paralithic bedrock	20-40	---	Moderately cemented	High	Low
Keese-----	Paralithic bedrock	10-20	---	Moderately cemented	Low	Low
LND: Ligon-----	Paralithic bedrock	20-40	---	Weakly cemented	Moderate	Low
Keese-----	Paralithic bedrock	11-20	---	Moderately cemented	Low	Low
LOC: Loneoak-----	Paralithic bedrock	60-71	---	Weakly cemented	High	Moderate
	Lithic bedrock	63-75	---	Strongly cemented		
Campair-----	Lithic bedrock	20-40	---	Strongly cemented	High	Moderate
LRC: Lou-----	Strongly contrasting textural stratification	20-40	---	Noncemented	Moderate	Low
Click-----	Strongly contrasting textural stratification	40-60	---	Noncemented	Low	Low
	Lithic bedrock	48-60	---	Indurated		
Voca-----	Strongly contrasting textural stratification	28-60	---	Noncemented	High	Low
LuC: Luckenbach-----	---	---	---	---	Moderate	Low
MPC: Menard-----	---	---	---	---	Moderate	Low
Pedernales-----	---	---	---	---	High	Low
MSC: Mereta-----	Petrocalcic	14-20	0-3	Strongly cemented	High	Low
Cho-----	Petrocalcic	4-20	0-3	Indurated	High	Low
Sunev-----	---	---	---	---	High	Low
NRE: Nebgen-----	Lithic bedrock	4-14	---	Indurated	Low	Low
Rock outcrop-----	Lithic bedrock	0-2	---	Indurated	High	Low
NRG: Nebgen-----	Lithic bedrock	4-14	---	Indurated	Low	Low
Rock outcrop-----	Lithic bedrock	0-2	---	Indurated	High	Low

Soil Survey of Mason County, Texas

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Risk of corrosion		
	Kind	Depth to top In	Thickness In	Hardness	Uncoated steel	Concrete
OaB: Oakalla-----	---	---	---	---	Moderate	Low
PeC: Pedernales-----	---	---	---	---	High	Low
RCC: Riverwash-----	---	---	---	---	Low	Low
Rock outcrop-----	Lithic bedrock	0-4	---	Indurated	Low	Low
RgG: Rock outcrop-----	Lithic bedrock	0-2	---	Indurated	High	Low
RhE: Roughcreek-----	Lithic bedrock	10-20	---	Indurated	High	Low
RkE: Roughcreek-----	Lithic bedrock	8-20	---	Indurated	High	Low
RRG: Roughcreek, 15 to 40 percent slopes-----	Lithic bedrock	4-20	---	Indurated	High	Low
Roughcreek, 12 to 15 percent slopes-----	Lithic bedrock	8-20	---	Indurated	High	Low
Rock outcrop-----	Lithic bedrock	0-2	---	Indurated	High	Low
SuD: Sunev-----	---	---	---	---	High	Low
TRE: Tarrant-----	Lithic bedrock	6-20	---	Indurated	High	Low
Rock outcrop-----	Lithic bedrock	0-2	---	Indurated	High	Low
TRG: Tarrant, 15 to 40 percent slopes-----	Lithic bedrock	6-20	---	Indurated	High	Low
Tarrant, 12 to 15 percent slopes-----	Lithic bedrock	6-20	---	Indurated	High	Low
Rock outcrop-----	Lithic bedrock	0-2	---	Indurated	High	Low
VeD: Venus, 0 to 3 percent slopes-----	---	---	---	---	High	Low
Venus, 3 to 8 percent slopes-----	---	---	---	---	High	Low
VoC: Voca-----	Strongly contrasting textural stratification	28-60	---	Noncemented	High	Low

Soil Survey of Mason County, Texas

Table 26.--Soil Features--Continued

Map symbol and soil name	Restrictive layer			Risk of corrosion		
	Kind	Depth to top	Thickness	Hardness	Uncoated steel	Concrete
		In	In			
W: Water-----	---	---	---	---	---	---
YNE:						
Yates-----	Lithic bedrock	4-14	---	Indurated	Moderate	Low
Nebgen-----	Lithic bedrock	4-14	---	Indurated	Low	Low
Rock outcrop-----	Lithic bedrock	0-2	---	Indurated	High	Low
YNG:						
Yates-----	Lithic bedrock	4-14	---	Indurated	Moderate	Low
Nebgen-----	Lithic bedrock	4-14	---	Indurated	Low	Low
Rock outcrop-----	Lithic bedrock	0-2	---	Indurated	High	Low

Table 27.--Physical Analyses of a Selected Soil

(The abbreviation "COLE" means coefficient of linear extensibility. Dashes indicate that data were not available.)

Soil name and sample number	Depth	Horizon	Particle-size distribution										COLE	Bulk Density		Water Content 1/3-bar	
			Sand							Fine Silt (0.02-0.002 mm)	Total Silt	Fine Clay <0.0002 mm		Total Clay	1/3-bar		Oven Dry
			Very coarse (2.0-1.0 mm)	Coarse (1.0-0.5mm)	Medium (0.5-0.25mm)	Fine (0.25-0.1 mm)	Very fine (0.1-0.05 mm)	Total (2.0-0.05 mm)	Wt %								
	In		(by weight)										cm/cm	g/cc	g/cc	Wt %	
Voca (1) (S09TX307001)																	
09N02898	0-6	A1	11.6	12.6	15.1	16.8	10.8	66.9	10.0	27.4	0.5	5.7	---	---	---	---	---
09N02899	6-11	A2	21.9	15.3	13.1	13.1	7.6	71.0	8.2	21.9	0.9	7.1	---	---	---	---	---
09N02900	11-17	Bt1	25.9	11.8	7.3	7.0	4.1	56.1	6.0	14.5	20.5	29.4	0.027	1.37	1.55	21.6	
09N02901	17-22	Bt2	11.5	11.2	5.7	4.7	3.2	36.3	4.4	9.9	44.8	53.8	0.038	1.30	1.58	30.2	
09N02902	22-34	Bt3	12.0	12.0	8.5	6.8	3.8	43.1	4.9	9.0	38.8	47.9	0.037	1.48	1.79	24.4	
09N02903	34-80	Bct	17.0	20.6	19.4	12.9	5.5	75.4	3.7	6.9	12.6	17.7	0.010	1.60	1.74	17.7	

1 Location of pedon sample is the same as that given in the series as described in the section "Soil Series and Their Morphology."

Table 28.--Chemical Analyses of a Selected Soil

(Dashes indicate that analyses were not made)

Soil name and sample number	Depth	Horizon	pH 1:1 (soil: water)	Extractable bases				Sum of Bases	Total Acid- ity	Cation Exchange capacity (NH ₄ OAC) (pH 7)	Base Satur- ation (NH ₄ OAC) (Sum)	Exchange- able sodium (ESP)	Ratio CEC to Clay
				Ca	Mg	K	Na						
Voca (1) (S09TX307001)	In		pH	----- Meq/100gm -----						Pct	Pct		
09N02898	0-6	A1	6.7	2.9	0.8	0.4	tr	4.1	2.4	4.7	87	tr	0.82
09N02899	6-11	A2	6.3	2.0	0.5	0.2	---	2.7	1.4	3.2	84	---	0.45
09N02900	11-17	Bt1	6.4	6.9	2.5	0.5	tr	9.9	4.1	11.8	84	tr	0.40
09N02901	17-22	Bt2	6.2	12.7	5.6	0.5	0.1	18.9	9.5	22.4	84	1	0.42
09N02902	22-34	Bt3	5.5	11.6	6.0	0.3	0.2	18.1	9.9	23.4	77	1	0.49
09N02903	34-80	Bct	5.8	7.1	3.0	0.2	0.2	10.5	5.0	11.7	90	2	0.66

1 Location of pedon sample is the same as that given in the series as described in the section "Soil Series and Their Morphology."

Table 29.--Clay Mineralogy of a Selected Soil

(Analysis by National Soil Survey Laboratory, USDA-NRCS, Lincoln, Nebraska. Relative Peak Size; 5-Very large; 4-Large; 3-Medium; 2-Small; 1-Very small. Dashes indicate that none of the mineral was detected)

Soil name and sample number	Depth	Horizon	Peak Size (1)			
			Mica	Kaolinite	Calcite	Goethite
Voca (2) (S09TX307001)	In					
09N02898	0-6	A1	2	2	---	---
09N02899	6-11	A2	---	---	---	---
09N02900	11-17	Bt1	3	3	1	---
09N02901	17-22	Bt2	---	---	---	---
09N02902	22-34	Bt3	3	2	---	1
09N02903	34-80	Bct	---	---	---	---

1 Total Clay fraction

2 Location of pedon sample is the same as that given in the series as described in the section "Soil Series and Their Morphology."

Table 30.--Engineering Index Properties of a Selected Soil

Soil name and Sample Number	Depth	Horizon	Grain Size Distribution						
			Percentage Passing Sieve						
			4	10	40	200	20	5	2
		-----Number-----				-----Microns ---			
Voca (S09TX307001)	In								
09N02898	0-6	A1	92	74	53	29	12	7	4
09N02899	6-11	A2	86	60	36	20	9	6	4
09N02900	11-17	Bt1	84	51	31	24	18	16	15
09N02901	17-22	Bt2	81	43	33	28	25	24	23
09N02902	22-34	Bt3	72	46	34	27	24	23	22
09N02903	34-80	Bct	54	26	15	7	6	5	5

1 Location of pedon sample is the same as that given in the series as described in the section "Soil Series and Their Morphology."

Soil Survey of Mason County, Texas

Table 31.--Taxonomic Classification of the Soils

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

Soil name	Family or higher taxonomic class
Acove-----	Fine, mixed, active, thermic Typic Haplustalfs
Brackett-----	Loamy, carbonatic, thermic, shallow Typic Haplustepts
Campair-----	Fine-loamy, siliceous, active, thermic Typic Haplustalfs
Campwood-----	Fine, smectitic, thermic Typic Haplusterts
Castell-----	Fine, mixed, semiactive, thermic Typic Paleustalfs
Cho-----	Loamy, carbonatic, thermic, shallow Petrocalcic Calciustolls
Click-----	Loamy-skeletal, mixed, semiactive, thermic Typic Haplustalfs
Eckert-----	Loamy-skeletal, mixed, active, thermic Lithic Haplustolls
Fieldcreek-----	Coarse-loamy, mixed, superactive, thermic Cumulic Haplustolls
Hensley-----	Clayey, mixed, active, thermic Lithic Rhodustalfs
Honeycreek-----	Fine-loamy, mixed, superactive, thermic Typic Haplustalfs
Hye-----	Fine-loamy, mixed, superactive, thermic Typic Haplustalfs
Katemcy-----	Fine, mixed, superactive, thermic Typic Haplustalfs
Keese-----	Loamy, mixed, active, thermic, shallow Typic Haplustepts
*Kerrville-----	Fine-loamy, carbonatic, thermic Typic Calciustepts
Ligon-----	Fine, mixed, superactive, thermic Typic Rhodustalfs
Loneoak-----	Clayey, mixed, active, thermic Arenic Paleustalfs
Lou-----	Fine-loamy, mixed, active, thermic Typic Haplustalfs
Luckenbach-----	Fine, mixed, superactive, thermic Typic Argiustolls
Menard-----	Fine-loamy, mixed, active, thermic Typic Haplustalfs
*Mereta-----	Loamy, mixed, superactive, thermic, shallow Petrocalcic Calciustolls
Nebgen-----	Loamy, mixed, active, nonacid, thermic Lithic Ustorthents
Oakalla-----	Fine-loamy, carbonatic, thermic Cumulic Haplustolls
Oben-----	Loamy, mixed, active, thermic, shallow Typic Haplustalfs
Pedernales-----	Fine, mixed, active, thermic Typic Paleustalfs
Pontotoc-----	Coarse-loamy, mixed, active, thermic Rhodic Paleustalfs
*Real-----	Loamy, carbonatic, thermic, shallow Typic Calciustolls
*Roughcreek-----	Clayey-skeletal, mixed, thermic Lithic Haplustolls
Roughcreek-----	Clayey-skeletal, smectitic, thermic Lithic Argiustolls
*Sunev-----	Fine-loamy, carbonatic, thermic Typic Calciustolls
Tarrant-----	Clayey-skeletal, smectitic, thermic Lithic Calciustolls
Valera-----	Fine, smectitic, thermic Petrocalcic Calciustolls
*Venus-----	Fine-loamy, mixed, superactive, thermic Typic Calciustolls
Voca-----	Fine, mixed, active, thermic Typic Paleustalfs
Yates-----	Loamy-skeletal, mixed, semiactive, nonacid, thermic Lithic Ustorthents

NRCS Accessibility Statement

The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at <http://offices.sc.egov.usda.gov/locator/app>.

