United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with the Hereford, San Pedro, Willcox-San Simon, and Whitewater Draw Natural Resource Conservation Districts and the Arizona Agricultural Experiment Station

Soil Survey of Cochise County, Arizona

Douglas-Tombstone Part

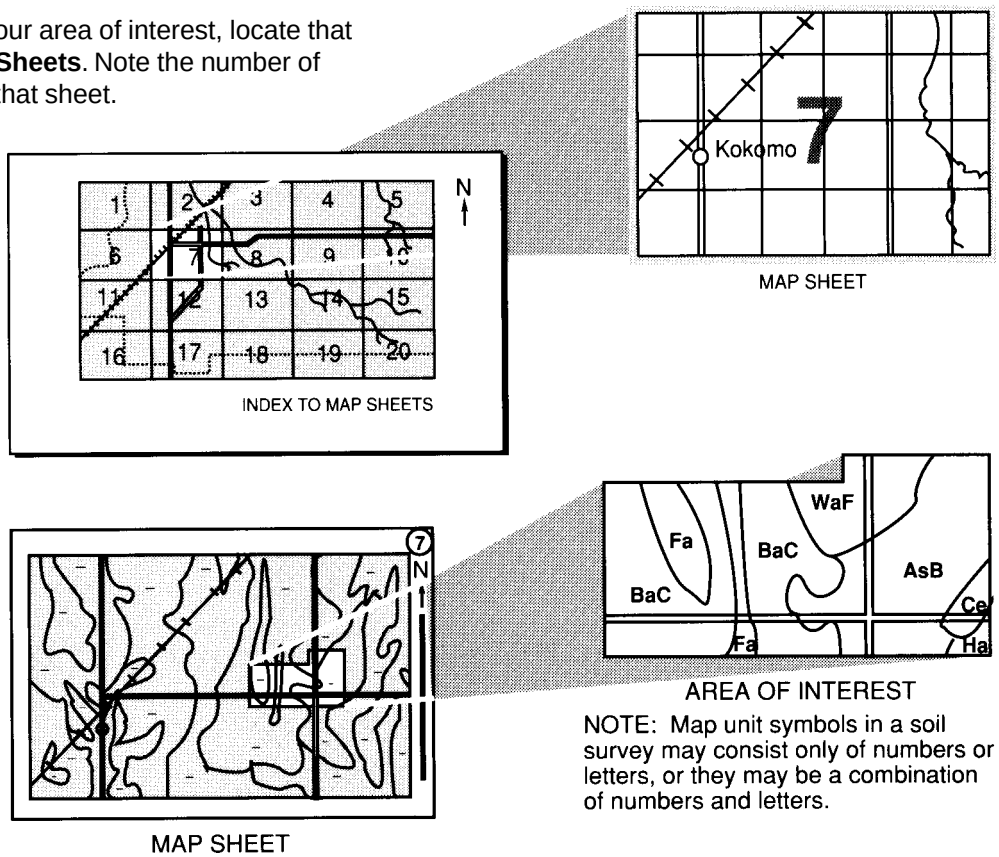
How To Use This Soil Survey

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

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

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

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



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

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

Major fieldwork for this survey was completed in 2000. Soil names and descriptions were approved in April 2000 by William W. Johnson, Jr., and Philip D. Camp, soil scientists, Natural Resources Conservation Service. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 2000. This survey was made cooperatively by the Natural Resources Conservation Service; the Hereford, San Pedro, Wilcox-San Simon, and Whitewater Draw Natural Resource Conservation Districts; and the Arizona Agricultural Experiment Station. It is part of the technical assistance furnished to the Agricultural Research Service, Walnut Gulch Experimental Watershed; U.S. Army Fort Huachuca; Bureau of Land Management; and the Hereford, San Pedro, Willcox-San Simon, and Whitewater Draw Natural Resource Conservation Districts.

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Cover: *Left*—a typical area of Brookline-Fluvaquents-Riverwash complex, 0 to 3 percent slopes, along the San Pedro River, south of Charleston, Arizona; *center*—a typical area of Combate loamy sand, 0 to 5 percent slopes, near Squaretop Hills; *right*—the San Bernardino Valley viewed from the southern Peloncillo Mountains, looking northwest toward the Perilla and Pedregosa Mountains. The foreground of the photo on the right is a typical area of Cherrycow-Magoffin-Rock outcrop complex, 15 to 65 percent slopes. The rest of the photo shows many different map units, mainly Mabray-Rock outcrop complex, 3 to 45 percent slopes, on limestone hills; Outlaw-Epitaph-Paramore complex, 0 to 15 percent slopes, on volcanic flows; and Boss, Krentz, and Paramore soils, and Rock outcrop, 15 to 55 percent slopes, on cinder cones.

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Foreword

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

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

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

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or sandy soils are poorly suited to use as septic tank absorption fields.

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

Michael Somerville
State Conservationist
Natural Resources Conservation Service

Soil Survey of
Cochise County, Arizona,
Douglas-Tombstone Part

Rangeland mapping by Cathy E. McGuire, William A. Svetlik, Donald J. Breckenfeld, Charles R. Peacock, Craig A. Prink, Nathan M. Starman, M.L. Richardson, and Lloyd Law, Jr., Natural Resources Conservation Service, and detailed cropland mapping by Scott D. Hutchinson, Lloyd Law, Jr., and Dale Orrell, Natural Resources Conservation Service

Ecological site identification and development by Daniel G. Robinett, Ronald J. Bemis, Emilio F. Carrillo, Donald D. Decker, Daniel Tofoya, and Sonia M. Gasho, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
the Hereford, San Pedro, Willcox-San Simon, and Whitewater Draw Natural Resource Conservation Districts and the Arizona Agricultural Experiment Station

This survey area is in the southeast corner of Arizona (fig.1). The boundary of the area extends south from Portal, Pearce, and St. David, Arizona, to the United States-Mexican border and from the Huachuca and Whetstone Mountains on the west to the Arizona-New Mexico State line on the east. The survey area makes up about 1,714,300 acres.

The survey area is part of the Chihuahuan Desert section of the Basin and Range Physiographic Province, which is characterized by north-south trending ranges of mountains. Broad basins or valleys are between the mountains. The survey area has a complex variety of terrain and soils. The vegetation ranges from that of desert shrub land to that of pine woodland. Elevation ranges from 3,550 feet in an area along the San Pedro River near St. David to 8,410 feet at Huachuca Peak. The annual precipitation ranges from 10 to 27 inches. The mean annual air temperature ranges from 50 to 67 degrees F.

The survey area has several natural drainage systems. It is drained mainly by the San Pedro River, the Babocómari River, Walnut Gulch, Greenbush Draw, Leslie Creek, Rucker Canyon Wash, and Whitewater Draw. The Babocómari River, Walnut Gulch, Greenbush Draw, Willow Wash, Graveyard Gulch, Clifford Wash, and Garden Canyon Wash flow into the San Pedro River. The San Pedro River flows

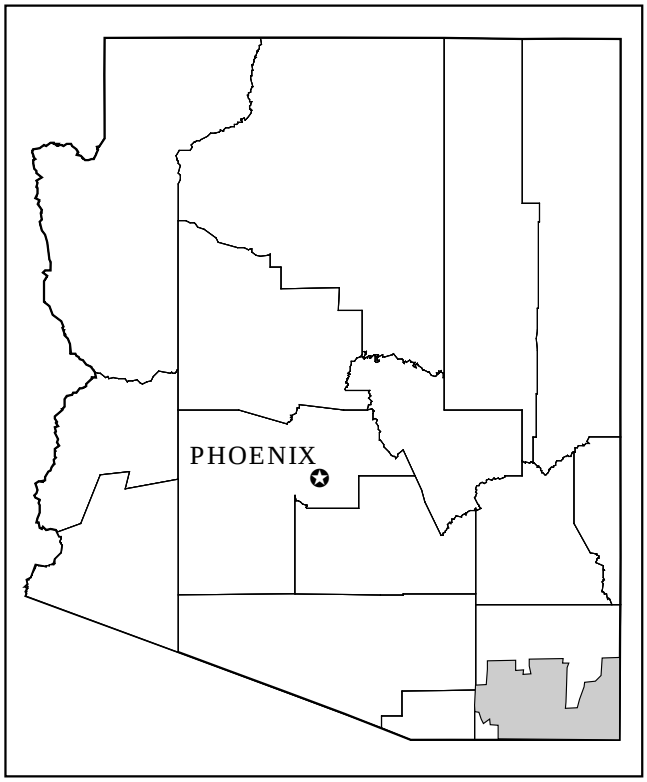

Figure 1.—Location of Cochise County, Douglas-Tombstone part, in Arizona.

north out of Mexico. It is a perennial-intermittent river; certain sections of the river have water throughout the year, while other sections have running water only after periods of rainfall. The San Pedro River is one of the longest naturally occurring riparian areas left in the Southwest. Leslie Creek and Rucker Wash drain into Whitewater Draw, which drains to the south. The San Bernardino Valley is drained mainly by Mulberry Draw, Silver Creek, Cottonwood Wash, and Black Draw, all of which flow southward into Mexico. Surface water in the upper part of the valley, from directly south of Apache, drains toward the north, into the San Simon Valley.

Ranching and farming are the main enterprises in the survey area. The major crops are alfalfa hay, corn, and wheat. A limited acreage is used for specialty crops of chilies, melons, and peanuts.

This survey updates the "Soil Survey of the Benson Area, Arizona" (Carpenter and Bransford, 1924) and the "Soil Survey of the Sulphur Spring Valley Area, Arizona" (Poulson and others, 1954), both of which cover part of the present survey area. The present survey provides additional information and has larger maps, which show the soils in greater detail. It also incorporates and updates the following interim and special reports: "Soil Survey of Walnut Gulch Experimental Watershed, Arizona" (Gelderman, 1970); "Soil Survey of U.S. Army, Fort Huachuca, Cochise County, Arizona" (Law, 1985; "Soil Survey of Walnut Gulch Experimental Watershed, Arizona" (Breckenfeld, 1993); "Soil Survey of Fort Huachuca, Arizona" (Svetlik, 1994); "Soil Survey of San Pedro Valley, Arizona" (McGuire, 1996); and "Soil Survey of San Bernardino Valley, Arizona" (McGuire, 1998).

Land Use History

By Diana Hadley, Arizona State Museum, University of Arizona.

For at least 14,000 years, a series of culture groups have occupied the survey area, each group imposing impacts from a distinct complex of land uses. Not until the past 125 years, however, have human land uses had significant impacts on soils, vegetation, watercourses, and wildlife. Following is an introduction to the history of land use in the survey area and the resulting changes in the soils and landscape.

During the Paleolithic period, the survey area was a cool, wet grassland that supported herds of horses, camels, bison, mammoths, and giant sloths. Archaeological finds at the Lehner and Lewis Springs sites include projectile points embedded in animal vertebrae, providing indisputable evidence that Paleo-Indian Clovis peoples hunted megafauna. After the Clovis culture, peoples of the Cochise culture occupied the area from approximately 5000 BC until the first century AD, living in pit houses and hunting deer, antelope, and rabbits, since the megafauna had become extinct. Near the end of their occupation, peoples of the Cochise culture practiced primitive agriculture, although farming provided only a minor portion of the food supply. Archaeologists speculate that after the first century AD, the Hohokam, who brought advanced agricultural techniques and irrigation north from Mexico, came into contact in this area with peoples of the Mogollon culture from central New Mexico and northern Mexico. Excavations reveal that the Casas Grandes culture of northern Chihuahua extended into the region and that trade took place with groups as distant as central Mexico. Between 1250 and the arrival of the Spaniards in the 1500's, however, human activity in the region declined dramatically. The causes of the decline are still undetermined.

Written accounts, dating from the earliest period of contact with Euro-Americans, describe lush grassland valleys, forested sky islands, and abundant wildlife. Grizzly bears, brown bears, turkeys, three species of deer, bighorn sheep, black-tailed prairie dogs, pronghorn antelopes, javelinas, Mexican wolves, and coyotes were abundant. Occasional jaguars and vast flocks of waterfowl migrated along the watercourses. Members of mutually hostile groups ventured into this contested area to hunt and gather, leaving it essentially unsettled. Early Spanish accounts indicate that the only permanent settlements were along the San Pedro, where Piman-speaking Sobaipuris lived in thatched and woven houses in villages of several hundred persons, irrigating fields of corn, squash, beans, and cotton. To the southeast, the Suma, Manso, Janos, and Jocome peoples occupied the plains and mountains of present-day Sonora and Chihuahua.

The Spanish (1540-1821) and Mexican (1821-1854) Periods

Although historians do not agree on the exact routes of early Spanish expeditions, descriptions of portions of the survey area appear in the formal reports of many expeditions. The journals describing both Fray Marcos de Niza's 1539 expedition and Francisco Vásquez de Coronado's expedition 2 years later agree that numerous small villages with irrigated farms were situated at regular intervals along the "Nexpa River," which is assumed to be the San Pedro. The people living along the Nexpa were of the same culture and language as the villagers of the Sonoran river basins.

By the mid-1600's, Athapascan-speaking Apaches intruded into the area, quickly incorporating or expelling their predecessors. By the early 1700's, the Chokonen Band, one of four bands of Chiricahua Apaches, held firm control of the Chiricahua, Peloncillo, and Animas mountain ranges. Throughout the entire period of Spanish and Mexican control, the Apache's persistent defensive tactics prevented permanent Euro-American settlement in the area, despite repeated attempts to dislodge the Apaches from their strongholds.

During the late 1690's, Jesuit missionary Father Eusebio Kino began a series of regular visits to the San Pedro villages. He made several trips down the river to its confluence with the Gila, noting that approximately 2,000 people lived in about a dozen villages along its banks and referring to the river as the Río de San Joseph de Terrenate or the Río de Quiburi. Kino established missions and *visitas* (visiting stations) at Quiburi, Gaybanipitea, and Cuachuca. The missions were abandoned by the early 1700's, however, because the river was a dangerous corridor for Apache travel and the missionaries stationed on its banks suffered from malarial fevers.

By 1762, the Sobipuri Pimas also gave up their settlements along the San Pedro, and Spanish troops relocated them to less exposed locations on the Santa Cruz River. In the 1770's, Spaniards attempted to reoccupy the river. They established a *presidio*, or garrisoned fort, at a site near the abandoned mission at Quibori, but the beleaguered *presidio* only remained there for a few years before it was moved to south Las Nutrias (named for muskrats or beavers) near the headwaters of the river.

East and south of the survey area, the Spanish military established two *presidios* south of the present boundary at Janos, Chihuahua (1686), and Fronteras, Sonora (1690). A portion of the *camino real*, or royal highway (in reality a dangerous dirt trail barely passable by wagons), connected the two forts by way of Guadalupe Canyon at the southern edge of present-day Cochise County. Numerous military expeditions, including several led by Juan Bautista de Anza, passed over the Guadalupe road and marched up the San Bernardino and San Simon Valleys. From 1775 to 1780, the former *rancho* at the San Bernardino *cienega*, 20 miles east of present-day Douglas, served as a *presidio*. During that time, the military constructed large adobe buildings and fortifications and even maintained a monthly armed mail service between *presidios* by way of the Guadalupe road. After the garrison was returned to Fronteras in 1780, cattle continued to graze at the San Bernardino. The location appears as a *rancho* on maps, but that designation may only mean that armed *vaqueros* visited the swampy area occasionally to gather their stock.

Although Spanish settlement was minimal, military expeditions, both punitive and exploratory, entered the area regularly. Hundreds of documents describe these *entradas*. Mountain ranges, creeks, and canyons throughout the area still bear Spanish names (San Bernardino, San Simon, Guadalupe, San Pedro, and Santa Cruz), many commemorating the saint whose day it happened to be when the expedition visited that particular location.

During the Mexican period (1821-1854), with diminished funding for defense, Apaches tightened their control of the area. In 1821, Ignacio Pérez petitioned for a land grant for *ganado mayor* (large livestock) at the San Bernardino, despite its dangerous location near Apache strongholds. The petition was for four *sitios* of grazing land. (One *sitio* equaled a square league, the equivalent of 4,316.32 acres.) Although the title was not issued for more than a decade, Pérez reportedly stocked the grant with thousands of head of cattle. The Mexican Government issued three other land grants in present-day Cochise County—the San Rafael del Valle, in an area along the San Pedro near the international boundary; the San Juan de las Boquillas y Nogales, farther north along the San Pedro; and the San Ignacio del Babocómari on Babocómari Creek. By the 1830's, Apaches forced the owners of all the grants to abandon their ranches. The cattle became wild, and the adobe buildings fell into ruins.

Throughout the Mexican period, the area remained a contested zone of sporadic warfare, which had the effect of minimizing impacts from human activities. Mexicans occupied the land grants on a temporary, intermittent basis, not unlike the pattern of Apache settlement in the mountains. The marks of human activity are evident only at specific locations. Cattle and horses belonging to Mexican ranchers concentrated along the watercourses and *cienegas* at the southern fringe of the area. Little, if any, Spanish or Mexican farming took place.

Native Americans impacted the area through hunting of specific animal populations (deer and antelope) and gathering of wild plants for food and household uses (agave, acorns, black walnuts, yucca, beargrass, and pricklypear). Sobaipuris farmed along the San Pedro prior to 1762. Apache farming—if Apaches practiced farming in the survey area—was limited to tiny plots of corn along mountain watercourses, the Chiricahuas being the least agricultural of any Apache group. Sobaipuris kept and bred limited numbers of livestock, particularly at

mission settlements. Although the Apaches did not raise livestock, they took cattle and horses from ranches farther south in Sonora and drove them north to their *ranchería* campsites in the Chiricahua and Huachuca Mountains, where they held them for slaughter or trade in the "natural corrals" formed by narrow box canyons. The captive livestock impacted only specific areas, mainly water sources, the canyons in which the livestock were held, and the trails over which they were driven. American explorers described a network of Apache "raiding" trails, clearly visible in the soft dirt of the valley floors. Many of these trails, including the "great stealing road of the Coyoteros" down the center of the Sulphur Springs Valley, were wide enough to move a half dozen head of cattle or horses abreast. Some of them gradually evolved into wagon roads, then dirt automobile roads, and later paved highways (such as Highway 80).

Apaches maintained control of the region throughout the Spanish and Mexican periods. Their occasional anthropogenic fires, for hunting or warfare, probably constituted the most widespread human impact of this period. Perhaps the most significant land use legacy of the Apaches was to have expelled the Sobaipuri population from the San Pedro and to have delayed Euro-American settlement and exploitation of resources.

The Territorial (1854-1912) and Early Statehood (1912-1930's) Periods

The few American explorers and trappers who ventured into the survey area before 1854 described vast unsettled grasslands, oak-dotted savannas, intermittent sandy-bottomed rivers with powerful seasonal flows, towering cottonwood and willow forests along streambanks, and *bosques* of giant mesquite trees, some with diameters of several feet. The region abounded in game of many kinds. On their way to California in 1826, James Ohio Pattie and his fellow trappers caught 200 beavers in a few days on the stream he called "Beaver River" (the San Pedro). In December 1846, with Lieutenant Colonel Philip St. George Cooke during the Mexican War, members of the Mormon Battalion described an abundance of game between Guadalupe Pass and the San Pedro. They encountered grizzly and brown bear near Guadalupe Canyon, caught "salmon trout" up to a foot in length in the San Pedro, and found it difficult to hunt the abundant antelope in the tall grass. Along the San Pedro, they passed what they thought were the ruins of Spanish towns and saw herds of wild cattle with occasional Spanish brands, some so ferocious that they attacked battalion hunting parties. In subsequent years, the route through Guadalupe Canyon, past the San Bernardino, and to the San Pedro became the most popular wagon road on the Southern Overland Route between Texas and California. Thousands of Forty-niners used it to reach the gold fields, and their diaries describe a similar abundance of resources.

On December 30, 1853, Mexico sold the United States enough relatively level land to facilitate the construction of a southern transcontinental railroad. By means of the Gadsden Purchase, the United States acquired not only the land that would become Cochise County but also the legal responsibility for the Apaches who resided north of the new international boundary but continued to raid in Mexico. Leaders of the Chokonen Band of Chiricahuas initially accepted Americans as possible allies against their long-time Mexican enemies. As American intrusion into their homeland increased, however, Mangas Coloradas and Cochise became hostile toward the newcomers. In 1858, southern Arizona became a link in the first transcontinental transportation system when John Butterfield's Overland Mail began providing coach and mail service directly across Apache territory, along the approximate route later followed by the Southern Pacific Railroad and Interstate 10. By 1861, Fort Bowie, in Apache Pass, was providing some protection for the mail route, but Civil War troop redeployment reduced the military presence in Arizona and the mail and stage service ended.

During the Civil War, the Confederate Army briefly occupied southern Arizona. Then, in late May 1862, General James Carleton's California Volunteers reclaimed the area for the Union. Arizona was not formally organized as a territory until December of the following year. From the end of the Civil War until 1870, when Arizona became a separate military department, hundreds of bloody skirmishes between hostile Apaches, the military, and American travelers occurred. In 1872, a treaty negotiated by Cochise and Brigadier General Oliver O. Howard ended some of the worst fighting and led to the establishment of a reservation in the Chokonen homeland. The Chiricahua Reservation incorporated the entire southeastern corner of the Arizona Territory, extending west from the New Mexico border to the Dragoon Mountains and north from the international boundary almost to present-day Interstate 10. Agent Thomas J. Jeffords, a trusted friend of Cochise, moved the reservation headquarters three times, seeking a healthy location free from malaria and distant from rapacious white traders who dealt in illegal liquor and arms. The reservation was short-lived, however, and in

June 1876, shortly after Cochise's death, a regiment of soldiers marched the Chiricahuas to the hated San Carlos Reservation and the reservation in their homeland was terminated.

Although the majority of Chiricahuas settled peacefully on other reservations, Geronimo and a small group of his followers rejected relocation. Small groups of renegade Apaches moved back and forth between San Carlos and their *ranchería* campsites in the Sierra Madres of Sonora and Chihuahua, raiding settlements and ranches on both sides of the border. In response to the continued retaliatory Apache warfare, the army set up a number of temporary military posts within the survey area, using an ingenious heliograph system to relay signals between the posts and signal stations. In addition to Fort Bowie, the army operated military camps at the San Bernardino Ranch during the month of March 1878, at Camp Rucker in the Chiricahua Mountains from April 1878 to November 1880, in Guadalupe Canyon during 1885, and at Camp Huachuca after September 1886.

Despite the Apache raids, mineral strikes and rich rangeland resources attracted Americans of many propensities to southern Arizona. The new arrivals included genuine settlers and ranchers, along with prospectors, gamblers, gunmen, and rustlers. In 1881, the territorial legislature created a new county in one of the fastest growing areas of the territory—the southeastern corner of the territory. The legislators named the new county for its most famous native, the former enemy Cochise. After Geronimo's final surrender to General Nelson Miles in Skeleton Canyon in September 1886, Apache warfare ended and the population of the new county boomed.

Mining

Mining attracted more settlement than any other enterprise in the survey area and spawned a number of subsidiary occupations in the fields of ore milling, fuelwood contracting, construction, lumbering, and transportation. The increased local market for food also gave rise to expanded livestock and farming industries. The region's legendary mining industry began during the summer of 1877, when two separate strikes were made on consecutive days in locations only a few miles apart.

On August 1, 1877, Ed Schieffelin located a claim at Tombstone, giving birth to the notorious mining camp. After Schieffelin's initial strike, assayer Richard Gird located many more claims, including the Grand Central and the Contention, two of the richest in the district. With wealthy outside investors, including local dignitaries, such as A.P.K. Safford, one of Arizona's territorial governors, the district developed quickly. By 1883, Tombstone had 50 separate mines and 7 ore mills were on or near the San Pedro, where steam engines took advantage of the river's perennial flow. Mill and transportation towns sprang up around the mills at Charleston, Millville, Emery City, Headcenter, and Contention. The consumption of charcoal for adobe furnaces and fuelwood for steam boilers gave rise to overcutting, and local residents quickly acknowledged that they had a fuelwood shortage. The Tombstone boom was brief. During the summer of 1886, a fire destroyed the pumps at the Grand Central mine. By 1887, flooding in the mines and a slump in silver prices had all but stopped mining and the mill towns were quickly deserted. Although short-lived, production in the Tombstone District was enormous, equaling $25 million in silver ore by 1901. Brief mining revivals occurred in 1903 and the 1920's.

On August 2, 1877, the day following Schieffelin's strike, several soldiers from Fort Bowie, including Lieutenant John Rucker, for whom Camp Rucker was named, found a silver float in the Mule Mountains, near what was to become the famous Copper Queen mine. The camp at Bisbee initially reduced ore in small Mexican-style adobe smelters, but these were soon replaced by up-to-date stamp mills. By the early 1880's, teams of 20 mules were hauling ore to the Southern Pacific Railroad at Benson. In April 1881, investors incorporated the Copper Queen Mining Company. After a second ore body was discovered in 1884, Phelps Dodge acquired the mines. By the mid-1880's, the Copper Queen's smelters were turning out move than 20,000 tons of ore annually. By 1900, Phelps Dodge recognized the need for new smelters. Mining engineers and town planners, associated with the company, laid out smelter sites and a new townsite nearby on the international boundary. With the Copper Queen and two Calumet and Arizona smelters operating 24-hours a day, Douglas grew to be one of the largest towns in the territory in only 5 years.

Many smaller mining operations scattered throughout the survey area produced some ore for varying periods of time. In the Huachuca Mountains, the Hartford Mining District at Ramsey Canyon was active during the 1880's. During the 1890's, a religious group operated the Copper Glance Mine near its community at Sunnyside, on the opposite side of the mountain range. In the Chiricahua Mountains, several mining districts were small producers. A boom at Galeyville, supported by the Pennsylvania oil magnate John Galey, made the camp famous during the early 1880's. The Tourquoise Mining District, which had its

major mining camps at Gleason and Courtland, produced over $14 million in copper, silver, and gold. In the Dragoons, a group of Chinese investors mined a small amount from Middlemarch Pass during the 1890's. The Pearce Mining District produced over $10 million in silver and gold between 1895 and the 1940's. In addition to the productive mines, the remains of unproductive diggings dot the mountains and hills of the county. For over a century, mining and smelting remained the major economic activity of the survey area. By the 1980's, however, mining had ceased at Bisbee and operation of the Copper Queen smelter in Douglas had ended.

Transportation

After the Southern Pacific was completed across southern Arizona in 1881, a large railroad network grew up between the mines and smelters at Tombstone, Bisbee, Naco, and Douglas. It included extensions to mining operations in northern Sonora. In 1882, the New Mexico and Arizona Railroad constructed a line from Benson to Fairbank to service the mines at Tombstone, although the town of Tombstone did not get railroad service until 1903, when the El Paso and Southwestern constructed a branch line. In 1889, the Arizona and Southeastern extended the New Mexico and Arizona line from Fairbank to Bisbee, and ore from the mines at Bisbee could be shipped to the Southern Pacific via two small railroad companies.

By the turn of the century, the booming mining towns of northern Sonora were brought into the railroad network. After Phelps Dodge purchased the Nacozari copper mine from the Guggenheim interests in 1896, the Arizona and Southeastern Railroad, a subsidiary of Phelps Dodge, constructed a line connecting the Nacozari with Bisbee. In 1902, Colonel William C. Greene completed the Cananea, Yaqui River, and Pacific Railroad line connecting his mines in Cananea to the new border town of Naco. The Southern Pacific purchased Greene's line the following year. In 1902, the El Paso and Southwestern Railroad (EPSW) completed its line connecting Douglas with Deming, New Mexico, on the Southern Pacific. Providing passenger as well as freight service, the EPSW built elegant stations and offered inexpensive excursions to popular outing destinations, such as Lewis Springs. During the Prohibition Era, the EPSW operated a Saturday night round-trip excursion, transporting Douglas residents to popular "watering holes" in Rodeo, New Mexico, which remained a "wet" State for several years after Arizona went "dry." By 1924, consolidation of the smaller lines had begun and the EPSW sold its holdings to the Southern Pacific. During the Great Depression, railroad service diminished and several branch lines were abandoned. In 1959, as automobile and truck travel began to replace the railroads, the EPSW southern line between Douglas and New Mexico ended service.

The Lumber Industry

During the mining boom of the 1880's and 1890's, forest resources in the Chiricahua, Huachuca, and Mule mountain ranges were intensively harvested for construction lumber, mine timbers, and fuelwood. In the Chiricahuas, the first sawmill went into operation in 1879 at Morse Canyon. Within a decade Pine, Pinery, Rock, Morse, and Rucker Canyons, on the western and southern slopes of the mountains, had been extensively cut. Between 1879 and 1902, the Chiricahuas supported 11 sawmills, including the Ross Mill and Brannock Riggs's mill in Barfoot Park. In the Huachucas, the Sunnyside religious community operated a mill that processed lumber used in building the mining town at Washington Camp. The Tanner Mill operated in Garden Canyon, above Fort Huachuca. The canyon produced both lumber and vegetables for the fort. The Mule Mountains, with lower elevations than the Chiricahuas and the Huachucas, produced little construction lumber and mainly supplied mine timbers and fuelwood for households and smelters. The Chiricahuas and Huachucas produced spruce, ponderosa, and other types of pine that made high-quality board lumber. In addition, stands of particular trees were used for special purposes. Juniper was used for fenceposts and kitchen sink drain boards, and Arizona cypress was used for mine timbers and shakes. Prior to the regulation of lumbering, several canyons in the Chiricahuas were entirely denuded, leading to criminal trespass suits against the logging groups and to considerable soil loss.

In 1902, the first of the forest reserves in the survey area, later known as national forests, was created in the Chiricahua Mountains, where the most extensive lumbering had taken place. In 1906, reserves were established in three other ranges—in the Huachucas and Dragoons, where less logging occurred than in the Chiricahuas, and in the Peloncillos, where almost no lumbering took place because they had small timber stands that were distant from settlements and difficult to access. Establishment of the forest reserves ended unregulated logging, but prices for local lumber remained lower than the cost of lumber imported by railroad for several years. As a result, the demand for local lumber remained high. Limited timber harvesting has continued to the present in some of the forests in the survey area.

Ranching

Like the survey area's mining industry, the open range cattle boom of the 1880's and 1890's attracted large amounts of outside capital investment. Completion of the Southern Pacific Railroad through northern Cochise County in 1881 provided the means for fast and easy importation of thousands of head of livestock. By 1886, Cochise County was stocked with a reported 60,000 head of cattle, although many knowledgeable observers believed that the real number was up to 50 percent higher.

Large corporate ranchers and small homesteaders claimed virtually every natural water source in the survey area. In the San Simon Valley, the San Simon Canal and Cattle Company stocked between 20,000 and 30,000 head of Texas cattle. In the San Bernardino and Sulphur Springs Valleys, the Erie Cattle Company and the Chiricahua Cattle Company had similar numbers of stock. Former Cochise County sheriff John H. Slaughter ran about 20,000 head on both sides of the international border. His ranch holdings included the former San Bernardino land grant and extended 30 miles south into Sonora. William C. Greene, developer of the Cananea Copper Company, had vast ranchland holdings in 10 separate divisions in northern Sonora. He operated the Green Cattle Company headquarters from his Palominas Division along the San Pedro, using that division to cross Mexican cattle into the United States. Downstream from Greene on the San Pedro, George Hearst purchased the former Boquillas land grant, operating it in conjunction with his holdings in Chihuahua and New Mexico. In addition to the large corporate ranches, many small ranches supported families who homesteaded water sources and often supplemented their income with subsistence farm plots and seasonal work on large ranches.

Dry years occurred with frequency. Severe prolonged droughts took place in 1885, 1892-93, 1902-04, the early 1920's, 1933-34, and the mid-1950's. During the notoriously severe drought of 1892-93, between 50 and 75 percent of the cattle in southern Cochise County died of starvation and thirst on the ranges, too weak to be moved to the railroad for shipment. The absence of Federal regulation encouraged excessive grazing and competitive overstocking and led to rangeland degradation and permanent soil loss. Ranchers themselves were among the first groups to call for Federal grazing regulation. Establishment of forest reserves prevented the worst grazing abuses in forested areas. Passage of the Taylor Grazing Act in 1934 and stock reductions associated with New Deal agricultural programs ended unregulated grazing on the remaining public land.

Farming

During the territorial period, early farm sites were restricted to areas with natural water sources. In the San Pedro Valley, farming resumed during the spring of 1877, when officials of the Church of Latter Day Saints authorized six Mormon families to settle along the river. After constructing an eight-room stone fort on the west bank south of present-day Saint David, the Mormons planted 75 acres of wheat and barley, using water from springs for irrigation. In the fall of 1878, plagued by malarial fevers that prostrated all of them at once, the farmers began draining beaver ponds to eliminate stagnant waters. By 1885, Mormon officials were offering bounties of $1,500 for the development of wells, and within a few years the San Pedro Valley had 200 flowing wells. In conjunction with the Saint David canal, the wells irrigated over 2,000 acres of farmland. Mormons developed scattered farms along the San Pedro as far south as Hereford, near the place where wild bulls had attacked the Mormon Battalion 30 years earlier, and as far north as Benson.

In the San Simon Valley, members of the Chenowth family and other early settlers developed canals during the late 1870's. The canals drained the San Simon *cienega*, creating a controversial irrigation system that was the subject of subsequent law suits. In the San Bernardino Valley, John Slaughter developed dozens of artesian wells at the San Bernardino *cienega* after 1900. Chinese farmers on his ranch used the artesian water to grow produce for sale in the booming towns of Douglas and Bisbee.

After 1907, farming began to extend away from the limited natural water sources in the survey area. The decade of 1910 to 1920 was one of relatively high rainfall, allowing the Agricultural Extension Agency at the University of Arizona to successfully promote dryfarming. The Extension Service operated an experimental farm near McNeal, in the Sulphur Springs Valley. Agents traveled throughout the county to give instruction in dryfarming techniques, including deep plowing to expose water conserved in the heavier textured soils at deeper levels. Farmers were surprisingly successful at raising several types of Dent corn, sorghum, barley, pinto beans, and even potatoes. Agricultural extension agents also promoted techniques of cattle feeding designed to increase the profitability of cattle ranching and to give ranchers greater security in dry years. These techniques included mowing and stacking "native grass hay," burning spines from several types of cacti to convert them into palatable and digestible feed, and using machines designed to chop soapweed yucca for fodder.

During the same decade, an artesian water belt

was developed south of San Simon and Bowie. Real estate agents intentionally created a small farm boom. By advertising homestead sites in out-of-State newspapers, they succeeded in bringing many would-be farmers into the survey area. Some of the farmers were later successful at growing Valencia onions and cotton, while others quickly sold out. Both the dryfarming techniques that promised unrealistic high yields and the modern well drilling methods that had made the artesian water development possible attracted a large influx of homesteaders, some with little practical experience in agriculture. Between 1910 and 1930, extensive water harvesting, farming, and grazing took place in parts of the San Simon Valley. By the 1930's, some areas were so extensively damaged by soil loss that they became nationally famous as textbook examples of erosion. The Works Progress Administration and Civilian Conservation Corps soon began restoration work.

Development, Growth, and Appreciation of Natural Resources (1960's to 1990's)

By the late 1940's, patterns of settlement in the survey area were changing. The rural population declined sharply in the period following World War II, and many former rural residents moved to the larger Arizona cities or out of the State. The towns of Douglas, Bisbee, and Naco experienced little growth. Many rural communities and the tiny railroad settlements along the EPSW and other branch lines either declined in population or ceased to exist. The exception to this pattern was the population-retirement boom in and around the town of Sierra Vista. This community, below Garden Canyon in the Huachuca Mountains, came into existence as a supply center for Fort Huachuca. Called Garden Canyon from 1917 until 1937 and Fry from 1937 to 1955, it is now named Sierra Vista. After 1970, many retirees, including U.S. Army personnel formerly stationed at Fort Huachuca, moved to the Sierra Vista area. Without effective planning or a county open space policy, the community burgeoned, extended onto the former grasslands surrounding the town, and continues to grow. Some residents and outsiders have expressed concern over water security and the effects of what they consider to be unsightly sprawl. Other residents resist any interference with their property rights and local control.

In contrast to the new suburban settlement pattern near Sierra Vista, another group in Cochise County has actively promoted the continuation of a ranching-based economy with strong rural values and the preservation of open space with wildlife corridors. For the past decade, the Malpai Borderlands Group has attempted to find solutions to ecosystem fragmentation and to increase the productivity and biological diversity of the rangeland in the survey area. This group, consisting mainly of ranchers and environmentalists, has based its efforts on good science, sound economics, cooperation between the private sector and governmental agencies, and a strong conservation ethic. It has established a grass bank, through which conservation easements can be exchanged for grazing privileges. The type of rural-based conservation of soil and rangeland resources practiced by the Malpai Borderlands Group is fast becoming a model for many similar efforts throughout the West.

Transportation Facilities

The only major Federal highway that serves the survey area is Interstate 10, which runs east and west directly north of the survey area. Highways 90, 80, and 191 run north and south through the survey area, connecting the major towns of St. David, Sierra Vista, Bisbee, Douglas, Pearce, Tombstone, and Sunizona.

No commercial airlines serve the survey area, but small general aviation airports are located at Sierra Vista, Tombstone, McNeal, and Douglas.

Climate

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

Table 1 gives data on temperature and precipitation for the survey area as recorded at Chiricahua National Monument, Douglas, and Tombstone during the period 1961 to 1990. 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 temperatures at Chiricahua National Monument, Douglas, and Tombstone are 43.9, 46.1, and 48.7 degrees F, respectively. The average daily minimum temperatures in winter are 30.3 degrees at Chiricahua National Monument, 29.9 degrees at Douglas, and 36.4 degrees at Tombstone. The lowest temperatures on record were -10 at Chiricahua National Monument on January 7, 1913; -4 at Douglas on December 8, 1978; and 3 at Tombstone on December 8, 1978.

In summer the average temperatures at Chiricahua National Monument, Douglas, and Tombstone are

73.0, 77.5, and 78.5 degrees, respectively. The average daily maximum temperatures in summer are 87.9 degrees at Chiricahua National Monument, 92.3 degrees at Douglas, and 92.5 degrees at Tombstone. The highest temperatures on record were 109 degrees at Chiricahua National Monument on July 13, 1909; 110 degrees at Douglas on June 26, 1994; and 112 degrees at Tombstone on July 4, 1989.

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 precipitation is 19.82 inches at Chiricahua National Monument, 13.39 inches at Douglas, and 13.50 inches at Tombstone. Of these annual amounts, about 13.2 inches at Chiricahua National Monument, 10.1 inches at Douglas, and 9.8 inches at Tombstone usually fall in the period April through October. The precipitation during this period amounts to roughly 70 to 75 percent of the annual average precipitation. The growing season for most crops falls within this period. The heaviest 1-day rainfall on record was 4.50 inches at Chiricahua National Monument on June 11, 1911; 2.50 inches at Douglas on July 19, 1950; and 2.96 inches at Tombstone on September 11, 1938. Thunderstorms occur on about 43 days each year, and most occur in July and August.

The average seasonal snowfall is 9.3 inches at Chiricahua National Monument, 1.1 inches at Douglas, and less than 1 inch at Tombstone. The greatest snow depth on record was 28 inches at Chiricahua National Monument on December 18, 1967; 3 inches at Douglas on November 17, 1958; and 10 inches at Tombstone on January 7, 1997. On the average, about 3 days per year at Chiricahua National Monument and less than 1 day per year at Douglas and Tombstone have at least 1 inch of snow on the ground. The heaviest 1-day snowfall on record was 16.0 inches at Chiricahua National Monument on January 20, 1916; 5.0 inches at Douglas on November 16, 1958; and 12.0 inches at Tombstone, on January 16, 1916.

The average relative humidity in mid-afternoon is about 22 percent. Humidity is higher at night, and the average at dawn is about 55 percent. The sun shines 83 percent of the time possible in summer and 80 percent in winter. The prevailing wind is from the southeast. Average windspeed is highest, about 9 miles per hour, in April and May.

How This Survey Was Made

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

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

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

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically.

Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research. Range conservationists identified present and potential plant communities and assigned a ecological site to each map unit.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses. 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 under different uses and different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

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

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

This survey was mapped at two levels of detail. Detailed cropland mapping was completed in 1982. The map units in areas of cropland are narrowly defined, and boundaries were plotted and verified at closely spaced intervals. Less detailed rangeland mapping was completed in 2000. The map units in areas of rangeland are broadly defined, and boundaries were plotted and verified at widely spaced intervals. The detail of mapping was selected to meet the current land use needs and the anticipated long-term use of the survey.

Several large tracts of land in the survey area were not mapped. Landowners denied permission for soil scientists to map these areas of private property. The term “Denied Access” identifies these areas on the detailed soil maps.

The descriptions, names, and delineations of the soils in this survey area do 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.

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. More information about each map unit is given under the heading "Use and Management of the Soils."

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 "included soils" that belong to taxonomic classes other than those of the major soils.

Most included 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 inclusions. They may or may not be mentioned in a particular map unit description. Other included components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting inclusions. They generally are in small areas and could not be mapped separately because of the scale used. The contrasting inclusions 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 included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into 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 gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, 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, Hantz silt loam, saline-sodic, 0 to 3 percent slopes, is a phase of the Hantz series.

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

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Courtland-Sasabe-Diaspar complex, 1 to 8 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered

practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Crowbar-Brunopeak association, 1 to 40 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Contention, Crystalgyp, Monzingo, and Redington soils, breaks, 5 to 60 percent slopes, is an undifferentiated group in this survey area.

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

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

1—Altar-Mallet complex, 0 to 8 percent slopes

Setting

Landform: alluvial fans
Slope range: 0 to 8 percent
Elevation: 4,200 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Altar and similar soils: 55 percent
Mallet and similar soils: 30 percent
Contrasting inclusions: 15 percent

Typical Profile

Altar

About 10 to 30 percent of the surface is covered with gravel and cobbles.

0 to 1 inch—brown sandy loam
1 to 10 inches—brown sandy loam
10 to 25 inches—dark brown very gravelly sandy loam
25 to 40 inches—light brown very cobbly sandy loam
40 to 60 inches—brown extremely cobbly coarse sand

Mallet

About 5 to 10 percent of the surface is covered with gravel.

0 to 6 inches—brown fine sandy loam
6 to 22 inches—brown fine sandy loam
22 to 55 inches—brown fine sandy loam
55 to 60 inches—brown extremely gravelly loamy sand

Soil Properties and Qualities

Altar

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: 40 to 75 percent gravel and cobbles
Corrosivity: steel—high; concrete—moderate

Mallet

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight or moderate; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: 5 to 35 percent
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Banshee, Forrest, and Guest soils, which have more than 35 percent clay
- Keysto and Bodecker soils in drainageways
- Combate, Comoro, and Ubik soils, which have less than 18 percent clay
- Caralampi, Courtland, Diaspar, and Sasabe soils, which have an argillic horizon
- Durazo soils, which are sandy and have a very high hazard of wind erosion

Similar inclusions:
- Altar and Mallet soils that have calcium carbonate in the lower part
- Altar and Mallet soils that have redoximorphic features below a depth of 30 inches
- Mallet soils that have more than 35 percent rock fragments in the lower part

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Altar—fast intake rate, hazard of wind erosion, content of rock fragments
Mallet—fast intake rate, hazards of wind erosion and water erosion

Dominant vegetation on the Altar soil:
• In the potential plant community—Arizona cottontop, black grama, sideoats grama, plains bristlegrass, plains lovegrass, bush muhly, blue threeawn, mesa threeawn, Mormon tea, catclaw, mesquite, shrubby buckwheat
• In the present plant community—Lehmann lovegrass, Rothrock grama, bush muhly, plains bristlegrass, blue threeawn, rumex, devils claw, mesquite, Mormon tea, burroweed

Dominant vegetation on the Mallet soil:
• In the potential plant community—Arizona cottontop, black grama, sideoats grama, plains bristlegrass, plains lovegrass, bush muhly, blue threeawn, mesa threeawn, Mormon tea, catclaw, mesquite, shrubby buckwheat
• In the present plant community—Lehmann lovegrass, Rothrock grama, bush muhly, plains bristlegrass, mesquite, Arizona cottontop, Mormon tea, burroweed, shrubby buckwheat

Special Management Concerns

• The large amount of rock fragments in the Altar soil interferes with excavations.
• Because of the moderately rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.
• These soils have a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• The Mallet soil has a slight or moderate hazard of water erosion; therefore, special consideration should be given to water management.

Interpretive Groups

Land capability classification: VIe nonirrigated
Ecological site: Sandy Loam, Deep, 12- to 16-inch precipitation zone, 041XC318AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

2—Anthony-Maricopa complex, 0 to 5 percent slopes

Setting

Landform: alluvial fans
Slope range: 0 to 5 percent
Frequency of flooding: Anthony—none; Maricopa—none or rare
Elevation: 3,600 to 3,800 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 190 to 230 days

Composition

Anthony and similar soils: 45 percent
Maricopa and similar soils: 40 percent
Contrasting inclusions: 15 percent

Typical Profile

Anthony

0 to 15 inches—brown sandy loam
15 to 40 inches—brown sandy loam
40 to 60 inches—brown sandy loam

Maricopa

0 to 5 inches—brown sandy loam
5 to 24 inches—brown sandy loam
24 to 60 inches—brown gravelly sand

Soil Properties and Qualities

Anthony

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Corrosivity: steel—high; concrete—low

Maricopa

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid or rapid
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low

Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: less than 35 percent in the upper part of the soil but ranges to more than 35 percent in the lower part
Corrosivity: steel—high; concrete—low

Contrasting Inclusions

- Riverwash
- Borderline soils, which have gypsum
- Soils that have more than 18 percent clay
- Urban land

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: hazard of wind erosion, hazard of seepage, sandy texture

Dominant vegetation on the Anthony soil:
- In the potential plant community—black grama, bush muhly, soaptree yucca, threeawn, sideoats grama, plains bristlegrass, staghorn cholla, Arizona cottontop, Rothrock grama
- In the present plant community—mesquite, burroweed, snakeweed, Lehmann lovegrass, bush muhly, soaptree yucca, annuals

Dominant vegetation on the Maricopa soil:
- In the potential plant community—mesquite, catclaw acacia, desert honeysuckle, Mormon tea, soaptree yucca, bush muhly, Rothrock grama, Arizona cottontop, southwest rabbitbrush, giant sacaton, big burrobrush, sideoats grama
- In the present plant community—mesquite, catclaw acacia, burroweed, Lehmann lovegrass, soaptree yucca, southwest rabbitbrush, big burrobrush, giant sacaton

Special Management Concerns

- Because of the moderately rapid or rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.
- These soils have a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification: VIIe nonirrigated
Ecological site:
Anthony—Sandy Loam Upland, 7- to 12-inch precipitation zone, 041XB215AZ
Maricopa—Sandy Bottom, 7- to 12-inch precipitation zone, 041XB213AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-2AZ—Chihuahuan-Sonoran Desert Shrub Mix

3—Arizo family-Riverwash complex, 0 to 3 percent slopes

Setting

Landform: alluvial fans and flood plains
Slope range: 0 to 3 percent
Frequency of flooding: Arizo family—rare or occasional; Riverwash—common
Elevation: 3,700 to 4,100 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 190 to 230 days

Composition

Arizo family and similar soils: 65 percent
Riverwash: 20 percent
Contrasting inclusions: 15 percent

Typical Profile

Arizo family

About 20 to 45 percent of the surface is covered with gravel and cobbles.

0 to 4 inches—yellowish brown very cobbly sand
4 to 12 inches—light yellowish brown gravelly coarse sand
12 to 26 inches—brown extremely cobbly coarse sand
26 to 60 inches—brown gravelly loamy coarse sand

Soil Properties and Qualities

Arizo family

Parent material: mixed alluvium
Depth class: very deep
Drainage class: excessively drained
Permeability: very rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent gravel and cobbles
Calcium carbonate equivalent: 0 to 3 percent
Content of gypsum: 0 to 1 percent

Corrosivity: steel—high; concrete—low

Characteristics of Riverwash

Riverwash consists of very deep, excessively drained, stratified sand, gravel, cobbles, and stones from numerous sources. It is in drainageways. It is subject to common flooding and shifting.

Inclusions

Contrasting inclusions:
- Crystalgyp soils, which have gypsum and are moderately deep
- Contention soils, which have more than 35 percent clay
- Ugyp soils, which have less than 15 percent rock fragments and sandy loam textures

Similar inclusions:
- Anthony soils, which have sandy loam textures and less than 35 percent rock fragments

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: content of rock fragments, hazard of flooding

Dominant vegetation on the Arizo family soil:
- In the potential plant community—velvet mesquite, catclaw acacia, Mormon tea, desert honeysuckle, sacaton, spike dropseed, bush muhly, Arizona cottontop, perennial threeawn
- In the present plant community—velvet mesquite, catclaw acacia, Mormon tea, burrowbrush, sacaton, southwest rabbitbrush

Special Management Concerns

- Structures should be located above the expected level of flooding.
- The large cobbles in the soil interfere with excavation when utilities are installed.

Interpretive Groups

Land capability classification:
Arizo family—VIIs nonirrigated
Riverwash—VIII
Ecological site:
Arizo family—Sandy Bottom, 7- to 12-inch precipitation zone, 041XB213AZ
Riverwash—none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-2AZ—Chihuahuan-Sonoran Desert Shrub Mix

4—Ashcreek-Stanford complex, 0 to 10 percent slopes

Setting

Landform: alluvial fans and inset fans
Slope range: 0 to 10 percent
Frequency of flooding: none or rare
Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Ashcreek and similar soils: 40 percent
Stanford and similar soils: 40 percent
Contrasting inclusions: 20 percent

Typical Profile

Ashcreek

0 to 6 inches—dark brown clay
6 to 36 inches—dark brown clay
36 to 52 inches—dark brown cobbly clay
52 to 60 inches—reddish brown clay

Stanford

0 to 2 inches—dark brown sandy loam
2 to 21 inches—dark brown sandy clay loam
21 to 37 inches—dark brown clay loam
37 to 60 inches—dark brown gravelly sandy clay loam

Soil Properties and Qualities

Ashcreek

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: very slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: medium or high
Hazard of erosion: by water—slight or moderate; by wind—moderate
Shrink-swell potential: very high
Soil cracking: many vertical cracks 0.5 inch to 2.0 inches wide to a depth of 36 inches or more
Corrosivity: steel—high; concrete—moderate

Stanford

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high

Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Content of rock fragments: less than 20 percent
Corrosivity: steel—high; concrete—moderate

Contrasting Inclusions

- Lanque soils, which have less than 18 percent clay
- Rafter soils, which have more than 35 percent rock fragments
- Haplustolls and Fluvaquents, which are wet

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: hazard of flooding, wind erosion, restricted permeability, soil cracking, moderate or very high shrink-swell potential

Dominant vegetation on the Ashcreek soil:
- In the potential plant community—tobosa, sideoats grama, blue grama, vine mesquite, cane beardgrass
- In the present plant community—tobosa, blue grama

Dominant vegetation on the Stanford soil:
- In the potential plant community—blue grama, sideoats grama, cane beardgrass, vine mesquite, creeping muhly, giant sacaton
- In the present plant community—mesquite, tobosa, giant sacaton, blue grama

Special Management Concerns

- Structures should be located above the expected level of flooding.
- The moderate or very high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- These soils have a moderate or moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- The high content of clay in these soils restricts water infiltration and permeability.

Interpretive Groups

Land capability classification:
Ashcreek—VIs nonirrigated
Stanford—VIe nonirrigated
Ecological site:
Ashcreek—Clayey Bottom, 16- to 20-inch precipitation zone, 041XA101AZ
Stanford—Loamy Bottom, Swales, 16- to 20-inch precipitation zone, 041XA115AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

5—Baboquivari-Combate complex, 0 to 3 percent slopes

Setting

Landform: Baboquivari—fan terraces and stream terraces; Combate—alluvial fans
Slope range: Baboquivari—1 to 3 percent; Combate—0 to 2 percent
Frequency of flooding: Baboquivari—none; Combate—none or rare
Elevation: 4,000 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees
Frost-free period: 180 to 230 days

Composition

Baboquivari and similar soils: 50 percent
Combate and similar soils: 40 percent
Contrasting inclusions: 10 percent

Typical Profile

Baboquivari

0 to 1 inch—brown sandy loam
1 to 4 inches—brown loam
4 to 24 inches—reddish brown sandy clay loam
24 to 34 inches—brown sandy loam
34 to 43 inches—brown gravelly loamy sand
43 to 60 inches—brown coarse sandy loam

Combate

0 to 2 inches—brown loamy sand
2 to 26 inches—dark brown and very dark grayish brown sandy loam
26 to 32 inches—dark yellowish brown coarse sandy loam
32 to 60 inches—yellowish brown sandy loam

Soil Properties and Qualities

Baboquivari

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: low to high

Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Calcium carbonate equivalent: 0 to 10 percent in the lower part of the soil
Corrosivity: steel—moderate; concrete—low

Combate

Parent material: fan alluvium derived from granite and gneiss
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low to high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—high
Shrink-swell potential: low
Content of rock fragments: 5 to 20 percent
Calcium carbonate equivalent: 0 to 3 percent below a depth of 20 inches
Corrosivity: steel—moderate; concrete—low

Inclusions

Contrasting inclusions:
- Bonita and Sasabe soils, which have more than 35 percent clay
- Caralampi soils, which have more than 35 percent rock fragments
- Soils that have sandy or gravelly sand textures

Similar inclusions:
- Ubik soils, which are calcareous throughout
- Combate soils that have sandy clay loam textures at a moderate depth
- Soils that have a gravelly subsoil
- Soils that have a surface layer of light colored loamy sand to sand

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Baboquivari—droughtiness, hazard of seepage, moderately slow intake rate, hazard of wind erosion
Combate—droughtiness, hazard of seepage, fast intake rate, hazard of wind erosion

Dominant vegetation on the Baboquivari soil:
- In the potential plant community—Arizona cottontop, black grama, sideoats grama, cane beardgrass, bush muhly, plains bristlegrass, range ratany, Rocky Mountain zinnia, blue grama, shrubby buckwheat
- In the present plant community—burroweed, snakeweed, mesquite, Mormon tea, fluffgrass, bush muhly, cane beardgrass, Arizona cottontop, yucca

Dominant vegetation on the Combate soil:
- In the potential plant community—Arizona cottontop, black grama, bush muhly, plains bristlegrass, Rothrock grama, mesquite, whitethorn, sideoats grama, green sprangletop
- In the present plant community—burroweed, mesquite, whitethorn, Rothrock grama, mesa threeawn, fluffgrass

Special Management Concerns

- The water intake rate of the Baboquivari soil limits productivity.
- Moldboard plowing can bring finer textured material to the surface and thus further reduce the water intake rate.
- In excellent condition, the Baboquivari soil should produce more forage than the Combate soil.
- If the Combate soil is abused, the vegetation deteriorates to burroweed and/or mesquite, with little organic matter in the surface layer to retain moisture in the profile. After this deterioration, reestablishing perennial grasses becomes extremely difficult. For these reasons, the site is quite fragile, demanding close attention to any form of domestic livestock grazing.
- These soils have a moderately high or high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification:
Baboquivari—IIc irrigated and VIc nonirrigated
Combate—IIe irrigated and VIe nonirrigated
Ecological site:
Baboquivari—Loamy Upland, 12- to 16-inch precipitation zone, 041XC313AZ
Combate—Sandy Loam, Deep, 12- to 16-inch precipitation zone, 041XC318AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

6—Banshee complex, 0 to 5 percent slopes

Setting

Landform: alluvial fans
Slope range: 0 to 5 percent
Elevation: 3,900 to 4,400 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Banshee and similar soils: 50 percent
Banshee, thick surface, and similar soils: 30 percent
Contrasting inclusions: 20 percent

Typical Profile

Banshee

About 0 to 10 percent of the surface is covered with gravel and cobbles.

0 to 3 inches—pinkish gray sandy loam
3 to 19 inches—very dark grayish brown clay
19 to 26 inches—grayish brown clay
26 to 42 inches—light brownish gray clay
42 to 60 inches—white cobbly fine sandy loam

Banshee, thick surface

0 to 7 inches—light brown very fine sandy loam
7 to 13 inches—brown fine sandy loam
13 to 24 inches—pinkish gray sandy loam
24 to 44 inches—brown clay
44 to 60 inches—light brown and pink clay

Soil Properties and Qualities

Parent material: mixed alluvium (derived from prehistoric lakes and marshes) and fan alluvium
Depth class: very deep
Drainage class: moderately well drained
Permeability: slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight or moderate; by wind—moderately high
Shrink-swell potential: high
Content of rock fragments: 5 to 40 percent gravel and cobbles in the lower part of the profile
Soil cracking: many vertical cracks 0.12 inch to 1.50 inches wide from the surface to a depth of 20 inches or more
Salinity: none to slight
Sodicity: none to slight
Calcium carbonate equivalent: 1 to 15 percent
Content of gypsum: 0 to 4 percent
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Mallet, Ubik, and Combate soils, which have less than 18 percent clay
- Hooks soils, which have less than 35 percent clay
- Altar soils, which have more than 35 percent rock fragments
- Keysto soils and Riverwash, which have more than 35 percent rocks and are in drainageways

Similar inclusions:
- Banshee soils that have a high content of salts, sodium, and gypsum in the lower part

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: slow permeability, high shrink-swell potential, soil cracking, hazard of wind erosion

Dominant vegetation on the Banshee soil:
- In the potential plant community—tobosa, blue grama, sideoats grama, cane beardgrass, plains lovegrass, vine mesquite, curly mesquite, knifeleaf condalia, mesquite, yucca
- In the present plant community—tobosa, blue grama, vine mesquite, mesquite, javelinabush, snakeweed

Dominant vegetation on Banshee, thick surface:
- In the potential plant community—blue grama, sideoats grama, cane beardgrass, plains lovegrass, black grama, plains bristlegrass, fourwing saltbush, mesquite, yucca, burroweed, Arizona cottontop, black grama
- In the present plant community—Lehmann lovegrass, cane beardgrass, plains bristlegrass, Arizona cottontop, sideoats grama, mesquite, fourwing saltbush, burroweed

Special Management Concerns

- The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The high content of clay restricts water infiltration and permeability.
- These soils have a moderately high hazard of wind

erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification: VIe nonirrigated
Ecological site:
Banshee—Clay Loam Upland, 12- to 16-inch precipitation zone, 041XC305AZ
Banshee, thick surface—Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

7—Bella fine sandy loam, 1 to 10 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 10 percent
Elevation: 4,100 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Bella and similar soils: 80 percent
Contrasting inclusions: 20 percent

Typical Profile

0 to 1 inch—brown fine sandy loam
1 to 10 inches—brown loam
10 to 15 inches—brown gravelly fine sandy loam
15 to 25 inches—a fractured hardpan cemented with calcium carbonate and gypsum
25 to 45 inches—light brown, calcareous, gypsiferous gravelly loam
45 to 60 inches—reddish brown, calcareous, gypsiferous sandy clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid above the hardpan and moderately slow below the hardpan
Available water capacity: very low
Potential rooting depth: 10 to 20 inches
Runoff rate: medium or high
Hazard of erosion: by water—moderate or severe; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: 0 to 20 percent gravel, hardpan fragments, and/or petronodes
Calcium carbonate equivalent: 15 to 55 percent under the hardpan
Content of gypsum: 5 to 15 percent under the hardpan
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- Vana soils, which have more than 18 percent clay
- Major soils, which are very deep
- Soils that have more than 35 percent rock fragments

Similar inclusions:
- Bella soils that have a thinner and softer hardpan

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: depth to a hardpan, a high content of calcium carbonate, excess gypsum below the hardpan

Dominant vegetation:
- In the potential plant community—bush muhly, tarbush, desert zinnia, whitethorn, black grama, creosotebush
- In the present plant community—Lehmann lovegrass, tarbush, desert zinnia, whitethorn, black grama, creosotebush

Special Management Concerns

- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- Excavations can be difficult because of the restrictive hardpan.

Interpretive Groups

Land capability classification: VIe nonirrigated
Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

8—Blakeney-Luckyhills complex, 3 to 15 percent slopes

Setting

Landform: fan terraces
Slope range: 3 to 15 percent

Elevation: 3,900 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Blakeney and similar soils: 65 percent
Luckyhills and similar soils: 25 percent
Contrasting inclusions: 10 percent

Typical Profile

Blakeney

0 to 11 inches—brown, calcareous fine sandy loam
11 to 18 inches—a hardpan cemented with calcium carbonate
18 to 41 inches—pinkish white, calcareous fine sandy loam
41 to 60 inches—light brown and white, calcareous loam

Luckyhills

0 to 3 inches—brown fine sandy loam
3 to 13 inches—light brown fine sandy loam
13 to 38 inches—pink and pinkish white, calcareous loam
38 to 60 inches—brown and pinkish white, calcareous loam

Soil Properties and Qualities

Blakeney

Parent material: mixed fan alluvium
Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 6 to 20 inches
Runoff rate: medium or high
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: 0 to 20 percent
Calcium carbonate equivalent: 5 to 20 percent above the hardpan and 20 to 80 percent below the hardpan
Corrosivity: steel—high; concrete—low

Luckyhills

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: less than 35 percent
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: 6 to 30 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Kahn soils, which have more than 18 percent clay
- McNeal, Forrest, and Buntline soils, which have an argillic horizon and more than 18 percent clay
- Guest and Riveroad soils, which have more than 18 percent clay and are in drainageways
- Comoro and Ubik soils in drainageways

Similar inclusions:
- Blakeney soils that have a thinner and softer hardpan

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: hazard of wind erosion, a high content of calcium carbonate, depth to a hardpan

Dominant vegetation on the Blakeney soil:
- In the potential plant community—creosotebush, range ratany, whitethorn, desert zinnia, mariola, twinberry, bush muhly, blue threeawn, fluffgrass
- In the present plant community—creosotebush, whitethorn, mariola, fluffgrass, blue threeawn

Dominant vegetation on the Luckyhills soil:
- In the potential plant community—creosotebush, whitethorn, tarbush, mariola, desert zinnia, bush muhly, blue threeawn, black grama, fluffgrass
- In the present plant community—creosotebush, whitethorn, tarbush, mariola

Special Management Concerns

- Excavations in areas of the Blakeney soil can be difficult because of the restrictive hardpan.
- These soils have a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: VIe nonirrigated

Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

9—Bodecker and Comoro soils, 0 to 5 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 0 to 5 percent
Elevation: 4,000 to 5,200 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

This is an undifferentiated map unit. The soils identified in the name of the unit are not consistently associated geographically. At least one soil occurs in every delineation, but each delineation can have any combination of the two soils.

Typical Profile

Bodecker

0 to 5 inches—brown gravelly coarse sand
5 to 35 inches—brown very gravelly coarse sand
35 to 54 inches—brown extremely gravelly coarse sand
54 to 60 inches—brown silt loam

Comoro

0 to 9 inches—brown fine sandy loam
9 to 19 inches—brown sandy loam
19 to 40 inches—brown sandy loam
40 to 60 inches—brown sand

Soil Properties and Qualities

Bodecker

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: excessively drained
Permeability: rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Corrosivity: steel—high; concrete—low

Comoro

Parent material: mixed alluvium
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Guest and Elgin soils, which have more than 35 percent clay
- McAllister and Stronghold soils, which have more than 15 calcium carbonate
- Riverwash

Similar inclusions:
- Combate soils, which do not have calcium carbonate

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: content of rock fragments, hazard of wind erosion, fast intake rate

Dominant vegetation on the Bodecker and Comoro soils:
- In the potential plant community—sideoats grama, cane beardgrass, giant sacaton, green sprangletop, spike dropseed, mesquite, whitethorn, netleaf hackberry, desert willow, western soapberry
- In the present plant community—mesquite, giant sacaton, annual grasses and forbs, burroweed, catclaw, netleaf hackberry, desert willow, chittamwood

Special Management Concerns

- The Comoro soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Water movement across this unit may cause piping.
- Because of the moderately rapid or rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.
- Excess rock fragments in the Bodecker soil interfere with excavations.

• This unit has few limitations and should be productive if proper management is applied.

Interpretive Groups

Land capability classification:
Bodecker—VIs nonirrigated
Comoro—VIe nonirrigated
Ecological site: Sandy Bottom, 12- to 16-inch precipitation zone, 041XC316AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

10—Bodecker very gravelly sandy loam, 0 to 2 percent slopes

Setting

Landform: alluvial fans and flood plains
Slope range: 0 to 2 percent
Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Bodecker and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 14 inches—brown very gravelly sandy loam
14 to 52 inches—pale brown extremely gravelly sand
52 to 60 inches—light brownish gray silt loam

Soil Properties and Qualities

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: excessively drained
Permeability: rapid in the upper part of the soil and moderate in the lower part
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
• Combate, Ubik, and Comoro soils, which have less than 35 percent rock fragments
• Forrest and Sasabe soils, which have more than 35 percent clay
• Riveroad soils, which have 18 to 35 percent clay
• Luckyhills and Swisshelm soils, which have accumulations of calcium carbonate

Similar inclusions:
• Bodecker soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: fast intake rate, content of rock fragments, hazard of flooding

Dominant vegetation:
• In the potential plant community—sideoats grama, Arizona cottontop, spike dropseed, green sprangletop, cane beardgrass, plains bristlegrass, bush muhly, mesquite, netleaf hackberry, desert willow, coyote willow, Arizona black walnut, giant sacaton, catclaw acacia
• In the present plant community—bush muhly, fluffgrass, sand dropseed, spike dropseed, giant sacaton, mesquite, whitethorn, coyote willow, netleaf hackberry, Arizona black walnut

Special Management Concerns

• Because of the rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.
• Excess rock fragments in the soil interfere with excavations.
• Structures should be located above the expected level of flooding.

Interpretive Groups

Land capability classification: IVs irrigated and VIs nonirrigated
Ecological site: Sandy Bottom, 12- to 16-inch precipitation zone, 041XC316AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

11—Bodecker very gravelly sandy loam, saline-sodic, 0 to 2 percent slopes

Setting

Landform: alluvial fans
Slope range: 0 to 2 percent
Frequency of flooding: occasional

Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Bodecker and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 14 inches—brown very gravelly sandy loam
14 to 52 inches—pale brown, saline-sodic extremely gravelly sand
52 to 60 inches—light brownish gray, saline-sodic silt loam

Soil Properties and Qualities

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: excessively drained
Permeability: rapid in the upper part of the soil and moderate in the lower part
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Content of rock fragments: more than 35 percent
Corrosivity: steel—high; concrete—high

Contrasting Inclusions

- Combate, Ubik, and Comoro soils, which have less than 35 percent rock fragments
- Forrest and Sasabe soils, which have more than 35 percent clay
- Riveroad soils, which have 18 to 35 percent clay
- Luckyhills and Swisshelm soils, which have accumulations of calcium carbonate

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: fast intake rate; content of rock fragments; excess salts, sodium, and gypsum; hazard of flooding

Dominant vegetation:
- In the potential plant community—sideoats grama, Arizona cottontop, spike dropseed, green sprangletop, cane beardgrass, plains bristlegrass, bush muhly, alkali sacaton, giant sacaton, inland saltgrass, fourwing saltbush
- In the present plant community—bush muhly, fluffgrass, sand dropseed, spike dropseed, giant sacaton, alkali sacaton, annual grasses, mesquite, wolfberry

Special Management Concerns

- Because of the rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.
- Excess rock fragments in the soil interfere with excavations.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.
- Structures should be located above the expected level of flooding.

Interpretive Groups

Land capability classification: IVs irrigated and VIs nonirrigated
Ecological site: Sandy Bottom, 12- to 16-inch precipitation zone, 041XC316AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

12—Bonita clay, 0 to 1 percent slopes

Setting

Landform: flood plains
Slope range: 0 to 3 percent
Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Bonita and similar soils: 85 percent

Contrasting inclusions: 15 percent

Typical Profile

0 to 9 inches—brown clay
9 to 23 inches—brown clay
23 to 60 inches—light reddish brown clay

Soil Properties and Qualities

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: well drained
Permeability: very slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: medium
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: very high
Calcium carbonate equivalent: 1 to 10 percent
Depth to a buried horizon: 25 to 40 inches
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Forrest and Elgin soils, which have accumulations of calcium carbonate at a depth of 20 to 40 inches
- McAllister and Riveroad soils, which have less than 35 percent clay
- Sasabe and Courtland soils, which do not have accumulations of calcium carbonate
- Combate, Comoro, Stronghold, and Ubik soils, which have less than 18 percent clay
- Eloma soils, which have more than 35 percent rock fragments

Similar inclusions:
- Bonita soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: very high shrink-swell potential, very slow permeability, hazard of flooding

Dominant vegetation:
- In the potential plant community—tobosa, sideoats grama, cane beardgrass, blue grama, vine mesquite
- In the present plant community—tobosa, sideoats grama, mesquite, yucca, cholla

Special Management Concerns

- The very high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- Structures should be located above the expected level of flooding.
- This unit provides good livestock forage for year-round use.
- The high content of clay in this soil restricts water infiltration and permeability.
- Consistent heavy grazing rapidly changes the plant community to blue grama and mesquite. As further abuse occurs, bare areas and square, banked gullies become prevalent.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Clayey Bottom, 12- to 16-inch precipitation zone, 041XC302AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

13—Bonita-Forrest complex, 1 to 8 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 8 percent
Elevation: 4,100 to 4,750 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Bonita and similar soils: 50 percent
Forrest and similar soils: 40 percent
Contrasting inclusions: 10 percent

Typical Profile

Bonita

0 to 1 inch—brown loam
1 to 9 inches—dark reddish brown clay loam
9 to 23 inches—dark reddish brown clay
23 to 44 inches—dark reddish brown clay
44 to 60 inches—dark reddish brown clay

Forrest

0 to 1 inch—brown loam
1 to 5 inches—brown clay loam
5 to 17 inches—brown clay
17 to 26 inches—brown clay
26 to 60 inches—light brown and brown, calcareous clay loam

Soil Properties and Qualities

Bonita

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: well drained
Permeability: very slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: medium or high
Hazard of erosion: by water—slight or moderate; by wind—moderate
Shrink-swell potential: very high
Soil cracking: many vertical cracks 0.25 inch to 1.5 inches wide from the surface to a depth of 23 inches or more
Calcium carbonate equivalent: 0 to 10 percent
Depth to a buried horizon: 25 to 40 inches
Corrosivity: steel—high; concrete—moderate

Forrest

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: high
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 15 to 30 percent in the lower part of the soil
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- McAllister, McNeal, and Riveroad soils, which have less than 35 percent clay
- Blakeney soils, which are very shallow or shallow to a hardpan
- Luckyhills, Combate, Comoro, and Ubik soils, which have less than 18 percent clay
- Libby soils, which have petronodes in the lower horizons
- Tombstone soils, which have more than 35 percent rock fragments
- Durazo soils, which are sandy and have a very high hazard of wind erosion

Similar inclusions:
- Forrest soils that have a thicker surface layer of sandy loam
- Bonita soils that have a buried soil at a depth of 15 to 20 inches
- Forrest and Bonita soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw
- Banshee soils, which have gypsum in the lower horizons

Use and Management

Major current uses: livestock grazing, wildlife habitat, and irrigated cropland

Soil-related factors: very high or high shrink-swell potential, very slow or slow permeability, soil cracking

Dominant vegetation on the Bonita soil:
- In the potential plant community—tobosa, sideoats grama, vine mesquite
- In the present plant community—tobosa, sideoats grama, mesquite, yucca, cholla

Dominant vegetation on the Forrest soil:
- In the potential plant community—tobosa, sideoats grama, blue grama, cane beardgrass, vine mesquite, curly mesquite
- In the present plant community—blue grama, vine mesquite, Lehmann lovegrass, annual forbs, burroweed, broom snakeweed, yucca

Special Management Concerns

- This unit provides good livestock forage for year-round use.
- Overuse results in a loss of diversity in the plant community.
- Consistent heavy grazing rapidly changes the plant community to blue grama and mesquite. As further abuse occurs, bare areas and square, banked gullies become prevalent.
- The high content of clay in these soils restricts water infiltration and permeability.
- The very high or high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The Bonita soil has a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site:
Bonita—Clayey Upland, 12- to 16-inch precipitation zone, 041XC304AZ
Forrest—Clay Loam Upland, 12- to 16-inch precipitation zone, 041XC305AZ

Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

14—Borderland sandy clay loam, 1 to 10 percent slopes

Setting

Landform: alluvial fans
Slope range: 1 to 10 percent
Elevation: 4,600 to 5,400 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Borderland and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

About 30 to 50 percent of the surface is covered with gravel and/or cobbles.

0 to 1 inch—brown sandy clay loam
1 to 10 inches—brown clay
10 to 23 inches—brown clay
23 to 60 inches—brown cobbly sandy loam

Soil Properties and Qualities

Parent material: alluvium derived from basalt and volcanic rocks
Depth class: very deep
Drainage class: well drained
Permeability: very slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: medium or high
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: very high
Content of rock fragments: 15 to 40 percent gravel and cobbles in the lower part of the soil
Soil cracking: many vertical cracks 0.12 inch to 2.50 inches wide from the surface to a depth of 17 inches or more
Depth to a calcic horizon: 20 to 60 inches
Calcium carbonate equivalent: 5 to 35 percent in the lower part of the soil
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Denab and Castledome soils, which are very shallow or shallow to tuff
- Rock outcrop
- Pyeatt soils, which have less than 18 percent clay and are calcareous throughout
- Hayhollow soils in drainageways

Similar inclusions:
- Blacktail soils, which have mixed mineralogy and are less susceptible to cracking than the Borderland soil

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: clayey texture, very high shrink-swell potential

Dominant vegetation:
- In the potential plant community—tobosa, cane beardgrass, sideoats grama, plains lovegrass, vine mesquite, blue grama, curly mesquite, false mesquite, shrubby buckwheat, mimosa, burroweed, snakeweed
- In the present plant community—tobosa, curly mesquite, cane beardgrass, mesquite, cholla

Special Management Concerns

- The very high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The high content of clay in the soil restricts water infiltration and permeability.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Clay Loam Upland, 16- to 20-inch precipitation zone, 041XA109AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

15—Borderline fine sandy loam, 2 to 15 percent slopes

Setting

Landform: fan terraces
Slope range: 2 to 15 percent
Elevation: 3,800 to 4,100 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 190 to 230 days

Composition

Borderline and similar soils: 70 percent
Contrasting inclusions: 30 percent

Typical Profile

About 70 to 80 percent of the surface is covered with gravel.

0 to 2 inches—light brown fine sandy loam
2 to 18 inches—light brown, calcareous, gypsiferous loam
18 to 41 inches—strong brown and light brown, calcareous, gypsiferous sandy loam
41 to 50 inches—brown, calcareous sandy loam
50 to 60 inches—brown, calcareous gravelly sandy loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—moderate or severe; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: 5 to 30 percent gravel in the lower part of the soil
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: 0 to 30 percent
Depth to a gypsic horizon: 2 to 20 inches
Content of gypsum: 0 to 10 percent
Corrosivity: steel—high; concrete—high

Contrasting Inclusions

- Contention soils, which have more than 35 percent clay
- Monzingo soils, which have dense layers
- Ugyp soils on alluvial fans

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: excess gypsum, a high content of calcium carbonate, hazards of wind erosion and water erosion

Dominant vegetation:
- In the potential and present plant communities—creosotebush, bush muhly, tarbush, whitethorn, desert zinnia, desert holly, range ratany, blue threeawn

Special Management Concerns

- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil has a moderate or severe hazard of water erosion; therefore, special consideration should be given to water management.
- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification: VIIe nonirrigated
Ecological site: Limy Upland, 7- to 12-inch precipitation zone, 041XB208AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-2AZ—Chihuahuan-Sonoran Desert Shrub Mix

16—Boss, Krentz, and Paramore soils, and Rock outcrop, 15 to 55 percent slopes

Setting

Landform: cinder cones
Slope range: 15 to 55 percent
Elevation: 3,800 to 5,200 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

This is an undifferentiated map unit. The components identified in the name of the unit are not consistently associated geographically. At least one component occurs in every delineation, but each delineation can have any combination of the three soils or Rock outcrop.

Typical Profile

Boss

About 75 to 85 percent of the surface is covered with cinders and with basalt gravel, cobbles, and stones.

0 to 2 inches—brown clay loam
2 to 14 inches—dark brown clay
14 inches—unweathered basalt and welded tuff

Krentz

About 80 to 95 percent of the surface is covered with cinders.

0 to 1 inch—brown gravelly loam
1 to 21 inches—brown very gravelly loam
21 to 37 inches—brown extremely gravelly sandy loam
37 to 60 inches—pink and light brown extremely gravelly sand, loamy sand, and cinders

Paramore

About 55 to 70 percent of the surface is covered with cinders and with basalt gravel and/or cobbles.

0 to 1 inch—dark brown gravelly silty clay loam
1 to 7 inches—dark brown gravelly clay
7 to 29 inches—dark brown clay
29 inches—welded cinders and tuff with calcium carbonate in the bedrock

Soil Properties and Qualities

Boss

Parent material: slope alluvium and residuum derived from basalt, cinders, bombs, and volcanic rocks
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: slow
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—slight
Shrink-swell potential: high
Corrosivity: steel—high; concrete—low

Krentz

Parent material: slope alluvium and residuum derived from cinders
Depth class: very deep
Drainage class: well drained
Permeability: moderate
Available water capacity: very low or low
Potential rooting depth: more than 60 inches
Runoff rate: low or medium
Hazard of erosion: by water—moderate or severe; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 30 to 90 percent gravel- and cobble-size cinders
Corrosivity: steel—high; concrete—low

Paramore

Parent material: slope alluvium and residuum derived from basalt, cinders, bombs, and volcanic rocks
Depth class: moderately deep
Drainage class: well drained
Permeability: very slow
Available water capacity: low
Potential rooting depth: 20 to 45 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—slight
Shrink-swell potential: very high
Content of rock fragments: 5 to 20 percent cinders and basalt gravel and cobbles
Soil cracking: common vertical cracks 0.25 inch to 1.5 inches wide
Corrosivity: steel—high; concrete—low

Characteristics of Rock Outcrop

Rock outcrop consists of barren rock that occurs as ledges and nearly vertical cliffs of andesite, welded tuff, and basalt. It also includes areas where the depth to bedrock is less than 4 inches. The higher percentage of the outcrop is in areas near hilltops.

Inclusions

Contrasting inclusions:
- Soils that are in drainageways
- Outlaw soils, which are very deep
- Soils that are shallow and contain less than 35 percent clay

Similar inclusions:
- Epitaph soils, which are moderately deep to a hardpan
- Soils that have slopes of less than 15 percent
- Paramore soils that are less than 20 inches deep or more than 45 inches deep

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Boss—high shrink-swell potential, soil cracking, shallow depth to bedrock, clayey textures, slope
Krentz—content of cinders, slope
Paramore—very high shrink-swell potential, soil cracking, moderate depth to bedrock, clayey textures, slope

Dominant vegetation on the Boss soil:
- In the potential plant community—sideoats grama, black grama, cane beardgrass, tobosa, slender grama, bush muhly, spidergrass, plains bristlegrass, blue grama, mintleaf lippia, shrubby buckwheat, kidneywood
- In the present plant community—tobosa, sideoats

grama, cane beardgrass, black grama, mintleaf lippia, yerba de pasmo, mesquite

Dominant vegetation on the Krentz soil:
- In the potential plant community—sideoats grama, plains lovegrass, cane beardgrass, black grama, spidergrass, wolftail, yerba de pasmo, Palmer agave, staghorn cholla, pricklypear, sacahuista
- In the present plant community—sideoats grama, cane beardgrass, black grama, spidergrass, mallow, yerba de pasmo, pricklypear, cholla, agave

Dominant vegetation on the Paramore soil:
- In the potential plant community—black grama, sideoats grama, cane beardgrass, tobosa, curly mesquite, mesquite, mintleaf lippia
- In the present plant community—tobosa, mesquite, cholla

Special Management Concerns

- The high or very high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- The high content of clay in the Boss and Paramore soils restricts water infiltration and permeability.
- The Krentz soil is dominated by sideoats grama and tends to be heavily grazed where slopes permit. Careful monitoring of this unit is required.
- Excess cinders in the Krentz soil interfere with excavations.
- These soils have a moderate or severe hazard of water erosion because of the slope; therefore, special consideration should be given to water management.
- Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Boss, Krentz, and Paramore soils in areas where slopes are 15 to 30 percent—VIs nonirrigated
Boss, Krentz, and Paramore soils in areas where slopes are 30 to 55 percent—VIe nonirrigated
Rock outcrop—VIII
Ecological site:
Boss, Krentz, and Paramore soils—Basalt Hills, 12- to 16-inch precipitation zone, 041XC301AZ
Rock outcrop—none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

17—Brookline-Fluvaquents-Riverwash complex, 0 to 3 percent slopes

Setting

Landform: flood plains
Landscape position: Riverwash and water—in channels; Fluvaquents—in areas adjacent to the Riverwash and water; Brookline—in areas farthest from the channels
Slope range: 0 to 3 percent
Frequency of flooding: common
Elevation: 3,700 to 4,700 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Stream Segment

Length: 15 to 90 miles; the San Pedro River from Palominas to Charleston; the Babacomari River from the Santa Cruz County line to the San Pedro River
Width: 5 to 150 feet
Average depth of water: 0.5 foot to 15 feet
Flow regime: perennial—fed by springs and precipitation throughout the year; dry in some parts during years of extremely low rainfall
Depth to a water table: 0 to 5 feet throughout the year
Bank cutting: 0.5 foot to 20 feet

Composition

Brookline and similar soils: 40 percent
Fluvaquents and similar soils: 30 percent
Riverwash: 25 percent
Contrasting inclusions: 5 percent

Typical Profile

Brookline

0 to 3 inches—brown fine sandy loam
3 to 18 inches—brown fine sandy loam
18 to 29 inches—dark brown coarse sand
29 to 60 inches—dark bluish gray and dark gray very gravelly coarse sand

Fluvaquents

0 to 10 inches—brown coarse sand

10 to 25 inches—dark bluish gray fine sandy loam
25 to 45 inches—dark reddish brown coarse sand
45 to 60 inches—brown very cobbly sand and very gravelly coarse sand

Soil Properties and Qualities

Brookline

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: somewhat poorly drained
Permeability: moderately rapid
Available water capacity: very low or low
Potential rooting depth: more than 60 inches
Runoff rate: medium
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: averages less than 35 percent, ranges to 70 percent
Calcium carbonate equivalent: 0 to 5 percent
Depth to a water table: 2 to 5 feet from August to April
Corrosivity: steel—high; concrete—moderate

Fluvaquents

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: somewhat poorly drained or poorly drained
Permeability: moderately rapid or rapid
Available water capacity: very low or low
Potential rooting depth: more than 60 inches
Runoff rate: medium
Hazard of erosion: by water—slight; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 40 to 80 percent
Depth to a water table: 0.5 foot to 5.0 feet from August to April
Corrosivity: steel—moderate; concrete—moderate

Characteristics of Riverwash

Riverwash consists of very deep, wet, stratified sand, gravel, and cobbles from numerous sources. It is in drainageways and can be covered by 0.5 foot to 15 feet of water. It is subject to frequent flooding and shifting. When it is not under water, it has a high water table within a depth of 5 feet. The water table usually is high from August to April, but it can be high throughout the year.

Contrasting Inclusions

- Soils that have more than 35 percent gravel
- Soils that are dry

Use and Management

Major current use: wildlife habitat

Soil-related factors: fluctuating water table, wetness, poor drainage, hazards of flash flooding, wind erosion, and streambank erosion

Dominant vegetation on the Brookline soil:
- In the potential plant community—75 percent canopy cover of cottonwood, black willow, Arizona ash, Arizona black walnut, and Arizona alder with an understory of deergrass, sacaton, sedges, rushes, mesquite, batamote, cottonwood, black willow, and netleaf hackberry
- In the present plant community—cottonwood, black willow, mesquite, sacaton, deergrass, spiny aster, batamote, sedges, rush, bermudagrass

Dominant vegetation on the Fluvaquents:
- In the potential plant community—75 percent canopy cover of cottonwood, black willow, Arizona black walnut, Arizona ash, and Arizona alder with an understory of sedge, rush, knotroot paspalum, deergrass, sacaton, southwestern chokecherry, batamote, yerba mansa, and watercress
- In the present plant community—cottonwood, black willow, mesquite, sacaton, deergrass, spiny aster, batamote, sedges, rush, horsetail, bermudagrass

Special Management Concerns

- Because of the hazard of flash flooding, structures should be located above drainageways.
- The fluctuating water table and wetness in winter and spring affect wildlife habitat and perennial streamflow.
- The Brookline soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification:
Brookline and Fluvaquents—VIw nonirrigated
Riverwash—VIII
Ecological site:
Brookline and Fluvaquents—Sandy Bottom, Subirrigated (POFR, SAGO), 12- to 16-inch precipitation zone, 041XC317AZ
Riverwash—none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

18—Brunkcow-Chiricahua-Andrada complex, 3 to 20 percent slopes

Setting

Landform: hills
Slope range: 3 to 20 percent
Elevation: 4,000 to 5,400 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Brunkcow and similar soils: 35 percent
Chiricahua and similar soils: 25 percent
Andrada and similar soils: 20 percent
Contrasting inclusions: 20 percent

Typical Profile

Brunkcow

About 30 to 50 percent of the surface is covered with gravel and cobbles.

0 to 2 inches—brown coarse sandy loam
2 to 8 inches—reddish brown sandy clay loam
8 to 12 inches—weathered granite
12 inches—unweathered granite

Chiricahua

About 50 to 70 percent of the surface is covered with gravel.

0 to 3 inches—brown sandy loam
3 to 16 inches—reddish brown clay loam
16 to 25 inches—weathered granite with clay in the fractures
25 inches—unweathered granite

Andrada

About 60 to 80 percent of the surface is covered with gravel.

0 to 1 inch—dark grayish brown gravelly sandy loam
1 to 6 inches—dark grayish brown gravelly sandy loam
6 to 19 inches—grayish brown very gravelly loam
19 to 60 inches—fragmental, highly fractured, calcareous diorite

Soil Properties and Qualities

Brunkcow

Parent material: slope alluvium derived from granite and diorite
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately slow
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: low or moderate
Content of rock fragments: less than 35 percent
Corrosivity: steel—moderate; concrete—low

Chiricahua

Parent material: slope alluvium and residuum derived from granite, granodiorite, diorite, gneiss, and quartzite
Depth class: shallow
Drainage class: well drained
Permeability: slow
Available water capacity: very low or low
Potential rooting depth: 20 to 30 inches
Runoff rate: low to high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: moderate
Content of rock fragments: 15 to 40 percent; averages less than 35 percent
Corrosivity: steel—moderate; concrete—low

Andrada

Parent material: slope alluvium and residuum derived from calcareous bedrock
Depth class: very deep
Drainage class: well drained
Permeability: moderate
Available water capacity: very low
Potential rooting depth: 60 inches or more
Runoff rate: low to high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 20 to 60 percent; averages more than 35 percent
Calcium carbonate equivalent: 10 to 30 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Rock outcrop
- Riverwash and Bodecker soils in drainageways
- Soils that are moderately deep
- Sasabe, Elgin, Outlaw, Courtland, and Diaspar soils, which are very deep
- Lampshire soils, which do not have calcium carbonate

Similar inclusions:
• Soils that have unweathered bedrock at a depth of more than 40 inches

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: depth to bedrock, droughtiness

Dominant vegetation on the Brunkcow soil:
• In the potential plant community—sideoats grama, slender grama, sprucetop grama, hairy grama, curly mesquite, cane beardgrass, plains lovegrass, tanglehead, false mesquite, mimosa, ocotillo, agave
• In the present plant community—whitethorn, mesquite, ocotillo, sotol, mimosa, tanglehead, sideoats grama, Lehmann lovegrass, threeawn, curly mesquite, agave

Dominant vegetation on the Chiricahua soil:
• In the potential plant community—sideoats grama, hairy grama, slender grama, sprucetop grama, curly mesquite, tobosa, cane beardgrass, plains lovegrass, false mesquite, range ratany, desert zinnia, mimosa
• In the present plant community—tobosa, sideoats grama, curly mesquite, ragweed, snakeweed, whitethorn, ocotillo, catclaw acacia, Lehmann lovegrass

Dominant vegetation on the Andrada soil:
• In the potential plant community—black grama, sideoats grama, blue threeawn, bush muhly, slim tridens, desert zinnia, range ratany, false mesquite, whitethorn, tarbush, false indigobush, creosotebush
• In the present plant community—whitethorn, tarbush, creosotebush, desert zinnia, black grama, bush muhly, blue threeawn, slim tridens

Special Management Concerns

• The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
• These soils have a slight or moderate hazard of water erosion; therefore, special consideration should be given to water management.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site:
Brunkcow and Chiricahua—Shallow Upland, 12- to 16-inch precipitation zone, 041XC322AZ
Andrada—Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

19—Brunkcow-Chiricahua-Lampshire complex, 15 to 60 percent slopes

Setting

Landform: hills and mountains
Slope range: 15 to 60 percent
Elevation: 4,100 to 5,400 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Brunkcow and similar soils: 30 percent
Chiricahua and similar soils: 25 percent
Lampshire and similar soils: 20 percent
Contrasting inclusions: 25 percent

Typical Profile

Brunkcow

About 80 to 90 percent of the surface is covered with cobbles and stones.

0 to 2 inches—brown very cobbly sandy loam
2 to 10 inches—dark reddish brown clay loam
10 to 15 inches—dark reddish brown sandy clay loam
15 inches—unweathered granite

Chiricahua

About 60 to 80 percent of the surface is covered with gravel, cobbles, and stones.

0 to 3 inches—dark brown very cobbly sandy loam
3 to 13 inches—dark reddish brown clay
13 to 20 inches—dusky red clay
20 to 27 inches—weathered diorite with clay in the fractures
27 inches—unweathered diorite

Lampshire

About 45 to 55 percent of the surface is covered with gravel, cobbles, and stones.

0 to 1 inch—dark brown very cobbly sandy loam
1 to 9 inches—very dark grayish brown very cobbly sandy loam
9 inches—unweathered, fractured diorite

Soil Properties and Qualities

Brunkcow

Parent material: slope alluvium derived from granite and diorite

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately slow
Available water capacity: very low or low
Potential rooting depth: 5 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: less than 35 percent
Corrosivity: steel—moderate; concrete—low

Chiricahua

Parent material: slope alluvium and residuum derived from granite, granodiorite, diorite, gneiss, and quartzite
Depth class: shallow
Drainage class: well drained
Permeability: slow
Available water capacity: low
Potential rooting depth: 20 to 30 inches
Runoff rate: high or very high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: moderate
Content of rock fragments: 15 to 40 percent; averages less than 35 percent
Corrosivity: steel—moderate; concrete—low

Lampshire

Parent material: slope alluvium and residuum derived from igneous rocks
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderate
Available water capacity: very low
Potential rooting depth: 4 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 35 to 70 percent
Corrosivity: steel—moderate; concrete—low

Inclusions

Contrasting inclusions:
- Rock outcrop
- Soils that are moderately deep or deep
- Andrada soils, which have accumulations of calcium carbonate
- Mabray soils, which are underlain by limestone bedrock
- Elgin and Outlaw soils, which are very deep

Similar inclusions:
- Brunkcow soils that have more than 35 percent rock fragments

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: depth to bedrock, droughtiness, slope, hazard of water erosion

Dominant vegetation on the Brunkcow soil:
- In the potential plant community—sideoats grama, plains lovegrass, cane beardgrass, green sprangletop, slender grama, sprucetop grama, hairy grama, false mesquite, herbaceous sage, mimosa, kidneywood, ocotillo, agave
- In the present plant community—mesquite, whitethorn, ocotillo, lippia, sotol, agave, Lehmann lovegrass, sideoats grama, green sprangletop, false mesquite

Dominant vegetation on the Chiricahua soil:
- In the potential plant community—hairy grama, sideoats grama, sprucetop grama, curly mesquite, plains lovegrass, cane beardgrass, false mesquite, mimosa, kidneywood, ocotillo, agave, slender grama
- In the present plant community—mesquite, whitethorn, ocotillo, snakeweed, sideoats grama, curly mesquite, false mesquite, annual goldeneye

Dominant vegetation on the Lampshire soil:
- In the potential plant community—sideoats grama, hairy grama, slender grama, sprucetop grama, black grama, cane beardgrass, plains lovegrass, tanglehead, false mesquite, Gregg dalea, sotol, ocotillo, agave, cloak fern
- In the present plant community—sideoats grama, Lehmann lovegrass, plains lovegrass, hairy grama, turpentinebush, sotol, ocotillo, mesquite

Special Management Concerns

- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- These soils have a moderate or severe hazard of water erosion because of the slope; therefore, special consideration should be given to water management.
- On sites for roads, special design is needed to overcome the slope.
- Livestock grazing can be limited by the slope.
- Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Slopes of 15 to 30 percent—VIs nonirrigated
Slopes of 30 to 60 percent—VIe nonirrigated
Ecological site: Granitic Hills, 12- to 16-inch precipitation zone, 041XC306AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

20—Budlamp-Woodcutter complex, 15 to 60 percent slopes

Setting

Landform: hills and mountains
Slope range: 15 to 60 percent
Elevation: 4,500 to 6,600 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Budlamp and similar soils: 60 percent
Woodcutter and similar soils: 25 percent
Contrasting inclusions: 15 percent

Typical Profile

Budlamp

0 to 2 inches—dark brown very gravelly fine sandy loam
2 to 8 inches—very dark grayish brown extremely gravelly fine sandy loam
8 inches—unweathered granite

Woodcutter

0 to 2 inches—brown very gravelly fine sandy loam
2 to 6 inches—dark brown very gravelly loam
6 to 12 inches—reddish brown very gravelly clay loam
12 inches—unweathered granite

Soil Properties and Qualities

Budlamp

Parent material: slope alluvium derived from granite, schist, and granodiorite
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Corrosivity: steel—high; concrete—moderate

Woodcutter

Parent material: slope alluvium derived from granite, schist, quartzite, and monzonite
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately slow
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—slight
Shrink-swell potential: moderate
Content of rock fragments: more than 35 percent
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Kuykendall and Cherrycow soils, which have more than 35 percent clay
- Magoffin soils, which have less than 35 percent rock fragments
- Oversight soils, which are very deep
- Soils that are moderately deep or deep
- Haplustolls and Fluvaquents, which are in drainageways and are very deep and wet
- Rock outcrop
- Yarbam soils, which have accumulations of calcium carbonate

Similar inclusions:
- Budlamp and Woodcutter soils on forest-land sites, which have a tree canopy cover of more than 15 percent
- Woodcutter soils that have lighter colors in the lower part

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: depth to bedrock, a very gravelly surface layer, hazard of water erosion, slope

Dominant vegetation:
- In the potential and present plant communities—plains lovegrass, sideoats grama, bullgrass, Texas bluestem, cane beardgrass, green sprangletop, crinkleawn, beggartick threeawn, cudweed, evolvulus, snake cotton, sida, anoda, rosary bean, greenthread,

agave, sotol, mimosa, false mesquite, yerba de pasmo, shrubby buckwheat, Emory oak, macrosiphonia, wait-a-bit mimosa, Mexican blue oak, Arizona white oak
• On forest-land sites (which have a tree canopy cover of more than 15 percent) on steep, north-facing slopes—a tree cover of mainly Arizona white oak and Emory oak and lesser amounts of alligator juniper and/or Mexican pinyon with an understory of manzanita, sacahuista, Scott yucca, silktassel, wedgeleaf haplopappus, desert spoon, bullgrass, Texas bluestem, plains lovegrass, prairie junegrass, sedge, pinyon ricegrass, sideoats grama, green sprangletop, beggartick threeawn, stolon daisy, herbaceous sage, bouvardia, New Mexico copperleaf, and tick clover

Special Management Concerns

• The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
• These soils have a moderate or severe hazard of water erosion because of steep slopes; therefore, special consideration should be given to water management.
• This unit is sensitive to natural and prescribed fires.
• Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Slopes of 15 to 30 percent—VIs nonirrigated
Slopes of 30 to 50 percent—VIe nonirrigated
Ecological site: Shallow Hills, 16- to 20-inch precipitation zone, 041XA102AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

21—Buntline clay loam, 0 to 2 percent slopes

Setting

Landform: fan terraces
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Buntline and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 14 inches—brown clay loam
14 to 16 inches—brown gravelly clay loam
16 to 23 inches—a highly fractured hardpan cemented with calcium carbonate
23 to 60 inches—pink, calcareous clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderate above the hardpan
Available water capacity: low
Potential rooting depth: 5 to 15 inches
Runoff rate: medium
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: low
Content of rock fragments: 0 to 20 percent gravel and cobbles above the hardpan and 0 to 75 percent below the hardpan
Calcium carbonate equivalent: 0 to 5 percent above the hardpan and 5 to 30 percent below the hardpan
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
• Luckyhills, Kahn, McNeal, and Zapolote soils, which do not have a hardpan

Similar inclusions:
• Blakeney soils, which have loamy textures

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: depth to a hardpan, a high content of calcium carbonate

Dominant vegetation:
• In the potential plant community—creosotebush, tarbush, whitethorn, desert zinnia, range ratany, black grama, bush muhly, blue threeawn
• In the present plant community—whitethorn, tarbush, creosotebush, bush muhly, threeawn

Special Management Concerns

• Excavation can be difficult because of the restrictive hardpan.
• This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: IVs irrigated and VIs nonirrigated
Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

22—Caralampi sandy loam, 1 to 5 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 5 percent
Elevation: 4,200 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Caralampi and similar soils: 80 percent
Contrasting inclusions: 20 percent

Typical Profile

About 80 to 90 percent of the surface is covered with gravel and cobbles.

0 to 1 inch—brown sandy loam
1 to 10 inches—brown gravelly sandy loam
10 to 27 inches—brown very gravelly clay loam
27 to 48 inches—strong brown extremely gravelly sandy clay loam
48 to 60 inches—extremely gravelly sandy clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent gravel and cobbles
Calcium carbonate equivalent: 0 to 10 percent below a depth of 40 inches
Corrosivity: steel—moderate; concrete—moderate

Contrasting Inclusions

- Libby and Gulch soils, which have petronodes
- Forrest, Riveroad, and Bonita soils in swales
- Keysto and Ubik soils, which are in drainageways and have less than 18 percent clay
- Sasabe and Mallet soils, which have less than 35 percent rock fragments
- Nolam, Elgin, Bernardino, McAllister, and Stronghold soils, which have accumulations of calcium carbonate

Use and Management

Major current uses: livestock grazing, wildlife habitat, and irrigated cropland

Soil-related factors: excess rock fragments

Dominant vegetation:
- In the potential plant community—sideoats grama, cane beardgrass, plains lovegrass, black grama, blue grama, false mesquite, range ratany, Arizona cottontop, mesa threeawn
- In the present plant community—mesquite, whitethorn, Lehmann lovegrass, burroweed

Special Management Concerns

- Excess rock fragments in the soil interfere with excavations.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

23—Caralampi very gravelly sandy loam, 1 to 3 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 3 percent
Elevation: 4,100 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Caralampi and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

About 25 to 75 percent of the surface is covered with gravel.

0 to 2 inches—brown very gravelly sandy loam
2 to 28 inches—reddish brown very gravelly sandy clay loam
28 to 60 inches—reddish brown gravelly clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent gravel and cobbles
Calcium carbonate equivalent: 0 to 10 percent below a depth of 40 inches
Corrosivity: steel—moderate; concrete—moderate

Contrasting Inclusions

- Courtland and Sasabe soils, which have less than 35 percent rock fragments and have a surface layer of sandy loam
- Libby and Gulch soils, which have petronodes
- Forrest, Riveroad, and Bonita soils in swales
- Keysto and Ubik soils, which are in drainageways and have less than 18 percent clay
- Sasabe and Mallet soils, which have less than 35 percent rock fragments
- Nolam, Elgin, Bernardino, McAllister, and Stronghold soils, which have accumulations of calcium carbonate

Use and Management

Major current uses: livestock grazing, wildlife habitat, and irrigated cropland

Soil-related factors: excess rock fragments

Dominant vegetation:
- In the potential plant community—sideoats grama, cane beardgrass, plains lovegrass, black grama, blue grama, false mesquite, range ratany, Arizona cottontop, mesa threeawn
- In the present plant community—mesquite, whitethorn, Lehmann lovegrass, burroweed

Special Management Concerns

- Excess rock fragments in the soil interfere with excavations.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

24—Carbine very gravelly loam, 3 to 30 percent slopes

Setting

Landform: fan terraces
Slope range: 3 to 30 percent
Elevation: 4,400 to 5,400 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Carbine and similar soils: 70 percent
Contrasting inclusions: 30 percent

Typical Profile

About 20 to 45 percent of the surface is covered with gravel and/or cobbles.

0 to 2 inches—dark brown very gravelly loam
2 to 9 inches—dark brown, calcareous gravelly fine sandy loam
9 to 16 inches—brown, calcareous gravelly loam
16 to 60 inches—a hardpan that is cemented calcium carbonate and varies in thickness; loamy alluvium below the hardpan

Soil Properties and Qualities

Parent material: fan alluvium derived from limestone and calcareous sandstone
Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight or moderate; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: less than 35 percent gravel and/or cobbles
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: 3 to 40 percent

Corrosivity: steel—high; concrete—low

Contrasting Inclusions

- Terrarossa, Blacktail, Pyeatt, Gardencan, and Lanque soils, which are very deep
- Elgin, Stronghold, and McAllister soils, which are very deep and are drier than the Carbine soil

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: depth to a hardpan, a very gravelly surface layer, a high content of calcium carbonate

Dominant vegetation:
- In the potential and present plant communities—black grama, sideoats grama, threeawn, false mesquite, Mormon tea, soaptree yucca, New Mexico feathergrass

Special Management Concerns

- Excavation can be difficult because of the restrictive hardpan.
- This unit responds well to managed, natural and prescribed fires.
- This unit has few limitations and should be productive if proper management is applied.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Limy Slopes, 16- to 20-inch precipitation zone, 041XA104AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

25—Carbine-Hathaway complex, 3 to 45 percent slopes

Setting

Landform: fan terraces
Slope range: 3 to 45 percent
Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Carbine and similar soils: 50 percent
Hathaway and similar soils: 35 percent
Contrasting inclusions: 15 percent

Typical Profile

Carbine

About 30 to 50 percent of the surface is covered with gravel.

0 to 1 inch—dark brown sandy loam
1 to 9 inches—dark brown, calcareous loam
9 to 18 inches—a highly fractured hardpan cemented with calcium carbonate
18 to 60 inches—pinkish gray, calcareous very gravelly sandy loam

Hathaway

About 60 to 80 percent of the surface is covered with gravel and cobbles.

0 to 2 inches—very dark gray gravelly fine sandy loam
2 to 9 inches—very dark gray very gravelly loam
9 to 25 inches—brown, calcareous very gravelly loam
25 to 60 inches—brown, calcareous extremely gravelly sandy loam

Soil Properties and Qualities

Carbine

Parent material: fan alluvium derived from limestone and calcareous sandstone
Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—moderate
Shrink-swell potential: low
Content of rock fragments: less than 35 percent gravel and/or cobbles
Calcium carbonate equivalent: 3 to 40 percent
Corrosivity: steel—high; concrete—low

Hathaway

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low
Potential rooting depth: 60 inches or more
Runoff rate: low to rapid
Hazard of erosion: by water—slight to severe; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Depth to a calcic horizon: 5 to 20 inches
Calcium carbonate equivalent: 5 to 40 percent

Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Blacktail and Terrarossa soils, which have more than 35 percent clay
- Pyeatt soils, which have less than 35 percent rock fragments and are very deep
- Denab and Castledome soils, which are very shallow or shallow to tuff

Similar inclusions:
- Carbine soils that have a thinner and softer hardpan
- Carbine soils that have more than 35 percent rock fragments

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: hazards of wind erosion and water erosion, a high content of calcium carbonate, depth to a hardpan, slope

Dominant vegetation on the Carbine soil:
- In the potential plant community—black grama, sideoats grama, crinkleawn, wooly bunchgrass, blue threeawn, hairy grama, New Mexico feathergrass, slim tridens, shortleaf tridens, sacahuista, false mesquite, Gregg's dalea
- In the present plant community—Lehmann lovegrass, sideoats grama, black grama, blue threeawn, slim tridens, shortleaf tridens, whitethorn, ocotillo, sacahuista

Dominant vegetation on the Hathaway soil:
- In the potential plant community—black grama, sideoats grama, crinkleawn, wooly bunchgrass, blue threeawn, hairy grama, New Mexico feathergrass, slim tridens, shortleaf tridens, sacahuista, false mesquite, Gregg's dalea
- In the present plant community—ocotillo, sideoats grama, black grama, slim tridens, shortleaf tridens, sacahuista, juniper

Special Management Concerns

- Excavation in areas of the Carbine soil can be difficult because of the restrictive hardpan.
- The Carbine soil has a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- These soils have a slight to severe hazard of water erosion; therefore, special consideration should be given to water management.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.
- Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Slopes of 3 to 30 percent—VIs nonirrigated
Slopes of 30 to 45 percent—VIe nonirrigated
Ecological site: Limy Slopes, 16- to 20-inch precipitation zone, 041XA104AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

26—Cazador-Lesliecreek complex, 0 to 10 percent slopes

Setting

Landform: alluvial fans and flood plains
Slope range: 0 to 10 percent
Frequency of flooding: common
Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Cazador and similar soils: 60 percent
Lesliecreek and similar soils: 30 percent
Contrasting inclusions: 10 percent

Typical Profile

Cazador

0 to 2 inches—brown clay loam
2 to 9 inches—dark brown clay
9 to 30 inches—brown clay
30 to 50 inches—dark brown clay
50 to 60 inches—dark brown clay

Lesliecreek

0 to 4 inches—dark brown loam
4 to 12 inches—grayish brown clay loam
12 to 32 inches—grayish brown loam
32 to 50 inches—brown silty clay loam
50 to 60 inches—brown clay loam

Soil Properties and Qualities

Cazador

Parent material: mixed alluvium
Depth class: very deep

Drainage class: well drained
Permeability: very slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: medium or high
Hazard of erosion: by water—slight or moderate; by wind—moderate
Shrink-swell potential: very high
Soil cracking: many vertical cracks 0.25 inch to 2 inches wide from the surface to a depth of 30 inches or more
Corrosivity: steel—high; concrete—low

Lesliecreek

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: moderate
Corrosivity: steel—high; concrete—low

Contrasting Inclusions

- Hayhollow soils, which have less than 18 percent clay
- Rafter soils, which have more than 35 percent rock fragments
- Haplustolls and Fluvaquents, which are wet

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: hazard of flooding, restricted permeability, soil cracking, moderate or very high shrink-swell potential

Dominant vegetation on the Cazador soil:
- In the potential plant community—tobosa, sideoats grama, blue grama, creeping muhly, vine mesquite, giant sacaton, cane beardgrass
- In the present plant community—mesquite, littleleaf sumac, tarbush, tobosa, burrograss

Dominant vegetation on the Lesliecreek soil:
- In the potential plant community—giant sacaton, blue grama, sideoats grama, vine mesquite, cane beardgrass, creeping muhly
- In the present plant community—mesquite, tobosa, giant sacaton

Special Management Concerns

- Structures should be located above the expected level of flooding.
- The moderate or very high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The high content of clay in these soils restricts water infiltration and permeability.

Interpretive Groups

Land capability classification:
Cazador—IIIw irrigated and VIw nonirrigated
Lesliecreek—IIw irrigated and VIw nonirrigated
Ecological site:
Cazador—Clayey Bottom, 16- to 20-inch precipitation zone, 041XA101AZ
Lesliecreek—Loamy Bottom, Subirrigated, 16- to 20-inch precipitation zone, 041XA114AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

27—Cherrycow-Blacktail complex, 3 to 30 percent slopes

Setting

Landform: pediments
Slope range: 3 to 30 percent
Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Cherrycow and similar soils: 50 percent
Blacktail and similar soils: 35 percent
Contrasting inclusions: 15 percent

Typical Profile

Cherrycow

About 60 to 70 percent of the surface is covered with gravel, and 10 to 20 percent is covered with cobbles and stones.

0 to 2 inches—very dark brown gravelly sandy loam
2 to 9 inches—very dark brown clay
9 to 18 inches—brown sandy loam
18 to 40 inches—brown very gravelly coarse sand
40 inches—unweathered tuff

Blacktail

About 20 to 40 percent of the surface is covered with gravel and cobbles.

0 to 2 inches—dark brown fine sandy loam
2 to 6 inches—very dark brown cobbly clay loam
6 to 14 inches—dark reddish brown clay
14 to 24 inches—dark reddish brown gravelly sandy clay
24 to 60 inches—brown very gravelly coarse sand

Soil Properties and Qualities

Cherrycow

Parent material: slope alluvium and residuum derived from andesite, rhyolite, basalt, and noncalcareous breccia
Depth class: moderately deep
Drainage class: moderately well drained
Permeability: very slow
Available water capacity: very low or low
Potential rooting depth: 10 to 40 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: very high
Content of rock fragments: 0 to 10 percent
Corrosivity: steel—high; concrete—moderate

Blacktail

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low to high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: high
Content of rock fragments: averages less than 30 percent, but can range to 50 percent in individual horizons
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Lanque soils, which have less than 18 percent clay
- Stanford soils, which have 18 to 35 percent clay
- Woodcutter and Budlamp soils, which have more than 35 percent rock fragments
- Pyeatt soils, which have accumulations of calcium carbonate
- Hayhollow soils, which have less than 18 percent clay and are in drainageways
- Magoffin soils, which are very shallow or shallow to bedrock

Similar inclusions:
- Cherrycow soils that are shallow to bedrock
- Cherrycow soils that have less than 35 percent clay

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: depth to bedrock, very high or high shrink-swell potential, very slow or slow permeability

Dominant vegetation on the Cherrycow and Blacktail soils:
- In the potential plant community—sideoats grama, blue grama, purple grama, cane beardgrass, plains lovegrass, Texas bluestem, wooly bunchgrass, shrubby buckwheat, Palmer's century plant, oneseed juniper, oak
- In the present plant community—sideoats grama, blue grama, plains lovegrass, cane beardgrass, purple grama, hairy grama, mesquite, Palmer's century plant, turpentinebush, oneseed juniper

Special Management Concerns

- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- The high content of clay in these soils restricts water infiltration and permeability.
- The very high or high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- This unit is sensitive to natural and prescribed fires.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Loamy Hills, 16- to 20-inch precipitation zone, 041XA107AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

28—Cherrycow-Magoffin-Rock outcrop complex, 15 to 65 percent slopes

Setting

Landform: hills and mountains
Slope range: 15 to 65 percent
Elevation: 4,700 to 6,200 feet
Mean annual precipitation: 16 to 20 inches

Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Cherrycow and similar soils: 35 percent
Magoffin and similar soils: 30 percent
Rock outcrop: 20 percent
Contrasting inclusions: 15 percent

Typical Profile

Cherrycow

About 20 to 50 percent of the surface is covered with gravel and cobbles, and 10 percent is covered with stones.

0 to 2 inches—very dark grayish brown sandy loam
2 to 14 inches—very dark grayish brown clay
14 to 20 inches—brown sandy clay loam
20 to 30 inches—light brown sandy clay loam
30 inches—unweathered rhyolite

Magoffin

About 30 to 50 percent of the surface is covered with gravel and cobbles, and 5 percent is covered with stones.

0 to 2 inches—very dark grayish brown gravelly sandy loam
2 to 10 inches—dark brown sandy loam
10 inches—unweathered rhyolite

Soil Properties and Qualities

Cherrycow

Parent material: slope alluvium and residuum derived from andesite, rhyolite, basalt, arkose, and noncalcareous breccia
Depth class: moderately deep
Drainage class: moderately well drained
Permeability: very slow
Available water capacity: low or moderate
Potential rooting depth: 10 to 40 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—slight
Shrink-swell potential: very high
Content of rock fragments: 0 to 10 percent
Corrosivity: steel—high; concrete—moderate

Magoffin

Parent material: slope alluvium and residuum derived from andesite, rhyolite, basalt, arkose, and noncalcareous breccia
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 0 to 20 percent
Corrosivity: steel—high; concrete—moderate

Characteristics of Rock Outcrop

Rock outcrop consists of barren rock that occurs as ledges and nearly vertical cliffs of andesite, rhyolite, basalt, and noncalcareous breccia. It also includes areas where the depth to bedrock is less than 4 inches. The higher percentage of the outcrop is in areas near hilltops.

Inclusions

Contrasting inclusions:
- Yarbam soils in areas underlain by limestone bedrock
- Terrarossa soils, which are very deep
- Woodcutter and Budlamp soils, which have more than 35 percent rock fragments
- Hayhollow soils, which have less than 18 percent clay and are in drainageways

Similar inclusions:
- Magoffin and Cherrycow soils on forest-land sites, which have a tree canopy cover of more than 15 percent
- Kuykendall soils, which are very shallow or shallow to basalt bedrock
- Cherrycow soils that have 20 to 35 percent clay

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Cherrycow—very slow permeability, very high shrink-swell potential, hazard of water erosion, slope
Magoffin—depth to bedrock, hazard of water erosion, slope

Dominant vegetation on the Cherrycow soil:
- In the potential plant community—curly mesquite, sideoats grama, plains lovegrass, Texas bluestem, blue grama, tobosa, shrubby buckwheat, range ratany, sacahuista, Emory oak, Arizona white oak, oneseed juniper
- In the present plant community—curly mesquite, sideoats grama, cane beardgrass, tobosa, mesquite, agave, snakeweed

Dominant vegetation on the Magoffin soil:
- In the potential plant community—plains lovegrass, sideoats grama, Texas bluestem, cane beardgrass, slender grama, blue grama, yucca, Palmer agave, false mesquite, shrubby buckwheat, oneseed juniper
- In the potential plant community—sideoats grama, plains lovegrass, cane beardgrass, slender grama, hairy grama, mesquite, agave, turpentinebush, kidneywood, Mexican oak

Special Management Concerns

- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- These soils have a moderate or severe hazard of water erosion because of steep slopes; therefore, special consideration should be given to water management.
- The high content of clay in the Cherrycow soil restricts water infiltration and permeability.
- The very high shrink-swell potential of the Cherrycow soil should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- This unit is sensitive to natural and prescribed fires.
- Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Cherrycow and Magoffin soils in areas where slopes are 15 to 30 percent—VIs nonirrigated
Cherrycow and Magoffin soils in areas where slopes are 30 to 65 percent—VIe nonirrigated
Rock outcrop—VIII
Ecological site:
Cherrycow—Volcanic Hills, 16- to 20-inch precipitation zone, 041XA111AZ
Magoffin—Shallow Hills, 16- to 20-inch precipitation zone, 041XA102AZ
Rock outcrop—none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

29—Chorro-Doubleadobe-Gothard complex, 0 to 5 percent slopes

Setting

Landform: flood plains and basin floors
Slope range: 0 to 5 percent
Frequency of flooding: common
Elevation: 3,600 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Chorro and similar soils: 30 percent
Doubleadobe and similar soils: 30 percent
Gothard and similar soils: 30 percent
Contrasting inclusions: 10 percent

Typical Profile

Chorro

0 to 2 inches—brown fine sandy loam
2 to 11 inches—brown, saline-sodic, calcareous fine sandy loam
11 to 24 inches—brown, saline-sodic, calcareous loam
24 to 44 inches—brown, saline-sodic, calcareous silty clay loam
44 to 60 inches—brown, saline-sodic, calcareous silty clay

Doubleadobe

0 to 1 inch—brown sandy loam
1 to 4 inches—brown, saline-sodic clay loam
4 to 13 inches—brown, saline-sodic clay
13 to 31 inches—pinkish gray and light brown, saline-sodic, calcareous clay
31 to 60 inches—light brown and white, saline-sodic, calcareous gravelly clay loam

Gothard

0 to 3 inches—brown sandy loam
3 to 8 inches—brown sandy loam
8 to 18 inches—dark reddish brown, saline-sodic sandy clay loam
18 to 30 inches—reddish brown, saline-sodic sandy clay loam
30 to 60 inches—reddish brown, saline-sodic, calcareous clay

Soil Properties and Qualities

Chorro

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—moderately high
Shrink-swell potential: moderate
Depth to a calcic horizon: 10 to 20 inches

Calcium carbonate equivalent: 5 to 25 percent
Content of gypsum: 0 to 5 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Doubleadobe

Parent material: mixed alluvium
Depth class: very deep
Drainage class: moderately well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—moderately high
Shrink-swell potential: high
Depth to a calcic horizon: 15 to 40 inches
Calcium carbonate equivalent: 2 to 60 percent
Salinity: slight to strong
Sodicity: moderate or strong
Content of gypsum: 0 to 5 percent
Corrosivity: steel—high; concrete—high

Gothard

Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—moderately high
Shrink-swell potential: moderate
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 5 to 25 percent
Content of gypsum: 0 to 5 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- McAllister, Sasabe, Courtland, and Diaspar soils with no saline and sodic properties
- Ubik and Riveroad soils with no sodic properties; in drainageways
- Marsh
- Ubik soils that are very strongly alkaline
- Soils that have more rock fragments

Similar inclusions:
- Chorro soils that are mildly alkaline
- Chorro soils that have more than 5 percent gypsum

Use and Management

Major current uses: livestock grazing, wildlife habitat, and irrigated cropland

Soil-related factors: droughtiness, hazard of soil piping, excess salts and sodium, hazards of water erosion, wind erosion, and flooding

Dominant vegetation on the Chorro, Doubleadobe, and Gothard soils:
- In the potential plant community—alkali sacaton, giant sacaton, inland saltgrass, tobosa, vine mesquite, fourwing saltbush, mesquite
- In the present plant community—alkali sacaton, annual grasses, mesquite, wolfberry, tobosa

Special Management Concerns

- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- The moderate or high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- These soils are very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.
- These soils have a moderate hazard of water erosion; therefore, special consideration should be given to water management.
- Structures should be located above the expected level of flooding.
- The high content of clay in these soils restricts water infiltration and permeability.
- These soils have a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification: IIIe irrigated and VIe nonirrigated
Ecological site: Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

30—Chorro-Guest complex, 0 to 3 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 0 to 3 percent
Frequency of flooding: rare
Elevation: 3,600 to 4,100 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Chorro and similar soils: 40 percent
Guest and similar soils: 40 percent
Contrasting inclusions: 20 percent

Typical Profile

Chorro

0 to 5 inches—dark grayish brown silt loam
5 to 14 inches—very dark gray, saline-sodic clay
14 to 27 inches—brown, saline-sodic, calcareous loam
27 to 60 inches—pink, saline-sodic, calcareous fine sandy loam

Guest

0 to 5 inches—brown clay loam
5 to 20 inches—brown clay
20 to 48 inches—dark brown silty clay
48 to 60 inches—brown fine sandy loam

Soil Properties and Qualities

Chorro

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—severe; by wind—moderate
Shrink-swell potential: moderate
Depth to a calcic horizon: 10 to 20 inches
Calcium carbonate equivalent: 5 to 25 percent
Content of gypsum: 0 to 5 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Guest

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: slow
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: high
Calcium carbonate equivalent: 0 to 10 percent
Content of gypsum: 0 to 4 percent in the lower part of the soil
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Ubik and Riveroad soils with no sodic properties
- Marsh
- Ubik soils that are very strongly alkaline
- Soils that have more rock fragments

Similar inclusions:
- Chorro soils that are mildly alkaline
- Chorro soils that have more than 5 percent gypsum

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: droughtiness, hazard of soil piping, excess gypsum, hazards of water erosion and wind erosion

Dominant vegetation on the Chorro soil:
- In the potential plant community—alkali sacaton, tobosa, saltgrass, blue grama, giant sacaton, mesquite, fourwing saltbush, iodinebush, seepweed, alkaliweed
- In the present plant community—alkali sacaton, annual grasses, mesquite, wolfberry

Dominant vegetation on the Guest soil:
- In the potential plant community—tobosa, sideoats grama, blue grama, giant sacaton, mesquite, wolfberry, whitethorn, broom snakeweed
- In the present plant community—tobosa, mesquite, wolfberry

Special Management Concerns

- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- The moderate or high shrink-swell potential should

be considered when foundations, concrete structures, and paved areas are designed and constructed.
• The Chorro soil is very strongly alkaline. The alkalinity restricts plant growth.
• The Chorro soil has a severe hazard of water erosion; therefore, special consideration should be given to water management.
• These soils have a moderate hazard of wind erosion. When vegetation is removed, care are should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification:
Chorro—IIIe irrigated and VIe nonirrigated
Guest—IIIs irrigated and VIs nonirrigated
Ecological site:
Chorro—Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Guest—Clayey Bottom, 12- to 16-inch precipitation zone, 041XC302AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

31—Cogswell clay, saline-sodic, 0 to 2 percent slopes

Setting

Landform: alluvial fans and flood plains
Slope range: 0 to 2 percent
Frequency of flooding: common
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Cogswell similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 5 inches—grayish brown clay
5 to 20 inches—grayish brown, sodic silty clay
20 to 33 inches—pale brown and very pale brown, saline-sodic, calcareous clay
33 to 42 inches—light brownish gray and very pale brown, saline-sodic loam
42 to 53 inches—light yellowish brown, saline-sodic fine sandy loam
53 to 57 inches—light brownish gray, saline-sodic loam
57 to 60 inches—pale brown, saline-sodic silty clay loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: high
Depth to a calcic horizon: 18 to 38 inches
Calcium carbonate equivalent: 15 to 40 percent
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
• McAllister, Sasabe, Courtland, and Diaspar soils with no saline and sodic properties
• Ubik, Guest, and Riveroad soils with no sodic properties; in drainageways
• Elfrida soils, which have less than 35 percent clay
• Marsh and barren spots that pond water
• Ubik soils that are very strongly alkaline
• Soils that have more rock fragments than the Cogswell soil

Similar inclusions:
• Cogswell soils that have more than 4 percent gypsum

Use and Management

Major current uses: livestock grazing, wildlife habitat, and irrigated cropland

Soil-related factors: slow permeability; high shrink-swell potential; hazard of soil piping; excess salts, sodium, and gypsum; hazards of wind erosion and flooding

Dominant vegetation:
• In the potential plant community—alkali sacaton, giant sacaton, inland saltgrass, tobosa, vine mesquite, fourwing saltbush, mesquite
• In the present plant community—alkali sacaton, annual grasses, mesquite, wolfberry, tobosa

Special Management Concerns

• Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.

• Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
• Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
• The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• This soil is very strongly alkaline. The alkalinity restricts plant growth.
• The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
• The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.
• This soil has a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• Structures should be located above the expected level of flooding.
• The high content of clay in this soil restricts water infiltration and permeability.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

32—Combate loamy sand, 0 to 5 percent slopes

Setting

Landform: alluvial fans
Slope range: 0 to 5 percent
Elevation: 4,000 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Combate and similar soils: 70 percent
Contrasting inclusions: 30 percent

Typical Profile

0 to 5 inches—brown loamy sand
5 to 21 inches—dark brown loamy sand
21 to 46 inches—brown sandy loam and coarse sandy loam
46 to 60 inches—brown sandy loam

Soil Properties and Qualities

Parent material: fan alluvium derived from granite and gneiss
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—high
Shrink-swell potential: low
Content of rock fragments: 5 to 20 percent
Calcium carbonate equivalent: 0 to 3 percent below a depth of 20 inches
Corrosivity: steel—moderate; concrete—low

Contrasting Inclusions

• Tombstone and Caralampi soils, which have more than 35 percent gravel
• Courtland, Diaspar, and Sasabe soils, which have an argillic horizon
• Durazo soils, which are sandy and have a very high hazard of wind erosion
• Brunkcow soils, which are shallow to bedrock

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: droughtiness, sandy texture, fast intake rate, hazard of wind erosion

Dominant vegetation:
• In the potential plant community—Arizona cottontop, sideoats grama, black grama, bush muhly, plains bristlegrass, Rothrock grama, whitethorn, mesquite, green sprangletop
• In the present plant community—Rothrock grama, mesa threeawn, giant sacaton, red threeawn, Arizona cottontop, bush muhly, mesquite, burroweed

Special Management Concerns

• Because of the moderately rapid permeability, special design of onsite waste-disposal systems may be needed to prevent the pollution of ground water or nearby water supplies.
• This soil has a high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• Overuse can result in long-term deterioration of the grass cover and an increase in the extent of shrubby species.

Interpretive Groups

Land capability classification: VIe nonirrigated

Ecological site: Sandy Loam, Deep, 12- to 16-inch precipitation zone, 041XC318AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

33—Comoro sandy loam, 0 to 2 percent slopes

Setting

Landform: alluvial fans
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Comoro and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 8 inches—brown sandy loam
8 to 19 inches—brown sandy loam
19 to 46 inches—light brown fine sandy loam
46 to 60 inches—light brown sandy loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Available water capacity: low to high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Guest, Bonita, Sasabe, Libby, and Forrest soils, which have more than 35 percent clay
- McAllister, Gulch, Luckyhills, and Stronghold soils, which have more than 15 calcium carbonate
- Riveroad and Courtland soils, which have 18 to 35 percent clay
- Combate, Mallet, Hooks, and Diaspar soils, which do not have calcium carbonate
- Blakeney soils, which are very shallow or shallow to a hardpan
- Altar soils, which have slopes of more than 35 percent

Similar inclusions:
- Ubik soils, which have loam and fine sandy loam textures
- Comoro soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazard of wind erosion, fast intake rate, piping

Dominant vegetation:
- In the potential plant community—sideoats grama, cane beardgrass, giant sacaton, green sprangletop, spike dropseed, mesquite, whitethorn, netleaf hackberry, desert willow, western soapberry
- In the present plant community—mesquite, giant sacaton, annual grasses and forbs, burroweed, catclaw, netleaf hackberry, desert willow, chittamwood

Special Management Concerns

- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Water movement across this unit may cause piping.
- Because of the moderately rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.
- This unit has few limitations and should be productive if proper management is applied.

Interpretive Groups

Land capability classification: IIe irrigated and VIe nonirrigated
Ecological site: Sandy Bottom, 12- to 16-inch precipitation zone, 041XC316AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

34—Comoro sandy loam, saline-sodic, 0 to 2 percent slopes

Setting

Landform: alluvial fans
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Comoro and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 8 inches—brown sandy loam
8 to 19 inches—brown, saline-sodic sandy loam
19 to 46 inches—light brown, saline-sodic fine sandy loam
46 to 60 inches—light brown, saline-sodic sandy loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- Guest, Bonita, Sasabe, Libby, and Forrest soils, which have more than 35 percent clay
- McAllister, Gulch, Luckyhills, and Stronghold soils, which have more than 15 calcium carbonate
- Riveroad and Courtland soils, which have 18 to 35 percent clay
- Combate, Mallet, Hooks, and Diaspar soils, which do not have calcium carbonate
- Blakeney soils, which are very shallow or shallow to a hardpan
- Altar soils, which have slopes of more than 35 percent

Similar inclusions:
- Ubik soils, which have loam and fine sandy loam textures

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazard of wind erosion, fast intake rate, piping, excess salts, sodium, and gypsum

Dominant vegetation:
- In the potential plant community—sideoats grama, cane beardgrass, giant sacaton, green sprangletop, spike dropseed, mesquite, whitethorn, netleaf hackberry, desert willow, western soapberry, alkali sacaton, inland saltgrass, fourwing saltbush
- In the present plant community—mesquite, giant sacaton, annual grasses and forbs, burroweed, catclaw, netleaf hackberry, desert willow, chittamwood, alkali sacaton, wolfberry

Special Management Concerns

- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Water movement across this unit may cause piping.
- Because of the moderately rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIe irrigated and VIe nonirrigated
Ecological site: Sandy Bottom, 12- to 16-inch precipitation zone, 041XC316AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

35—Contention, Crystalgyp, Monzingo, and Redington soils, breaks, 5 to 60 percent slopes

Setting

Landform: dissected relict lakebeds
Slope range: 5 to 60 percent
Elevation: 3,800 to 4,100 feet
Mean annual precipitation: 10 to 12 inches

Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 190 to 230 days

Composition

This is an undifferentiated map unit. The soils identified in the name of the unit are not consistently associated geographically. At least one soil occurs in every delineation, but each delineation can have any combination of the four soils.

Typical Profile

Contention

About 10 to 20 percent of the surface is covered with gravel, cobbles, hardpan fragments, and/or limestone.

0 to 3 inches—reddish brown silt loam
3 to 11 inches—reddish brown silty clay
11 to 21 inches—reddish brown, gypsiferous clay
21 to 60 inches—reddish brown, gypsiferous clay

Crystalgyp

0 to 1 inch—gray cryptogams and very pale sandy loam
1 to 10 inches—very pale brown, gypsiferous sandy loam
10 to 30 inches—brown, gypsiferous loam
30 to 60 inches—weathered, gypsiferous sandstone

Monzingo

About 35 to 45 percent of the surface is covered with gravel.

0 to 3 inches—light brown fine sandy loam
3 to 19 inches—light brown, calcareous, gypsiferous loam
19 to 26 inches—light brown, very dense, calcareous, gypsiferous fine sandy loam
26 to 34 inches—light brown, calcareous, gypsiferous fine sandy loam
34 to 45 inches—light brown, calcareous, gypsiferous loam
45 to 55 inches—light brown and brown, very dense, calcareous, gypsiferous fine sandy loam
55 to 60 inches—light brown, gypsiferous fine sandy loam

Redington

About 10 to 40 percent of the surface is covered with gravel and/or cobbles.

0 to 1 inch—light brown fine sandy loam
1 to 6 inches—light brown fine sandy loam
6 to 16 inches—light brown, calcareous, gypsiferous loamy sand
16 to 36 inches—light brown, calcareous, gypsiferous sand
36 to 42 inches—light brown, very dense, calcareous, gypsiferous sand
42 to 60 inches—light brown, calcareous, gypsiferous sand

Soil Properties and Qualities

Contention

Parent material: mixed alluvium derived from prehistoric lakes and marshes
Depth class: very deep
Drainage class: well drained
Permeability: very slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: medium to very high
Hazard of erosion: by water—moderate to very severe; by wind—moderate
Shrink-swell potential: very high
Soil cracking: when the soil is dry, continuous cracks from the surface to a depth of 26 inches, ranging from 0.12 inch to 1.50 inches in width
Calcium carbonate equivalent: 1 to 15 percent
Depth to a gypsic horizon: 3 to 20 inches
Content of gypsum: 1 to 15 percent
Corrosivity: steel—high; concrete—high

Crystalgyp

Parent material: mixed alluvium or residuum derived from gypsiferous sandstone
Depth class: moderately deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low or low
Potential rooting depth: 30 to 40 inches
Runoff rate: medium to very high
Hazard of erosion: by water—moderate to very severe; by wind—moderately high
Shrink-swell potential: low
Calcium carbonate equivalent: 0 to 10 percent
Depth to a gypsic horizon: 1 to 30 inches
Content of gypsum: 5 to 80 percent
Corrosivity: steel—high; concrete—high

Monzingo

Parent material: mixed alluvium derived from prehistoric lakes and marshes
Depth class: very deep
Drainage class: well drained
Permeability: moderate
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: medium or high

Hazard of erosion: by water—moderate to very severe; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: can be 15 to 25 percent gravel
Depth to a calcic horizon: 3 to 20 inches
Calcium carbonate equivalent: 1 to 35 percent
Depth to a gypsic horizon: 3 to 20 inches
Content of gypsum: 0 to 20 percent
Corrosivity: steel—high; concrete—high

Redington

Parent material: mixed alluvium derived from prehistoric lakes and marshes
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: medium or high
Hazard of erosion: by water—moderate to very severe; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: less than 15 percent gravel and/or petronodes in the control section
Depth to a calcic horizon: 6 to 20 inches
Calcium carbonate equivalent: 1 to 35 percent
Depth to a gypsic horizon: 6 to 30 inches
Content of gypsum: 0 to 10 percent
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- Soils that have very dense layers and have sandy textures throughout
- Soils that are in drainageways
- Soils that are shallow to bedrock
- Soils that have less gypsum
- Soils that have a hardpan

Similar inclusions:
- Ugyp soils, which do not have dense layers

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Contention—hazards of water erosion and wind erosion, piping, soil settling, very slow permeability, very high shrink-swell potential, soil cracking, excess gypsum, clayey texture, slope
Crystalgyp—hazards of water erosion and wind erosion, piping, soil settling, excess gypsum, a high content of calcium carbonate, sandy texture, slope
Monzingo—hazards of water erosion and wind erosion, piping, soil settling, excess gypsum, a high content of calcium carbonate, slope
Redington—hazards of water erosion and wind erosion, soil settling, excess gypsum, a high content of calcium carbonate, slope

Dominant vegetation on the Contention soil:
- In the potential plant community—tobosa, mesquite, alkali sacaton, fourwing saltbush, vine mesquite, tarbush, wolfberry
- In the present plant community—tobosa, mesquite, creosotebush, whitethorn, tarbush

Dominant vegetation on the Crystalgyp soil:
- In the potential plant community—alkali sacaton, bush muhly, black grama, creosotebush, tobosa, whitethorn, fluffgrass, moss, lichens
- In the present plant community—creosotebush, whitethorn, cactus, bush muhly, black grama, tarbush, Mormon tea

Dominant vegetation on the Monzingo soil:
- In the potential plant community—creosotebush, whitethorn, tarbush, ocotillo, desert zinnia, range ratany, Texas dogweed, fluffgrass, black grama, twist flower, bush muhly, blue threeawn, twinberry
- In the present plant community—whitethorn, tarbush, burroweed, snakeweed, mariola, bush muhly

Dominant vegetation on the Redington soil
- In the potential plant community—desert zinnia, slim tridens, creosotebush, whitethorn, bush muhly, black grama, blue threeawn
- In the present plant community—whitethorn, tarbush, burroweed, creosotebush, bush muhly

Special Management Concerns

- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- These soils have a moderate to very severe hazard of water erosion; therefore, special consideration should be given to water management.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- Very dense layers (Cd layers) have restricted permeability and are root restrictive when dry.
- These soils are not suitable as sources of construction material because of their gypsum content.
- The very high shrink-swell potential of the Contention soil should be considered when

foundations, concrete structures, and paved areas are designed and constructed.
- Steep slopes cause management problems.

Interpretive Groups

Land capability classification: VIIe nonirrigated
Ecological site:
Contention—Clayey Hills, 7- to 12-inch precipitation zone, 041XB216AZ
Crystalgyp—Gypsum Upland, 7- to 12-inch precipitation zone, 041XB219AZ
Monzingo—Limy Upland, 7- to 12-inch precipitation zone, 041XB208AZ
Redington—Limy Slopes, 7- to 12-inch precipitation zone, 041XB207AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-2AZ—Chihuahuan-Sonoran Desert Shrub Mix

36—Contention-Ugyp soils complex, 0 to 5 percent slopes

Setting

Landform: Contention—dissected relict lakebeds; Ugyp—stream terraces and alluvial fans
Slope range: 0 to 5 percent
Frequency of flooding: Contention—none; Ugyp—rare or occasional
Elevation: 3,800 to 4,100 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 190 to 230 days

Composition

Contention and similar soils: 45 percent
Ugyp and similar soils: 35 percent
Contrasting inclusions: 20 percent

Typical Profile

Contention

0 to 2 inches—pinkish gray loam
2 to 7 inches—brown, gypsiferous silty clay loam
7 to 32 inches—brown, gypsiferous silty clay
32 to 60 inches—brown, gypsiferous silty clay

Ugyp

0 to 3 inches—light brown fine sandy loam
3 to 13 inches—brown, calcareous, gypsiferous silt loam
13 to 30 inches—brown, calcareous, gypsiferous fine sandy loam
30 to 52 inches—light brown, calcareous, gypsiferous, stratified sandy loam to loamy coarse sand
52 to 60 inches—light brown, calcareous, gypsiferous loamy fine sand and fine sand

Soil Properties and Qualities

Contention

Parent material: mixed alluvium derived from prehistoric lakes and marshes
Depth class: very deep
Drainage class: well drained
Permeability: very slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: medium
Hazard of erosion: by water—moderate; by wind—moderate
Shrink-swell potential: very high
Soil cracking: many vertical cracks 0.12 inch to 1.5 inches wide from the surface to a depth of 26 inches or more
Calcium carbonate equivalent: 1 to 15 percent
Depth to a gypsic horizon: 3 to 20 inches
Content of gypsum: 1 to 15 percent
Corrosivity: steel—high; concrete—high

Ugyp

Parent material: mixed alluvium derived from sedimentary formations
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low to high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: averages less than 15 percent gravel but ranges to 25 percent
Depth to a calcic horizon: 1 to 20 inches
Calcium carbonate equivalent: 1 to 30 percent
Depth to a gypsic horizon: 1 to 20 inches
Content of gypsum: 5 to 15 percent
Corrosivity: steel—high; concrete—high

Contrasting Inclusions

- Soils that are shallow to a hardpan
- Redington soils, which have dense layers and have sandy textures

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Contention—very high shrink-swell potential, soil cracking, excess gypsum, hazards of piping, water erosion, and wind erosion
Ugyp—excess gypsum, hazards of piping, water erosion, and wind erosion

Dominant vegetation on the Contention soil:
• In the potential and present plant communities—tobosa, fourwing saltbush, vine mesquite, tarbush, wolfberry, alkali sacaton, mesquite

Dominant vegetation on the Ugyp soil on alluvial fans:
• In the potential and present plant communities—alkali sacaton, giant sacaton, bush muhly, tobosa, wolfberry, tarbush, creosotebush, mesquite, burrograss, sideoats grama

Dominant vegetation on the Ugyp soil on stream terraces:
• In the potential and present plant communities—alkali sacaton, giant sacaton, sideoats grama, sand dropseed, fourwing saltbush, bush muhly, mesquite, wolfberry

Special Management Concerns

• Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
• Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
• Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
• These soils are not suitable as sources of construction material because of their gypsum content.
• The very high shrink-swell potential of the Contention soil should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• The Ugyp soil has dual range sites that have different plant communities. The stream terraces receive more moisture than the alluvial fans and are more productive.

Interpretive Groups

Land capability classification: VIIe nonirrigated
Ecological site:
Contention—Clayey Bottom, 7- to 12-inch precipitation zone, 041XB202AZ
Ugyp on alluvial fans—Limy Fan, 7- to 12-inch precipitation zone, 041XB206AZ
Ugyp on stream terraces—Loamy Bottom, 7- to 12-inch precipitation zone, 041XB209AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-2AZ—Chihuahuan-Sonoran Desert Shrub Mix

37—Courtland sandy loam, 0 to 2 percent slopes

Setting

Landform: fan terraces
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Courtland and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 8 inches—brown sandy loam
8 to 14 inches—brown sandy loam
14 to 20 inches—reddish brown sandy loam
20 to 49 inches—yellowish red sandy clay loam
49 to 60 inches—red sandy clay loam

Soil Properties and Qualities

Parent material: fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Content of rock fragments: less than 35 percent
Calcium carbonate equivalent: less than 15 percent
Corrosivity: steel—moderate; concrete—low

Contrasting Inclusions

• Combate, Ubik, Riveroad, and Guest soils in drainageways
• Caralampi, Altar, and Bodecker soils, which have more than 35 percent rock fragments
• Forrest and Sasabe soils, which have more than 35 percent clay
• Mallet and Hooks soils, which do not have an argillic horizon
• Baboquivari soils, which have a higher content of organic matter in the surface layer than the Courtland soil

• Durazo soils, which are sandy and have a very high hazard of wind erosion

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factor: hazard of wind erosion

Dominant vegetation:
• In the potential plant community—Arizona cottontop, black grama, sideoats grama, cane beardgrass, California zinnia, ratany, shrubby buckwheat, blue grama, Rothrock grama
• In the present plant community—Lehmann lovegrass, burroweed, mesquite, cane beardgrass, sideoats grama, plains bristlegrass, desert broom

Special Management Concerns

• This unit is dominated by warm-season perennial grasses that stabilize the soil surface, protecting it from excessive wind erosion.
• This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• This unit has few limitations and should be very productive under proper management.

Interpretive Groups

Land capability classification: IIe irrigated and VIe nonirrigated
Ecological site: Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

38—Courtland sandy loam, saline-sodic, 0 to 2 percent slopes

Setting

Landform: fan terraces
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Courtland and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 8 inches—brown sandy loam
8 to 14 inches—brown sandy loam
14 to 20 inches—reddish brown, saline-sodic sandy loam
20 to 49 inches—yellowish red, saline-sodic sandy clay loam
49 to 60 inches—red, saline-sodic sandy clay loam

Soil Properties and Qualities

Parent material: fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Content of rock fragments: less than 35 percent
Calcium carbonate equivalent: less than 15 percent
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Contrasting Inclusions

• Combate, Ubik, Riveroad, and Guest soils in drainageways
• Caralampi, Altar, and Bodecker soils, which have more than 35 percent rock fragments
• Forrest and Sasabe soils, which have more than 35 percent clay
• Mallet and Hooks soils, which do not have an argillic horizon
• Baboquivari soils, which have a higher content of organic matter in the surface layer than the Courtland soil
• Durazo soils, which are sandy and have a very high hazard of wind erosion

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazard of wind erosion, excess salts, sodium, and gypsum

Dominant vegetation:
• In the potential plant community—Arizona cottontop, black grama, sideoats grama, cane beardgrass, California zinnia, ratany, shrubby buckwheat, blue

grama, Rothrock grama, alkali sacaton, fourwing saltgrass, inland saltgrass
• In the present plant community—Lehmann lovegrass, burroweed, mesquite, cane beardgrass, sideoats grama, plains bristlegrass, desert broom, alkali sacaton, fourwing saltgrass, inland saltgrass

Special Management Concerns

• This unit is dominated by warm-season perennial grasses that stabilize the soil surface, protecting it from excessive wind erosion.
• This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive soil loss and dust.
• Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
• Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
• Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
• This soil is very strongly alkaline. The alkalinity restricts plant growth.
• The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
• The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIe irrigated and VIe nonirrigated
Ecological site: Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

39—Courtland-Diaspar complex, 0 to 3 percent slopes

Setting

Landform: fan terraces
Slope range: 0 to 3 percent
Elevation: 4,200 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Courtland and similar soils: 55 percent
Diaspar and similar soils: 30 percent
Contrasting inclusions: 15 percent

Typical Profile

Courtland

0 to 8 inches—brown sandy loam
8 to 14 inches—brown sandy loam
14 to 20 inches—reddish brown sandy loam
20 to 49 inches—yellowish red sandy clay loam
49 to 60 inches—red sandy clay loam

Diaspar

0 to 5 inches—yellowish red sandy loam
5 to 20 inches—reddish brown sandy loam
20 to 41 inches—yellowish red and dark red sandy clay loam
41 to 60 inches—dark red gravelly sandy clay loam

Soil Properties and Qualities

Courtland

Parent material: fan alluvium derived from granite and gneiss
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Content of rock fragments: less than 35 percent
Calcium carbonate equivalent: less than 15 percent
Corrosivity: steel—moderate; concrete—low

Diaspar

Parent material: fan alluvium derived from granite and gneiss
Depth class: very deep
Drainage class: well drained
Permeability: moderate
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Content of rock fragments: 10 to 35 percent
Calcium carbonate equivalent: 0 to 5 percent
Corrosivity: steel—high; concrete—low

Contrasting Inclusions

• Combate, Ubik, Riveroad, and Guest soils in drainageways
• Caralampi and Tombstone soils, which have more than 35 percent rock fragments

- Sasabe soils, which have more than 35 percent clay
- Gulch and Libby soils, which have some gypsum and have more calcium carbonate than the Courtland and Diaspar soils
- Tenneco soils, which have more organic matter in the surface layer than the Courtland and Diaspar soils and do not have an argillic horizon
- Durazo soils, which are sandy and have a very high hazard of wind erosion

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factor: hazard of wind erosion

Dominant vegetation on the Courtland soil:
- In the potential plant community—Arizona cottontop, black grama, sideoats grama, cane beardgrass, California zinnia, ratany, shrubby buckwheat, blue grama, Rothrock grama
- In the present plant community—Lehmann lovegrass, burroweed, mesquite, cane beardgrass, sideoats grama, plains bristlegrass, desert broom

Dominant vegetation on the Diaspar soil:
- In the potential plant community—Arizona cottontop, black grama, sideoats grama, cane beardgrass, range ratany, plains bristlegrass, false mesquite, Rothrock grama
- In the present plant community—Lehmann lovegrass, burroweed, mesquite, desert broom

Special Management Concerns

- This unit is dominated by warm-season perennial grasses that stabilize the soil surface, protecting it from excessive wind erosion.
- These soils have a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- This unit has few limitations and should be very productive under proper management.

Interpretive Groups

Land capability classification: IIe irrigated and VIe nonirrigated
Ecological site: Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

40—Courtland-Sasabe-Diaspar complex, 1 to 8 percent slopes

Setting

Landform: fan terraces
Slope range: Courtland—1 to 3 percent; Sasabe—1 to 8 percent; Diaspar—1 to 5 percent
Elevation: 4,200 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Courtland and similar soils: 35 percent
Sasabe and similar soils: 35 percent
Diaspar and similar soils: 20 percent
Contrasting inclusions: 10 percent

Typical Profile

Courtland

0 to 6 inches—reddish brown sandy loam
6 to 24 inches—reddish brown sandy clay loam
24 to 36 inches—red gravelly clay loam
36 to 60 inches—red clay loam

Sasabe

0 to 3 inches—yellowish red sandy loam
3 to 11 inches—red sandy clay loam
11 to 36 inches—dark reddish brown clay loam
36 to 60 inches—red sandy clay loam

Diaspar

0 to 5 inches—yellowish red sandy loam
5 to 20 inches—reddish brown sandy loam
20 to 41 inches—yellowish red and dark red sandy clay loam
41 to 60 inches—dark red gravelly sandy clay loam

Soil Properties and Qualities

Courtland

Parent material: fan alluvium derived from granite and gneiss
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight or moderate; by wind—moderately high
Shrink-swell potential: moderate

Content of rock fragments: less than 35 percent
Calcium carbonate equivalent: less than 15 percent
Corrosivity: steel—moderate; concrete—low

Sasabe

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight or moderate; by wind—moderately high
Shrink-swell potential: high
Content of rock fragments: 5 to 25 percent
Calcium carbonate equivalent: less than 15 percent
Depth to an abrupt textural change: 7 to 15 inches
Corrosivity: steel—high; concrete—low

Diaspar

Parent material: fan alluvium derived from granite and gneiss
Depth class: very deep
Drainage class: well drained
Permeability: moderate
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Content of rock fragments: 10 to 35 percent
Calcium carbonate equivalent: 0 to 5 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Combate, Ubik, Comoro, Riveroad, and Guest soils in drainageways
- Caralampi and Tombstone soils, which have more than 35 percent gravel
- Durazo soils, which are sandy and have a very high hazard of wind erosion
- Gulch and Libby soils, which have some gypsum and have more calcium carbonate than the Courtland, Sasabe, and Diaspar soils
- Tenneco soils, which have more organic matter in the surface layer than the Courtland, Sasabe, and Diaspar soils and have an argillic horizon
- Eloma soils, which have more than 35 percent rock fragments and more than 35 percent clay
- Brunkcow and Chiricahua soils, which are very shallow or shallow to bedrock
- Andrada soils, which have accumulations of calcium carbonate and are underlain by fragmental bedrock

Similar inclusions:
- Courtland, Diaspar, and Sasabe soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factor: hazard of wind erosion

Dominant vegetation on the Courtland soil:
- In the potential plant community—Arizona cottontop, black grama, sideoats grama, cane beardgrass, California zinnia, ratany, shrubby buckwheat
- In the present plant community—Lehmann lovegrass, burroweed, mesquite, cane beardgrass, sideoats grama, plains bristlegrass, desert broom

Dominant vegetation on the Sasabe soil:
- In the potential plant community—blue grama, sideoats grama, black grama, cane beardgrass, tobosa, Arizona cottontop, false mesquite
- In the present plant community—Lehmann lovegrass, mesquite, burroweed, cane beardgrass, broom snakeweed

Dominant vegetation on the Diaspar soil:
- In the potential plant community—Arizona cottontop, black grama, sideoats grama, cane beardgrass, range ratany, plains bristlegrass, false mesquite
- In the present plant community—Lehmann lovegrass, burroweed, mesquite, desert broom

Special Management Concerns

- This unit is dominated by warm-season perennial grasses that stabilize the soil surface, protecting it from excessive wind erosion.
- The high clay content in the Courtland and Sasabe soils restricts water infiltration and permeability.
- The Courtland, Sasabe, and Diaspar soils have a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- This unit has few limitations and should be very productive under proper management.

Interpretive Groups

Land capability classification:
Courtland and Diaspar—IIe irrigated and VIe nonirrigated
Sasabe—IIIe irrigated and VIe nonirrigated

Ecological site:
Courtland and Diaspar—Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Sasabe—Loamy Upland, 12- to 16-inch precipitation zone, 0411XC313AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

41—Crowbar-Brunopeak association, 1 to 40 percent slopes

Setting

Landform: Crowbar—the tops of fan terraces; Brunopeak—the side slopes of fan terraces
Slope range: Crowbar—1 to 15 percent; Brunopeak—15 to 40 percent
Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Crowbar and similar soils: 60 percent
Brunopeak and similar soils: 30 percent
Contrasting inclusions: 10 percent

Typical Profile

Crowbar

About 20 to 50 percent of the surface is covered with gravel and cobbles.

0 to 1 inch—brown fine sandy loam
1 to 12 inches—brown gravelly sandy clay loam
12 to 26 inches—brown extremely gravelly sandy clay loam
26 to 60 inches—brown extremely gravelly sandy clay loam

Brunopeak

About 60 to 90 percent of the surface is covered with gravel and cobbles.

0 to 3 inches—dark brown very gravelly sandy loam
3 to 16 inches—dark reddish brown extremely gravelly clay loam
16 to 42 inches—dark reddish brown extremely cobbly sandy clay
42 to 60 inches—dark reddish brown extremely cobbly sandy clay

Soil Properties and Qualities

Crowbar

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: low
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: moderate
Content of rock fragments: more than 35 percent gravel and cobbles
Corrosivity: steel—high; concrete—moderate

Brunopeak

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: low
Potential rooting depth: 60 inches or more
Runoff rate: high or very high
Hazard of erosion: by water—moderate or severe; by wind—slight
Shrink-swell potential: high
Content of rock fragments: more than 35 percent gravel and cobbles
Corrosivity: steel—high; concrete—moderate

Contrasting Inclusions

- Haplustolls and Fluvaquents, which are wet and are in drainageways
- Gardencan soils, which have 18 to 35 percent clay
- Lanque soils, which have less than 18 percent clay
- Terrarossa soils, which have less than 35 percent rock fragments in the control section

Use and Management

Major current uses: wildlife habitat and livestock grazing

Soil-related factors: slow permeability, high shrink-swell potential, content of rock fragments, clayey texture, hazard of water erosion, slope

Dominant vegetation on the Crowbar soil:
- In the potential and present plant communities—sideoats grama, plains bristlegrass, cane beardgrass, Arizona cottontop, blue grama, black grama

Dominant vegetation on the Brunopeak soil:
• In the potential and present plant communities—plains lovegrass, sideoats grama, Texas bluestem, wooly bunchgrass, cane beardgrass, blue grama, hairy grama, purple grama, Palmer agave, oak, juniper

Special Management Concerns

• This unit responds well to managed, natural and prescribed fires.
• The high content of clay in these soils slows infiltration and permeability.
• The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• Because of the hazard of water erosion, special consideration should be given to water management.
• Excess rock fragments in the soil interfere with excavations.
• The slope of the Brunopeak soil causes management problems.

Interpretive Groups

Land capability classification:
Crowbar—VIs nonirrigated
Brunopeak—VIe nonirrigated
Ecological site:
Crowbar—Sandy Loam Upland, 16- to 20-inch precipitation zone, 41XA110AZ
Brunopeak—Loamy Hills, 16- to 20-inch precipitation zone, 041XA107AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

42—Deloro-Leyte-Lampshire complex, 3 to 55 percent slopes

Setting

Landform: hills and mountains
Slope range: 3 to 55 percent
Elevation: 4,400 to 5,900 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Deloro and similar soils: 40 percent
Leyte and similar soils: 30 percent
Lampshire and similar soils: 20 percent
Contrasting inclusions: 10 percent

Typical Profile

Deloro

About 75 to 90 percent of the surface is covered with cobbles and stones.

0 to 2 inches—reddish brown very gravelly sandy loam
2 to 11 inches—dark reddish brown extremely gravelly sandy clay loam
11 to 19 inches—dark reddish brown extremely gravelly clay
19 to 29 inches—highly fractured granodiorite
29 inches—unweathered granodiorite

Leyte

About 60 to 80 percent of the surface is covered with gravel, cobbles, and stones.

0 to 1 inch—brown gravelly sandy loam
1 to 4 inches—dark reddish brown very cobbly clay loam
4 to 12 inches—dark reddish brown cobbly clay
12 inches—unweathered rhyolite porphyry

Lampshire

About 60 to 70 percent of the surface is covered with gravel, cobbles, and stones.

0 to 1 inch—brown very gravelly sandy loam
1 to 9 inches—brown very cobbly sandy loam
9 inches—unweathered rhyolite porphyry

Soil Properties and Qualities

Deloro

Parent material: colluvium and residuum derived from quartzite, granodiorite, glance conglomerate, feldspathic sandstone, and rhyolite porphyry
Depth class: shallow
Drainage class: well drained
Permeability: slow
Available water capacity: very low
Potential rooting depth: 10 to 20 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—slight
Shrink-swell potential: moderate
Content of rock fragments: more than 35 percent
Corrosivity: steel—moderate; concrete—low

Leyte

Parent material: slope alluvium and residuum derived from quartzite, granodiorite, glance conglomerate, feldspathic sandstone, and rhyolite porphyry

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: slow
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—very slight
Shrink-swell potential: moderate
Content of rock fragments: averages less than 35 percent gravel and cobbles, but can range to 40 percent in individual horizons
Corrosivity: steel—moderate; concrete—low

Lampshire

Parent material: slope alluvium and residuum derived from igneous rocks
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 4 to 20 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 35 to 70 percent
Corrosivity: steel—moderate; concrete—low

Contrasting Inclusions

- Rock outcrop
- Soils that are moderately deep or deep
- Andrada soils, which are calcareous throughout
- Eloma soils, which are very deep and have more than 35 percent rock fragments

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: depth to bedrock, droughtiness, slope, hazard of water erosion

Dominant vegetation on the Deloro and Leyte soils:
- In the potential plant community—sideoats grama, plains lovegrass, cane beardgrass, green sprangletop, black grama, hairy grama, tobosa, curly mesquite, false mesquite, pricklypear
- In the present plant community—mesquite, whitethorn, ocotillo, lippia, sotol, agave, Lehmann lovegrass, sideoats grama, green sprangletop, false mesquite

Dominant vegetation on the Lampshire soil:
- In the potential plant community—sideoats grama, plains lovegrass, tanglehead, cane beardgrass, black grama, hairy grama, false mesquite, shrubby buckwheat, sotol
- In the present plant community—sideoats grama, Lehmann lovegrass, plains lovegrass, hairy grama, turpentinebush, sotol, ocotillo, mesquite

Special Management Concerns

- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- These soils have a slight to severe hazard of water erosion; therefore, special consideration should be given to water management.
- On sites for roads, special design is needed to overcome the slope.
- Livestock grazing can be limited by the slope.
- Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Slopes of 3 to 30 percent—VIs nonirrigated
Slopes of 30 to 55 percent—VIe nonirrigated
Ecological site: Volcanic Hills, 12- to 16-inch precipitation zone, 041XC323AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

43—Denab-Castledome complex, 3 to 45 percent slopes

Setting

Landform: pediments
Slope range: 3 to 45 percent
Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Denab and similar soils: 50 percent
Castledome and similar soils: 30 percent
Contrasting inclusions: 20 percent

Typical Profile

Denab

About 60 to 80 percent of the surface is covered with fine gravel.

0 to 1 inch—brown gravelly sandy loam
1 to 7 inches—brown loam
7 to 15 inches—interbedded tuff and calcareous loam

15 inches—unweathered tuff

Castledome

About 5 to 15 percent of the surface is covered with gravel.

0 to 1 inch—brown fine sandy loam
1 to 2 inches—dark reddish brown clay loam
2 to 9 inches—dark reddish brown clay
9 to 21 inches—fractured, decomposed tuff
21 to 34 inches—interbedded tuff and calcareous loam
34 inches—unweathered tuff

Soil Properties and Qualities

Denab

Parent material: slope alluvium and residuum derived from tuff
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 20 to 40 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—slight
Depth to a calcic horizon: 0 to 5 inches
Calcium carbonate equivalent: 5 to 20 percent
Shrink-swell potential: low
Corrosivity: steel—high; concrete—low

Castledome

Parent material: slope alluvium overlying tuff
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: slow
Available water capacity: very low
Potential rooting depth: 25 to 40 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—slight
Shrink-swell potential: high
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Blacktail and Borderland soils, which are very deep
- Cherrycow soils, which are moderately deep
- Rock outcrop
- Hayhollow and Rafter soils, which have less than 18 percent clay and are in drainageways

Similar inclusions:
- Denab soils that have less calcium carbonate

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Denab—depth to bedrock, hazard of water erosion, slope
Castledome—depth to bedrock, slow permeability, high shrink-swell potential, hazard of water erosion, slope

Dominant vegetation on the Denab soil:
- In the potential plant community—black grama, blue grama, sideoats grama, threeawn, slim tridens, shortleaf tridens, spike pappusgrass, range ratany
- In the present plant community—black grama, blue grama, sideoats grama, purple grama, threeawns, sacahuista, soaptree yucca, burroweed, wait-a-bit mimosa, annual grasses and forbs

Dominant vegetation on the Castledome soil:
- In the potential plant community—sideoats grama, blue grama, purple grama, cane beardgrass, Texas bluestem, plains lovegrass, shrubby buckwheat, false mesquite, sacahuista, oak, oneseed juniper
- In the present plant community—curly mesquite, blue grama, sideoats grama, cane beardgrass, mesquite, agave, snakeweed, sacahuista

Special Management Concerns

- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- These soils have a slight to severe hazard of water erosion; therefore, special consideration should be given to water management.
- The high content of clay in the Castledome soil restricts water infiltration and permeability.
- The high shrink-swell potential of the Castledome soil should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- This unit is sensitive to natural and prescribed fires.
- Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Slopes of 3 to 30 percent—VIs nonirrigated
Slopes of 30 to 45 percent—VIe nonirrigated
Ecological site:
Denab—Limy Upland, 16- to 20-inch precipitation zone, 041XA105AZ
Castledome—Volcanic Hills, 16- to 20-inch precipitation zone, 041XA111AZ

Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

44—Denied Access

This map unit is in areas where landowners refused access to their private property. The owners of private property are entitled to this right. These areas were not traversed; therefore, soils information will not be provided. The National Soil Survey Handbook requires that every area on a soil map be designated with a map unit number. It also requires that every means available to the soil survey project be used to obtain access. This responsibility was carried out with the help of the Natural Resource Conservation Districts, but access was still denied.

45—Diaspar sandy loam, 0 to 2 percent slopes

Setting

Landform: fan terraces
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Diaspar and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 6 inches—brown sandy loam
6 to 10 inches—reddish brown sandy loam
10 to 60 inches—brown sandy loam

Soil Properties and Qualities

Parent material: fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low to high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Calcium carbonate equivalent: 0 to 5 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Combate, Comoro, Ubik, Riveroad, and Guest soils in drainageways
- Caralampi and Bodecker soils, which have more than 35 percent rock fragments
- Libby and Sasabe soils, which have more than 35 percent clay
- Courtland soils, which have 18 to 35 percent clay
- Stronghold, Forrest, Elgin, Gulch, and McAllister soils, which have accumulations of calcium carbonate
- Durazo soils, which are sandy and have a very high hazard of wind erosion

Similar inclusions:
- Diaspar soils that have slopes of 3 to 5 percent
- Diaspar soils that have a surface layer of clay loam
- Diaspar soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factor: hazard of wind erosion

Dominant vegetation:
- In the potential plant community—Arizona cottontop, black grama, sideoats grama, cane beardgrass, range ratany, plains bristlegrass, false mesquite, Rothrock grama
- In the present plant community—Lehmann lovegrass, burroweed, mesquite, desert broom

Special Management Concerns

- This unit is dominated by warm-season perennial grasses that stabilize the soil surface, protecting it from excessive wind erosion.
- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- This unit has few limitations and should be very productive under proper management.

Interpretive Groups

Land capability classification: IIe irrigated and VIe nonirrigated
Ecological site: Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

46—Diaspar sandy loam, saline-sodic, 0 to 2 percent slopes

Setting

Landform: fan terraces
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Diaspar and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 6 inches—brown sandy loam
6 to 10 inches—reddish brown, saline-sodic sandy loam
10 to 60 inches—brown, saline-sodic sandy loam

Soil Properties and Qualities

Parent material: fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Calcium carbonate equivalent: 0 to 5 percent
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- Combate, Comoro, Ubik, Riveroad, and Guest soils in drainageways
- Caralampi and Bodecker soils, which have more than 35 percent rock fragments
- Libby and Sasabe soils, which have more than 35 percent clay
- Courtland soils, which have 18 to 35 percent clay
- Stronghold, Forrest, Elgin, Gulch, and McAllister soils, which have accumulations of calcium carbonate
- Durazo soils, which are sandy and have a very high hazard of wind erosion

Similar inclusions:
- Diaspar soils that have slopes of 3 to 5 percent
- Diaspar soils that have a surface layer of clay loam

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazard of wind erosion, excess salts, sodium, and gypsum

Dominant vegetation:
- In the potential plant community—Arizona cottontop, black grama, sideoats grama, cane beardgrass, range ratany, plains bristlegrass, false mesquite, Rothrock grama, alkali sacaton, giant sacaton, inland saltgrass, fourwing saltbush
- In the present plant community—Lehmann lovegrass, burroweed, mesquite, desert broom, alkali sacaton, annual grasses, wolfberry

Special Management Concerns

- This unit is dominated by warm-season perennial grasses that stabilize the soil surface, protecting it from excessive wind erosion.
- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIe irrigated and VIe nonirrigated
Ecological site: Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

47—Dona Ana-Mohave complex, 1 to 5 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 5 percent
Elevation: 3,600 to 4,200 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 190 to 230 days

Composition

Dona Ana and similar soils: 45 percent
Mohave and similar soils: 30 percent
Contrasting inclusions: 25 percent

Typical Profile

Dona Ana

0 to 2 inches—brown sandy loam
2 to 11 inches—brown, calcareous clay loam
11 to 16 inches—light brown, calcareous clay loam
16 to 24 inches—light brown and pinkish white, calcareous clay loam
24 to 38 inches—brown, calcareous very gravelly coarse sandy loam
38 to 60 inches—brown, calcareous very cobbly coarse sand

Mohave

0 to 2 inches—strong brown fine sandy loam
2 to 13 inches—yellowish red sandy clay loam
13 to 22 inches—reddish brown sandy clay loam
22 to 35 inches—brown and pinkish white, calcareous gravelly sandy clay loam
35 to 60 inches—light brown, calcareous loamy fine sand

Soil Properties and Qualities

Dona Ana

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: 5 to 55 percent, averages more than 15 percent
Corrosivity: steel—high; concrete—low

Mohave

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 15 to 55 percent below a depth of 20 inches
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Soils that have more than 35 percent rock fragments
- Soils that have a hardpan
- Arizo family soils, which are sandy and are in drainageways
- Soils that have less than 18 percent clay

Similar inclusions:
- Mohave soils with a surface layer that has hue of 5YR

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: hazard of wind erosion, moderate shrink-swell potential, rock fragments below a depth of 40 inches

Dominant vegetation on the Dona Ana soil:
- In the potential plant community—creosotebush, bush muhly, perennial threeawn
- In the present plant community—creosotebush, mesquite, catclaw acacia, burroweed, bush muhly

Dominant vegetation on the Mohave soil:
- In the potential plant community—black grama, Rothrock grama, bush muhly, perennial threeawn, plains bristlegrass, soaptree yucca, Mormon tea, velvet mesquite, staghorn cholla
- In the present plant community—mesquite, burroweed, Lehmann lovegrass, perennial threeawn

Special Management Concerns

- These soils have a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Excess rocks below a depth of 40 inches interfere with excavations.

• The moderate shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.

Interpretive Groups

Land capability classification: IIe irrigated and VIIe nonirrigated
Ecological site:
Dona Ana—Limy Upland, 7- to 12-inch precipitation zone, 041XB208AZ
Mohave—Sandy Loam Upland, 7- to 12-inch precipitation zone, 041XB215AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-2AZ—Chihuahuan-Sonoran Desert Shrub Mix

48—Doubleadobe sandy loam, 1 to 3 percent slopes

Setting

Landform: flood plains and basin floors
Slope range: 1 to 3 percent
Frequency of flooding: common
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Doubleadobe and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 1 inch—brown sandy loam
1 to 4 inches—brown, saline-sodic clay loam
4 to 13 inches—brown, saline-sodic clay
13 to 31 inches—pinkish gray and light brown, saline-sodic, calcareous clay
31 to 60 inches—light brown and white, saline-sodic, calcareous gravelly clay loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: moderately well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—moderately high
Shrink-swell potential: high
Depth to a calcic horizon: 15 to 40 inches
Calcium carbonate equivalent: 2 to 60 percent
Content of gypsum: 0 to 5 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
• McAllister, Sasabe, Courtland, and Diaspar soils with no saline and sodic properties
• Ubik and Riveroad soils with no sodic properties; in drainageways
• Marsh
• Ubik soils that are very strongly alkaline
• Soils that have more rock fragments than the Doubleadobe soil

Similar inclusions:
• Doubleadobe soils that have more than 5 percent gypsum

Use and Management

Major current uses: livestock grazing, wildlife habitat, and irrigated cropland

Soil-related factors: droughtiness; hazard of soil piping; excess salts, sodium, and gypsum; hazards of water erosion, wind erosion, and flooding

Dominant vegetation:
• In the potential plant community—alkali sacaton, giant sacaton, inland saltgrass, tobosa, vine mesquite, fourwing saltbush, mesquite
• In the present plant community—alkali sacaton, annual grasses, mesquite, wolfberry, tobosa

Special Management Concerns

• Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
• Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
• Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
• The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• This soil is very strongly alkaline. The alkalinity restricts plant growth.
• The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
• The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

• This soil has a moderate hazard of water erosion; therefore, special consideration should be given to water management.
• Structures should be located above the expected level of flooding.
• The high content of clay in the soil restricts water infiltration and permeability.
• This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification: IIIe irrigated and VIe nonirrigated
Ecological site: Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

49—Durazo loamy sand, 0 to 2 percent slopes

Setting

Landform: stream terraces
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Durazo and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 8 inches—brown loamy sand
8 to 48 inches—brown loamy sand
48 to 60 inches—reddish brown sandy clay loam

Soil Properties and Qualities

Parent material: sandy eolian material
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: rapid in the upper part of the soil and moderately slow in the lower part
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—high
Shrink-swell potential: low in the upper part of the soil and moderate in the lower part
Content of rock fragments: less than 5 percent
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
• Courtland and Caralampi soils, which have 18 to 35 percent clay
• Forrest and Sasabe soils, which have more than 35 percent clay
• Combate soils, which have sandy loam textures

Similar inclusions:
• Diaspar soils, which have an argillic horizon and less than 18 percent clay
• Durazo soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazard of wind erosion, fast intake rate, hazard of seepage

Dominant vegetation:
• In the potential plant community—black grama, sand dropseed, mesa dropseed, spike dropseed, threeawn, soaptree yucca, Mormon tea
• In the present plant community—mesquite, soaptree yucca, Mormon tea, burroweed, Cochise lovegrass, spike dropseed, plains bristlegrass

Special Management Concerns

• This soil has a high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• Because of an abrupt textural change, a buried horizon in this soil restricts water movement until saturation occurs.
• Because of the rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.

Interpretive Groups

Land capability classification: IIIe irrigated and VIe nonirrigated
Ecological site: Sandy Upland, 12- to 16-inch precipitation zone, 041XC325AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

50—Durazo loamy sand, saline-sodic, 0 to 2 percent slopes

Setting

Landform: stream terraces
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Durazo and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 8 inches—brown loamy sand
8 to 48 inches—brown, saline-sodic loamy sand
48 to 60 inches—reddish brown, saline-sodic sandy clay loam

Soil Properties and Qualities

Parent material: sandy eolian material
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: rapid in the upper part of the soil and moderately slow in the lower part
Available water capacity: low
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—high
Shrink-swell potential: low in the upper part of the soil and moderate in the lower part
Content of rock fragments: less than 5 percent
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- Courtland and Caralampi soils, which have 18 to 35 percent clay
- Forrest and Sasabe soils, which have more than 35 percent clay
- Combate soils, which have sandy loam textures

Similar inclusions:
- Diaspar soils, which have an argillic horizon and less than 18 percent clay

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazard of wind erosion, fast intake rate, hazard of seepage, excess salts, sodium, and gypsum

Dominant vegetation:
- In the potential plant community—black grama, sand dropseed, mesa dropseed, spike dropseed, threeawn, soaptree yucca, alkali sacaton, giant sacaton, inland saltgrass, fourwing saltbush
- In the present plant community—mesquite, soaptree yucca, burroweed, Cochise lovegrass, spike dropseed, plains bristlegrass, alkali sacaton, annual grasses, wolfberry

Special Management Concerns

- This soil has a high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Because of an abrupt textural change, a buried horizon in this soil restricts water movement until saturation occurs.
- Because of the rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIe irrigated and VIe nonirrigated
Ecological site: Sandy Upland, 12- to 16-inch precipitation zone, 041XC325AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

51—Durazo, saline-sodic-Gothard complex, 1 to 15 percent slopes

Setting

Landform: Durazo—stream terraces; Gothard—basin floors and flood plains

Slope range: Durazo—1 to 15 percent; Gothard—1 to 5 percent
Frequency of flooding: Durazo—none; Gothard—occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Durazo and similar soils: 55 percent
Gothard and similar soils: 30 percent
Contrasting inclusions: 15 percent

Typical Profile

Durazo

0 to 6 inches—reddish brown loamy sand
6 to 44 inches—reddish brown, saline-sodic loamy sand
44 to 60 inches—pinkish gray and reddish brown, saline-sodic sandy loam

Gothard

0 to 3 inches—brown sandy loam
3 to 8 inches—brown sandy loam
8 to 18 inches—dark reddish brown, saline-sodic sandy clay loam
18 to 30 inches—reddish brown, saline-sodic sandy clay loam
30 to 60 inches—reddish brown, saline-sodic, calcareous clay

Soil Properties and Qualities

Durazo

Parent material: sandy eolian material
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: rapid in the upper part of the soil and moderately rapid in the lower part
Available water capacity: low
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—high
Shrink-swell potential: low
Content of rock fragments: less than 5 percent
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Gothard

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—moderate
Shrink-swell potential: moderate or high
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 5 to 25 percent in the lower part of the soil
Content of gypsum: 0 to 5 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- Caralampi and Altar soils, which have more than 35 percent rock fragments
- Sasabe, Bonita, and Forrest soils, which have more than 35 percent clay
- McNeal soils, which have a calcic horizon within a depth of 20 inches
- Mallet and Courtland soils, which do not have accumulations of calcium carbonate
- Luckyhills soils, which have less than 18 percent clay
- Ubik and Riveroad soils in drainageways

Similar inclusions:
- Diaspar soils, which have an argillic horizon and less than 18 percent clay

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazard of wind erosion, fast intake rate, hazard of seepage, hazard of flooding, moderate shrink-swell potential, excess salts, sodium, and gypsum

Dominant vegetation on the Durazo soil:
- In the potential plant community—black grama, sand dropseed, mesa dropseed, spike dropseed, threeawn, soaptree yucca, alkali sacaton, giant sacaton, inland saltgrass, fourwing saltbush
- In the present plant community—mesquite, soaptree yucca, burroweed, spike dropseed, plains bristlegrass, alkali sacaton, annual grasses, mesquite, wolfberry

Dominant vegetation on the Gothard soil:
- In the potential plant community—alkali sacaton,

giant sacaton, inland saltgrass, tobosa, vine mesquite, fourwing saltbush, mesquite
• In the present plant community—alkali sacaton, annual grasses, mesquite, wolfberry, tobosa

Special Management Concerns

• The hazard of wind erosion is high on the Durazo soil and moderate on the Gothard soil. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• The moderate or high shrink-swell potential of the Gothard soil should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• The Gothard soil has few limitations and should be very productive if proper management is applied.
• Because of an abrupt textural change, a buried horizon in the Durazo soil restricts water movement until saturation occurs.
• Because of the rapid permeability in the Durazo soil, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.
• Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
• Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
• Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
• The Durazo and Gothard soils are very strongly alkaline. The alkalinity restricts plant growth.
• The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
• The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.
• Structures should be located above the expected level of flooding.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site:
Durazo—Sandy Upland, 12- to 16-inch precipitation zone, 041XC325AZ
Gothard—Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

52—Durazo-Courtland complex, 1 to 5 percent slopes

Setting

Landform: Durazo—dunes; Courtland—fan terraces
Slope range: 1 to 5 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Durazo and similar soils: 50 percent
Courtland and similar soils: 40 percent
Contrasting inclusions: 10 percent

Typical Profile

Durazo

0 to 2 inches—strong brown loamy fine sand
2 to 51 inches—strong brown loamy fine sand
51 to 60 inches—reddish brown sandy loam

Courtland

About 20 to 30 percent of the surface is covered with gravel.

0 to 1 inch—brown sandy loam
1 to 12 inches—brown sandy loam
12 to 39 inches—brown sandy clay loam
39 to 60 inches—dark brown sandy clay loam

Soil Properties and Qualities

Durazo

Parent material: sandy eolian material
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: rapid in the upper part of the soil and moderately rapid in the lower part
Available water capacity: low to high
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—high
Shrink-swell potential: low
Content of rock fragments: less than 5 percent
Corrosivity: steel—high; concrete—moderate

Courtland

Parent material: fan alluvium derived from granite and gneiss
Depth class: very deep
Drainage class: well drained

Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: moderate
Content of rock fragments: less than 35 percent
Calcium carbonate equivalent: less than 5 percent
Corrosivity: steel—moderate; concrete—low

Inclusions

Contrasting inclusions:
- Baboquivari and Caralampi soils, which have 18 to 35 percent clay
- Sasabe soils, which have more than 35 percent clay

Similar inclusions:
- Diaspar soils, which have an argillic horizon and less than 18 percent clay

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: hazard of wind erosion, fast intake rate, hazard of seepage

Dominant vegetation on the Durazo soil:
- In the potential plant community—black grama, sand dropseed, mesa dropseed, spike dropseed, threeawn, soaptree yucca, Mormon tea
- In the present plant community—mesquite, soaptree yucca, Mormon tea, burroweed, Cochise lovegrass, spike dropseed, plains bristlegrass

Dominant vegetation on the Courtland soil:
- In the potential plant community—sideoats grama, cane beardgrass, Arizona cottontop, black grama, plains lovegrass, blue grama, threeawn
- In the present plant community—Lehmann lovegrass, burroweed, mesquite, cane beardgrass, plains bristlegrass, desert broom, annual forbs and grasses

Special Management Concerns

- The hazard of wind erosion is high on the Durazo soil and moderate on the Courtland soil. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Because of an abrupt textural change, a buried horizon in the Durazo soil restricts water movement until saturation occurs.
- Because of the rapid permeability in the Durazo soil, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.

Interpretive Groups

Land capability classification:
Durazo—IIIe irrigated and VIe nonirrigated
Courtland—IIc irrigated and VIc nonirrigated
Ecological site:
Durazo—Sandy Upland, 12- to 16-inch precipitation zone, 041XC325AZ
Courtland—Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

53—Durazo-McAllister complex, 1 to 15 percent slopes

Setting

Landform: Durazo—stream terraces; McAllister—fan terraces
Slope range: 1 to 15 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Durazo and similar soils: 55 percent
McAllister and similar soils: 30 percent
Contrasting inclusions: 15 percent

Typical Profile

Durazo

0 to 6 inches—reddish brown loamy sand
6 to 44 inches—reddish brown loamy sand
44 to 60 inches—pinkish gray and reddish brown sandy loam

McAllister

0 to 7 inches—reddish brown loam
7 to 26 inches—reddish brown clay loam
26 to 60 inches—light reddish brown, calcareous clay loam

Soil Properties and Qualities

Durazo

Parent material: sandy eolian material
Depth class: very deep

Drainage class: somewhat excessively drained
Permeability: rapid in the upper part of the soil and moderately rapid in the lower part
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—high
Shrink-swell potential: low
Content of rock fragments: less than 5 percent
Corrosivity: steel—high; concrete—moderate

McAllister

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight or moderate; by wind—moderate
Shrink-swell potential: moderate
Content of rock fragments: 5 to 30 percent
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 15 to 30 percent in the lower part of the soil
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Caralampi and Altar soils, which have more than 35 percent rock fragments
- Sasabe, Bonita, and Forrest soils, which have more than 35 percent clay
- McNeal soils, which have a calcic horizon within a depth of 20 inches
- Mallet and Courtland soils, which do not have accumulations of calcium carbonate
- Luckyhills soils, which have less than 18 percent clay
- Ubik and Riveroad soils in drainageways

Similar inclusions:
- Diaspar soils, which have an argillic horizon and less than 18 percent clay

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazard of wind erosion, fast intake rate, hazard of seepage, moderate shrink-swell potential

Dominant vegetation on the Durazo soil:
- In the potential plant community—black grama, sand dropseed, mesa dropseed, spike dropseed, threeawn, soaptree yucca, Mormon tea
- In the present plant community—mesquite, soaptree yucca, Mormon tea, burroweed, Cochise lovegrass, spike dropseed, plains bristlegrass

Dominant vegetation on the McAllister soil:
- In the potential plant community—sideoats grama, plains lovegrass, cane beardgrass, black grama, blue grama, curly mesquite, false mesquite, shrubby buckwheat, Mormon tea
- In the present plant community—black grama, Lehmann lovegrass, fluffgrass, curly mesquite, false mesquite, whitethorn, Mormon tea

Special Management Concerns

- The hazard of wind erosion is high on the Durazo soil and moderate on the McAllister soil. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- The moderate shrink-swell potential of the McAllister soil should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The McAllister soil has few limitations and should be very productive if proper management is applied.
- Because of an abrupt textural change, a buried horizon in the Durazo soil restricts water movement until saturation occurs.
- Because of the rapid permeability in the Durazo soil, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.

Interpretive Groups

Land capability classification:
Durazo—IIIe irrigated and VIe nonirrigated
McAllister—IIs irrigated and VIs nonirrigated
Ecological site:
Durazo—Sandy Upland, 12- to 16-inch precipitation zone, 041XC325AZ
McAllister—Loamy Upland, 12- to 16-inch precipitation zone, 041XC313AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

54—Elfrida clay loam, 0 to 2 percent slopes

Setting

Landform: alluvial fans
Slope range: 0 to 2 percent

Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Elfrida and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 9 inches—brown clay loam
9 to 23 inches—brown clay loam
23 to 46 inches—brown, very pale brown, and pale red clay loam
46 to 60 inches—brown clay

Soil Properties and Qualities

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow in the upper part of the soil and slow in the lower part
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: moderate in the upper part of the soil and high in the lower part
Calcium carbonate equivalent: 15 to 40 percent
Salinity: slight
Sodicity: moderate
Corrosivity: steel—high; concrete—moderate

Contrasting Inclusions

- Combate, Ubik, Riveroad, and Guest soils in drainageways
- Kahn soils, which have less organic matter in the surface layer than the Elfrida soil
- Caralampi and Bodecker soils, which have more than 35 percent rock fragments
- Forrest, Zapolote, and Sasabe soils, which have more than 35 percent clay
- Chorro, Doubleadobe, and Gothard soils, which have high concentrations of salts, sodium, and gypsum

Use and Management

Major current use: irrigated cropland

Soil-related factors: hazard of flooding, a high content of calcium carbonate

Special Management Concerns

- This soil has a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Structures should be located above the expected level of flooding.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: IIs irrigated and VIs nonirrigated
Ecological site: Clayey Bottom, 12- to 16-inch precipitation zone, 041XC302AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

55—Elfrida clay loam, saline-sodic, 0 to 2 percent slopes

Setting

Landform: alluvial fans
Slope range: 0 to 2 percent
Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Elfrida and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 9 inches—brown clay loam
9 to 23 inches—brown, saline-sodic clay loam
23 to 46 inches—brown, very pale brown, and pale red, saline-sodic clay loam
46 to 60 inches—brown, saline-sodic clay

Soil Properties and Qualities

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow in the upper part of the soil and slow in the lower part
Available water capacity: high
Potential rooting depth: 60 inches or more

Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: moderate in the upper part of the soil and high in the lower part
Calcium carbonate equivalent: 15 to 40 percent
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Contrasting Inclusions

- Combate, Ubik, Riveroad, and Guest soils in drainageways
- Kahn soils, which have less organic matter in the surface layer than the Elfrida soil
- Caralampi and Bodecker soils, which have more than 35 percent rock fragments
- Forrest, Zapolote, and Sasabe soils, which have more than 35 percent clay
- Chorro, Doubleadobe, and Gothard soils, which have high concentrations of salts, sodium, and gypsum

Use and Management

Major current use: irrigated cropland

Soil-related factors: hazard of flooding, a high content of calcium carbonate, excess salts, sodium, and gypsum

Dominant vegetation:
- In the potential plant community—alkali sacaton, giant sacaton, inland saltgrass, tobosa, vine mesquite, fourwing saltbush, mesquite
- In the present plant community—alkali sacaton, annual grasses, mesquite, wolfberry, tobosa

Special Management Concerns

- This soil has a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Structures should be located above the expected level of flooding.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

56—Elgin-McAllister-Stronghold complex, 1 to 8 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 8 percent
Elevation: 4,100 to 5,200 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Elgin and similar soils: 35 percent
McAllister and similar soils: 30 percent
Stronghold and similar soils: 20 percent
Contrasting inclusions: 15 percent

Typical Profile

Elgin

About 20 to 60 percent of the surface is covered with gravel and cobbles.

0 to 1 inch—brown fine sandy loam
1 to 10 inches—reddish brown clay
10 to 22 inches—reddish brown clay loam
22 to 38 inches—brown, calcareous clay loam
38 to 60 inches—brown, calcareous gravelly sandy clay loam

McAllister

About 10 to 15 percent of the surface is covered with gravel.

0 to 1 inch—brown fine sandy loam
1 to 9 inches—brown clay loam
9 to 20 inches—reddish brown sandy clay loam
20 to 34 inches—brown, calcareous sandy clay loam

34 to 60 inches—brown, calcareous sandy loam

Stronghold

About 10 to 20 percent of the surface is covered with gravel.

0 to 1 inch—dark brown sandy loam
1 to 19 inches—brown, calcareous loam
19 to 41 inches—light brown, calcareous gravelly sandy loam
41 to 51 inches—brown, calcareous loam
51 to 60 inches—brown, calcareous extremely gravelly loamy sand

Soil Properties and Qualities

Elgin

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: high
Content of rock fragments: less than 35 percent
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 10 to 25 percent below a depth of 20 inches
Corrosivity: steel—high; concrete—low

McAllister

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight or moderate; by wind—moderate
Shrink-swell potential: moderate
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 15 to 30 percent below a depth of 20 inches
Corrosivity: steel—high; concrete—low

Stronghold

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: low
Content of rock fragments: 5 to 35 percent
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: 5 to 40 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Tombstone and Caralampi soils, which have more than 35 percent rock fragments
- Combate, Ubik, Bonita, and Riveroad soils in drainageways and swales
- Graham and Lampshire soils, which are very shallow or shallow to bedrock

Similar inclusions:
- Elgin soils that have a thicker surface layer of sandy loam
- Elgin soils that have less calcium carbonate
- Bernardino and Elfrida soils, which have accumulations of calcium carbonate within a depth of 20 inches

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Elgin—high shrink-swell potential
McAllister—a high content of calcium carbonate
Stronghold—gravelly surface, a high content of calcium carbonate

Dominant vegetation on the Elgin soil:
- In the potential plant community—sideoats grama, cane beardgrass, plains lovegrass, blue grama, curly mesquite, threeawn, false mesquite
- In the present plant community—curly mesquite, black grama, hairy grama, vine mesquite, Mormon tea, burroweed, mesquite

Dominant vegetation on the McAllister soil:
- In the potential plant community—sideoats grama, blue grama, black grama, cane beardgrass, threeawn, desert zinnia, range ratany, soaptree yucca, Mormon tea
- In the present plant community—blue grama, black grama, threeawn, desert zinnia, soaptree yucca, Mormon tea, mesquite, burroweed

Dominant vegetation on the Stronghold soil:
- In the potential plant community—sideoats grama, black grama, blue threeawn, slim tridens, bush muhly,

sand dropseed, fluffgrass, desert zinnia, range ratany, false mesquite
• In the present plant community—blue threeawn, black grama, false mesquite, Mormon tea, desert zinnia, whitethorn, ocotillo, sideoats grama, slim tridens, fluffgrass

Special Management Concerns

• When this unit is abused, the plant community can shift from mid grasses to short grasses. Where this shift has occurred, forage production is much lower.
• This is a grassland site capable of producing a large volume of high-quality feed.
• The high shrink-swell potential of the Elgin soil should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• The Stronghold soil is slow to respond to all forms of management because of the high concentrations of calcium carbonate.
• Road construction should include water bars and should be kept to a minimum.

Interpretive Groups

Land capability classification:
Elgin and Stronghold—IIIs irrigated and VIs nonirrigated
McAllister—IIs irrigated and VIs nonirrigated
Ecological site:
Elgin—Loamy Upland, 12- to 16-inch precipitation zone, 041XC313AZ
McAllister and Stronghold—Limy Slopes, 12- to 16-inch precipitation zone, 041XC308AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

57—Elgin-Outlaw complex, 1 to 10 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 10 percent
Elevation: 3,800 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Elgin and similar soils: 50 percent
Outlaw and similar soils: 40 percent
Contrasting inclusions: 10 percent

Typical Profile

Elgin

About 50 to 70 percent of the surface is covered with gravel and cobbles.

0 to 2 inches—brown sandy loam
2 to 7 inches—brown sandy clay loam
7 to 19 inches—reddish brown clay
19 to 26 inches—yellowish red clay
26 to 43 inches—yellowish red, calcareous very gravelly clay loam
43 to 60 inches—yellowish red, calcareous gravelly coarse sandy loam

Outlaw

About 10 to 30 percent of the surface is covered with gravel and cobbles.

0 to 2 inches—brown sandy loam
2 to 13 inches—dark brown clay
13 to 28 inches—brown clay
28 to 60 inches—pink, calcareous loam

Soil Properties and Qualities

Elgin

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: high
Content of rock fragments: less than 35 percent
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 10 to 25 percent below a depth of 20 inches
Corrosivity: steel—high; concrete—low

Outlaw

Parent material: mixed alluvium derived from basalt, cinders, bombs, and volcanic rocks
Depth class: very deep
Drainage class: well drained
Permeability: very slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: medium or high
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: very high
Soil cracking: many vertical cracks 0.125 inch to 2.5

inches wide from the surface to a depth of 17 inches or more
Depth to a calcic horizon: 30 to 60 inches
Calcium carbonate equivalent: 0 to 50 percent
Corrosivity: steel—high; concrete—low

Contrasting Inclusions

- Epitaph and Paramore soils, which are moderately deep
- Combate, Ubik, Guest, and Riveroad soils in drainageways
- Eloma soils, which have more than 35 percent rock fragments
- Libby soils, which have petronodes in the lower horizons
- Bernardino and Stronghold soils, which have accumulations of calcium carbonate
- Tenneco soils, which have less than 35 percent clay
- Andrada soils, which have calcium carbonate throughout
- Mabray and Brunkcow soils, which are very shallow or shallow to bedrock

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Elgin—high shrink-swell potential
Outlaw—very high shrink-swell potential, clayey textures

Dominant vegetation on the Elgin soil:
- In the potential plant community—sideoats grama, cane beardgrass, plains lovegrass, shrubby buckwheat, mesquite, plains bristlegrass, red threeawn, bush muhly, purple muhly, burroweed, snakeweed, tobosa, blue grama
- In the present plant community—bush muhly, tobosa, plains lovegrass, plains bristlegrass, blue threeawn, fluffgrass, mesquite, snakeweed

Dominant vegetation on the Outlaw soil:
- In the potential plant community—tobosa, sideoats grama, vine mesquite, plains bristlegrass, cane beardgrass
- In the present plant community—tobosa, bush muhly, sideoats grama, vine mesquite, plains bristlegrass, snakeweed, yucca, cholla

Special Management Concerns

- The high or very high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The Outlaw soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- The high content of clay in these soils restricts water infiltration and permeability.

Interpretive Groups

Land capability classification:
Elgin—VIs nonirrigated
Outlaw—VIe nonirrigated
Ecological site:
Elgin—Clay Loam Upland, 12- to 16-inch precipitation zone, 041XC305AZ
Outlaw—Clayey Upland, 12- to 16-inch precipitation zone, 041XC304AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

58—Elgin-Stronghold complex, 3 to 20 percent slopes

Setting

Landform: fan terraces
Slope range: 3 to 20 percent
Elevation: 4,500 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Elgin and similar soils: 50 percent
Stronghold and similar soils: 40 percent
Contrasting inclusions: 10 percent

Typical Profile

Elgin

About 25 to 30 percent of the surface is covered with gravel.

0 to 1 inch—brown very gravelly fine sandy loam
1 to 15 inches—dark reddish brown clay
15 to 21 inches—reddish brown gravelly sandy clay loam
21 to 27 inches—light reddish brown and reddish brown, calcareous gravelly sandy loam
27 to 60 inches—pinkish gray, calcareous very gravelly sandy loam

Stronghold

0 to 2 inches—dark brown very gravelly sandy loam

2 to 8 inches—brown, calcareous gravelly sandy loam
8 to 18 inches—pinkish gray, calcareous gravelly sandy loam
18 to 60 inches—pinkish gray, calcareous gravelly sandy loam

Soil Properties and Qualities

Elgin

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low to high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: moderate
Content of rock fragments: less than 35 percent
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 10 to 25 percent below a depth of 20 inches
Corrosivity: steel—high; concrete—low

Stronghold

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: low to high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 15 to 35 percent
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: 5 to 40 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Tombstone soils, which have more than 35 percent rock fragments
- Combate, Ubik, Bonita, and Riveroad soils in drainageways and swales
- Graham and Lampshire soils, which are very shallow or shallow to bedrock
- Buntline soils, which are very shallow or shallow to a hardpan

Similar inclusions:
- Elgin soils that have a thicker surface layer of sandy loam
- Elgin soils that have less calcium carbonate
- Bernardino soils, which have accumulations of calcium carbonate within a depth of 20 inches

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Elgin—moderate shrink-swell potential
Stronghold—gravelly surface layer, high content of calcium carbonate

Dominant vegetation on the Elgin soil:
- In the potential plant community—sideoats grama, cane beardgrass, plains lovegrass, prairie junegrass, green sprangletop, hairy grama, shrubby buckwheat, range ratany, false mesquite, plains bristlegrass, vine mesquite, curly mesquite, blue grama
- In the present plant community—curly mesquite, black grama, hairy grama, vine mesquite, Mormon tea, burroweed, mesquite

Dominant vegetation on the Stronghold soil:
- In the potential plant community—sideoats grama, black grama, blue threeawn, red threeawn, New Mexico feathergrass, false mesquite, Mormon tea, soaptree yucca
- In the present plant community—blue threeawn, red threeawn, black grama, cane beardgrass, false mesquite, Mormon tea, desert zinnia

Special Management Concerns

- When this unit is abused, the plant community can shift from mid grasses to short grasses. Where this shift has occurred, forage production is much lower.
- This is a grassland site capable of producing a large volume of high-quality feed.
- The moderate shrink-swell potential of the Elgin soil should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- Water erosion is a hazard in the steeper areas.
- The Stronghold soil is slow to respond to all forms of management because of the high concentrations of calcium carbonate.
- Road construction should include water bars and should be kept to a minimum.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site:
Elgin—Loamy Upland, 12- to 16-inch precipitation zone, 041XC313AZ
Stronghold—Limy Slopes, 12- to 16-inch precipitation zone, 041XC308AZ

Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

59—Eloma sandy loam, 1 to 10 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 10 percent
Elevation: 3,800 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Eloma and similar soils: 80 percent
Contrasting inclusions: 20 percent

Typical Profile

About 35 to 45 percent of the surface is covered with gravel.

0 to 3 inches—brown gravelly loam
3 to 30 inches—dark reddish brown very gravelly clay
30 to 42 inches—reddish brown very gravelly clay loam
42 to 60 inches—reddish brown very gravelly sandy clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: moderate
Content of rock fragments: more than 35 percent gravel, cobbles, and/or stones
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Riveroad and Ubik soils in drainageways
- Caralampi soils, which have less than 35 percent clay
- Elgin, McAllister, and Nolam soils, which have accumulations of calcium carbonate
- Outlaw, Epitaph, and Paramore soils on volcanic flows
- Kahn and Zapolote soils, which have calcium carbonate throughout
- Bonita and Sasabe soils, which have less than 20 percent rock fragments

Similar inclusions:
- White House soils, which have less than 35 percent rock fragments

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: excess rock fragments, clayey texture, moderate shrink-swell potential

Dominant vegetation:
- In the potential plant community—sideoats grama, cane beardgrass, plains lovegrass, tobosa, curly mesquite, vine mesquite, blue grama, mesquite, plains bristlegrass, bush muhly, black grama, whitethorn, tarbush
- In the present plant community—mesquite, whitethorn, tarbush, tobosa, plains bristlegrass, cane beardgrass

Special Management Concerns

- The moderate shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- Excess rock fragments in the soil interfere with excavations.
- The high content of clay in the soil restricts water infiltration and permeability.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Clay Loam Upland, 12- to 16-inch precipitation zone, 041XC305AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

60—Eloma-Caralampi-White House complex, 1 to 15 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 15 percent
Elevation: 4,200 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Eloma and similar soils: 40 percent
Caralampi and similar soils: 30 percent
White House and similar soils: 20 percent
Contrasting inclusions: 10 percent

Typical Profile

Eloma

About 20 to 50 percent of the surface is covered with gravel and cobbles.

0 to 1 inch—dark reddish brown very gravelly sandy loam
1 to 10 inches—dark reddish brown very gravelly clay loam
10 to 27 inches—dark reddish brown very gravelly clay
27 to 60 inches—dark reddish brown extremely cobbly clay

Caralampi

About 60 to 80 percent of the surface is covered with gravel and cobbles.

0 to 1 inch—reddish brown sandy loam
1 to 12 inches—dark reddish brown gravelly clay loam
12 to 50 inches—dark reddish brown very cobbly clay loam
50 to 60 inches—reddish brown very gravelly coarse sandy loam

White House

About 3 to 5 percent of the surface is covered with gravel and cobbles.

0 to 1 inch—brown sandy loam
1 to 5 inches—brown sandy clay loam
5 to 23 inches—dark reddish brown clay
23 to 35 inches—dark reddish brown and dark red clay
35 to 60 inches—dark red extremely gravelly clay

Soil Properties and Qualities

Eloma

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: low
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—very slight
Shrink-swell potential: moderate
Content of rock fragments: more than 35 percent gravel, cobbles, and/or stones
Corrosivity: steel—high; concrete—moderate

Caralampi

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: low to high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent gravel and cobbles
Calcium carbonate equivalent: 0 to 10 percent below a depth of 40 inches
Corrosivity: steel—moderate; concrete—moderate

White House

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: high
Content of rock fragments: less than 35 percent
Calcium carbonate equivalent: less than 15 percent in the lower part of the soil
Corrosivity: steel—high; concrete—moderate

Contrasting Inclusions

- Libby and Gulch soils, which have petronodes
- Forrest and Bonita soils in swales
- Keysto soils, which are in drainageways and have less than 18 percent clay
- Nolam, Elgin, Bernardino, Tombstone, and Stronghold soils, which have accumulations of calcium carbonate
- Buntline soils, which are very shallow or shallow to a hardpan

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Eloma—excess rock fragments, excessive clay, moderate shrink-swell potential

Caralampi—excess rock fragments
White House—excessive clay, high shrink-swell potential, hazard of wind erosion

Dominant vegetation on the Eloma soil:
• In the potential plant community—sideoats grama, cane beardgrass, plains lovegrass, tobosa, curly mesquite, vine mesquite, blue grama, false mesquite, sprucetop grama
• In the present plant community—mesquite, ocotillo, whitethorn, false mesquite, tobosa, curly mesquite

Dominant vegetation on the Caralampi soil:
• In the potential plant community—sideoats grama, cane beardgrass, plains lovegrass, black grama, blue grama, sprucetop grama, false mesquite, curly mesquite, range ratany
• In the present plant community—mesquite, whitethorn, Lehmann lovegrass, burroweed

Dominant vegetation on the White House soil:
• In the potential plant community—sideoats grama, cane beardgrass, plains lovegrass, blue grama, sprucetop grama, curly mesquite, false mesquite
• In the present plant community—mesquite, Lehmann lovegrass, burroweed, sprucetop grama, curly mesquite

Special Management Concerns

• The high or moderate shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• Excess rock fragments in the Eloma and Caralampi soils interfere with excavations.
• The White House soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• The high content of clay in these soils restricts water infiltration and permeability.

Interpretive Groups

Land capability classification:
Eloma and Caralampi—VIs nonirrigated
White House—VIe nonirrigated
Ecological site:
Eloma—Clay Loam Upland, 12- to 16-inch precipitation zone, 041XC305AZ
Caralampi and White House—Loamy Upland, 12- to 16-inch precipitation zone, 041XC313AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

61—Epitaph very cobbly clay loam, 3 to 15 percent slopes

Setting

Landform: hills
Slope range: 3 to 15 percent
Elevation: 4,700 to 4,900 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Epitaph and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

About 40 to 50 percent of the surface is covered with gravel and cobbles.

0 to 1 inch—dark brown very cobbly clay loam
1 to 6 inches—dark reddish brown clay
6 to 27 inches—dark reddish brown clay
27 to 38 inches—indurated hardpan
38 inches—unweathered basalt

Soil Properties and Qualities

Parent material: slope alluvium and residuum derived from basalt
Depth class: moderately deep to a hardpan
Drainage class: well drained
Permeability: very slow
Available water capacity: low
Potential rooting depth: 20 to 40 inches
Runoff rate: medium or high
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: very high
Soil cracking: many vertical cracks 0.25 inch to 1.5 inches wide from the surface to the hardpan
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
• Lampshire soils, which have less than 18 percent clay
• Rock outcrop
• Graham soils, which are very shallow or shallow to bedrock

Similar inclusions:
• Epitaph soils that have a gravelly surface layer

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: very high shrink-swell potential, depth to a hardpan and bedrock

Dominant vegetation:
• In the potential plant community—sideoats grama, tobosa, vine mesquite, blue grama, curly mesquite, pricklypear, cane beardgrass
• In the present plant community—tobosa, curly mesquite, sideoats grama, bush muhly, fluffgrass, cane beardgrass, mesquite, whitethorn, burroweed, wait-a-bit mimosa, cactus

Special Management Concerns

• Mesquite that has invaded this unit should be grubbed. Knifing is not a good alternative because it kills all of the grass as well as the mesquite.
• Bare areas develop where this unit is overused. Reestablishing grasses is difficult in these areas because of the very high shrink-swell potential.
• The very high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Clayey Upland, 12- to 16-inch precipitation zone, 041XC304AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

62—Far-Hogris association, 15 to 60 percent slopes

Setting

Landform: hills and mountains
Slope range: Far—25 to 60 percent; Hogris—15 to 50 percent
Elevation: 5,600 to 7,000 feet
Mean annual precipitation: 20 to 24 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 120 to 180 days

Composition

Far and similar soils: 55 percent
Hogris and similar soils: 25 percent
Contrasting inclusions: 20 percent

Typical Profile

Far

0 to 1 inch—slightly decomposed oak and pine litter
1 to 3 inches—dark brown stony fine sandy loam
3 to 16 inches—brown very cobbly fine sandy loam
16 inches—unweathered sandstone

Hogris

0 to 2 inches—slightly decomposed oak and pine litter
2 to 5 inches—very dark grayish brown extremely cobbly fine sandy loam
5 to 14 inches—brown extremely cobbly sandy loam
14 to 38 inches—grayish brown extremely cobbly sandy loam
38 to 60 inches—brown extremely cobbly sandy loam

Soil Properties and Qualities

Far

Parent material: mixed slope alluvium
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: averages more than 35 percent, ranges to 60 percent
Corrosivity: steel—high; concrete—moderate

Hogris

Parent material: mixed slope alluvium
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 40 to 80 percent
Corrosivity: steel—high; concrete—moderate

Contrasting Inclusions

• Huachuca soils, which are very shallow or shallow to limestone bedrock
• Fluvaquents and Haplustolls in drainageways that form perennial streams and springs

- Rock outcrop
- Soils that are moderately deep and have more than 35 percent clay

Use and Management

Major current use: wildlife habitat

Soil-related factors: slope, depth to bedrock, excessive runoff, hazard of water erosion

Dominant vegetation on the Far soil:
- In the potential and present plant communities—40 percent canopy cover of Arizona white oak, Emory oak, alligator juniper, Mexican pinyon, and silverleaf oak with an understory of Texas bluestem, bullgrass, sideoats grama, plains lovegrass, prairie junegrass, sacahuista, yucca, mountain mahogany, silktassel, and manzanita

Dominant vegetation on the Hogris soil:
- In the potential and present plant communities—30 percent canopy cover of Arizona white oak, Emory oak, alligator juniper, and Mexican pinyon with an understory of bullgrass, plains lovegrass, beggartick threeawn, sideoats grama, Texas bluestem, wooly bunchgrass, hairy grama, sedge, yucca, sacahuista, and sotol

Special Management Concerns

- This unit responds well to managed, natural and prescribed fires.
- On sites for roads, special design is needed to overcome the slope.
- These soils have a moderate or severe hazard of water erosion because of the slope; therefore, special consideration should be given to water management.
- Steep slopes cause management problems on this unit.

Interpretive Groups

Land capability classification:
Slopes of 15 to 30 percent—VIs nonirrigated
Slopes of 30 to 60 percent—VIe nonirrigated
Ecological site:
Far—Shallow Hill (QUEM, QUAR, JUDE), 20- to 23-inch precipitation zone, 041XA120AZ
Hogris—Loamy Hills (QUAR, QUEM), 20- to 23-inch precipitation zone, 041A124AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

63—Far-Huachuca-Hogris association, 15 to 70 percent slopes

Setting

Landform: hills and mountains
Slope range: Far—25 to 60 percent; Huachuca—25 to 70 percent; Hogris—15 to 50 percent
Elevation: Far and Hogris—5,600 to 6,600 feet; Huachuca—6,000 to 7,400 feet
Mean annual precipitation: 20 to 24 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 120 to 180 days

Composition

Far and similar soils: 35 percent
Huachuca and similar soils: 35 percent
Hogris and similar soils: 20 percent
Contrasting inclusions: 10 percent

Typical Profile

Far

0 to 1 inch—slightly decomposed oak and pine litter
1 to 7 inches—dark grayish brown very gravelly sandy loam
7 to 16 inches—yellowish brown very gravelly sandy loam
16 inches—unweathered granite

Huachuca

0 to 3 inches—slightly decomposed grass and oak litter
3 to 8 inches—brown very stony loam
8 inches—unweathered limestone

Hogris

0 to 2 inches—slightly decomposed oak and pine litter
2 to 6 inches—dark grayish brown extremely cobbly loam
6 to 9 inches—brown extremely cobbly loam
9 to 14 inches—yellowish brown extremely cobbly fine sandy loam
14 to 60 inches—yellowish brown extremely cobbly sandy loam

Soil Properties and Qualities

Far

Parent material: mixed slope alluvium
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid

Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: averages more than 35 percent, ranges to 60 percent
Corrosivity: steel—high; concrete—moderate

Huachuca

Parent material: slope alluvium derived from limestone
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderate
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Calcium carbonate equivalent: less than 5 percent
Corrosivity: steel—moderate; concrete—low

Hogris

Parent material: mixed slope alluvium
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 40 to 80 percent
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Fluvaquents and Haplustolls in drainageways that form perennial streams and springs

Similar inclusions:
- Soils that are very shallow or shallow to bedrock and have more than 40 percent calcium carbonate

Use and Management

Major current use: wildlife habitat

Soil-related factors: depth to bedrock, hazard of water erosion, slope, excessive runoff

Dominant vegetation on the Far soil:
- In the potential and present plant communities—30 percent canopy cover of Arizona white oak, Emory oak, alligator juniper, and Mexican pinyon with an understory of Texas bluestem, bullgrass, sideoats grama, crinkleawn, plains lovegrass, prairie junegrass, beggartick threeawn, sacahuista, manzanita, and mountain mahogany

Dominant vegetation on the Huachuca soil:
- In the potential and present plant communities—35 percent canopy cover of alligator juniper, Mexican pinyon, and mountain mahogany with an understory of pinyon ricegrass, sideoats grama, bullgrass, silktassel, blue muhly, and agave

Dominant vegetation on the Hogris soil:
- In the potential and present plant communities—35 percent canopy cover of Arizona white oak, Emory oak, alligator juniper, and Mexican pinyon with an understory of bullgrass, plains lovegrass, beggartick threeawn, sideoats grama, Texas bluestem, wooly bunchgrass, hairy grama, sedge, yucca, sacahuista, and sotol

Special Management Concerns

- This unit responds well to managed, natural and prescribed fires.
- These soils have a moderate or severe hazard of water erosion because of the slope; therefore, special consideration should be given to water management.
- Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Slopes of 15 to 30 percent—VIs nonirrigated
Slopes of 30 to 70 percent—VIe nonirrigated
Ecological site:
Far—Shallow Hills (QUEM, QUAR, JUDE), 20- to 23-inch precipitation zone, 041A120AZ
Huachuca—Limestone Hills (CERCO, PICE, JUDE2, QUAR), 20- to 23-inch precipitation zone, 041A121AZ
Hogris—Loamy Hills (QUAR, QUEM), 20- to 23-inch precipitation zone, 41AZ124AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

64—Far-Huachuca-Hogris association, moist, 15 to 70 percent slopes

Setting

Landform: hills and mountains

Slope range: Far—25 to 60 percent; Huachuca—25 to 70 percent; Hogris—15 to 50 percent
Elevation: Far and Hogris—6,600 to 7,700 feet; Huachuca—7,000 to 8,410 feet
Mean annual precipitation: 24 to 27 inches
Mean annual air temperature: 47 to 55 degrees F
Frost-free period: 120 to 180 days

Composition

Far and similar soils: 35 percent
Huachuca and similar soils: 35 percent
Hogris and similar soils: 20 percent
Contrasting inclusions: 10 percent

Typical Profile

Far

0 to 1 inch—slightly decomposed oak and pine litter
1 to 7 inches—dark grayish brown very gravelly sandy loam
7 to 16 inches—yellowish brown very gravelly sandy loam
16 inches—unweathered granite

Huachuca

0 to 3 inches—slightly decomposed grass and oak litter
3 to 8 inches—brown very stony loam
8 inches—unweathered limestone

Hogris

0 to 2 inches—slightly decomposed oak and pine litter
2 to 6 inches—dark grayish brown extremely cobbly loam
6 to 9 inches—brown extremely cobbly loam
9 to 14 inches—yellowish brown extremely cobbly fine sandy loam
14 to 60 inches—yellowish brown extremely cobbly sandy loam

Soil Properties and Qualities

Far

Parent material: mixed slope alluvium
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: averages more than 35 percent, ranges to 60 percent
Corrosivity: steel—high; concrete—moderate

Huachuca

Parent material: slope alluvium derived from limestone
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderate
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Calcium carbonate equivalent: less than 5 percent
Corrosivity: steel—moderate; concrete—low

Hogris

Parent material: mixed slope alluvium
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 40 to 80 percent
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Fluvaquents and Haplustolls in drainageways that form perennial streams and springs

Similar inclusions:
- Soils that are very shallow or shallow to bedrock and have more than 40 percent calcium carbonate

Use and Management

Major current use: wildlife habitat

Soil-related factors: depth to bedrock, hazard of water erosion, slope, excessive runoff

Dominant vegetation on the Far soil:
- In the potential and present plant communities—50 percent canopy cover of Arizona white oak, silverleaf oak, ponderosa pine, Apache pine, Chihuahua pine, and Mexican pinyon with an understory of Texas bluestem, bullgrass, sideoats grama, crinkleawn, plains lovegrass, prairie junegrass, manzanita, and mountain mahogany

Dominant vegetation on the Huachuca soil:
• In the potential and present plant communities—45 percent canopy cover of alligator juniper, Mexican pinyon, mountain mahogany, silverleaf oak, ponderosa pine, Apache pine, and Arizona white oak with an understory of pinyon ricegrass, sideoats grama, bullgrass, silktassel, blue muhly, and agave

Dominant vegetation on the Hogris soil:
• In the potential and present plant communities—35 percent canopy cover of Arizona white oak, Emory oak, alligator juniper, and Mexican pinyon with an understory of bullgrass, plains lovegrass, beggartick threeawn, sideoats grama, Texas bluestem, wooly bunchgrass, hairy grama, sedge, yucca, sacahuista, and sotol

Special Management Concerns

• This unit responds well to managed, natural and prescribed fires.
• These soils have a moderate or severe hazard of water erosion because of the slope; therefore, special consideration should be given to water management.
• Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Slopes of 15 to 30 percent—VIs nonirrigated
Slopes of 30 to 70 percent—VIe nonirrigated
Ecological site:
Far and Huachuca—Mountains (PIPO), 25+-inch precipitation zone, 041XA128AZ
Hogris—Loamy Hills (QUAR, QUEM), 20- to 23-inch precipitation zone, 041A124AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

65—Forrest clay loam, 1 to 3 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 3 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Forrest and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 6 inches—brown clay loam
6 to 28 inches—reddish brown and light reddish brown clay
28 to 37 inches—pink, calcareous clay
37 to 60 inches—pink, calcareous clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: high
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 15 to 30 percent in the lower part of the soil
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
• McAllister, Courtland, McNeal, Kahn, and Riveroad soils, which have 18 to 35 percent clay
• Sasabe soils, which do not have accumulations of calcium carbonate
• Luckyhills, Combate, Comoro, Diaspar, Mallet, Stronghold, and Ubik soils, which have less than 18 percent clay
• Libby, Gulch, and Zapolote soils, which have petronodes and/or gypsum
• Guest and Bonita soils, which do not have an argillic horizon
• Blakeney and Buntline soils, which are very shallow or shallow to a hardpan
• Bodecker, Altar, and Nolam soils, which have more than 35 percent rock fragments
• Durazo soils, which are sandy and have a very high hazard of wind erosion

Similar inclusions:
• Forrest soils that have a surface layer of sandy loam
• Forrest soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: high shrink-swell potential, hazard of wind erosion, slow permeability

Dominant vegetation:
• In the potential plant community—blue grama, vine mesquite, sideoats grama, cane beardgrass, tobosa, giant sacaton, yucca, creeping muhly
• In the present plant community—blue grama, vine mesquite, Lehmann lovegrass, annual forbs, burroweed, broom snakeweed, yucca

Special Management Concerns

• Overuse results in a loss of diversity in the plant community.
• The high content of clay in the soil restricts water infiltration and permeability.
• The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• This soil has a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Loamy Bottom, Swales, 12- to 16-inch precipitation zone, 041XC311AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

66—Forrest clay loam, saline-sodic, 1 to 3 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 3 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Forrest and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 6 inches—brown clay loam
6 to 28 inches—reddish brown and light reddish brown, saline-sodic clay
28 to 37 inches—pink, saline-sodic, calcareous clay
37 to 60 inches—pink, saline-sodic, calcareous clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: high
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 15 to 30 percent in the lower part of the soil
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
• McAllister, Courtland, McNeal, Kahn, and Riveroad soils, which have 18 to 35 percent clay
• Sasabe soils, which do not have accumulations of calcium carbonate
• Luckyhills, Combate, Comoro, Diaspar, Mallet, Stronghold, and Ubik soils, which have less than 18 percent clay
• Libby, Gulch, and Zapolote soils, which have petronodes and/or gypsum
• Guest and Bonita soils, which do not have an argillic horizon
• Blakeney and Buntline soils, which are very shallow or shallow to a hardpan
• Bodecker, Altar, and Nolam soils, which have more than 35 percent rock fragments
• Durazo soils, which are sandy and have a very high hazard of wind erosion

Similar inclusions:
• Forrest soils that have a surface layer of sandy loam

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: high shrink-swell potential, hazard of wind erosion, slow permeability, excess salts, sodium, and gypsum

Dominant vegetation:
• In the potential plant community—blue grama, vine

mesquite, sideoats grama, cane beardgrass, tobosa, giant sacaton, yucca, creeping muhly, alkali sacaton, inland saltgrass, fourwing saltbush
• In the present plant community—blue grama, vine mesquite, Lehmann lovegrass, annual forbs, burroweed, broom snakeweed, yucca, alkali sacaton, annual grasses, mesquite, wolfberry, tobosa

Special Management Concerns

• Overuse results in a loss of diversity in the plant community.
• The high content of clay in the soil restricts water infiltration and permeability.
• The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• This soil has a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
• Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
• Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
• This soil is very strongly alkaline. The alkalinity restricts plant growth.
• The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
• The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

67—Forrest sandy loam, 1 to 3 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 3 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Forrest and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 6 inches—brown sandy loam
6 to 28 inches—reddish brown and light reddish brown clay
28 to 37 inches—pink, calcareous clay
37 to 60 inches—pink, calcareous clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: high
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 15 to 30 percent in the lower part of the soil
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
• McAllister and Riveroad soils, which have 18 to 35 percent clay
• Sasabe soils, which do not have accumulations of calcium carbonate
• Luckyhills, Combate, Comoro, Mallet, and Ubik soils, which have less than 18 percent clay
• Bodecker and Altar soils, which have more than 35 percent rock fragments

Similar inclusions:
• Forrest soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: high shrink-swell potential, hazard of wind erosion, slow permeability

Dominant vegetation:
• In the potential plant community—blue grama, vine mesquite, sideoats grama, cane beardgrass, tobosa, giant sacaton, yucca, creeping muhly

• In the present plant community—blue grama, vine mesquite, Lehmann lovegrass, annual forbs, burroweed, broom snakeweed, yucca

Special Management Concerns

• Overuse results in a loss of diversity in the plant community.
• The high content of clay in the soil restricts water infiltration and permeability.
• The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification: IIIe irrigated and VIe nonirrigated
Ecological site: Loamy Bottom, Swales, 12- to 16-inch precipitation zone, 041XC311AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

68—Forrest silt loam, 0 to 1 percent slopes

Setting

Landform: fan terraces
Slope range: 0 to 1 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Forrest and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 6 inches—brown silt loam
6 to 28 inches—reddish brown and light reddish brown clay
28 to 37 inches—pink, calcareous clay
37 to 60 inches—pink, calcareous clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—slight
Shrink-swell potential: high
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 15 to 30 percent in the lower part of the soil
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
• McAllister, Courtland, and Riveroad soils, which have 18 to 35 percent clay
• Sasabe soils, which do not have accumulations of calcium carbonate
• Luckyhills, Combate, Comoro, and Ubik soils, which have less than 18 percent clay
• Bodecker soils, which have more than 35 percent rock fragments
• Guest soils, which do not have an argillic horizon
• Durazo soils, which are sandy and have a very high hazard of wind erosion

Similar inclusions:
• Forrest soils that have a surface layer of sandy loam
• Forrest soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: high shrink-swell potential, hazard of water erosion, slow permeability

Dominant vegetation:
• In the potential plant community—blue grama, vine mesquite, sideoats grama, cane beardgrass, tobosa, giant sacaton, yucca, creeping muhly
• In the present plant community—blue grama, vine mesquite, Lehmann lovegrass, annual forbs, burroweed, broom snakeweed, yucca

Special Management Concerns

• Overuse results in a loss of diversity in the plant community.
• The high content of clay in the soil restricts water infiltration and permeability.
• The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• This soil has a moderate hazard of water erosion; therefore, special consideration should be given to water management.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Loamy Bottom, Swales, 12- to 16-inch precipitation zone, 041XC311AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

69—Forrest silt loam, saline-sodic, 1 to 3 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 3 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Forrest and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 6 inches—brown silt loam
6 to 28 inches—reddish brown and light reddish brown, saline-sodic clay
28 to 37 inches—pink, saline-sodic, calcareous clay
37 to 60 inches—pink, saline-sodic, calcareous clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—slight
Shrink-swell potential: high
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 15 to 30 percent in the lower part of the soil
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- McAllister, Courtland, and Riveroad soils, which have 18 to 35 percent clay
- Sasabe soils, which do not have accumulations of calcium carbonate
- Luckyhills, Combate, Comoro, and Ubik soils, which have less than 18 percent clay
- Bodecker soils, which have more than 35 percent rock fragments
- Guest soils, which do not have an argillic horizon
- Durazo soils, which are sandy and have a very high hazard of wind erosion

Similar inclusions:
- Forrest soils that have a surface layer of sandy loam

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: high shrink-swell potential, hazard of water erosion, slow permeability, excess salts, sodium, and gypsum

Dominant vegetation:
- In the potential plant community—blue grama, vine mesquite, sideoats grama, cane beardgrass, tobosa, giant sacaton, yucca, creeping muhly, alkali sacaton, inland saltgrass, fourwing saltbush
- In the present plant community—blue grama, vine mesquite, Lehmann lovegrass, annual forbs, burroweed, broom snakeweed, yucca, alkali sacaton, annual grasses, mesquite, wolfberry, tobosa

Special Management Concerns

- Overuse results in a loss of diversity in the plant community.
- The high content of clay in the soil restricts water infiltration and permeability.
- The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- This soil has a moderate hazard of water erosion; therefore, special consideration should be given to water management.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.

• The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
• The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

70—Forrest-Bonita complex, 0 to 3 percent slopes

Setting

Landform: Forrest—basin floors; Bonita—flood plains
Slope range: 0 to 3 percent
Frequency of flooding: Forrest—none; Bonita—rare or occasional
Elevation: 4,100 to 4,750 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Forrest and similar soils: 55 percent
Bonita and similar soils: 40 percent
Contrasting inclusions: 5 percent

Typical Profile

Forrest

0 to 1 inch—brown fine sandy loam
1 to 7 inches—reddish brown sandy clay loam
7 to 22 inches—reddish brown clay
22 to 39 inches—yellowish red and pinkish white, calcareous clay loam
39 to 60 inches—light reddish brown and reddish brown, calcareous sandy clay loam

Bonita

0 to 2 inches—grayish brown silt loam
2 to 5 inches—dark grayish brown silty clay loam
5 to 20 inches—dark brown silty clay
20 to 40 inches—dark reddish gray and reddish brown clay
40 to 60 inches—reddish brown and pink clay loam

Soil Properties and Qualities

Forrest

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: high
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 15 to 30 percent in the lower part of the soil
Corrosivity: steel—high; concrete—low

Bonita

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: well drained
Permeability: very slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: very high
Calcium carbonate equivalent: 1 to 10 percent
Depth to a buried horizon: 25 to 40 inches
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
• Grizzle soils, which have sandstone bedrock at a moderate depth
• Elgin soils, which have accumulations of calcium carbonate at a depth of 20 to 40 inches
• McAllister and Riveroad soils, which have less than 35 percent clay
• Sasabe soils, which do not have accumulations of calcium carbonate
• Blakeney soils, which are very shallow or shallow to a hardpan
• Luckyhills, Combate, Comoro, and Ubik soils, which have less than 18 percent clay
• Libby soils, which have petronodes in the lower horizons
• Tombstone soils, which have more than 35 percent rock fragments

Similar inclusions:
• Forrest soils that have a thicker surface layer of sandy loam

• Forrest and Bonita soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw
• Bonita soils that have a buried soil at a depth of 15 to 20 inches
• Banshee soils, which have gypsum in the lower horizons

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors:
Forrest—high shrink-swell potential, hazard of wind erosion
Bonita—very high shrink-swell potential, hazard of flooding

Dominant vegetation on the Forrest soil:
• In the potential plant community—blue grama, vine mesquite, sideoats grama, cane beardgrass, tobosa, giant sacaton, yucca, creeping muhly
• In the present plant community—blue grama, vine mesquite, Lehmann lovegrass, annual forbs, burroweed, broom snakeweed, yucca

Dominant vegetation on the Bonita soil:
• In the potential plant community—tobosa, sideoats grama, cane beardgrass, blue grama, vine mesquite
• In the present plant community—tobosa, sideoats grama, mesquite, yucca, cholla

Special Management Concerns

• This unit provides good livestock forage for year-round use.
• Overuse results in a loss of diversity in the plant community.
• Consistent heavy grazing rapidly changes the plant community to blue grama and mesquite. As further abuse occurs, bare areas and square, banked gullies become prevalent.
• The high or very high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• The Forrest soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• Structures should be located above the expected level of flooding.

Interpretive Groups

Land capability classification:
Forrest—IIIe irrigated and VIe nonirrigated
Bonita—IIIs irrigated and VIs nonirrigated

Ecological site:
Forrest—Loamy Bottom, Swales, 12- to 16-inch precipitation zone, 041XC311AZ
Bonita—Clayey Bottom, 12- to 16-inch precipitation zone, 041XC302AZ

Major land resource area: 41—Southeastern Arizona Basin and Range

Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

71—Gardencan-Lanque complex, 0 to 5 percent slopes

Setting

Landform: Gardencan—fan terraces; Lanque—alluvial fans and stream terraces
Slope range: 0 to 5 percent
Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Gardencan and similar soils: 45 percent
Lanque and similar soils: 35 percent
Contrasting inclusions: 20 percent

Typical Profile

Gardencan

0 to 4 inches—brown and strong brown sandy loam
4 to 9 inches—reddish brown sandy clay loam
9 to 20 inches—yellowish red sandy clay loam
20 to 39 inches—red gravelly clay loam
39 to 60 inches—yellowish red very cobbly sandy clay loam

Lanque

0 to 4 inches—dark brown sandy loam
4 to 19 inches—dark brown sandy loam
19 to 46 inches—dark grayish brown coarse sandy loam
46 to 60 inches—dark grayish brown sandy clay loam

Soil Properties and Qualities

Gardencan

Parent material: fan alluvium derived from granite and gneiss
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow

Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Content of rock fragments: averages less than 35 percent, but can range to 55 percent in individual horizons
Corrosivity: steel—high; concrete—moderate

Lanque

Parent material: fan alluvium and stream alluvium derived from granite and gneiss
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: averages less than 35 percent, but can range to 50 percent in individual horizons
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Terrarossa and Cherrycow soils, which have more than 35 percent clay
- Rafter soils, which have more than 35 percent rock fragments and are in drainageways
- Fluvaquents, which are in drainageways and are wet
- Carbine soils, which are very shallow or shallow to a hardpan
- Magoffin soils, which are very shallow or shallow to bedrock
- Oversight, Crowbar, and Brunopeak soils, which have more than 35 percent rock fragments

Similar inclusions:
- Gardencan and Lanque soils on forest-land sites, which have a tree canopy cover of more than 15 percent

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Gardencan—hazard of wind erosion
Lanque—hazard of wind erosion, fast intake rate

Dominant vegetation:
- In the potential plant community—plains lovegrass, sideoats grama, green sprangletop, blue grama, wooly bunchgrass, shrubby buckwheat, mesquite, Emory oak, cane beardgrass
- In the present plant community—plains lovegrass, sideoats grama, Emory oak, green sprangletop, blue grama, wooly bunchgrass, shrubby buckwheat

Special Management Concerns

- This unit responds well to managed, natural and prescribed fires.
- These soils have a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- This unit has few limitations and should be very productive if proper management is applied.
- Because of the moderately rapid permeability in the Lanque soil, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.

Interpretive Groups

Land capability classification: IIe irrigated and VIe nonirrigated
Ecological site: Sandy Loam Upland, 16- to 20-inch precipitation zone, 041XA110AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

72—Glendale very fine sandy loam, 0 to 2 percent slopes

Setting

Landform: flood plains
Slope range: 0 to 2 percent
Frequency of flooding: none or rare
Elevation: 3,600 to 3,800 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 190 to 230 days

Composition

Glendale and similar soils: 80 percent
Contrasting inclusions: 20 percent

Typical Profile

0 to 7 inches—brown very fine sandy loam
7 to 31 inches—brown silty clay loam
31 to 45 inches—brown loam

45 to 60 inches—light brown silty clay loam

Soil Properties and Qualities

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—moderately high
Shrink-swell potential: moderate
Corrosivity: steel—high; concrete—low

Contrasting Inclusions

- Hantz soils, which have more than 35 percent clay
- Anthony and Maricopa soils, which have less than 18 percent clay
- Contention soils, which have gypsum and more than 35 percent clay

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazards of wind erosion and water erosion, moderate shrink-swell potential

Dominant vegetation:
- In the potential plant community—45 percent canopy cover of velvet mesquite, screwbean mesquite, western honey mesquite, netleaf hackberry, and Mexican elderberry with an understory of giant sacaton, sideoats grama, tobosa, vine mesquite, threeawn, fourwing saltbush, bottlebrush squirrletail, plains bristlegrass, and graythorn
- In the present plant community—mesquite, saltcedar, graythorn, wolfberry, annuals, giant sacaton

Special Management Concerns

- This soil has a moderate hazard of water erosion; therefore, special consideration should be given to water management.
- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- The moderate shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- This unit has few limitations and should be very productive if proper management is applied.

Interpretive Groups

Land capability classification: IIe irrigated and VIIe nonirrigated
Ecological site: Loamy Bottom (PRVE), 7- to 12-inch precipitation zone, 041XB221AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-2AZ—Chihuahuan-Sonoran Desert Shrub Mix

73—Gothard loam, 1 to 3 percent slopes

Setting

Landform: basin floors
Slope range: 1 to 3 percent
Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Gothard and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 3 inches—pale brown loam
3 to 8 inches—brown sandy loam
8 to 18 inches—dark reddish brown, saline-sodic sandy clay loam
18 to 30 inches—reddish brown, saline-sodic sandy clay loam
30 to 60 inches—reddish brown, saline-sodic, calcareous clay

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—moderate
Shrink-swell potential: moderate or high
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 5 to 25 percent in the lower part of the soil
Content of gypsum: 0 to 5 percent
Salinity: slight to strong

Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- Sasabe, Courtland, Mallet, Hooks, and Diaspar soils, which do not have accumulations of calcium carbonate
- Ubik and Riveroad soils in drainageways
- Luckyhills soils, which have less than 18 percent clay
- Kahn soils, which do not have an argillic horizon
- Altar soils, which have more than 35 percent rock fragments
- Buntline and Blakeney soils, which are very shallow or shallow to a hardpan
- Forrest, Bonita, Guest, and Eloma soils, which have more than 35 percent clay

Similar inclusions:
- Gothard soils that have a surface layer of sandy loam

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: moderate or high shrink-swell potential, hazard of flooding, excess salts, sodium, and gypsum

Dominant vegetation:
- In the potential plant community—alkali sacaton, giant sacaton, inland saltgrass, tobosa, vine mesquite, fourwing saltbush, mesquite
- In the present plant community—alkali sacaton, annual grasses, mesquite, wolfberry, tobosa

Special Management Concerns

- The moderate or high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.
- Structures should be located above the expected level of flooding.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

74—Gothard sandy loam, 0 to 2 percent slopes

Setting

Landform: flood plains and basin floors
Slope range: 0 to 2 percent
Frequency of flooding: common
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Gothard and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 3 inches—brown sandy loam
3 to 8 inches—brown sandy loam
8 to 18 inches—dark reddish brown, saline-sodic sandy clay loam
18 to 30 inches—reddish brown, saline-sodic sandy clay loam
30 to 60 inches—reddish brown, saline-sodic, calcareous clay

Soil Properties and Qualities

Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—moderately high
Shrink-swell potential: moderate or high
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 5 to 25 percent
Content of gypsum: 0 to 5 percent

Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- McAllister, Sasabe, Courtland, and Diaspar soils with no saline and sodic properties
- Ubik and Riveroad soils with no sodic properties; in drainageways
- Marsh
- Ubik soils that are very strongly alkaline
- Soils that have more rock fragments than the Gothard soil

Similar inclusions:
- Gothard soils that have more than 5 percent gypsum
- Gothard soils that have a surface layer of clay loam

Use and Management

Major current uses: livestock grazing, wildlife habitat, and irrigated cropland

Soil-related factors: hazard of soil piping; excess salts, sodium, and gypsum; hazards of water erosion, wind erosion, and flooding

Dominant vegetation:
- In the potential plant community—alkali sacaton, giant sacaton, inland saltgrass, tobosa, vine mesquite, fourwing saltbush, mesquite
- In the present plant community—alkali sacaton, annual grasses, mesquite, wolfberry, tobosa

Special Management Concerns

- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.
- This soil has a moderate hazard of water erosion; therefore, special consideration should be given to water management.
- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Structures should be located above the expected level of flooding.

Interpretive Groups

Land capability classification: IIIe irrigated and VIe nonirrigated
Ecological site: Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

75—Graham-Lampshire complex, 8 to 60 percent slopes

Setting

Landform: hills and mountains
Slope range: Graham—8 to 40 percent; Lampshire—15 to 60 percent
Elevation: 4,400 to 5,590 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Graham and similar soils: 60 percent
Lampshire and similar soils: 25 percent
Contrasting inclusions: 15 percent

Typical Profile

Graham

About 45 to 55 percent of the surface is covered with gravel, cobbles, and stones.

0 to 1 inch—brown very cobbly loam
1 to 10 inches—reddish brown clay
10 inches—unweathered basalt

Lampshire

About 45 to 55 percent of the surface is covered with gravel, cobbles, and stones.

0 to 5 inches—brown very stony loam
5 inches—unweathered basalt

Soil Properties and Qualities

Graham

Parent material: slope alluvium and residuum derived from basalt
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: very slow
Available water capacity: very low
Potential rooting depth: 8 to 20 inches
Runoff rate: medium to very high

Hazard of erosion: by water—slight to severe; by wind—very slight
Shrink-swell potential: very high
Content of rock fragments: 10 to 40 percent gravel and cobbles
Corrosivity: steel—high; concrete—low

Lampshire

Parent material: slope alluvium and residuum derived from igneous rocks
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderate
Available water capacity: very low
Potential rooting depth: 4 to 20 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 35 to 70 percent
Corrosivity: steel—moderate; concrete—low

Inclusions

Contrasting inclusions:
- Andrada soils, which are calcareous and overlie fragmental bedrock
- Rock outcrop
- Epitaph and Paramore soils, which are moderately deep
- Elgin, Stronghold, and Outlaw soils, which are very deep
- Brunkcow soils, which have 18 to 35 percent clay

Similar inclusions:
- Graham soils that have a gravelly surface layer
- Graham soils that have a thicker surface layer of sandy loam
- Graham soils that are calcareous and are adjacent to areas of limestone
- Graham soils that have slopes of less than 15 percent and are in the ecological site Clayey Upland, 12- to 16-inch precipitation zone, 041XC304AZ

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Graham—very high shrink-swell potential, slope, depth to bedrock, very slow permeability
Lampshire—slope, depth to bedrock, stony surface

Dominant vegetation on the Graham soil:
- In the potential plant community—sideoats grama, cane beardgrass, tobosa, plains lovegrass, black grama, curly mesquite, fourwing saltbush, threeawn
- In the present plant community—curly mesquite, threeawn, hairy grama, tobosa, cane beardgrass, snakeweed, mesquite, yerba de pasmo

Dominant vegetation on the Lampshire soil:
- In the potential plant community—sideoats grama, hairy grama, slender grama, sprucetop grama, black grama, cane beardgrass, plains lovegrass, tanglehead, false mesquite, Gregg dalea, sotol, ocotillo, agave, cloak fern
- In the present plant community—sideoats grama, Lehmann lovegrass, plains lovegrass, hairy grama, turpentinebush, sotol, ocotillo, mesquite

Special Management Concerns

- This unit produces a good volume of palatable forage.
- Mesquite should not be controlled by knifing, which damages the grass species.
- Excessive use results in bare areas. Reestablishing grasses can be very difficult in these areas.
- Steep slopes cause management problems.
- The Lampshire soil can produce a wide diversity of palatable forage. The slope and a rough surface, however, may limit livestock movement.
- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- The very high shrink-swell of the Graham soil should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The high content of clay in the Graham soil restricts water infiltration and permeability.

Interpretive Groups

Land capability classification:
Slopes of 8 to 30 percent—VIs nonirrigated
Slopes of 30 to 60 percent—VIe nonirrigated
Ecological site: Basalt Hills, 12- to 16-inch precipitation zone, 041XC301AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

76—Graveyard-Sierravista complex, 0 to 8 percent slopes

Setting

Landform: stream terraces and fan terraces
Slope range: 0 to 8 percent
Elevation: 4,200 to 4,600 feet

Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Graveyard and similar soils: 45 percent
Sierravista and similar soils: 35 percent
Contrasting inclusions: 20 percent

Typical Profile

Graveyard

0 to 3 inches—strong brown fine sandy loam
3 to 9 inches—brown, calcareous sandy loam
9 to 16 inches—brown, calcareous very gravelly sandy loam
16 to 34 inches—brown and light brown, calcareous extremely gravelly sandy loam
34 to 56 inches—brown and light brown, calcareous very gravelly sandy loam
56 to 60 inches—brown and light brown, calcareous extremely gravelly sandy loam

Sierravista

0 to 3 inches—yellowish red fine sandy loam
3 to 21 inches—dark red very gravelly sandy clay loam
21 to 42 inches—red very gravelly sandy clay loam
42 to 60 inches—pink and weak red, calcareous extremely gravelly sandy loam

Soil Properties and Qualities

Graveyard

Parent material: mixed alluvium
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Available water capacity: low
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—moderate or severe; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: more than 35 percent gravel and petronodes
Depth to a calcic horizon: 3 to 20 inches
Calcium carbonate equivalent: 3 to 40 percent
Content of gypsum: 0 to 5 percent
Corrosivity: steel—moderate; concrete—high

Sierravista

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight or moderate; by wind—moderately high
Shrink-swell potential: moderate
Content of rock fragments: 35 to 80 percent gravel and petronodes
Depth to a calcic horizon: 30 to 50 inches
Calcium carbonate equivalent: 0 to 5 percent in the upper part of the soil and more than 15 percent in the lower part
Corrosivity: steel—high; concrete—low

Contrasting Inclusions

- Diaspar, Comoro, Courtland, and Gulch soils, which have less than 35 percent gravel
- Sasabe and Libby soils, which have more than 35 percent clay
- Vana, Bella, and Blakeney soils, which are very shallow or shallow to a hardpan

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: droughtiness, hazard of wind erosion, content of rock fragments, content of calcium carbonate

Dominant vegetation on the Graveyard soil:
- In the potential plant community—creosotebush, whitethorn, tarbush, black grama, bush muhly
- In the present plant community—creosotebush, whitethorn, tarbush, black grama, bush muhly, desert zinnia, burroweed

Dominant vegetation on the Sierravista soil:
- In the potential plant community—sideoats grama, cane bluestem, bush muhly
- In the present plant community—Lehmann lovegrass, bush muhly, desert zinnia, red threeawn, burroweed, tarbush

Special Management Concerns

- These soils have a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Excess rock fragments in the soils interfere with excavations.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: VIe nonirrigated
Ecological site:
Graveyard—Limy Slopes, 12- to 16-inch precipitation zone, 041XC308AZ
Sierravista—Loamy Upland, 12- to 16-inch precipitation zone, 041XC313AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

77—Grizzle coarse sandy loam, 3 to 8 percent slopes

Setting

Landform: hills
Slope range: 3 to 8 percent
Elevation: 4,500 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Grizzle and similar soils: 80 percent
Contrasting inclusions: 20 percent

Typical Profile

0 to 1 inch—reddish brown coarse sandy loam
1 to 6 inches—reddish brown, calcareous clay loam
6 to 14 inches—reddish brown, compacted, calcareous loam
14 to 32 inches—reddish brown, compacted, calcareous loam
32 to 50 inches—weathered sandstone
50 inches—unweathered sandstone

Soil Properties and Qualities

Parent material: slope alluvium and residuum derived from sandstone and shale
Depth class: moderately deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: low or moderate
Potential rooting depth: 25 to 60 inches
Runoff rate: medium or high
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Depth to a calcic horizon: 1 to 10 inches
Calcium carbonate equivalent: 5 to 30 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Soils that are shallow to bedrock
- Rock outcrop
- Riveroad soils, which are very deep and are along drainageways
- Pedregosa soils, which are very shallow or shallow to a hardpan

Similar inclusions:
- Grizzle soils that have a very gravelly surface layer
- Grizzle soils that are moderately deep to unweathered bedrock

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: droughtiness, hazard of wind erosion

Dominant vegetation:
- In the potential plant community—bush muhly, black grama, plains bristlegrass, fluffgrass, creosotebush, whitethorn, tarbush, desert zinnia, knifeleaf condalia, prickleaf dogweed, blue threeawn
- In the present plant community—blue threeawn, sand dropseed, fluffgrass, bush muhly, creosotebush, whitethorn, tarbush, desert zinnia, black grama, prickleaf dogweed, knifeleaf condalia

Special Management Concerns

- When this site is in good condition, it provides good winter browse for livestock and wildlife.
- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- The weathered bedrock can be easily excavated with power tools.

Interpretive Groups

Land capability classification: VIe nonirrigated
Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

78—Guest silty clay loam, 0 to 1 percent slopes

Setting

Landform: flood plains and alluvial fans

Slope range: 0 to 1 percent
Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Guest and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 6 inches—brown silty clay loam
6 to 14 inches—brown silty clay loam
14 to 39 inches—brown silty clay
39 to 60 inches—brown fine sandy loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: high
Soil cracking: many vertical cracks 0.125 inch to 1.5 inches wide
Calcium carbonate equivalent: 0 to 10 percent
Content of gypsum: 0 to 4 percent
Salinity: none or very slight
Sodicity: slight
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Riveroad soils, which have 18 to 35 percent clay
- Soils that have more than 20 percent rock fragments
- Kahn soils, which have more than 15 percent calcium carbonate
- Mallet and Ubik soils, which have less than 18 percent clay
- Bodecker and Altar soils, which have more than 35 percent rock fragments and are in drainageways

Similar inclusions:
- Guest soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazard of flooding, slow permeability, high shrink-swell potential, hazard of piping, soil cracking

Dominant vegetation:
- In the potential and present plant communities—tobosa, vine mesquite, sideoats grama, perennial forbs, burrograss

Special Management Concerns

- Structures should be located above the expected level of flooding.
- The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The high content of clay in this soil restricts water infiltration and permeability.
- Water moving across this unit may cause piping.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Clayey Bottom, 12- to 16-inch precipitation zone, 041XC302AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

79—Guest silty clay loam, 0 to 3 percent slopes

Setting

Landform: flood plains
Slope range: 0 to 3 percent
Frequency of flooding: occasional
Elevation: 3,900 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Guest and similar soils: 80 percent
Contrasting inclusions: 20 percent

Typical Profile

0 to 7 inches—brown silty clay loam
7 to 18 inches—brown silty clay
18 to 34 inches—dark yellowish brown silty clay
34 to 60 inches—brown silty clay

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained

Permeability: slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: high
Soil cracking: many vertical cracks 0.125 inch to 1.5 inches wide
Salinity: none to slight
Sodicity: none to slight
Calcium carbonate equivalent: 0 to 10 percent
Content of gypsum: 0 to 2 percent
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Ubik, Combate, and Luckyhills soils, which have less than 18 percent clay
- Blakeney soils, which are very shallow or shallow to a hardpan

Similar inclusions:
- Sasabe and Forrest soils, which have an argillic horizon
- Guest soils that have redoximorphic features in the lower part

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: hazard of flooding, slow permeability, high shrink-swell potential, hazard of piping, soil cracking

Dominant vegetation:
- In the potential and present plant communities—tobosa, vine mesquite, sideoats grama, perennial forbs, burrograss

Special Management Concerns

- Structures should be located above the expected level of flooding.
- The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The high content of clay in this soil restricts water infiltration and permeability.
- Water moving across this unit may cause piping.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Clayey Bottom, 12- to 16-inch precipitation zone, 041XC302AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

80—Guest silty clay loam, saline-sodic, 0 to 1 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 0 to 1 percent
Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Guest and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 6 inches—brown silty clay loam
6 to 14 inches—brown, saline-sodic silty clay loam
14 to 39 inches—brown, saline-sodic silty clay
39 to 60 inches—brown, saline-sodic fine sandy loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: high
Soil cracking: many vertical cracks 0.125 inch to 1.5 inches wide
Calcium carbonate equivalent: 0 to 10 percent
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Contrasting Inclusions

- Riveroad soils, which have 18 to 35 percent clay
- Soils that have more than 20 percent rock fragments
- Kahn soils, which have more than 15 percent calcium carbonate

• Mallet and Ubik soils, which have less than 18 percent clay
• Bodecker and Altar soils, which have more than 35 percent rock fragments and are in drainageways

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazard of flooding, slow permeability, high shrink-swell potential, hazard of piping, soil cracking, excess salts, sodium, and gypsum

Dominant vegetation:
• In the potential and present plant communities—tobosa, vine mesquite, sideoats grama, perennial forbs, burrograss, alkali sacaton, giant sacaton, inland saltgrass, fourwing saltbush, wolfberry

Special Management Concerns

• Structures should be located above the expected level of flooding.
• The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• The high content of clay in this soil restricts water infiltration and permeability.
• Water moving across this unit may cause piping.
• Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
• Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
• Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
• This soil is very strongly alkaline. The alkalinity restricts plant growth.
• The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
• The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

81—Guest silty clay, 0 to 1 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 0 to 1 percent
Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Guest and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 9 inches—grayish brown silty clay
9 to 60 inches—brown and yellowish brown clay

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: high
Soil cracking: many vertical cracks 0.125 inch to 1.5 inches wide
Calcium carbonate equivalent: 0 to 10 percent
Content of gypsum: 0 to 4 percent
Salinity: none to slight
Sodicity: none to slight
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
• Ubik, Combate, and Luckyhills soils, which have less than 18 percent clay
• Riveroad soils, which have 18 to 35 percent clay

Similar inclusions:
• Guest soils that have a surface layer of clay or clay loam

• Guest soils that have redoximorphic features in the lower part
• Guest soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazard of flooding, slow permeability, high shrink-swell potential, hazard of piping, soil cracking

Dominant vegetation:
• In the potential and present plant communities—tobosa, vine mesquite, sideoats grama, perennial forbs, burrograss

Special Management Concerns

• Structures should be located above the expected level of flooding.
• The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• The high content of clay in this soil restricts water infiltration and permeability.
• Water moving across this unit may cause piping.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Clayey Bottom, 12- to 16-inch precipitation zone, 041XC302AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

82—Guest silty clay, saline-sodic, 0 to 1 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 0 to 1 percent
Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Guest and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 9 inches—grayish brown silty clay
9 to 60 inches—brown and yellowish brown, saline-sodic clay

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: high
Soil cracking: many vertical cracks 0.125 inch to 1.5 inches wide
Calcium carbonate equivalent: 0 to 10 percent
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
• Ubik, Combate, and Luckyhills soils, which have less than 18 percent clay
• Riveroad soils, which have 18 to 35 percent clay

Similar inclusions:
• Guest soils that have a surface layer of clay or clay loam
• Guest soils that have redoximorphic features in the lower part

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazard of flooding, slow permeability, high shrink-swell potential, hazard of piping, soil cracking, excess salts, sodium, and gypsum

Dominant vegetation:
• In the potential and present plant communities—tobosa, vine mesquite, sideoats grama, perennial forbs, burrograss, alkali sacaton, giant sacaton, inland saltgrass, fourwing saltbush, wolfberry

Special Management Concerns

• Structures should be located above the expected level of flooding.
• The high shrink-swell potential should be considered

when foundations, concrete structures, and paved areas are designed and constructed.
- The high content of clay in this soil restricts water infiltration and permeability.
- Water moving across this unit may cause piping.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

83—Guest-Cogswell complex, saline-sodic, 0 to 1 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 0 to 1 percent
Frequency of flooding: common
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Guest and similar soils: 60 percent
Cogswell and similar soils: 30 percent
Contrasting inclusions: 10 percent

Typical Profile

Guest

0 to 6 inches—brown clay
6 to 60 inches—brown, saline-sodic clay

Cogswell

0 to 5 inches—grayish brown silty clay loam
5 to 20 inches—grayish brown, sodic silty clay
20 to 33 inches—pale brown and very pale brown, saline-sodic, calcareous clay
33 to 42 inches—light brownish gray and very pale brown, saline-sodic loam
42 to 53 inches—light yellowish brown, saline-sodic fine sandy loam
53 to 57 inches—light brownish gray, saline-sodic loam
57 to 60 inches—pale brown, saline-sodic silty clay loam

Soil Properties and Qualities

Guest

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: high
Calcium carbonate equivalent: 0 to 10 percent
Content of gypsum: 0 to 4 percent in the lower part of the soil
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Cogswell

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: high
Depth to a calcic horizon: 18 to 38 inches
Calcium carbonate equivalent: 15 to 40 percent
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- Ubik and Riveroad soils with no sodic properties
- Marsh

- Ubik soils that are very strongly alkaline
- Soils that have more rock fragments

Similar inclusions:
- Cogswell soils that are mildly alkaline
- Cogswell soils that have more than 4 percent gypsum

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: droughtiness; hazard of soil piping; excess salts, sodium, and gypsum; hazards of flooding, water erosion, and wind erosion

Dominant vegetation on the Guest soil:
- In the potential plant community—tobosa, sideoats grama, blue grama, giant sacaton, mesquite, wolfberry, whitethorn, broom snakeweed
- In the present plant community—tobosa, mesquite, wolfberry

Dominant vegetation on the Cogswell soil:
- In the potential plant community—alkali sacaton, tobosa, saltgrass, blue grama, giant sacaton, mesquite, fourwing saltbush, iodinebush, seepweed, alkaliweed
- In the present plant community—alkali sacaton, annual grasses, mesquite, wolfberry

Special Management Concerns

- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.
- The high content of clay in these soils restricts water infiltration and permeability.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- These soils are very strongly alkaline. The alkalinity restricts plant growth.
- These soils have a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Structures should be located above the expected level of flooding.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

84—Guest-Riveroad association, 0 to 1 percent slopes

Setting

Landform: Guest—flood plains; Riveroad—flood plains and alluvial fans
Slope range: 0 to 1 percent
Frequency of flooding: none or rare
Elevation: 4,000 to 4,300 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Guest and similar soils: 40 percent
Riveroad and similar soils: 40 percent
Contrasting inclusions: 20 percent

Typical Profile

Guest

0 to 1 inch—brown clay loam
1 to 10 inches—brown clay
10 to 38 inches—brown clay
38 to 60 inches—brown clay

Riveroad

0 to 4 inches—brown fine sandy loam
4 to 14 inches—brown fine sandy loam
14 to 22 inches—brown and dark brown silt loam
22 to 33 inches—brown and dark brown silty clay loam
33 to 53 inches—dark brown silty clay
53 to 60 inches—brown sandy loam

Soil Properties and Qualities

Guest

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high
Potential rooting depth: 60 inches or more

Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: high
Soil cracking: many vertical cracks 0.125 inch to 1.5 inches wide
Salinity: none or very slight
Sodicity: slight
Calcium carbonate equivalent: 0 to 10 percent
Content of gypsum: 0 to 4 percent (in areas along the San Pedro River)
Corrosivity: steel—high; concrete—low or moderate

Riveroad

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Content of gypsum: 0 to 4 percent (in areas along the San Pedro River)
Corrosivity: steel—high; concrete—moderate (high in areas along the San Pedro River)

Inclusions

Contrasting inclusions:
- Ubik soils, which have less than 18 percent clay
- McAllister, Forrest, and Sasabe soils, which have an argillic horizon
- Soils that have more than 20 percent rock fragments

Similar inclusions:
- Guest and Riveroad soils, which have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazard of flooding, wind erosion and water erosion, slow permeability, soil cracking, moderate or high shrink-swell potential

Dominant vegetation on the Guest soil:
- In the potential plant community—tobosa, vine mesquite, burrograss, pale wolfberry
- In the present plant community—mesquite, littleleaf sumac, tarbush, tobosa, burrograss

Dominant vegetation on the Riveroad soil:
- In the potential plant community—giant sacaton, sideoats grama, blue grama, tobosa, vine mesquite, mesquite, desert willow
- In the present plant community—mesquite, tobosa, giant sacaton

Special Management Concerns

- Structures should be located above the expected level of flooding.
- The moderate or high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- These soils have a moderate or moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- The high content of clay in these soils restricts water infiltration and permeability.

Interpretive Groups

Land capability classification:
Guest—IIIs irrigated and VIs nonirrigated
Riveroad—IIe irrigated and VIe nonirrigated
Ecological site:
Guest—Clayey Bottom, 12- to 16-inch precipitation zone, 041XC302AZ
Riveroad—Loamy Bottom, Subirrigated, 12- to 16-inch precipitation zone, 041XC312AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

85—Hantz silt loam, saline-sodic, 0 to 3 percent slopes

Setting

Landform: flood plains
Slope range: 0 to 3 percent
Frequency of flooding: rare or occasional
Elevation: 3,600 to 3,800 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 190 to 230 days

Composition

Hantz and similar soils: 80 percent
Contrasting inclusions: 20 percent

Typical Profile

0 to 3 inches—light brown silt loam

3 to 14 inches—brown, saline-sodic silty clay loam
14 to 42 inches—brown, saline-sodic silty clay
42 to 60 inches—brown, saline-sodic silty clay

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—moderate
Shrink-swell potential: high
Soil cracking: many vertical cracks 0.25 to 0.5 inch wide from the surface to a depth of 20 inches or more
Salinity: slight or moderate
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Contrasting Inclusions

- Glendale soils, which have less than 35 percent clay
- Anthony and Maricopa soils, which have less than 18 percent clay
- Contention soils, which have gypsum

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazard of water erosion, high shrink-swell potential, hazard of flooding, excess salts

Dominant vegetation:
- In the potential and present plant communities—35 percent canopy cover of velvet mesquite, western honey mesquite, and screwbean mesquite with an understory of alkali sacaton, twoflower trichloris, sacaton, seepweed, annual forbs, mesquite, graythorn, wolfberry, and fourwing saltbush

Special Management Concerns

- This soil has a moderate hazard of water erosion; therefore, special consideration should be given to water management.
- The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.
- Structures should be located above the expected level of flooding.

Interpretive Groups

Land capability classification: IIIe irrigated and VIIe nonirrigated
Ecological site: Saline Bottom, 7- to 12-inch precipitation zone, 041XB211AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-2AZ—Chihuahuan-Sonoran Desert Shrub Mix

86—Haplustolls-Fluvaquents association, mesic, 0 to 4 percent slopes

Setting

Landform: flood plains
Slope range: 0 to 4 percent
Frequency of flooding: Haplustolls—rare or occasional; Fluvaquents—common
Elevation: 5,700 to 7,200 feet
Mean annual precipitation: 20 to 24 inches
Mean annual air temperature: 50 to 57 degrees F
Frost-free period: 120 to 180 days

Composition

Haplustolls and similar soils: 70 percent
Fluvaquents and similar soils: 20 percent
Contrasting inclusions: 10 percent

Typical Profile

Haplustolls

0 to 2 inches—slightly decomposed oak leaves, twigs, and grass litter
2 to 8 inches—brown very cobbly loamy sand
8 to 27 inches—brown very cobbly coarse sandy loam
27 to 37 inches—brown very cobbly coarse sand
37 to 42 inches—very dark grayish brown very cobbly sandy loam
42 to 60 inches—brown extremely gravelly coarse sand

Fluvaquents

0 to 1 inch—yellowish brown extremely cobbly fine sandy loam
1 to 2 inches—brown extremely cobbly coarse sand
2 to 5 inches—grayish brown and greenish gray extremely cobbly fine sandy loam

5 to 20 inches—brown and greenish gray extremely cobbly fine sandy loam
20 to 60 inches—brown and greenish gray extremely cobbly coarse sand

Soil Properties and Qualities

Haplustolls

Length of areas: a few feet to 2 miles
Width of areas: 10 to 125 feet
Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: somewhat poorly drained or poorly drained
Depth to a water table: 6 to 9 feet from August to April
Permeability: moderately rapid to very rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 40 to 80 percent
Corrosivity: steel—moderate; concrete—moderate

Fluvaquents

Length of areas: a few feet to 1,000 feet
Width of areas: a few feet to 40 feet
Parent material: mixed stream alluvium
Depth class: deep or very deep
Drainage class: somewhat poorly drained or poorly drained
Depth to a water table: 1 to 2 feet from August to April
Permeability: moderately rapid to very rapid
Available water capacity: very low
Potential rooting depth: 60 inches or more
Runoff rate: medium
Hazard of erosion: by water—slight; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 40 to 80 percent
Corrosivity: steel—moderate; concrete—moderate

Contrasting Inclusions

- Soils that have bedrock within a depth of 20 inches and are wet
- Soils that are moderately deep and wet

Use and Management

Major current use: wildlife habitat

Soil-related factors: fluctuating water table, wetness in winter and spring, hazards of flash flooding and streambank erosion

Dominant vegetation on the Haplustolls:
- In the potential and present plant communities—80 percent canopy cover of Arizona sycamore, Arizona white oak, Arizona black walnut, Arizona madrone, silverleaf oak, alligator juniper, ponderosa pine, and Chihuahua pine with an understory of bulb panic, deergrass, poison ivy, canyon grape, dogwood, giant wildrye, goosegrass, and thimbleberry; at the higher elevations, ponderosa pine, Apache pine, Douglas-fir, and arroyo willow with an understory of beggartick threeawn, wildrye, bulb panic, pinyon ricegrass, deergrass, nodding brome, meadow rue, goosegrass, pennyroyal, miners lettuce, monkeyflower, geraniums, giant evening primrose, big coneflower, American starthistle, goldenrods, scarlet thistle, dayflower, wild oregano, annual sunflower, wire lettuce, false terragon, Virginia creeper, canyon grape, redosier dogwood, silktassel, creeping barberry, Fendler buckbrush, Scott's yucca, sacahuista, Gregg's ash, southwestern thimbleberry, and poison ivy

Dominant vegetation on the Fluvaquents:
- In the potential and present plant communities—75 percent canopy cover of Arizona sycamore, bigtooth maple, redosier dogwood, southwestern chokecherry, and Arizona black walnut with an understory of sedges, rushes, horsetail, water bentgrass, watercress, water speedwell, monkeyflower, miners lettuce, waterplantain, and cattails

Special Management Concerns

- Because of the hazard of flash flooding, structures should be located above drainageways.
- The fluctuating water table and wetness in winter and spring affect wildlife habitat and perennial streamflow.

Interpretive Groups

Land capability classification: VIw nonirrigated
Ecological site: Sandy Bottom, Subirrigated (PLWR, JUMA, QUERC), 20- to 23-inch precipitation zone, 041XA125AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

87—Haplustolls-Fluvaquents association, thermic, 0 to 4 percent slopes

Setting

Landform: flood plains
Slope range: 0 to 4 percent

Frequency of flooding: Haplustolls—rare or occasional; Fluvaquents—common
Elevation: 4,700 to 5,700 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Haplustolls and similar soils: 70 percent
Fluvaquents and similar soils: 20 percent
Contrasting inclusions: 10 percent

Typical Profile

Haplustolls

0 to 2 inches—slightly decomposed oak leaves, twigs, and grass litter
2 to 10 inches—brown gravelly fine sandy loam
10 to 22 inches—dark brown extremely cobbly coarse sand
22 to 60 inches—brown extremely cobbly coarse sand

Fluvaquents

0 to 2 inches—brown extremely cobbly coarse sand
2 to 10 inches—dark yellowish brown extremely cobbly coarse sand
10 to 25 inches—yellowish brown extremely cobbly coarse sand
25 to 60 inches—dark yellowish brown extremely cobbly coarse sand

Soil Properties and Qualities

Haplustolls

Length of areas: a few feet to 2 miles
Width of areas: 10 to 125 feet
Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: somewhat poorly drained or poorly drained
Depth to a water table: 6 to 9 feet from August to April
Permeability: very rapid
Available water capacity: very low
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 40 to 80 percent
Corrosivity: steel—moderate; concrete—moderate

Fluvaquents

Length of areas: a few feet to 1,000 feet
Width of areas: a few feet to 40 feet
Parent material: mixed stream alluvium
Depth class: deep or very deep
Drainage class: somewhat poorly drained or poorly drained
Depth to a water table: 1 to 3 feet from August to April
Permeability: very rapid
Available water capacity: very low
Potential rooting depth: 60 inches or more
Runoff rate: medium
Hazard of erosion: by water—slight; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 40 to 80 percent
Corrosivity: steel—moderate; concrete—moderate

Contrasting Inclusions

- Soils that have bedrock within a depth of 20 inches and are wet
- Soils that are moderately deep and wet
- Rock outcrop

Use and Management

Major current use: wildlife habitat

Soil-related factors: fluctuating water table, wetness in winter and spring, hazards of flash flooding and streambank erosion

Dominant vegetation on the Haplustolls:
- In the potential and present plant communities—50 percent canopy cover of Fremont cottonwood, mesquite, Arizona sycamore, Arizona white oak, desert willow, velvet ash, and Arizona black walnut with an understory of bulb panic, green sprangletop, giant sacaton, deergrass, spike dropseed, canyon grape, giant wildrye, and southwest rabbitbrush

Dominant vegetation on the Fluvaquents:
- In the potential and present plant communities—50 percent canopy cover of Fremont cottonwood, Arizona sycamore, Goodding willow, and velvet ash with an understory of sedges, rushes, knotgrass, deergrass, canyon grape, watercress, water speedwell, and monkeyflower

Special Management Concerns

- Because of the hazard of flash flooding, structures should be located above drainageways.
- The fluctuating water table and wetness in winter and spring affect wildlife habitat and perennial streamflow.

Interpretive Groups

Land capability classification: VIw nonirrigated
Ecological site: Sandy Bottom, Subirrigated (PLWR, JUMA, FRVE2), 16- to 20-inch precipitation zone, 041XC113AZ

Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

88—Hayhollow-Rafter-Riverwash complex, 0 to 5 percent slopes

Setting

Landform: flood plains
Slope range: 0 to 5 percent
Frequency of flooding: Hayhollow and Rafter—common; Riverwash—frequent
Elevation: 4,300 to 5,300 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Hayhollow and similar soils: 30 percent
Rafter and similar soils: 30 percent
Riverwash: 30 percent
Contrasting inclusions: 10 percent

Typical Profile

Hayhollow

0 to 2 inches—slightly decomposed oak and sycamore leaves
2 to 9 inches—dark brown sand
9 to 22 inches—brown sandy loam
22 to 34 inches—brown sand
34 to 51 inches—brown sandy loam
51 to 60 inches—grayish brown sandy loam

Rafter

About 30 to 60 percent of the surface is covered with gravel and cobbles.

0 to 6 inches—dark brown gravelly fine sandy loam
6 to 24 inches—dark brown extremely cobbly sandy loam
24 to 42 inches—brown extremely cobbly coarse sand
42 to 60 inches—brown extremely gravelly sandy loam

Soil Properties and Qualities

Hayhollow

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—very high
Shrink-swell potential: low
Content of rock fragments: averages less than 35 percent, but can range to 50 percent in individual horizons
Corrosivity: steel—high; concrete—moderate

Rafter

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid or rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent gravel and cobbles
Corrosivity: steel—high; concrete—moderate

Characteristics of Riverwash

Riverwash consists of very deep, excessively drained, stratified sand, gravel, cobbles, and stones from numerous sources. It is in drainageways. It is subject to frequent flooding and shifting. Riverwash has a high water table at a depth of 0.5 foot to 5.0 feet from August through April. Also, it can be covered by 0.25 foot to 6.0 feet of water.

Inclusions

Contrasting inclusions:
- Oversight soils, which have more than 35 percent rock fragments
- Soils that are sandy

Similar inclusions:
- Hayhollow soils that are frequently flooded
- Hayhollow and Rafter soils on range sites, which have a tree canopy cover of less than 15 percent

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Hayhollow—hazards of wind erosion, flooding, and streambank erosion
Rafter—hazard of flooding, content of rock fragments
Riverwash—content of rock fragments, hazard of flooding, fast intake rate

Dominant vegetation:
- In the potential and present plant communities—30

percent canopy cover of Arizona sycamore, Arizona ash, Arizona walnut, Arizona white oak, Emory oak, and alligator juniper with an understory of sideoats grama, green sprangletop, cane beardgrass, blue grama, beggartick threeawn, deergrass, giant sacaton, canyon grape, virgins bower, desert honeysuckle, and Apache plume

Special Management Concerns

- The Rafter soil and Riverwash have large cobbles and stones that interfere with excavation when utilities are installed.
- The Hayhollow soil has a very high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- This unit has few limitations and should be very productive if proper management is applied.
- Structures should be located above the expected level of flooding.
- Proper management can reduce the hazard of streambank erosion.
- Because of the very rapid or moderately rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.

Interpretive Groups

Land capability classification:
Hayhollow and Rafter—VIw nonirrigated
Riverwash—VIII
Ecological site:
Hayhollow and Rafter—Sandy Bottom, Subirrigated, (PLWR, JUMA, FRVE2), 16- to 20-inch precipitation zone, 041XA113AZ
Riverwash—none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

89—Kaboom-Reeup complex, 0 to 45 percent slopes

Setting

Landform: stream terraces and relict basin floors
Slope range: Kaboom—0 to 5 percent; Reeup—3 to 45 percent
Elevation: 4,000 to 4,300 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Kaboom and similar soils: 50 percent
Reeup and similar soils: 30 percent
Contrasting inclusions: 20 percent

Typical Profile

Kaboom

0 to 2 inches—light brown very gravelly sandy loam
2 to 13 inches—light brown and brown, calcareous, gypsiferous clay loam
13 inches—interbedded sandstone, limestone, and loamy soil material

Reeup

0 to 2 inches—brown loam
2 to 7 inches—brown, gypsiferous gravelly clay loam
7 to 12 inches—light brown, gypsiferous clay
12 to 21 inches—brown, gypsiferous clay
21 to 29 inches—light brown, gypsiferous clay loam
29 to 32 inches—brown and pinkish white very gravelly clay loam
32 inches—interbedded sandstone, limestone, and loamy soil material; gypsum crystals in the bedrock

Soil Properties and Qualities

Kaboom

Parent material: mixed alluvium
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately slow
Available water capacity: very low or low
Potential rooting depth: 5 to 20 inches
Runoff rate: medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: moderate
Depth to a calcic horizon: 2 to 10 inches
Calcium carbonate equivalent: 1 to 40 percent
Depth to a gypsic horizon: 2 to 10 inches
Content of gypsum: 0 to 20 percent
Corrosivity: steel—moderate; concrete—high

Reeup

Parent material: mixed alluvium
Depth class: moderately deep
Drainage class: well drained
Permeability: slow
Available water capacity: low or moderate
Potential rooting depth: 25 to 40 inches
Runoff rate: medium to very high

Hazard of erosion: by water—moderate to very severe; by wind—moderate
Shrink-swell potential: high
Calcium carbonate equivalent: 0 to 15 percent
Depth to a gypsic horizon: 2 to 40 inches
Content of gypsum: 0 to 10 percent
Corrosivity: steel—moderate; concrete—high

Contrasting Inclusions

- Diaspar soils, which have less than 18 percent clay and are very deep
- Sasabe and Courtland soils, which do not have accumulations of calcium carbonate and gypsum and are very deep
- Graveyard and Sierravista soils, which have more than 35 percent rock fragments and/or petronodes
- Rock outcrop
- Major soils, which have 18 to 35 percent clay and are very deep

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: excess gypsum, clayey texture, restricted permeability, depth to bedrock, hazards of piping and water erosion, slope, content of calcium carbonate

Dominant vegetation on the Kaboom soil:
- In the potential and present plant communities—creosotebush, whitethorn, tarbush, black grama, sideoats grama, slim tridens

Dominant vegetation on the Reeup soil:
- In the potential and present plant communities—creosotebush, whitethorn, tarbush, black grama, sideoats grama, slim tridens, fourwing saltbush, tobosa

Special Management Concerns

- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- Excavation can be difficult because of the restrictive interbedded bedrock.
- Water movement across this unit may cause piping.
- These soils are not suitable as sources of construction material because of their gypsum content.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Steep slopes cause management problems.
- The Reeup soil has a moderate to very severe hazard of water erosion; therefore, special consideration should be given to water management.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification:
Slopes of 0 to 30 percent—VIs nonirrigated
Slopes of 30 to 45 percent—VIe nonirrigated
Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

90—Kahn complex, 0 to 3 percent slopes

Setting

Landform: alluvial fans
Slope range: 0 to 3 percent
Frequency of flooding: none or rare
Elevation: 3,800 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Kahn fine sandy loam and similar soils: 45 percent
Kahn silt loam and similar soils: 40 percent
Contrasting inclusions: 15 percent

Typical Profile

Kahn fine sandy loam

0 to 8 inches—brown fine sandy loam
8 to 18 inches—brown loam
18 to 60 inches—brown, calcareous clay loam

Kahn silt loam

0 to 1 inch—brown silt loam
1 to 15 inches—brown loam
15 to 29 inches—pink, calcareous clay loam
29 to 43 inches—light brown, calcareous clay loam
43 to 60 inches—light reddish brown clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow

Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion where the surface layer is fine sandy loam: by water—slight; by wind—moderately high
Hazard of erosion where the surface layer is silt loam: by water—moderate; by wind—moderate
Shrink-swell potential: moderate
Depth to a calcic horizon: 15 to 43 inches
Calcium carbonate equivalent: 10 to 45 percent in the lower part of the soil
Content of gypsum: 0 to 4 percent
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Luckyhills soils, which have less than 18 percent clay
- Blakeney soils, which are very shallow or shallow to a hardpan
- McAllister soils, which have an argillic horizon
- Riveroad and Ubik soils, which have less calcium carbonate than the Kahn soils

Similar inclusions:
- Kahn soils that have a surface layer of clay loam
- Kahn soils that have a buried argillic horizon

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: moderately slow permeability, hazards of flooding and wind erosion

Dominant vegetation:
- In the potential and present plant communities—tobosa, burrograss, whitethorn, tarbush, mesquite, giant sacaton, littleleaf sumac, bush muhly, plains bristlegrass, fourwing saltbush

Special Management Concerns

- Structures should be located above the expected level of flooding
- These soils have a moderately high or moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- The clay content in these soils restricts water infiltration and permeability.

Interpretive Groups

Land capability classification:
Kahn fine sandy loam—IIe irrigated and VIe nonirrigated
Kahn silt loam—IIs irrigated and VIs nonirrigated
Ecological site: Limy Fan, 12- to 16-inch precipitation zone, 041XC320AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

91—Kahn-Zapolote complex, 1 to 15 percent slopes

Setting

Landform: Kahn—relict basin floors and alluvial fans; Zapolote—relict basin floors, alluvial fans, and fan terraces
Slope range: 1 to 15 percent
Frequency of flooding: rare
Elevation: 3,700 to 4,200 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Kahn and similar soils: 40 percent
Zapolote and similar soils: 40 percent
Contrasting inclusions: 20 percent

Typical Profile

Kahn

About 30 to 40 percent of the surface is covered with gravel.

0 to 2 inches—light brown loam
2 to 10 inches—brown clay loam
10 to 41 inches—light brown, calcareous clay loam
41 to 60 inches—brown, calcareous clay loam

Zapolote

About 40 to 50 percent of the surface is covered with gravel.

0 to 1 inch—reddish brown clay loam
1 to 5 inches—reddish brown clay loam
5 to 29 inches—reddish brown, calcareous clay
29 to 60 inches—reddish brown, calcareous clay

Soil Properties and Qualities

Kahn

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: very high

Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—moderate or severe; by wind—moderate
Shrink-swell potential: moderate
Content of rock fragments: less than 15 percent gravel and/or nodules
Depth to a calcic horizon: 10 to 35 inches
Calcium carbonate equivalent: 5 to 45 percent
Content of gypsum: 0 to 5 percent
Corrosivity: steel—high; concrete—high

Zapolote

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: very slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: medium or high
Hazard of erosion: by water—moderate or severe; by wind—moderate
Shrink-swell potential: very high
Content of rock fragments: 0 to 10 percent petronodes
Soil cracking: many vertical cracks 0.25 to 0.50 inch wide and 7 to 29 or more inches deep
Depth to a calcic horizon: 5 to 20 inches
Calcium carbonate equivalent: 20 to 35 percent
Content of gypsum: 1 to 5 percent
Corrosivity: steel—moderate; concrete—high

Inclusions

Contrasting inclusions:
- Blakeney and Buntline soils, which are very shallow or shallow to a hardpan
- Luckyhills soils, which have less than 18 percent clay
- Eloma and Caralampi soils, which have more than 35 percent clay
- White House soils, which do not have accumulations calcium carbonate within a depth of 40 inches

Similar inclusions:
- Kahn and Zapolote soils that have more than 5 percent gypsum

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: droughtiness, hazard of soil piping, excess gypsum, hazards of water erosion and wind erosion

Dominant vegetation on the Kahn soil:
- In the potential plant community—creosotebush, whitethorn, tarbush, black grama, bush muhly, fluffgrass blue threeawn, Texas dogwood
- In the present plant community—creosotebush, tarbush, whitethorn, Texas dogwood, yucca, ratear coldenia, feather dales, snakeweed, bush muhly, black grama, fluffgrass, blue threeawn

Dominant vegetation on the Zapolote soil:
- In the potential plant community—tobosa, sideoats grama, giant sacaton, creosotebush, tarbush, snakeweed, sandpaper plant, whitethorn
- In the present plant community—tobosa, sideoats grama, green sprangletop, blue threeawn, giant sacaton, creosotebush, tarbush, snakeweed, wolfberry, ratear coldenia

Special Management Concerns

- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- These soils have a moderate or severe hazard of water erosion; therefore, special consideration should be given to water management.
- These soils have a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification: VIe nonirrigated
Ecological site:
Kahn—Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ, and Limy Fan, 12- to 16-inch precipitation zone, 041XC320AZ
Zapolote—Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

92—Karro loam, 1 to 3 percent slopes

Setting

Landform: alluvial fans
Slope range: 1 to 3 percent
Frequency of flooding: rare
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Karro similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 14 inches—brown loam
14 to 44 inches—white, calcareous clay loam
44 to 61 inches—very pale brown clay loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: moderate
Depth to a calcic horizon: 10 to 24 inches
Calcium carbonate equivalent: more than 40 percent
Salinity: moderate
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Luckyhills soils, which have less than 18 percent clay
- Blakeney soils, which are very shallow or shallow to a hardpan
- Riveroad and Ubik soils, which have less calcium carbonate than the Karro soil

Similar inclusions:
- Karro soils that have a gravelly surface layer
- Karro soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazard of wind erosion, a high content of calcium carbonate

Dominant vegetation:
- In the potential and present plant communities—tobosa, burrograss, whitethorn, tarbush, mesquite, giant sacaton, littleleaf sumac, bush muhly, plains bristlegrass, fourwing saltbush

Special Management Concerns

- This soil has a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: IIs irrigated and VIs nonirrigated
Ecological site: Limy Fan, 12- to 16-inch precipitation zone, 041XC320AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

93—Karro loam, saline-sodic, 1 to 3 percent slopes

Setting

Landform: alluvial fans
Slope range: 1 to 3 percent
Frequency of flooding: rare
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Karro similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 14 inches—brown loam
14 to 44 inches—white, saline-sodic, calcareous clay loam
44 to 61 inches—very pale brown, saline-sodic clay loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: moderate
Depth to a calcic horizon: 10 to 24 inches
Calcium carbonate equivalent: more than 40 percent

Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- Luckyhills soils, which have less than 18 percent clay
- Blakeney soils, which are very shallow or shallow to a hardpan
- Riveroad and Ubik soils, which have less calcium carbonate than the Karro soil

Similar inclusions:
- Karro soils that have a gravelly surface layer

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazard of wind erosion; a high content of calcium carbonate; excess salts, sodium, and gypsum

Dominant vegetation:
- In the potential and present plant communities—tobosa, burrograss, whitethorn, tarbush, mesquite, giant sacaton, littleleaf sumac, bush muhly, plains bristlegrass, fourwing saltbush, alkali sacaton, inland saltgrass

Special Management Concerns

- This soil has a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Limy Fan, 12- to 16-inch precipitation zone, 041XC320AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

94—Keysto-Riverwash complex, 1 to 5 percent slopes

Setting

Landform: alluvial fans and flood plains
Slope range: 1 to 5 percent
Frequency of flooding: Keysto—rare; Riverwash—common
Elevation: 4,500 to 5,200 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Keysto and similar soils: 60 percent
Riverwash: 30 percent
Contrasting inclusions: 10 percent

Typical Profile

Keysto

About 25 to 70 percent of the surface is covered with gravel, cobbles, stones, and/or boulders.

0 to 9 inches—brown very cobbly sandy loam
9 to 30 inches—brown extremely bouldery sandy loam
30 to 60 inches—brown extremely bouldery coarse sand

Soil Properties and Qualities

Keysto

Parent material: mixed fan and stream alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 40 to 75 percent gravel, cobbles, stones, and/or boulders
Corrosivity: steel—high; concrete—moderate

Characteristics of Riverwash

Riverwash consists of very deep, excessively drained, stratified sand, gravel, cobbles, and stones

from numerous sources. It is in drainageways. It is subject to common flooding and shifting.

Inclusions

Contrasting inclusions:
- Bodecker soils, which are sandy and have accumulations of calcium carbonate
- Eloma, Caralampi, and White House soils, which have more than 18 percent clay and are not subject to flooding
- Brookline soils and Fluvaquents, which have a high water table

Similar inclusions:
- Keysto soils that have a lower content of rock fragments
- Keysto soils that have buried argillic horizons

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Keysto—flooding, fast intake rate
Riverwash—flash flooding

Dominant vegetation on the Keysto soil:
- In the potential plant community—sideoats grama, Arizona cottontop, green sprangletop, cane beardgrass, plains bristlegrass, bush muhly, mesquite, spike dropseed, desert willow, netleaf hackberry
- In the present plant community—bush muhly, fluffgrass, mesquite, whitethorn, Lehmann lovegrass, desert willow, netleaf hackberry

Special Management Concerns

- The large rock fragments in the Keysto soil interfere with excavations.
- Because of the moderately rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.
- Structures should be located above the expected level of flooding.

Interpretive Groups

Land capability classification:
Keysto—VIs nonirrigated
Riverwash—VIII
Ecological site:
Keysto—Sandy Bottom, 12- to 16-inch precipitation zone, 041XC316AZ
Riverwash—none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

95—Kuykendall-Rock outcrop complex, 3 to 45 percent slopes

Setting

Landform: hills and mountains
Slope range: 3 to 45 percent
Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Kuykendall and similar soils: 70 percent
Rock outcrop: 20 percent
Contrasting inclusions: 10 percent

Typical Profile

Kuykendall

About 30 to 60 percent of the surface is covered with gravel.

0 to 1 inch—dark brown clay
1 to 7 inches—dark reddish brown clay
7 to 18 inches—dark reddish brown clay
18 inches—unweathered basalt

Soil Properties and Qualities

Kuykendall

Parent material: slope alluvium and residuum derived from basalt and other volcanic rocks
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: very slow
Available water capacity: low
Potential rooting depth: 5 to 20 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—slight
Shrink-swell potential: very high
Corrosivity: steel—high; concrete—moderate

Characteristics of Rock Outcrop

Rock outcrop consists of barren rock that occurs as ledges and nearly vertical cliffs of basalt and other volcanic rocks. It also includes areas where the depth to bedrock is less than 4 inches. The higher percentage of the outcrop is in areas near hilltops.

Inclusions

Contrasting inclusions:
- Yarbam soils in areas underlain by limestone bedrock
- Woodcutter and Budlamp soils, which have more than 35 percent rock fragments
- Cherrycow soils, which are moderately deep
- Terrarossa and Blacktail soils, which are very deep
- Magoffin soils, which have less than 18 percent clay
- Hayhollow and Rafter soils, which have less than 18 percent clay and are in drainageways

Similar inclusions:
- Kuykendall soils that have less than 35 percent clay
- Kuykendall soils that have accumulations of calcium carbonate on the bedrock

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: depth to bedrock, very slow permeability, very high shrink-swell potential, hazard of water erosion, slope

Dominant vegetation on the Kuykendall soil:
- In the potential plant community—sideoats grama, blue grama, hairy grama, purple grama, cane beardgrass, plains lovegrass, Texas bluestem, shrubby buckwheat, sacahuista, tobosa
- In the present plant community—curly mesquite, sideoats grama, cane beardgrass, tobosa, mesquite, agave, snakeweed, juniper

Special Management Concerns

- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- The Kuykendall soil has a slight to severe hazard of water erosion; therefore, special consideration should be given to water management.
- The high content of clay in the soil restricts water infiltration and permeability.
- The very high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- This unit is sensitive to natural and prescribed fires.
- Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Kuykendall soil in areas where slopes are 3 to 30 percent—VIs nonirrigated
Kuykendall soil in areas where slopes are 30 to 45 percent—VIe nonirrigated
Rock outcrop—VIII
Ecological site:
Kuykendall—Volcanic Hills, 16- to 20-inch precipitation zone, 041XA111AZ
Rock outcrop—none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

96—Lanque-Stanford complex, 0 to 5 percent slopes

Setting

Landform: alluvial fans and inset fans
Slope range: 0 to 5 percent
Frequency of flooding: rare
Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Lanque and similar soils: 60 percent
Stanford and similar soils: 30 percent
Contrasting inclusions: 10 percent

Typical Profile

Lanque

About 30 to 40 percent of the surface is covered with gravel.

0 to 4 inches—brown sandy loam
4 to 12 inches—very dark gray sandy loam
12 to 33 inches—dark brown fine sandy loam
33 to 60 inches—dark brown loam

Stanford

About 10 to 20 percent of the surface is covered with gravel.

0 to 2 inches—brown fine sandy loam
2 to 10 inches—dark brown sandy loam
10 to 16 inches—dark brown sandy loam
16 to 30 inches—dark gray loam
30 to 60 inches—dark gray clay loam

Soil Properties and Qualities

Lanque

Parent material: fan alluvium and stream alluvium derived from granite and gneiss
Depth class: very deep
Drainage class: well drained

Permeability: moderately rapid
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: averages less than 35 percent, but can range to 50 percent in individual horizons
Corrosivity: steel—high; concrete—moderate

Stanford

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Content of rock fragments: less than 20 percent
Corrosivity: steel—high; concrete—moderate

Contrasting Inclusions

- Blacktail, Ashcreek, and Terrarossa soils, which have more than 35 percent clay
- Rafter soils, which have more than 35 percent gravel and are in drainageways
- Oversight soils, which have more than 35 percent rock fragments
- Ashcreek soils, which have more than 35 percent clay

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factor: fast intake rate

Dominant vegetation on the Lanque soil:
- In the potential plant community—sideoats grama, blue grama, cane beardgrass, green sprangletop, plains lovegrass, Arizona cottontop, shrubby buckwheat
- In the present plant community—Lehmann lovegrass, sideoats grama, blue grama, shrubby buckwheat, annual grasses and forbs, mesquite

Dominant vegetation on the Stanford soil:
- In the potential plant community—sideoats grama, blue grama, vine mesquite, creeping muhly, cane beardgrass
- In the present plant community—sideoats grama, blue grama, vine mesquite, threeawn, mesquite, burroweed

Special Management Concerns

- This unit responds well to managed, natural and prescribed fires.
- The Stanford soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- This unit has few limitations and should be very productive if proper management is applied.
- Because of the moderately rapid permeability in the Lanque soil, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.

Interpretive Groups

Land capability classification:
Lanque—VIs nonirrigated
Stanford—VIe nonirrigated
Ecological site:
Lanque—Sandy Loam Upland, 16- to 20-inch precipitation zone, 041XA110AZ
Stanford—Loamy Bottom, Swales, 16- to 20-inch precipitation zone, 041XA115AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

97—Libby-Gulch complex, 0 to 10 percent slopes

Setting

Landform: fan terraces, stream terraces, and relict basin floors
Slope range: 0 to 10 percent
Elevation: 3,900 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Libby and similar soils: 45 percent
Gulch and similar soils: 35 percent
Contrasting inclusions: 20 percent

Typical Profile

Libby

0 to 1 inch—yellowish red very gravelly sandy loam
1 to 13 inches—dark red clay

13 to 25 inches—red, calcareous gravelly clay
25 to 60 inches—red, calcareous very gravelly clay loam

Gulch

0 to 1 inch—yellowish red gravelly fine sandy loam
1 to 3 inches—yellowish red sandy loam
3 to 10 inches—yellowish red, calcareous sandy clay loam
10 to 24 inches—yellowish red, calcareous clay loam
24 to 40 inches—yellowish red, calcareous gravelly clay loam
40 to 60 inches—yellowish red and white, calcareous gravelly clay loam

Soil Properties and Qualities

Libby

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: high
Content of rock fragments: averages less than 35 percent gravel and/or petronodes, but ranges to 55 percent
Petronodic feature: 18 to 55 percent petronodes
Calcium carbonate equivalent: 5 to 40 percent
Content of gypsum: 0 to 2 percent in the lower part of the soil
Depth to an abrupt textural change: 1 to 15 inches
Corrosivity: steel—moderate; concrete—moderate

Gulch

Parent material: mixed calcareous alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: moderate to very high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: moderate
Content of rock fragments: less than 35 percent
Depth to a calcic horizon: 3 to 20 inches
Calcium carbonate equivalent: 15 to 55 percent in the lower part of the soil
Content of gypsum: 0 to 4 percent in the lower part of the soil
Corrosivity: steel—moderate; concrete—moderate

Contrasting Inclusions

- Diaspar, Courtland, and Sasabe soils, which have less calcium carbonate than the Libby and Gulch soils
- Graveyard, Sierravista, and Caralampi soils, which have more than 35 percent rock fragments
- Blakeney, Bella, Vana, and Buntline soils, which are very shallow or shallow to a hardpan
- Ubik, Combate, Comoro, and Riveroad soils in drainageways
- Durazo soils, which are sandy and have a very high hazard of wind erosion
- Tenneco, Forrest, and Bonita soils, which do not have gypsum

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Libby—droughtiness, slow permeability, high shrink-swell potential
Gulch—droughtiness, excess gypsum, content of calcium carbonate

Dominant vegetation on the Libby soil:
- In the potential plant community—mesquite, black grama, sideoats grama, tobosa, cane beardgrass, plains bristlegrass, Texas zinnia, tarbush, whitethorn
- In the present plant community—mesquite, tarbush, whitethorn, desert broom, fluffgrass, burroweed, snakeweed

Dominant vegetation on the Gulch soil:
- In the potential plant community—creosotebush, javelinabush, whitethorn, desert zinnia, bush muhly, black grama, slim tridens
- In the present plant community—creosotebush, javelinabush, whitethorn, desert zinnia, mariola, burroweed, snakeweed

Special Management Concerns

- The high content of clay in the Libby soil restricts water infiltration and permeability.
- The shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site:
Libby—Loamy Upland, 12- to 16-inch precipitation zone, 041XC313AZ
Gulch—Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

98—Luckyhills loamy sand, 0 to 5 percent slopes

Setting

Landform: fan terraces
Slope range: 0 to 5 percent
Elevation: 3,900 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Luckyhills and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 3 inches—brown loamy sand
3 to 26 inches—brown, calcareous sandy loam and fine sandy loam
26 to 34 inches—light brown, calcareous gravelly sandy loam
34 to 60 inches—light brown, calcareous silt loam

Soil Properties and Qualities

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—high
Shrink-swell potential: low
Content of rock fragments: less than 35 percent
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: 6 to 30 percent below a depth of 2 inches
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- McNeal soils, which have more than 18 percent clay
- Soils that have a very gravelly subsoil

Similar inclusions:
- Soils that have slopes of more than 5 percent

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: droughtiness, hazard of wind erosion, content of calcium carbonate

Dominant vegetation:
- In the potential plant community—black grama, fluffgrass, bush muhly, ratear coldenia, javelina brush, mariola, desert zinnia, creosotebush, tarbush, whitethorn, slim tridens, blue threeawn
- In the present plant community—creosotebush, tarbush, whitethorn, desert zinnia, fluffgrass, bush muhly

Special Management Concerns

- Erosion becomes a problem as this site deteriorates.
- This soil has a high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: VIe nonirrigated
Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

99—Luckyhills-McNeal complex, 3 to 15 percent slopes

Setting

Landform: fan terraces
Slope range: 3 to 15 percent
Elevation: 4,200 to 4,750 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Luckyhills and similar soils: 50 percent
McNeal and similar soils: 40 percent
Contrasting inclusions: 10 percent

Typical Profile

Luckyhills

About 10 to 55 percent of the surface is covered with gravel.

0 to 2 inches—pale brown very gravelly sandy loam
2 to 13 inches—pale brown and white, calcareous gravelly sandy loam
13 to 31 inches—pinkish white and pinkish gray, calcareous sandy loam
31 to 39 inches—light brown and pinkish white, calcareous gravelly sandy loam
39 to 60 inches—light brown and pink, calcareous gravelly loam

McNeal

About 45 to 55 percent of the surface is covered with gravel.

0 to 1 inch—strong brown very gravelly sandy loam
1 to 13 inches—yellowish red clay loam
13 to 21 inches—light reddish brown and pink, calcareous clay loam
21 to 41 inches—light reddish brown and pinkish white, calcareous sandy clay loam
41 to 60 inches—strong brown and pinkish white, calcareous sandy loam

Soil Properties and Qualities

Luckyhills

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: less than 35 percent
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: 6 to 30 percent below a depth of 2 inches
Corrosivity: steel—high; concrete—low

McNeal

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: moderate
Depth to a calcic horizon: 5 to 20 inches
Calcium carbonate equivalent: 15 to 55 percent below a depth of 5 inches
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Bonita soils, which are in drainageways and have more than 35 percent clay
- Combate and Mallet soils, which do not have accumulations of calcium carbonate
- Libby and Forrest soils, which have more than 35 percent clay
- Vana and Blakeney soils, which are very shallow or shallow to a hardpan
- Tombstone and Caralampi soils, which have more than 35 percent rock fragments
- Durazo soils, which are sandy and have a very high hazard of wind erosion

Similar inclusions:
- Luckyhills soils that have a thicker surface layer of very gravelly sandy loam
- McNeal soils that have gravelly textures
- Luckyhills soils that have weakly cemented horizons
- In areas adjacent to the Paramore Crater, soils that are moderately deep to very deep over surge conglomerate

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: gravelly surface, slope, a high content of calcium carbonate

Dominant vegetation on the Luckyhills soil:
- In the potential plant community—bush muhly, black grama, slim tridens, ratear coldenia, mariola, creosotebush, desert zinnia, whitethorn, blue threeawn, fluffgrass, tarbush
- In the present plant community—slim tridens, blue threeawn, whitethorn, mariola, ratear coldenia, desert zinnia, tarbush, javelina brush

Dominant vegetation on the McNeal soil:
- In the potential plant community—bush muhly, black grama, plains bristlegrass, sideoats grama, blue threeawn, desert zinnia, creosotebush, whitethorn, tarbush, Mormon tea, range ratany

• In the present plant community—tarbush, whitethorn, creosotebush, javelina brush, littleleaf sumac, desert zinnia, bush muhly, black grama, plains bristlegrass, fluffgrass, mariola

Special Management Concerns

• This unit does not respond well to brush management.
• This unit provides reasonable winter and spring forage for cattle.
• The McNeal soil responds well to knifing and range seeding.
• This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification:
Luckyhills soil in areas where slopes are 3 to 5 percent—IIIs irrigated
McNeal soil in areas where slopes are 3 to 5 percent—IIs irrigated
Luckyhills and McNeal soils in areas where slopes are 3 to 15 percent—VIs nonirrigated
Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

100—Lutzcan-Yarbam complex, 25 to 50 percent slopes

Setting

Landform: hills and mountains
Slope range: 25 to 50 percent
Elevation: 4,800 to 6,000 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Lutzcan and similar soils: 50 percent
Yarbam and similar soils: 35 percent
Contrasting inclusions: 15 percent

Typical Profile

Lutzcan

0 to 2 inches—brown very cobbly sandy clay loam
2 to 9 inches—brown very cobbly loam
9 to 18 inches—light brown very cobbly clay loam
18 inches—weathered sandstone

Yarbam

0 to 2 inches—dark gray very gravelly loam
2 to 9 inches—dark gray very gravelly loam
9 inches—unweathered limestone

Soil Properties and Qualities

Lutzcan

Parent material: residuum and colluvium derived from sandstone
Depth class: shallow
Drainage class: well drained
Permeability: moderately slow
Available water capacity: very low
Potential rooting depth: 14 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: moderate
Content of rock fragments: 40 to 60 percent
Corrosivity: steel—high; concrete—low

Yarbam

Parent material: slope alluvium and residuum derived from limestone
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 6 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 35 to 70 percent gravel, cobbles, and/or stones
Calcium carbonate equivalent: 20 to 40 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
• Rock outcrop
• Soils that have less organic matter in the surface layer than the Lutzcan and Yarbam soils
• Soils that have unweathered bedrock within a depth of 20 inches
• Terrarossa soils, which are very deep

Similar inclusions:
• Soils that have slopes of less than 25 percent

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: content of rock fragments, depth to bedrock, hazard of water erosion, slope

Dominant vegetation on the Lutzcan soil:
• In the potential and present plant communities—oaks, coralbean, sideoats grama, plains lovegrass, cane beardgrass, green sprangletop

Dominant vegetation on the Yarbam soil:
• In the potential and present plant communities—mountain mahogany, sideoats grama, bullgrass, stipa species, black grama, rough tridens, sotol, beargrass

Special Management Concerns

• The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
• These soils have a moderate or severe hazard of water erosion because of the slope; therefore, special consideration should be given to water management.
• Steep slopes and a rough surface can limit the use of this unit.
• Excess rock fragments in the soils interfere with excavations.
• Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Slopes of 25 to 30 percent—VIs nonirrigated
Slopes of 30 to 50 percent—VIe nonirrigated
Ecological site:
Lutzcan—Shallow Hills, 16- to 20-inch precipitation zone, 041XA102AZ
Yarbam—Limestone Hills, 16- to 20-inch precipitation zone, 041XA103AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

101—Mabray-Chiricahua-Rock outcrop complex, 3 to 45 percent slopes

Setting

Landform: hills and mountains
Slope range: 3 to 45 percent
Elevation: 4,100 to 5,400 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Mabray and similar soils: 45 percent
Chiricahua and similar soils: 30 percent
Rock outcrop: 15 percent
Contrasting inclusions: 10 percent

Typical Profile

Mabray

About 45 to 55 percent of the surface is covered with gravel and cobbles.

0 to 5 inches—dark grayish brown very cobbly loam
5 to 11 inches—dark grayish brown very cobbly loam
11 inches—unweathered limestone

Chiricahua

About 40 to 50 percent of the surface is covered with gravel and cobbles.

0 to 1 inch—reddish brown very gravelly clay loam
1 to 4 inches—reddish brown gravelly clay loam
4 to 9 inches—dark reddish brown gravelly clay
9 to 20 inches—dark red clay and gravelly clay
20 to 24 inches—highly fractured quartzite; clay films on the fractured bedrock
24 inches—unweathered quartzite

Soil Properties and Qualities

Mabray

Parent material: slope alluvium and residuum derived from limestone
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderate
Available water capacity: very low
Potential rooting depth: 4 to 20 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 20 to 45 percent gravel and 15 to 50 percent cobbles
Calcium carbonate equivalent: 40 to 60 percent
Corrosivity: steel—high; concrete—low

Chiricahua

Parent material: slope alluvium and residuum derived from granite, gneiss, granodiorite, and quartzite
Depth class: shallow
Drainage class: well drained
Permeability: slow
Available water capacity: very low or low
Potential rooting depth: 20 to 30 inches
Runoff rate: low to very high
Hazard of erosion: by water—slight to severe; by wind—very slight
Shrink-swell potential: high

Content of rock fragments: 15 to 40 percent; averages less than 35 percent
Corrosivity: steel—high; concrete—low

Characteristics of Rock Outcrop

Rock outcrop consists of barren rock that occurs as ledges and nearly vertical cliffs of tilted and folded limestone and metamorphic rock. It also includes areas where the depth to bedrock is less than 4 inches. The higher percentage of the outcrop is in areas near hilltops.

Inclusions

Contrasting inclusions:
- Graham soils, which have more than 35 percent clay
- Lampshire soils, which do not have accumulations of calcium carbonate
- Narrow bodies of Combate and Bodecker soils, which are adjacent to drainageways and are very deep

Similar inclusions:
- Soils that have slopes of less than 3 percent or more than 45 percent
- Small areas with 50 to 60 percent cobbles and 10 to 20 percent stones
- Andrada soils, which are calcareous and overlie fragmental bedrock

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: slope, depth to bedrock, cobbly and stony surface, content of calcium carbonate

Dominant vegetation on the Mabray soil:
- In the potential plant community—sideoats grama, black grama, cane beardgrass, threeawn, slim tridens, plains bristlegrass, green sprangletop, bush muhly, Arizona cottontop, range ratany, mariola, sacahuista, ocotillo
- In the present plant community—black grama, bush muhly, sideoats grama, threeawn, plains bristlegrass, fluffgrass, sacahuista, ocotillo, whitethorn

Dominant vegetation on the Chiricahua soil:
- In the potential plant community—hairy grama, sideoats grama, cane beardgrass, slender grama, red threeawn, plains lovegrass, plains bristlegrass, Arizona cottontop, false mesquite, black grama, curly mesquite, shrubby buckwheat
- In the present plant community—curly mesquite, hairy grama, cane beardgrass, red threeawn, mesquite, burroweed, sideoats grama

Special Management Concerns

- A rough surface and steep slopes greatly restrict livestock movement.
- Brush management and range seeding should not be considered on this unit because of surface cobbles and stones.
- The rooting depth limits the growth of plants.
- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- The Mabray and Chiricahua soils have a slight to severe hazard of water erosion; therefore, special consideration should be given to water management.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.
- Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Mabray and Chiricahua soils in areas where slopes are 3 to 30 percent—VIs nonirrigated
Mabray and Chiricahua soils in areas where slopes are 30 to 45 percent—VIe nonirrigated
Rock outcrop—VIII
Ecological site:
Mabray—Limestone Hills, 12- to 16-inch precipitation zone, 041XC307AZ
Chiricahua—Shallow Upland, 12- to 16-inch precipitation zone, 041XC322AZ
Rock outcrop—none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

102—Mabray-Rock outcrop complex, 3 to 45 percent slopes

Setting

Landform: hills and mountains
Slope range: 3 to 45 percent
Elevation: 4,100 to 5,200 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Mabray and similar soils: 60 percent
Rock outcrop: 30 percent
Contrasting inclusions: 10 percent

Typical Profile

Mabray

About 50 to 60 percent of the surface is covered with gravel and cobbles.

0 to 8 inches—dark grayish brown extremely cobbly loam
8 to 11 inches—dark grayish brown very cobbly loam
11 inches—unweathered limestone

Soil Properties and Qualities

Mabray

Parent material: slope alluvium and residuum derived from limestone
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderate
Available water capacity: very low
Potential rooting depth: 4 to 20 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 20 to 45 percent gravel and 15 to 50 percent cobbles
Calcium carbonate equivalent: 40 to 60 percent
Corrosivity: steel—high; concrete—low

Characteristics of Rock Outcrop

Rock outcrop consists of barren rock that occurs as ledges and nearly vertical cliffs of tilted and folded limestone and other sedimentary rock. It also includes areas where the depth to bedrock is less than 4 inches. The higher percentage of the outcrop is in areas near hilltops.

Inclusions

Contrasting inclusions:
- Graham soils, which have more than 35 percent clay
- Blakeney and Sutherland soils, which are very shallow or shallow to a hardpan
- Luckyhills and Mule soils, which are very deep

Similar inclusions:
- Soils that have slopes of less than 3 percent or more than 45 percent
- Small areas with 50 to 60 percent cobbles and 10 to 20 percent stones

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: slope, depth to bedrock, cobbly surface, hazard of water erosion, a high content of calcium carbonate

Dominant vegetation on the Mabray soil:
- In the potential plant community—sideoats grama, black grama, cane beardgrass, threeawn, slim tridens, plains bristlegrass, green sprangletop, bush muhly, Arizona cottontop, range ratany, mariola, sacahuista, ocotillo
- In the present plant community—black grama, bush muhly, sideoats grama, threeawn, plains bristlegrass, fluffgrass, sacahuista, ocotillo, whitethorn

Special Management Concerns

- A rough surface and steep slopes greatly restrict livestock movement.
- Brush management and range seeding should not be considered on this unit because of surface cobbles and stones.
- The rooting depth limits the growth of plants.
- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- The Mabray soil has a slight to severe hazard of water erosion; therefore, special consideration should be given to water management.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.
- Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Mabray soil in areas where slopes are 3 to 30 percent—VIs nonirrigated
Mabray soil in areas where slopes are 30 to 45 percent—VIe nonirrigated
Rock outcrop—VIII
Ecological site:
Mabray—Limestone Hills, 12- to 16-inch precipitation zone, 041XC307AZ
Rock outcrop—none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

103—Magoffin-Rock outcrop-Cherrycow complex, 0 to 15 percent slopes

Setting

Landform: hills
Slope range: 0 to 15 percent

Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Magoffin and similar soils: 40 percent
Rock outcrop: 30 percent
Cherrycow and similar soils: 20 percent
Contrasting inclusions: 10 percent

Typical Profile

Magoffin

About 5 to 10 percent of the surface is covered with gravel.

0 to 2 inches—brown sandy loam
2 to 12 inches—brown sandy loam
12 to 15 inches—brown cobbly sandy loam
15 inches—unweathered dacite porphyry lava

Cherrycow

About 5 to 10 percent of the surface is covered with gravel.

0 to 2 inches—dark brown sandy loam
2 to 11 inches—dark brown sandy loam
11 to 25 inches—brown and strong brown clay
25 to 33 inches—dark yellowish brown, strong brown, and brown sandy clay
33 to 40 inches—strong brown and brown sandy loam
40 inches—unweathered dacite porphyry lava

Soil Properties and Qualities

Magoffin

Parent material: slope alluvium and residuum derived from dacite porphyry lava
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: medium or high
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: low
Content of rock fragments: 0 to 20 percent
Corrosivity: steel—high; concrete—moderate

Cherrycow

Parent material: slope alluvium and residuum derived from dacite porphyry lava
Depth class: moderately deep
Drainage class: moderately well drained
Permeability: very slow
Available water capacity: low or moderate
Potential rooting depth: 20 to 40 inches
Runoff rate: medium or high
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: very high
Content of rock fragments: 0 to 10 percent
Corrosivity: steel—high; concrete—moderate

Characteristics of Rock Outcrop

Rock outcrop consists of barren rock that occurs as outcrops and boulders of dacite porphyry lava. It also includes areas where the depth to bedrock is less than 4 inches.

Inclusions

Contrasting inclusions:
- Gardencan, Lanque, and Crowbar soils, which are very deep
- Woodcutter and Budlamp soils, which have more than 35 percent rock fragments
- Hayhollow soils, which have less than 18 percent clay and are in drainageways

Similar inclusions:
- Magoffin and Cherrycow soils on forest-land sites, which have a tree canopy cover of more than 15 percent
- Cherrycow soils that are shallow to bedrock
- Soils that have slopes of more than 15 percent

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Magoffin—depth to bedrock, hazard of wind erosion
Cherrycow—very slow permeability, very high shrink-swell potential, hazard of wind erosion

Dominant vegetation on the Magoffin soil:
- In the potential plant community—sideoats grama, blue grama, purple grama, sprucetop grama, hairy grama, plains lovegrass, wolftail, shrubby buckwheat, false mesquite
- In the present plant community—sideoats grama, blue grama, slender grama, purple grama, hairy grama, mesquite, Palmer's century plant, turpentinebush, juniper

Dominant vegetation on the Cherrycow soil:
- In the potential plant community—sideoats grama, blue grama, purple grama, plains lovegrass, cane beardgrass, Texas bluestem, wooly bunchgrass,

beggartick threeawn, shrubby buckwheat, Palmer's century plant, oneseed juniper, oak
• In the potential plant community—curly mesquite, sideoats grama, cane beardgrass, tobosa, mesquite, Palmer's century plant, snakeweed, juniper, oak

Special Management Concerns

• The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
• The high content of clay in the Cherrycow soil restricts water infiltration and permeability.
• The very high shrink-swell potential of the Cherrycow soil should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• The Magoffin and Cherrycow soils have a moderate hazard of wind erosion; therefore, special consideration should be given to water management.
• This unit is sensitive to natural and prescribed fires.

Interpretive Groups

Land capability classification:
Magoffin and Cherrycow—VIs nonirrigated
Rock outcrop—VIII
Ecological site:
Magoffin—Shallow Upland, 16- to 20-inch precipitation zone, 041XA117AZ
Rock outcrop—none assigned
Cherrycow—Loamy Upland, 16- to 20-inch precipitation zone, 041XA108AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

104—Major complex, 0 to 5 percent slopes

Setting

Landform: Major fine sandy loam—stream terraces; Major silt loam—relict basin floors
Slope range: 0 to 5 percent
Frequency of flooding: Major fine sandy loam—none; Major silt loam—rare or occasional
Elevation: 4,000 to 4,400 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Major fine sandy loam and similar soils: 40 percent
Major silt loam and similar soils: 40 percent
Contrasting inclusions: 20 percent

Typical Profile

Major fine sandy loam

0 to 2 inches—light brown fine sandy loam
2 to 7 inches—brown, calcareous sandy loam
7 to 22 inches—light brown, calcareous gravelly loam
22 to 36 inches—light brown, calcareous loam
36 to 60 inches—weak red, gypsiferous clay loam

Major silt loam

0 to 7 inches—pinkish gray, calcareous silt loam
7 to 21 inches—brown, calcareous fine sandy loam
21 to 50 inches—pinkish gray and brown, calcareous loam
50 to 60 inches—reddish brown, calcareous, gypsiferous silty clay

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate or severe; by wind—moderate or moderately high
Shrink-swell potential: moderate
Content of rock fragments: less than 35 percent gravel and/or petronodes
Petronodic feature: 20 to 30 percent petronodes
Depth to a calcic horizon: 2 to 35 inches
Calcium carbonate equivalent: 2 to 60 percent
Depth to a gypsic horizon: 20 to 60 inches
Content of gypsum: 0 to 15 percent
Corrosivity: steel—moderate; concrete—high

Inclusions

Contrasting inclusions:
• Diaspar, Sasabe, Courtland soils, which do not have accumulations of calcium carbonate or gypsum
• Libby soils, which have more than 35 percent clay
• Sierravista and Graveyard soils, which have more than 35 percent rock fragments and/or petronodes
• Blakeney soils, which are very shallow or shallow to a hardpan

Similar inclusions:
• Gulch soils, which are more yellow than the Major soils and have an argillic horizon

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: droughtiness, hazard of soil piping, excess gypsum, hazards of water erosion and wind erosion, a high content of calcium carbonate

Dominant vegetation on Major fine sandy loam:
• In the potential and present plant communities—creosotebush, whitethorn, tarbush, black grama, bush muhly, desert zinnia, littleleaf sumac, fourwing saltbush

Dominant vegetation on Major silt loam:
• In the potential and present plant communities—mesquite, fourwing saltbush, tarbush, whitethorn, alkali sacaton, twoflower trichloris, tobosa, burrograss, Pima pappusgrass, bush muhly

Special Management Concerns

• Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
• Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
• Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
• The Major soils have a moderate or severe hazard of water erosion; therefore, special consideration should be given to water management.
• These soils have a moderate or moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: VIe nonirrigated
Ecological site:
Major fine sandy loam—Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major silt loam—Saline Bottom, 12- to 16-inch precipitation zone, 041XC315AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

105—Mallet-Hooks complex, 0 to 5 percent slopes

Setting

Landform: stream terraces and alluvial fans
Slope range: 0 to 5 percent
Frequency of flooding: stream terraces—none; alluvial fans—rare
Elevation: 3,900 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Mallet and similar soils: 45 percent
Hooks and similar soils: 35 percent
Contrasting inclusions: 20 percent

Typical Profile

Mallet

About 30 to 35 percent of the surface is covered with gravel.

0 to 2 inches—brown sandy loam
2 to 18 inches—brown sandy loam
18 to 35 inches—brown fine sandy loam
35 to 45 inches—brown gravelly sandy loam
45 to 60 inches—brown gravelly sand

Hooks

0 to 2 inches—brown sandy loam
2 to 14 inches—dark brown silty clay loam
14 to 46 inches—brown silty clay loam
46 to 60 inches—brown clay loam

Soil Properties and Qualities

Mallet

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: low
Corrosivity: steel—high; concrete—moderate

Hooks

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Guest and Sasabe soils, which have more than 35 percent clay
- Courtland and Diaspar soils, which have an argillic horizon
- Altar and Bodecker soils, which have more than 35 percent rock fragments
- Riveroad, Ubik, and Comoro soils, which have accumulations of calcium carbonate

Similar inclusions:
- Mallet and Hooks soils that have coppice dunes

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazards of wind erosion and piping

Dominant vegetation on the Mallet soil:
- In the potential plant community—plains lovegrass, sideoats grama, blue grama, black grama, bush muhly, spike dropseed, Arizona cottontop, shrubby buckwheat, Mormon tea, yucca, fourwing saltbush
- In the present plant community—cane beardgrass, blue grama, spike dropseed, Arizona cottontop, Mormon tea, shrubby buckwheat, burroweed, yucca

Dominant vegetation on the Hooks soil:
- In the potential plant community—plains lovegrass, sideoats grama, blue grama, cane beardgrass, mesa threeawn, plains bristlegrass, shrubby buckwheat, Mormon tea, yucca, mesquite
- In the present plant community—cane beardgrass, red threeawn, plains bristlegrass, plains lovegrass, mesa threeawn, Mormon tea, shrubby buckwheat, burroweed, mesquite

Special Management Concerns

- This unit has few limitations and should be productive if proper management is applied.
- These soils have a moderate or moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Water movement across this unit may cause piping.
- Structures should be located above the expected level of flooding.

Interpretive Groups

Land capability classification:
Mallet—IIc irrigated and VIc nonirrigated
Hooks—IIe irrigated and VIe nonirrigated
Ecological site:
Mallet—Sandy Loam, Deep, 12- to 16-inch precipitation zone, 041XC318AZ
Hooks—Loamy Upland, 12- to 16-inch precipitation zone, 041XC313AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

106—Marsh

Marsh consists of water-saturated, poorly drained areas in drainageways that are intermittently or permanently covered with water. These areas support aquatic and grasslike vegetation. They can have bedrock at a shallow or moderate depth. The vegetation includes cattails, rushes, and sedges.

Marsh areas have high potential for wildlife habitat. In conservation planning, special consideration should be given to maintaining the wildlife habitat and water in these areas. This unit is assigned to land capability class VIII.

107—McAllister loam, 1 to 3 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 3 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

McAllister and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 8 inches—pale brown loam

8 to 27 inches—brown clay loam
27 to 60 inches—light brown, calcareous clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: moderate
Content of rock fragments: 5 to 30 percent
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 15 to 30 percent in the lower part of the soil
Salinity: none to slight
Sodicity: none to slight
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Sasabe, Courtland, Mallet, Hooks, and Diaspar soils, which do not have accumulations of calcium carbonate
- Ubik and Riveroad soils in drainageways
- Luckyhills soils, which have less than 18 percent clay
- Kahn soils, which do not have an argillic horizon
- Altar soils, which have more than 35 percent rock fragments
- Buntline and Blakeney soils, which are very shallow or shallow to a hardpan
- Forrest, Bonita, Guest, and Eloma soils, which have more than 35 percent clay

Similar inclusions:
- McAllister soils that have a surface layer of sandy loam
- McAllister soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factor: moderate shrink-swell potential

Dominant vegetation:
- In the potential plant community—sideoats grama, plains lovegrass, cane beardgrass, black grama, blue grama, curly mesquite, false mesquite, shrubby buckwheat, Mormon tea
- In the present plant community—black grama, Lehmann lovegrass, fluffgrass, curly mesquite, false mesquite, whitethorn, Mormon tea

Special Management Concerns

- The moderate shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- This unit has few limitations and should be very productive if proper management is applied.

Interpretive Groups

Land capability classification: IIs irrigated and VIs nonirrigated
Ecological site: Loamy Upland, 12- to 16-inch precipitation zone, 041XC313AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

108—McAllister-Stronghold complex, 3 to 20 percent slopes

Setting

Landform: fan terraces
Slope range: 3 to 20 percent
Elevation: 4,500 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

McAllister and similar soils: 50 percent
Stronghold and similar soils: 30 percent
Contrasting inclusions: 20 percent

Typical Profile

McAllister

About 35 to 45 percent of the surface is covered with gravel.

0 to 2 inches—brown gravelly fine sandy loam
2 to 18 inches—reddish brown gravelly sandy clay loam
18 to 35 inches—yellowish red gravelly sandy clay loam
35 to 60 inches—light brown and yellowish red, calcareous sandy loam

Stronghold

About 35 to 55 percent of the surface is covered with gravel.

0 to 1 inch—brown very gravelly loamy sand

1 to 8 inches—brown, calcareous gravelly sandy loam
8 to 25 inches—light brown, calcareous gravelly sandy loam
25 to 60 inches—light brown and pink, calcareous gravelly sandy loam

Soil Properties and Qualities

McAllister

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low to high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: moderate
Content of rock fragments: 5 to 30 percent
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 15 to 30 percent in the lower part of the soil
Corrosivity: steel—high; concrete—low

Stronghold

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: low to high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 15 to 35 percent
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: 5 to 40 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Tombstone soils, which have more than 35 percent rock fragments
- Combate, Baboquivari, and Sasabe soils, which do not have accumulations of calcium carbonate
- Ubik and Riveroad soils in drainageways
- Buntline and Blakeney soils, which are very shallow or shallow to a hardpan
- Bernardino soils, which have more than 35 percent clay

Similar inclusions:
- McAllister soils that have a thicker surface layer of sandy loam

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
McAllister—moderate shrink-swell potential, gravelly surface
Stronghold—gravelly surface, a high content of calcium carbonate

Dominant vegetation on the McAllister soil:
- In the potential plant community—sideoats grama, plains lovegrass, cane beardgrass, black grama, blue grama, curly mesquite, false mesquite, shrubby buckwheat, Mormon tea
- In the present plant community—black grama, Lehmann lovegrass, fluffgrass, curly mesquite, false mesquite, whitethorn, Mormon tea

Dominant vegetation on the Stronghold soil:
- In the potential plant community—sideoats grama, black grama, blue threeawn, red threeawn, New Mexico feathergrass, false mesquite, Mormon tea, soaptree yucca, hairy grama, cane beardgrass
- In the present plant community—blue threeawn, red threeawn, black grama, cane beardgrass, false mesquite, Mormon tea, desert zinnia

Special Management Concerns

- This is a grassland site capable of producing a large volume of high-quality feed.
- The moderate shrink-swell potential of the McAllister soil should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The McAllister soil has few limitations and should be very productive if proper management is applied.
- The Stronghold soil is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site:
McAllister—Loamy Upland, 12- to 16-inch precipitation zone, 041XC313AZ
Stronghold—Limy Slopes, 12- to 16-inch precipitation zone, 041XC308AZ
Major land resource area: 41—Southeastern Arizona Basin and Range

Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

109—McNeal gravelly sandy loam, 1 to 3 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 3 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

McNeal and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 2 inches—brown gravelly sandy loam
2 to 5 inches—reddish brown loam
5 to 24 inches—reddish brown and light reddish brown, calcareous gravelly clay loam
24 to 53 inches—light brown, calcareous loam
53 to 60 inches—pink loamy fine sand

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: moderate
Depth to a calcic horizon: 5 to 20 inches
Calcium carbonate equivalent: 15 to 55 percent below a depth of 5 inches
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Bonita soils, which are in drainageways and have more than 35 percent clay
- Combate, Sasabe, Diaspar, and Courtland soils, which do not have accumulations of calcium carbonate
- Elgin and Forrest soils, which have more than 35 percent clay
- Stronghold and Luckyhills soils, which have less than 18 percent clay
- Buntline and Blakeney soils, which are very shallow or shallow to a hardpan
- Bodecker and Eloma soils, which have more than 35 percent rock fragments
- Durazo soils, which are sandy and have a very high hazard of wind erosion

Similar inclusions:
- McNeal soils that have gravelly textures
- McNeal soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: a gravelly surface layer, a high content of calcium carbonate

Dominant vegetation:
- In the potential plant community—bush muhly, black grama, plains bristlegrass, sideoats grama, blue threeawn, desert zinnia, creosotebush, whitethorn, tarbush, Mormon tea, range ratany
- In the present plant community—tarbush, whitethorn, creosotebush, javelina brush, littleleaf sumac, desert zinnia, bush muhly, black grama, plains bristlegrass, fluffgrass, mariola

Special Management Concerns

- This unit does not respond well to brush management.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: IIs irrigated and VIs nonirrigated
Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

110—McNeal gravelly sandy loam, saline-sodic, 1 to 3 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 3 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

McNeal and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 2 inches—brown gravelly sandy loam
2 to 5 inches—reddish brown, saline-sodic loam
5 to 24 inches—reddish brown and light reddish brown, saline-sodic, calcareous gravelly clay loam
24 to 53 inches—light brown, saline-sodic, calcareous loam
53 to 60 inches—pink loamy fine sand

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: moderate
Depth to a calcic horizon: 5 to 20 inches
Calcium carbonate equivalent: 15 to 55 percent below a depth of 5 inches
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- Bonita soils, which are in drainageways and have more than 35 percent clay
- Combate, Sasabe, Diaspar, and Courtland soils, which do not have accumulations of calcium carbonate
- Elgin and Forrest soils, which have more than 35 percent clay
- Stronghold and Luckyhills soils, which have less than 18 percent clay
- Buntline and Blakeney soils, which are very shallow or shallow to a hardpan
- Bodecker and Eloma soils, which have more than 35 percent rock fragments
- Durazo soils, which are sandy and have a very high hazard of wind erosion

Similar inclusions:
- McNeal soils that have gravelly textures

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: a gravelly surface layer, a high content of calcium carbonate, excess salts, sodium, and gypsum

Dominant vegetation:
- In the potential plant community—bush muhly, black grama, plains bristlegrass, sideoats grama, blue threeawn, desert zinnia, creosotebush, whitethorn, tarbush, range ratany, alkali sacaton, giant sacaton, inland saltgrass, tobosa, vine mesquite, fourwing saltbush
- In the present plant community—tarbush, whitethorn, creosotebush, javelina brush, littleleaf sumac, desert zinnia, bush muhly, black grama, plains bristlegrass, fluffgrass, mariola, alkali sacaton, annual grasses, mesquite, wolfberry, tobosa

Special Management Concerns

- This unit does not respond well to brush management.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

111—Monzingo-Ugyp complex, 1 to 20 percent slopes

Setting

Landform: Monzingo—dissected relict lakebeds; Ugyp—stream terraces and alluvial fans

Slope range: Monzingo—5 to 20 percent; Ugyp—1 to 5 percent
Frequency of flooding: Monzingo—none; Ugyp—rare or occasional
Elevation: 3,800 to 4,100 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 190 to 230 days

Composition

Monzingo and similar soils: 55 percent
Ugyp and similar soils: 25 percent
Contrasting inclusions: 20 percent

Typical Profile

Monzingo

0 to 2 inches—pinkish gray fine sandy loam
2 to 9 inches—pinkish gray fine sandy loam
9 to 17 inches—pinkish gray, calcareous, gypsiferous loam
17 to 30 inches—light brown, calcareous, gypsiferous loam
30 to 60 inches—light brown, very dense, calcareous, gypsiferous fine sandy loam

Ugyp

0 to 4 inches—brown sandy loam
4 to 10 inches—brown fine sandy loam
10 to 33 inches—brown, calcareous, gypsiferous loam
33 to 60 inches—brown, calcareous, gypsiferous silt loam

Soil Properties and Qualities

Monzingo

Parent material: mixed alluvium derived from prehistoric lakes and marshes
Depth class: very deep
Drainage class: well drained
Permeability: moderate
Available water capacity: moderate to very high
Potential rooting depth: 60 inches or more
Runoff rate: medium or high
Hazard of erosion: by water—moderate or severe; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: generally 0 to 10 percent gravel, but ranges to 25 percent
Depth to a calcic horizon: 3 to 20 inches
Calcium carbonate equivalent: 5 to 35 percent
Depth to a gypsic horizon: 3 to 20 inches
Content of gypsum: 5 to 20 percent
Corrosivity: steel—high; concrete—high

Ugyp

Parent material: mixed alluvium derived from sedimentary formations
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—moderately high
Shrink-swell potential: low
Depth to a calcic horizon: 1 to 20 inches
Calcium carbonate equivalent: 5 to 30 percent
Depth to a gypsic horizon: 1 to 20 inches
Content of gypsum: 5 to 15 percent
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- Soils that average less than 10 percent clay and have very dense layers
- Soils that are shallow to a hardpan

Similar inclusions:
- Soils that have less gypsum
- Monzingo soils that do not have very dense layers

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Monzingo—excess gypsum, hazards of wind erosion and water erosion, piping
Ugyp—hazards of wind erosion and water erosion, piping

Dominant vegetation on the Monzingo soil:
- In the potential plant community—creosotebush, whitethorn, tarbush, desert zinnia, Texas dogwood, fluffgrass, black grama, blue threeawn
- In the present plant community—creosotebush, whitethorn, desert zinnia, range ratany, black grama, twistflower, fluffgrass

Dominant vegetation on the Ugyp soil:
- In the potential and present plant communities—creosotebush, whitethorn, tarbush, alkali sacaton, sacaton, littleleaf sumac, mesquite

Special Management Concerns

- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.

• Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
• Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
• Permeability is restricted in very dense layers (Cd layers). These layers are root restrictive when dry.
• These soils have a moderate or severe hazard of water erosion; therefore, special consideration should be given to water management.
• The Ugyp soil has dual range sites with the same plant communities. The stream terraces receive more moisture than the alluvial fans and are more productive.

Interpretive Groups

Land capability classification: VIIe nonirrigated
Ecological site:
Monzingo—Limy Upland, 7- to 12-inch precipitation zone, 041XB208AZ
Ugyp on alluvial fans—Limy Fan, 7- to 12-inch precipitation zone, 041XB220AZ
Ugyp on stream terraces—Loamy Bottom, 7- to 12-inch precipitation zone, 041XB209AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-2AZ—Chihuahuan-Sonoran Desert Shrub Mix

112—Naco-Ruins soils complex, 1 to 5 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 5 percent
Elevation: 4,400 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Naco and similar soils: 35 percent
Ruins, thick surface, and similar soils: 35 percent
Ruins and similar soils: 20 percent
Contrasting inclusions: 10 percent

Typical Profile

Naco

About 50 to 70 percent of the surface is covered with gravel and cobbles.

0 to 2 inches—brown fine sandy loam
2 to 8 inches—reddish brown sandy loam
8 to 15 inches—reddish brown very cobbly clay
15 to 44 inches—dark reddish brown very cobbly clay
44 to 60 inches—yellowish red clay

Ruins, thick surface

0 to 22 inches—yellowish red loamy fine sand
22 to 27 inches—reddish brown loamy fine sand
27 to 40 inches—dark reddish brown clay
40 to 60 inches—dark reddish brown cobbly clay

Ruins

About 5 to 20 percent of the surface is covered with gravel and cobbles.

0 to 5 inches—reddish brown fine sandy loam
5 to 9 inches—dark reddish brown gravelly clay loam
9 to 28 inches—dark reddish brown clay
28 to 60 inches—dark reddish brown very cobbly clay loam

Soil Properties and Qualities

Naco

Parent material: fan alluvium derived from quartz sandstone and arkose
Depth class: very deep
Drainage class: well drained
Permeability: very slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: very high
Content of rock fragments: 35 to 65 percent
Corrosivity: steel—high; concrete—low

Ruins, thick surface

Parent material: fan alluvium derived from quartz sandstone and arkose
Depth class: very deep
Drainage class: well drained
Permeability: rapid in the upper part of the soil and very slow in the lower part
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—high
Shrink-swell potential: low in the upper part of the soil and very high in the lower part
Corrosivity: steel—high; concrete—low

Ruins

Parent material: fan alluvium derived from quartz sandstone and arkose
Depth class: very deep
Drainage class: well drained

Permeability: very slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: medium
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: very high
Content of rock fragments: less than 35 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Keysto soils, which are in drainageways and have less than 18 percent clay
- Blakeney and Buntline soils, which are very shallow or shallow to a hardpan
- Soils that are shallow to bedrock
- Luckyhills and Nolam soils, which have less than 35 percent clay
- Libby soils, which have petronodes in the lower part

Similar inclusions:
- Naco soils that have a thick surface layer of loamy fine sand

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: hazard of wind erosion, very high shrink-swell potential, content of rock fragments

Dominant vegetation on the Naco soil:
- In the potential plant community—blue grama, black grama, sideoats grama, cane beardgrass, plains lovegrass, Arizona cottontop, false mesquite, spreading ratany, Texas zinnia
- In the present plant community—mesquite, Lehmann lovegrass, burroweed, false mesquite, threeawn

Dominant vegetation on Ruins, thick surface:
- In the potential plant community—blue grama, black grama, sideoats grama, cane beardgrass, plains bristlegrass, Arizona cottontop, sand dropseed, mesa dropseed
- In the present plant community—mesquite, fourwing saltbush, Lehmann lovegrass, burroweed, forbs

Dominant vegetation on the Ruins soil:
- In the potential plant community—blue grama, black grama, sideoats grama, cane beardgrass, Arizona cottontop, false mesquite, spreading ratany, Texas zinnia
- In the present plant community—mesquite, Lehmann lovegrass, false mesquite, burroweed, forbs

Special Management Concerns

- The Ruins soils have a moderately high or high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- The high content of clay in the Naco and Ruins soils restricts water infiltration and permeability.
- Excess rock fragments in these soils interfere with excavations.
- The very high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The hazard of water erosion increases if the surface layer is removed.

Interpretive Groups

Land capability classification:
Naco—VIs nonirrigated
Ruins—VIe nonirrigated
Ecological site:
Naco and Ruins—Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Ruins, thick surface—Sandy Loam, Deep, 12- to 16-inch precipitation zone, 041XC318AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

113—Nolam-Libby-Buntline complex, 1 to 10 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 10 percent
Elevation: 3,900 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Nolam and similar soils: 40 percent
Libby and similar soils: 25 percent
Buntline and similar soils: 20 percent
Contrasting inclusions: 15 percent

Typical Profile

Nolam

About 5 to 20 percent of the surface is covered with gravel.

0 to 1 inch—yellowish red fine sandy loam

1 to 19 inches—reddish brown very cobbly sandy clay loam
19 to 38 inches—yellowish red and reddish brown, calcareous extremely cobbly sandy loam
38 to 60 inches—reddish brown and pinkish white, calcareous extremely cobbly sandy loam

Libby

0 to 1 inch—dark reddish brown gravelly fine sandy loam
1 to 8 inches—reddish brown loam
8 to 23 inches—reddish brown clay
23 to 60 inches—reddish brown and light reddish brown, calcareous clay loam

Buntline

0 to 1 inch—reddish brown gravelly fine sandy loam
1 to 8 inches—yellowish red sandy loam
8 to 23 inches—a highly fractured hardpan cemented with calcium carbonate
23 to 47 inches—pinkish gray, calcareous extremely cobbly sandy loam
47 to 60 inches—white and reddish brown sandy clay loam

Soil Properties and Qualities

Nolam

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight or moderate; by wind—moderately high
Shrink-swell potential: moderate
Content of rock fragments: more than 35 percent
Depth to a calcic horizon: 20 to 40 inches
Calcium carbonate equivalent: 0 to 5 percent in the upper part of the soil and 15 to 40 percent in the lower part
Corrosivity: steel—high; concrete—low

Libby

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: high
Content of rock fragments: averages less than 35 percent gravel and petronodes, but ranges to 55 percent
Petronodic feature: 18 to 55 percent petronodes
Calcium carbonate equivalent: 5 to 40 percent
Depth to an abrupt textural change: 1 to 15 inches
Corrosivity: steel—moderate; concrete—moderate

Buntline

Parent material: mixed fan alluvium
Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid above the hardpan
Available water capacity: very low
Potential rooting depth: 5 to 15 inches
Runoff rate: medium or high
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 0 to 20 percent gravel and cobbles above the hardpan, 0 to 75 percent below the hardpan
Calcium carbonate equivalent: 0 to 5 percent above the hardpan, 5 to 30 percent below the hardpan
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Graveyard and Sierravista soils, which have more than 35 percent petronodes
- Kahn soils, which have loamy textures throughout
- McNeal soils, which have less than 35 percent rock fragments
- Naco, Forrest, and Ruins soils, which have more than 35 percent clay
- Gulch soils, which have gypsum

Similar inclusions:
- Nolam soils that have hue of 7.5YR
- Nolam soils that have less than 35 percent rock fragments

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Nolam—hazards of wind erosion and water erosion, moderate shrink-swell potential, a high content of calcium carbonate, content of rock fragments
Libby—slow permeability, high shrink-swell potential
Buntline—depth to a hardpan, content of rock fragments

Dominant vegetation on the Nolam soil:
• In the potential plant community—sideoats grama, cane beardgrass, plains lovegrass, blue grama, sprucetop grama, black grama, threeawn, false mesquite, desert zinnia
• In the present plant community—mesquite, burroweed, Lehmann lovegrass, whitethorn, desert zinnia

Dominant vegetation on the Libby soil:
• In the potential plant community—sideoats grama, cane beardgrass, plains lovegrass, blue grama, sprucetop grama, curly mesquite, threeawn, false mesquite, range ratany
• In the present plant community—mesquite, whitethorn, Lehmann lovegrass, grama species, burroweed

Dominant vegetation on the Buntline soil:
• In the potential plant community—creosotebush, tarbush, whitethorn, desert zinnia, range ratany, black grama, bush muhly, blue threeawn
• In the present plant community—whitethorn, tarbush, creosotebush, bush muhly, threeawn

Special Management Concerns

• Excavation in areas of the Buntline soil can be difficult because of the restrictive hardpan.
• The Nolam soil has a slight or moderate hazard of water erosion; therefore, special consideration should be given to water management.
• The Nolam soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• The Libby soil has a high content of gypsum and is very susceptible to piping, settling, and erosion.
• The high content of clay in the Libby soil restricts water infiltration and permeability.
• Excess rock fragments in the soils interfere with excavations.
• This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.
• The moderate or high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.

Interpretive Groups

Land capability classification:
Nolam—VIe nonirrigated
Libby and Buntline—VIs nonirrigated
Ecological site:
Nolam and Libby—Loamy Upland, 12- to 16-inch precipitation zone, 041XC313AZ
Buntline—Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

114—Outlaw-Epitaph-Paramore complex, 0 to 15 percent slopes

Setting

Landform: volcanic flows
Slope range: 0 to 15 percent
Elevation: 3,800 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Outlaw and similar soils: 35 percent
Epitaph and similar soils: 25 percent
Paramore and similar soils: 20 percent
Contrasting inclusions: 20 percent

Typical Profile

Outlaw

About 10 to 20 percent of the surface is covered with cinders and with basalt gravel and/or cobbles.

0 to 1 inch—reddish brown silty clay loam
1 to 32 inches—dark reddish brown clay
32 to 46 inches—yellowish red and pinkish white, calcareous loam
46 to 63 inches—dark reddish brown, calcareous clay loam

Epitaph

About 30 to 40 percent of the surface is covered with cinders and basalt gravel and cobbles.

0 to 1 inch—dark brown silty clay loam
1 to 9 inches—dark reddish brown silty clay
9 to 24 inches—dark reddish brown clay
24 to 33 inches—a strongly cemented hardpan
33 inches—unweathered basalt flow

Paramore

About 20 to 30 percent of the surface is covered with cinders and with basalt gravel and/or cobbles.

0 to 1 inch—brown silty clay loam
1 to 22 inches—dark brown and dark reddish brown clay
22 inches—unweathered basalt flow

Soil Properties and Qualities

Outlaw

Parent material: mixed alluvium derived from basalt, cinders, bombs, and volcanic rocks
Depth class: very deep
Drainage class: well drained
Permeability: very slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: medium or high
Hazard of erosion: by water—slight or moderate; by wind—moderate
Shrink-swell potential: very high
Soil cracking: many vertical cracks 0.125 inch to 2.5 inches wide from the surface to a depth of 22 inches or more
Depth to a calcic horizon: 30 to 60 inches
Calcium carbonate equivalent: 0 to 50 percent
Corrosivity: steel—high; concrete—low

Epitaph

Parent material: slope alluvium and residuum derived from basalt, cinders, bombs, and volcanic rocks
Depth class: moderately deep to a hardpan
Drainage class: well drained
Permeability: very slow
Available water capacity: low
Potential rooting depth: 20 to 40 inches
Runoff rate: medium or high
Hazard of erosion: by water—slight or moderate; by wind—moderate
Shrink-swell potential: very high
Soil cracking: common vertical cracks 0.25 inch to 1.5 inches wide
Corrosivity: steel—high; concrete—low

Paramore

Parent material: slope alluvium and residuum derived from basalt, cinders, bombs, and volcanic rocks
Depth class: moderately deep
Drainage class: well drained
Permeability: very slow
Available water capacity: low
Potential rooting depth: 20 to 45 inches
Runoff rate: medium or high
Hazard of erosion: by water—slight or moderate; by wind—moderate
Shrink-swell potential: very high
Content of rock fragments: 5 to 20 percent cinders and basalt gravel and cobbles
Soil cracking: common vertical cracks 0.25 inch to 1.5 inches wide
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Soils that are in drainageways
- Boss soils, which are very shallow or shallow to bedrock
- Eloma soils, which have more than 35 percent rock fragments
- Elgin soils, which formed in mixed alluvium
- Krentz soils, which have less than 35 percent clay and are underlain by cinders
- Rock outcrop at the edges of volcanic flows

Similar inclusions:
- Epitaph soils that are less than 20 inches deep or more than 40 inches deep
- Paramore soils that are less than 20 inches deep or more than 45 inches deep
- Outlaw soils that do not have accumulations of calcium carbonate
- Soils that have slopes of more than 15 percent; on forest-land sites

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Outlaw—very high shrink-swell potential, soil cracking, clayey textures
Epitaph and Paramore—very high shrink-swell potential, soil cracking, moderate depth to a hardpan or bedrock, clayey textures

Dominant vegetation on the Outlaw soil:
- In the potential plant community—tobosa, sideoats grama, vine mesquite, cane beardgrass, plains bristlegrass, annual forbs and grasses
- In present community—tobosa, sideoats grama, cane beardgrass, fluffgrass, mesquite, cholla, burroweed

Dominant vegetation on the Epitaph soil:
- In the potential plant community—tobosa, sideoats grama, vine mesquite, cane beardgrass, plains bristlegrass, annual forbs and grasses
- In the present plant community—tobosa, mesquite, cholla

Dominant vegetation on the Paramore soil:
- In the potential plant community—tobosa, sideoats grama, vine mesquite, cane beardgrass, annual forbs and grasses
- In the present plant community—tobosa, sideoats grama, cane beardgrass, mesquite, whitethorn

Special Management Concerns

• The very high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• The limited depth to bedrock or a hardpan interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
• Water movement across this unit may cause piping.
• The high content of clay in these soils restricts water infiltration and permeability.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Clayey Upland, 12- to 16-inch precipitation zone, 041XC304AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

115—Oversight gravelly sandy loam, 1 to 35 percent slopes

Setting

Landform: alluvial fans
Slope range: 1 to 35 percent
Elevation: 4,500 to 6,000 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Oversight and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

About 70 to 95 percent of the surface is covered with gravel, cobbles, and stones.

0 to 3 inches—brown gravelly sandy loam
3 to 14 inches—brown very gravelly sandy loam
14 to 29 inches—brown very cobbly loam
29 to 48 inches—brown very gravelly sandy clay loam
48 to 60 inches—brown extremely gravelly sandy clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid in the upper part of the soil and moderately slow in the buried horizons
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low to high
Hazard of erosion: by water—slight to severe; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 30 to 75 percent gravel, cobbles, and stones
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
• Lanque and Hayhollow soils, which have less than 35 percent rock fragments
• Rafter soils, which are subject to flooding
• Riverwash
• Budlamp soils, which are very shallow or shallow

Similar inclusions:
• Oversight soils that have less than 35 percent rock fragments

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: slope, content of rock fragments

Dominant vegetation:
• In the potential plant community—sideoats grama, cane beardgrass, plains lovegrass, crinkleawn, blue grama, beggartick threeawn, shrubby buckwheat, false mesquite, yerba de pasmo
• In the present plant community—blue grama, spidergrass, Lehmann lovegrass, cane beardgrass, yerba de pasmo, false mesquite, shrubby buckwheat, mesquite, snakeweed

Special Management Concerns

• The large rock fragments in the soil interfere with excavations.
• Road construction should include water bars and should be kept to a minimum.
• Erosion is a hazard on steep slopes.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Sandy Loam Upland, 16- to 20-inch precipitation zone, 041XA110AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

116—Oversight sandy loam, calcareous, 1 to 20 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 20 percent
Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Oversight and similar soils: 80 percent
Contrasting inclusions: 20 percent

Typical Profile

About 0 to 10 percent of the surface is covered with gravel.

0 to 1 inch—brown sandy loam
1 to 7 inches—brown sandy loam
7 to 15 inches—brown gravelly sandy loam
15 to 42 inches—brown extremely cobbly sandy loam
42 to 60 inches—brown, calcareous extremely gravelly loamy sand

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: low to high
Hazard of erosion: by water—slight or moderate; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: more than 35 percent gravel and cobbles
Calcium carbonate equivalent: 5 to 20 percent in the lower part of the soil
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Soils that have a hardpan at a moderate depth and are generally on the side slopes of fan terraces
- Lutzcan and Yarbam soils, which are very shallow or shallow to bedrock
- Terrarossa soils, which have more than 35 percent clay

Similar inclusions:
- Soils that have 18 to 35 percent clay

Use and Management

Major current uses: wildlife habitat and livestock grazing,

Soil-related factors: fast intake rate, content of rock fragments, hazard of wind erosion

Dominant vegetation:
- In the potential and present plant communities—sideoats grama, blue grama, cane beardgrass, plains lovegrass, Texas bluestem, green sprangletop, black grama, threeawn, shrubby buckwheat, oak

Special Management Concerns

- This unit responds well to managed, natural and prescribed fires.
- Excess rock fragments in the soil interfere with excavations.
- Because of the moderately rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.
- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification: VIe nonirrigated
Ecological site: Sandy Loam Upland, 16- to 20-inch precipitation zone, 041XA110AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

117—Oversight-Lanque complex, 1 to 5 percent slopes

Setting

Landform: alluvial fans and fan terraces
Slope range: 1 to 5 percent
Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Oversight and similar soils: 60 percent

Lanque and similar soils: 30 percent
Contrasting inclusions: 10 percent

Typical Profile

Oversight

About 35 to 70 percent of the surface is covered with gravel and/or cobbles.

0 to 1 inch—brown fine sandy loam
1 to 12 inches—brown sandy loam
12 to 25 inches—reddish brown very cobbly sandy loam
25 to 45 inches—reddish brown very cobbly sandy loam
45 to 60 inches—yellowish red very cobbly sandy clay loam

Lanque

0 to 3 inches—dark yellowish brown loamy sand
3 to 25 inches—brown sandy loam
25 to 60 inches—dark yellowish brown sandy loam

Soil Properties and Qualities

Oversight

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid in the upper part of the soil and moderately slow in the buried horizons
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent gravel and/or cobbles
Corrosivity: steel—high; concrete—low

Lanque

Parent material: fan alluvium and stream alluvium derived from granite and gneiss
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low to high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—high
Shrink-swell potential: low
Content of rock fragments: averages less than 35 percent, but can range to 50 percent in individual horizons
Corrosivity: steel—high; concrete—moderate

Contrasting Inclusions

- Terrarossa soils, which have more than 35 percent clay
- Gardencan soils, which have 18 to 35 percent clay

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Oversight—content of rock fragments
Lanque—hazard of wind erosion

Dominant vegetation on the Oversight soil:
- In the potential plant community—plains lovegrass, sideoats grama, blue grama, cane beardgrass, hairy grama, shrubby buckwheat, green sprangletop, Arizona cottontop
- In the present plant community—Lehmann lovegrass, grama species, cane beardgrass, green sprangletop, camphorweed

Dominant vegetation on the Lanque soil:
- In the potential plant community—sideoats grama, green sprangletop, cane beardgrass, plains lovegrass, crinkleawn, blue grama, beggartick threeawn, shrubby buckwheat
- In the present plant community—Lehmann lovegrass, grama species, cane beardgrass, green sprangletop, camphorweed

Special Management Concerns

- The Oversight soil has large cobbles that interfere with excavation when utilities are installed.
- The Lanque soil has a high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- This unit has few limitations and should be very productive if proper management is applied.

Interpretive Groups

Land capability classification:
Oversight—VIs nonirrigated
Lanque—VIe nonirrigated
Ecological site: Sandy Loam Upland, 16- to 20-inch precipitation zone, 041XA110AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

118—Pedregosa very gravelly fine sandy loam, 3 to 15 percent slopes

Setting

Landform: fan terraces
Slope range: 3 to 15 percent
Elevation: 4,000 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Pedregosa and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

About 40 to 50 percent of the surface is covered with gravel and cobbles.

0 to 1 inch—brown very gravelly fine sandy loam
1 to 7 inches—brown very gravelly fine sandy loam
7 to 13 inches—a fractured, strongly cemented hardpan
13 to 60 inches—white and brown very gravelly sandy loam

Soil Properties and Qualities

Parent material: mixed calcareous fan alluvium
Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: medium or high
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Calcium carbonate equivalent: 5 to 25 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Bonita soils, which are very deep and have more than 35 percent clay
- Tombstone and Stronghold soils, which are very deep and do not have a hardpan
- Graham soils, which are very shallow or shallow to bedrock
- Epitaph soils, which are moderately deep to a hardpan, which overlies bedrock

Similar inclusions:
- Soils that have slopes of more than 15 percent
- Blakeney soils, which have less than 35 percent rock fragments

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: droughtiness, depth to a hardpan, gravelly and cobbly surface, content of calcium carbonate

Dominant vegetation:
- In the potential plant community—littleleaf sumac, whitethorn, creosotebush, mariola, desert zinnia, tarbush, javelina brush, range ratany, bush muhly, black grama, fluffgrass, sideoats grama, desert needlegrass, cane beardgrass, Arizona cottontop, blue threeawn, yucca
- In the present plant community—littleleaf sumac, creosotebush, whitethorn, javelina brush, mariola, desert zinnia, prickleaf dogweed, range ratany, yucca, fluffgrass, bush muhly, black grama, Lehmann lovegrass, blue threeawn

Special Management Concerns

- Littleleaf sumac is prevalent, probably because of the fractured hardpan. If the hardpan is destroyed by knifing, the plant community can change from one that is dominated by brush to one that is dominated by grass. The range site changes from Limy Upland to Limy Slopes. Once converted to Limy Slopes, the site can be maintained by prescribed burning.
- Excavation can be difficult because of the restrictive hardpan.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

119—Pedregosa-Tombstone complex, 3 to 20 percent slopes

Setting

Landform: fan terraces
Slope range: 3 to 20 percent
Elevation: 4,000 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Pedregosa and similar soils: 70 percent
Tombstone and similar soils: 20 percent
Contrasting inclusions: 10 percent

Typical Profile

Pedregosa

About 70 to 80 percent of the surface is covered with gravel and pan fragments.

0 to 2 inches—brown gravelly sandy loam
2 to 13 inches—brown very gravelly loam
13 to 18 inches—brown very cobbly fine sandy loam
18 inches—a very hard, strongly cemented hardpan

Tombstone

About 40 to 50 percent of the surface is covered with gravel.

0 to 2 inches—brown very gravelly sandy loam
2 to 15 inches—brown, calcareous very gravelly sandy loam
15 to 60 inches—light brown, calcareous extremely gravelly sandy loam

Soil Properties and Qualities

Pedregosa

Parent material: mixed calcareous fan alluvium
Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Calcium carbonate equivalent: 5 to 25 percent
Corrosivity: steel—high; concrete—low

Tombstone

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: low to high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Depth to a calcic horizon: 1 to 20 inches
Calcium carbonate equivalent: 5 to 30 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Bernardino soils, which have more than 35 percent clay
- Soils that are moderately deep to bedrock

Similar inclusions:
- Soils that have slopes of more than 20 percent
- Stronghold soils, which have less than 35 percent gravel
- Blakeney soils, which have less than 35 percent rock fragments

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: droughtiness, slope, content of rock fragments, gravelly and cobbly surface, a high content of calcium carbonate

Dominant vegetation on the Pedregosa and Tombstone soils:
- In the potential plant community—sideoats grama, black grama, bush muhly, slim tridens, blue threeawn, false mesquite, range ratany, desert zinnia, Mormon tea, ocotillo, whitethorn, creosotebush
- In the present plant community—littleleaf sumac, desert zinnia, prickleaf dogweed, sacahuista, whitethorn, mariola, blue threeawn, black grama, bush muhly, slim tridens, fluffgrass, sandpaper bush, creosotebush

Special Management Concerns

- The low or very low available water capacity is the main limitation.
- Excess rock fragments in the soils interfere with excavations.
- This unit responds well to managed, natural and prescribed fires.
- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

120—Perilla-Durazo complex, 0 to 3 percent slopes

Setting

Landform: fan terraces and stream terraces
Slope range: 0 to 3 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Perilla and similar soils: 50 percent
Durazo and similar soils: 40 percent
Contrasting inclusions: 10 percent

Typical Profile

Perilla

0 to 5 inches—brown sandy loam
5 to 21 inches—brown sandy loam
21 to 29 inches—brown fine sandy loam
29 to 60 inches—brown and strong brown gravelly sandy loam

Durazo

0 to 10 inches—brown loamy sand
10 to 31 inches—light brown loamy sand
31 to 60 inches—light brown sand

Soil Properties and Qualities

Perilla

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: less than 35 percent
Calcium carbonate equivalent: less than 5 percent
Corrosivity: steel—high; concrete—moderate

Durazo

Parent material: sandy eolian material
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: rapid
Available water capacity: low
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—high
Shrink-swell potential: low
Content of rock fragments: less than 5 percent
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Caralampi, Riveroad, and Courtland soils, which have 18 to 35 percent clay
- Sasabe soils, which have more than 35 percent clay
- Ubik soils, which have loam and fine sandy loam textures

Similar inclusions:
- Diaspar soils, which have an argillic horizon and less than 18 percent clay

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazard of wind erosion, fast intake rate, hazard of seepage

Dominant vegetation on the Perilla soil:
- In the potential plant community—sideoats grama, cane beardgrass, Arizona cottontop, black grama, plains lovegrass, blue grama, threeawn
- In the present plant community—Lehmann lovegrass, burroweed, mesquite, cane beardgrass, plains bristlegrass, desert broom, annual forbs and grasses

Dominant vegetation on the Durazo soil:
- In the potential plant community—black grama, sand dropseed, mesa dropseed, spike dropseed, threeawn, soaptree yucca, Mormon tea
- In the present plant community—mesquite, soaptree yucca, Mormon tea, burroweed, Cochise lovegrass, spike dropseed, plains bristlegrass

Special Management Concerns

- The hazard of wind erosion is high on the Durazo soil and moderately high on the Perilla soil. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Because of an abrupt textural change, a buried horizon in the Durazo soil restricts water movement until saturation occurs.
- Because of the moderately rapid or rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.

Interpretive Groups

Land capability classification:
Perilla—IIe irrigated and VIe nonirrigated
Durazo—IIIe irrigated and VIe nonirrigated
Ecological site:
Perilla—Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Durazo—Sandy Upland, 12- to 16-inch precipitation zone, 041XC325AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

121—Pits

This map unit consists of open excavations, locally called mine pits, from which soil and geologic materials have been removed for use in copper production. Included in this unit are waste materials, which are mostly gravelly and sandy and clayey. Limestone deposits are common in and around areas of this unit. The pits generally are small, but a few are large. The largest ones are at Tombstone and Bisbee. Some pits have been abandoned.

This unit has little or no potential for irrigated cropland or urban development. It is assigned to land capability class VIII.

122—Pits-Dumps complex

This map unit consists of pits from which sand, gravel, copper, and iron ore have been removed and dumps where unused materials are dumped. It includes exposed copper ore ready for mining and piles of lower grade ore used in leaching operations. Individual areas of this unit are delineated on the detailed soil maps where possible. The smaller areas are identified by spot symbols. Some areas are used for copper leaching operations.

This unit has little or no potential for irrigated cropland or urban development. If restored and reseeded with grasses, abandoned areas have moderate potential for wildlife habitat. This unit is assigned to land capability class VIII.

123—Quiburi-Fluvaquents-Riverwash complex, 0 to 5 percent slopes

Setting

Landform: flood plains
Slope range: Quiburi—0 to 5 percent; Fluvaquents—0 to 2 percent
Frequency of flooding: Quiburi—rare or occasional; Fluvaquents—frequent
Elevation: 3,600 to 4,000 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 190 to 230 days

Stream Segment

Length: 15 to 20 miles; Charleston to Benson
Width: 10 to 125 feet
Average depth of water: 0 to 5 feet
Flow regime: partly ephemeral (flowing only in response to precipitation) and partly perennial (fed by springs throughout the year)
Bank cutting: 3 to 30 feet

Composition

Quiburi and similar soils: 35 percent
Fluvaquents and similar soils: 30 percent
Riverwash: 25 percent
Contrasting inclusions: 10 percent

Typical Profile

Quiburi

0 to 1 inch—slightly decomposed leaf litter
1 to 6 inches—brown very fine sandy loam
6 to 36 inches—brown very fine sandy loam
36 to 51 inches—light brown, stratified very fine sandy loam to silt loam
51 to 60 inches—light brown very fine sandy loam

Fluvaquents

0 to 4 inches—dark yellowish brown coarse sand
4 to 20 inches—grayish brown coarse sand
20 to 50 inches—dark bluish gray gravelly coarse sand

Soil Properties and Qualities

Quiburi

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: moderately well drained
Depth to a water table: 3 to 6 feet from August to April
Permeability: moderately rapid
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: medium
Hazard of erosion: by water—moderate; by wind—moderately high
Shrink-swell potential: low

Calcium carbonate equivalent: 0 to 5 percent
Corrosivity: steel—high; concrete—moderate

Fluvaquents

Parent material: mixed stream alluvium
Depth class: deep or very deep
Drainage class: somewhat poorly drained or poorly drained
Depth to a water table: 0.5 foot to 5.0 feet from August to April
Permeability: very rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: medium
Hazard of erosion: by water—slight; by wind—very slight
Shrink-swell potential: low
Content of rock fragments: 40 to 80 percent
Corrosivity: steel—moderate; concrete—low

Characteristics of Riverwash

Riverwash consists of very deep, excessively drained, stratified sand, gravel, cobbles, and stones from numerous sources. It is in drainageways. It is subject to frequent flooding and shifting. Riverwash has a high water table at a depth of 0.5 foot to 5.0 feet from August through April. Also, it can be covered by 0.25 foot to 6.0 feet of water.

Contrasting Inclusions

- Soils that have bedrock within a depth of 20 inches and are wet
- Soils that are moderately deep and wet

Use and Management

Major current use: wildlife habitat

Soil-related factors: fluctuating water table, wetness in winter and spring, hazards of flash flooding and streambank erosion

Dominant vegetation on the Quiburi soil:
- In the potential plant community—70 percent canopy cover of cottonwood and black willow with an understory of sacaton, knotroot paspalum, sedge, rush, horsetail, batamote, watercress, yerba mansa, and giant sacaton
- In the present plant community—cottonwood, black willow, mesquite, saltcedar, bermudagrass, spiny aster, sedges, rush, horsetail, sacaton

Dominant vegetation on the Fluvaquents:
- In the potential plant community—70 percent canopy cover of cottonwood, black willow, and netleaf hackberry with an understory of sedge, rush, watercress, knotroot paspalum, horsetail, Arizona wildrye, giant sacaton, cattail, and batamote
- In the present plant community—cottonwood, black willow, batamote, saltcedar, mesquite, spiny aster, bermudagrass, sedges, rush, horsetail, cattails

Special Management Concerns

- Because of the hazard of flash flooding, structures should be located above drainageways.
- The fluctuating water table and wetness in winter and spring affect wildlife habitat and perennial streamflow.

Interpretive Groups

Land capability classification:
Quiburi—VIIe nonirrigated
Fluvaquents—VIIw nonirrigated
Riverwash—VIII
Ecological site:
Quiburi and Fluvaquents—Sandy Bottom, Subirrigated (SAGO, POFR), 7- to 12-inch precipitation zone, 041XB218AZ
Riverwash—none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-2AZ—Chihuahuan-Sonoran Desert Shrub Mix

124—Rafter-Lanque complex, 0 to 5 percent slopes

Setting

Landform: alluvial fans and stream terraces
Slope range: 0 to 5 percent
Frequency of flooding: alluvial fans—rare; stream terraces—none
Elevation: 4,600 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Rafter and similar soils: 50 percent
Lanque and similar soils: 40 percent
Contrasting inclusions: 10 percent

Typical Profile

Rafter

About 60 to 80 percent of the surface is covered with gravel and cobbles.

0 to 2 inches—brown gravelly sandy loam

2 to 12 inches—brown very gravelly sandy loam
12 to 28 inches—brown extremely gravelly sandy loam
28 to 60 inches—brown extremely gravelly coarse sand

Lanque

0 to 2 inches—brown fine sandy loam
2 to 24 inches—dark brown sandy loam
24 to 50 inches—brown gravelly sandy loam
50 to 60 inches—dark grayish brown gravelly sandy loam

Soil Properties and Qualities

Rafter

Parent material: mixed stream and fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid or rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent gravel and cobbles
Corrosivity: steel—high; concrete—moderate

Lanque

Parent material: fan alluvium and stream alluvium derived from granite and gneiss
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: averages less than 35 percent, but can range to 50 percent in individual horizons
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Soils that have sandy textures and more than 35 percent rock fragments
- Hayhollow soils and Riverwash, which are in drainageways and are subject to common flooding

Similar inclusions:
- Lanque soils that have accumulations of calcium carbonate in the lower part

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: hazard of wind erosion, fast intake rate, content of rock fragments

Dominant vegetation on the Rafter and Lanque soils:
- In the potential plant community—sideoats grama, blue grama, cane beardgrass, green sprangletop, plains lovegrass, Arizona cottontop, Apache plum, shrubby buckwheat
- In the present plant community—plains lovegrass, sideoats grama, Emory oak, blue grama, shrubby buckwheat, Apache plum, mesquite, annual grasses and forbs, senecio

Special Management Concerns

- This unit responds well to managed, natural and prescribed fires.
- The Lanque soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- This unit has few limitations and should be very productive if proper management is applied.
- Because of the moderately rapid or rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.

Interpretive Groups

Land capability classification:
Rafter—VIs nonirrigated
Lanque—VIe nonirrigated
Ecological site: Sandy Loam Upland, 16- to 20-inch precipitation zone, 041XA110AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

125—Riveroad and Ubik soils, 0 to 5 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 0 to 5 percent
Frequency of flooding: rare
Elevation: 3,900 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

This is an undifferentiated map unit. The soils identified in the name of the unit are not consistently associated geographically. At least one soil occurs in every delineation, but each delineation can have any combination of the two soils.

Typical Profile

Riveroad

0 to 1 inch—light brownish gray silt loam
1 to 6 inches—pinkish gray silt loam
6 to 21 inches—brown silt loam
21 to 60 inches—brown silty clay loam

Ubik

0 to 5 inches—brown loam
5 to 16 inches—brown silt loam
16 to 60 inches—brown fine sandy loam

Soil Properties and Qualities

Riveroad

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: moderate
Salinity: none or very slight
Sodicity: slight
Content of gypsum: 0 to 4 percent
Corrosivity: steel—high; concrete—moderate

Ubik

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: less than 15 percent
Salinity: none to slight
Sodicity: slight
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Guest soils, which have more than 35 percent clay
- Soils that have more than 20 percent rock fragments
- Kahn soils, which have more than 15 percent calcium carbonate
- Bodecker soils, which have more than 35 percent rock fragments and are in drainageways
- Riverwash

Similar inclusions:
- Ubik soils that have gypsum and are adjacent to the San Pedro River
- Riveroad and Ubik soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazards of flooding, water erosion, and piping

Dominant vegetation on the Riveroad soil:
- In the potential plant community—giant sacaton, sideoats grama, blue grama, vine mesquite, tobosa, mesquite, desert willow
- In the present plant community—mesquite, tobosa, giant sacaton

Dominant vegetation on the Ubik soil:
- In the potential plant community—vine mesquite, blue grama, tobosa, sideoats grama, cane beardgrass, mesquite, giant sacaton, creeping muhly
- In the present plant community—mesquite, giant sacaton, burrograss

Special Management Concerns

- Structures should be located above the expected level of flooding.
- Water movement across this unit may cause piping.
- This unit has few limitations and should be productive if proper management is applied.

Interpretive Groups

Land capability classification: IIs irrigated and VIs nonirrigated
Ecological site:
Riveroad—Loamy Bottom, Subirrigated, 12- to 16-inch precipitation zone, 041XC312AZ
Ubik—Loamy Bottom, Swales, 12- to 16-inch precipitation zone, 041XC311AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

126—Riverwash, 1 to 10 percent slopes

Setting

Landform: flood plains
Frequency of flooding: frequent
Slope range: 1 to 10 percent
Elevation: 4,400 to 5,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Riverwash: 90 percent
Contrasting inclusions: 10 percent

Characteristics of Riverwash

Riverwash consists of very deep, excessively drained, stratified sand, gravel, cobbles, and stones from numerous sources. It is in drainageways. It is subject to frequent flooding and shifting. Riverwash has a high water table at a depth of 0.5 foot to 5.0 feet from August through April. Also, it can be covered by 0.1 foot to 6.0 feet of water.

Inclusions

Contrasting inclusions:
- Hayhollow soils, which have sandy loam textures
- Rafter soils, which have more than 18 percent clay

Similar inclusions:
- Riverwash that has a thick surface layer of sandy loam

Use and Management

Major current use: wildlife habitat

Management factors: flash flooding, fast intake rate

Special Management Concerns

- Because of the hazard of flooding, including flash flooding, structures should not be located in areas of this unit.
- Because of very rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or of nearby water supplies.

Interpretive Groups

Land capability classification: VIII
Ecological site: none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

127—Riverwash-Bodecker complex, 0 to 3 percent slopes

Setting

Landform: flood plains
Slope range: Riverwash—0 to 2 percent; Bodecker—0 to 3 percent
Frequency of flooding: Riverwash—common; Bodecker—occasional
Elevation: 4,000 to 5,200 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Riverwash: 65 percent
Bodecker and similar soils: 30 percent
Contrasting inclusions: 5 percent

Characteristics of Riverwash

Riverwash consists of very deep, excessively drained, stratified sand, gravel, cobbles, and stones from numerous sources. It is in drainageways. It is subject to common flooding and shifting.

Typical Profile

Bodecker

0 to 3 inches—brown loamy fine sand
3 to 12 inches—brown gravelly sand
12 to 29 inches—brown very gravelly coarse sand
29 to 48 inches—pale brown gravelly sand
48 to 60 inches—brown very gravelly coarse sand

Soil Properties and Qualities

Bodecker

Parent material: mixed stream alluvium
Depth class: very deep
Drainage class: excessively drained
Permeability: rapid or very rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: very low
Hazard of erosion: by water—slight; by wind—high
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Combate soils, which have sandy loam textures
- Luckyhills soils, which have accumulations of calcium carbonate

• Altar soils, which have less than 18 percent clay and are not subject to flooding

Similar inclusions:
• Bodecker soils that have a thicker surface layer

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Riverwash—flash flooding
Bodecker—flooding, fast intake rate, hazard of wind erosion

Dominant vegetation on the Bodecker soil:
• In the potential plant community—sideoats grama, Arizona cottontop, spike dropseed, green sprangletop, cane beardgrass, plains bristlegrass, bush muhly, mesquite, netleaf hackberry, desert willow, coyote willow, Arizona black walnut, giant sacaton, catclaw acacia
• In the present plant community—bush muhly, fluffgrass, sand dropseed, spike dropseed, giant sacaton, mesquite, whitethorn, coyote willow, netleaf hackberry, Arizona black walnut

Special Management Concerns

• Livestock tend to concentrate on this unit, creating distribution problems.
• The Bodecker soil has a high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• Because of rapid or very rapid permeability, special design of onsite waste-disposal systems is needed to prevent the pollution of ground water or nearby water supplies.
• Because of the hazard of flooding, including flash flooding, structures should not be located in areas of this unit.

Interpretive Groups

Land capability classification:
Riverwash—VIII
Bodecker—VIe nonirrigated
Ecological site:
Riverwash—none assigned
Bodecker—Sandy Bottom, 12- to 16-inch precipitation zone, 041XC316AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

128—Rock outcrop-Magoffin complex, 5 to 60 percent slopes

Setting

Landform: hills and mountains
Slope range: 5 to 60 percent
Elevation: 4,800 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Rock outcrop: 50 percent
Magoffin and similar soils: 40 percent
Contrasting inclusions: 10 percent

Characteristics of Rock Outcrop

Rock outcrop consists of barren rock that occurs as outcrops, boulders, ledges, and nearly vertical cliffs of dacite and monzonite porphyry. It also includes areas where the depth to bedrock is less than 4 inches. The higher percentage of the outcrop is in areas near hilltops.

Typical Profile

Magoffin

About 70 to 80 percent of the surface is covered with cobbles and stones.

0 to 3 inches—brown cobbly sandy loam
3 to 13 inches—brown sandy loam
13 to 15 inches—brown loamy sand
15 inches—unweathered dacite and monzonite porphyry

Soil Properties and Qualities

Magoffin

Parent material: slope alluvium and residuum derived from dacite and monzonite porphyry
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 0 to 20 percent
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Woodcutter and Budlamp soils, which have more than 35 percent rock fragments
- Kuykendall and Cherrycow soils, which have more than 35 percent clay
- Hayhollow soils, which have less than 18 percent clay and are in drainageways

Similar inclusions:
- Magoffin soils on forest-land sites, which have a tree canopy cover of more than 15 percent
- Magoffin soils that are moderately deep or deep

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: depth to bedrock, hazard of wind erosion, slope

Dominant vegetation on the Magoffin soil:
- In the potential plant community—sideoats grama, hairy grama, cane beardgrass, Texas bluestem, plains lovegrass, bullgrass, beggartick threeawn, shrubby buckwheat, agave, oneseed juniper, oak
- In the present plant community—sideoats grama, plains lovegrass, cane beardgrass, slender grama, hairy grama, mesquite, agave, turpentinebush, oak, juniper, sotol

Special Management Concerns

- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- Steep slopes cause management problems.
- The Magoffin soil has a slight to severe hazard of water erosion; therefore, special consideration should be given to water management.
- This unit is sensitive to natural and prescribed fires.

Interpretive Groups

Land capability classification:
Magoffin soil in areas where slopes are 5 to 30 percent—VIs nonirrigated
Magoffin soil in areas where slopes are 30 to 60 percent—VIe nonirrigated
Rock outcrop—VIII
Ecological site:
Rock outcrop—none assigned
Magoffin—Shallow Hills, 16- to 20-inch precipitation zone, 041XA102AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

129—Sasabe complex, 0 to 3 percent slopes

Setting

Landform: fan terraces
Slope range: 0 to 3 percent
Frequency of flooding: Sasabe sandy loam—none; Sasabe silt loam—frequent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Sasabe sandy loam and similar soils: 55 percent
Sasabe silt loam and similar soils: 35 percent
Contrasting inclusions: 10 percent

Typical Profile

Sasabe sandy loam

0 to 1 inch—yellowish red sandy loam
1 to 5 inches—yellowish brown sandy loam
5 to 13 inches—reddish brown sandy clay loam
13 to 36 inches—red clay
36 to 54 inches—red sandy clay loam
54 to 60 inches—yellowish red clay loam

Sasabe silt loam

0 to 4 inches—brown silt loam
4 to 13 inches—brown clay loam
13 to 24 inches—reddish brown clay
24 to 43 inches—yellowish red clay
43 to 60 inches—yellowish red sandy loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight or moderate; by wind—slight or moderately high
Shrink-swell potential: high
Content of rock fragments: 5 to 25 percent
Calcium carbonate equivalent: less than 15 percent
Depth to an abrupt textural change: 7 to 15 inches

Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Tenneco, Riveroad, Baboquivari, McNeal, and Courtland soils, which have 18 to 35 percent clay
- Diaspar, Ubik, Luckyhills, and Combate soils, which have less than 18 percent clay
- Durazo soils, which are sandy and have a very high hazard of wind erosion
- Caralampi and Eloma soils, which have more than 35 percent rock fragments
- Elgin and Forrest soils, which have accumulations of calcium carbonate

Similar inclusions:
- Sasabe soils that have a surface layer of clay loam
- Sasabe soils that have a surface layer of sandy loam 20 to 30 inches thick; along Highway 80 south of Apache

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: slow permeability, hazards of flooding and wind erosion, high shrink-swell potential

Dominant vegetation on Sasabe sandy loam:
- In the potential plant community—sideoats grama, cane beardgrass, Arizona cottontop, black grama, plains lovegrass, shrubby buckwheat, false mesquite
- In the present plant community—mesquite, Lehmann lovegrass, grama species, burroweed

Dominant vegetation on Sasabe silt loam:
- In the potential plant community—vine mesquite, tobosa, giant sacaton, blue grama, plains lovegrass, sideoats grama, cane beardgrass, mesquite
- In the present plant community—mesquite, blue grama, vine mesquite, Lehmann lovegrass

Special Management Concerns

- The high content of clay in the soils restricts water infiltration and permeability.
- The low areas of this unit are frequently flooded.
- The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- These soils have a slight or moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification:
Sasabe sandy loam—IIIe irrigated and VIe nonirrigated
Sasabe silt loam—IIIw irrigated and VIw nonirrigated
Ecological site:
Sasabe sandy loam—Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Sasabe silt loam—Loamy Bottom, Swales, 12- to 16-inch precipitation zone, 041XC311AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

130—Sasabe gravelly sandy loam, 0 to 2 percent slopes

Setting

Landform: fan terraces
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Sasabe and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 7 inches—brown and reddish brown gravelly sandy loam
7 to 10 inches—light brown sandy loam
10 to 20 inches—reddish brown clay
20 to 30 inches—red sandy clay loam
30 to 60 inches—yellowish red and pink gravelly sandy clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: high
Content of rock fragments: 5 to 25 percent
Calcium carbonate equivalent: less than 15 percent

Depth to an abrupt textural change: 7 to 15 inches
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
• Riveroad, McNeal, Baboquivari, Hooks, and Courtland soils, which have 18 to 35 percent clay
• Diaspar, Ubik, Luckyhills, Mallet, Comoro, and Combate soils, which have less than 18 percent clay
• Durazo soils, which are sandy and have a very high hazard of wind erosion
• Caralampi, Eloma, and Bodecker soils, which have more than 35 percent rock fragments
• Forrest soils, which have accumulations of calcium carbonate
• Guest and Bonita soils in swales

Similar inclusions:
• Sasabe soils that have a surface layer of clay loam
• Sasabe soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: slow permeability, high shrink-swell potential

Dominant vegetation:
• In the potential plant community—sideoats grama, cane beardgrass, Arizona cottontop, black grama, plains lovegrass, shrubby buckwheat, false mesquite
• In the present plant community—mesquite, Lehmann lovegrass, grama species, burroweed

Special Management Concerns

• The high content of clay in this soil restricts water infiltration and permeability.
• The low areas of this unit are subject to flooding.
• The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

131—Sasabe gravelly sandy loam, saline-sodic, 0 to 2 percent slopes

Setting

Landform: fan terraces
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Sasabe and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 7 inches—brown and reddish brown gravelly sandy loam
7 to 10 inches—light brown, saline-sodic sandy loam
10 to 20 inches—reddish brown, saline-sodic clay
20 to 30 inches—red, saline-sodic sandy clay loam
30 to 60 inches—yellowish red and pink, saline-sodic gravelly sandy clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: high
Content of rock fragments: 5 to 25 percent
Calcium carbonate equivalent: less than 15 percent
Depth to an abrupt textural change: 7 to 15 inches
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
• Riveroad, McNeal, Baboquivari, Hooks, and Courtland soils, which have 18 to 35 percent clay
• Diaspar, Ubik, Luckyhills, Mallet, Comoro, and Combate soils, which have less than 18 percent clay
• Durazo soils, which are sandy and have a very high hazard of wind erosion
• Caralampi, Eloma, and Bodecker soils, which have more than 35 percent rock fragments

- Forrest soils, which have accumulations of calcium carbonate
- Guest and Bonita soils in swales

Similar inclusions:
- Sasabe soils that have a surface layer of clay loam

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: slow permeability, high shrink-swell potential, excess salts, sodium, and gypsum

Dominant vegetation:
- In the potential plant community—sideoats grama, cane beardgrass, Arizona cottontop, black grama, plains lovegrass, shrubby buckwheat, false mesquite, alkali sacaton, giant sacaton, inland saltgrass, tobosa, vine mesquite, fourwing saltbush
- In the present plant community—mesquite, Lehmann lovegrass, grama species, burroweed, alkali sacaton, annual grasses, wolfberry, tobosa

Special Management Concerns

- The high content of clay in this soil restricts water infiltration and permeability.
- The low areas of this unit are subject to flooding.
- The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

132—Schiefflin very stony loamy sand, 3 to 15 percent slopes

Setting

Landform: hills
Slope range: 3 to 15 percent
Elevation: 4,000 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Schiefflin and similar soils: 80 percent
Contrasting inclusions: 20 percent

Typical Profile

About 40 to 60 percent of the surface is covered with gravel, boulders, and stones.

0 to 6 inches—brown very stony loamy sand
6 to 18 inches—brown gravelly sand
18 inches—unweathered granodiorite

Soil Properties and Qualities

Parent material: slope alluvium and residuum derived from granodiorite
Depth class: very shallow or shallow
Drainage class: somewhat excessively drained
Permeability: rapid
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: medium or high
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 10 to 25 percent
Stone class: 2 (Stones or boulders cover about 0.01 to 0.1 percent of the surface. The smallest stones are no less than 8 meters apart, and the smallest boulders are no less than 20 meters apart.)
Corrosivity: steel—moderate; concrete—moderate

Inclusions

Contrasting inclusions:
- Soils that are moderately deep or deep to bedrock
- Rock outcrop
- Combate soils, which are very deep

Similar inclusions:
- Soils that have slopes of more than 15 percent
- Schiefflin soils that have sandy loam textures
- Schiefflin soils that have accumulations of calcium carbonate and are adjacent to areas of limestone

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: droughtiness, shallow depth to bedrock, surface boulders and stones

Dominant vegetation:
- In the potential plant community—sideoats grama, plains lovegrass, cane beardgrass, bullgrass, black grama, bush muhly, Arizona cottontop, mintleaf lippia, littleleaf sumac, whitethorn, range ratany, false mesquite, shrubby buckwheat
- In the present plant community—black grama, bush muhly, sideoats grama, Arizona cottontop, cane beardgrass, bullgrass, mesa threeawn, littleleaf sumac, catclaw acacia, mintleaf lippia

Special Management Concerns

- This unit produces a large volume of palatable forage.
- Large stones and boulders restrict livestock movement.
- The effectiveness of precipitation is increased because moisture is concentrated in the soil material between the surface stones and boulders.
- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Sandy Loam, Deep, 12- to 16-inch precipitation zone, 041XC318AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

133—Stronghold gravelly fine sandy loam, 1 to 3 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 3 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Stronghold and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 2 inches—brown gravelly fine sandy loam
2 to 9 inches—pinkish gray fine sandy loam
9 to 49 inches—pinkish white, calcareous gravelly loam
49 to 54 inches—pinkish gray, calcareous loam
54 to 60 inches—pinkish white, calcareous gravelly loam

Soil Properties and Qualities

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 15 to 35 percent
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: 5 to 40 percent
Salinity: none to slight
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Sasabe soils, which do not have accumulations of calcium carbonate
- Ubik and Riveroad soils in drainageways
- Buntline and Blakeney soils, which are very shallow or shallow to a hardpan
- McAllister soils, which have 18 to 35 percent clay
- Luckyhills soils, which have less organic matter in the surface layer than the Stronghold soil
- Forrest, Bonita, and Elgin soils, which have more than 35 percent clay

Similar inclusions:
- Stronghold soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factor: a high content of calcium carbonate

Dominant vegetation:
- In the potential plant community—sideoats grama, black grama, blue threeawn, red threeawn, New Mexico feathergrass, false mesquite, Mormon tea, soaptree yucca, hairy grama, cane beardgrass
- In the present plant community—blue threeawn, red

threeawn, black grama, cane beardgrass, false mesquite, Mormon tea, desert zinnia

Special Management Concerns

• This soil is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Limy Slopes, 12- to 16-inch precipitation zone, 041XC308AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

134—Stronghold-Bernardino complex, 10 to 30 percent slopes

Setting

Landform: fan terraces
Slope range: 10 to 30 percent
Elevation: 4,500 to 5,200 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Stronghold and similar soils: 50 percent
Bernardino and similar soils: 40 percent
Contrasting inclusions: 10 percent

Typical Profile

Stronghold

0 to 2 inches—very dark gray very gravelly loam
2 to 8 inches—very dark gray very gravelly loam
8 to 20 inches—very dark grayish brown, calcareous gravelly fine sandy loam
20 to 33 inches—light gray, calcareous gravelly sandy loam
33 to 60 inches—grayish brown, calcareous gravelly loamy sand

Bernardino

About 45 to 55 percent of the surface is covered with gravel.

0 to 2 inches—dark grayish brown very gravelly fine sandy loam
2 to 7 inches—dark reddish brown clay loam
7 to 15 inches—reddish brown clay
15 to 18 inches—brown, calcareous gravelly clay loam
18 to 48 inches—pinkish gray and light brown, calcareous gravelly sandy loam
48 to 60 inches—pinkish white and light brown, calcareous gravelly loamy sand

Soil Properties and Qualities

Stronghold

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: medium or high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 15 to 35 percent
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: 5 to 40 percent
Corrosivity: steel—high; concrete—low

Bernardino

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: medium or high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: moderate
Content of rock fragments: less than 35 percent
Depth to a calcic horizon: 5 to 20 inches
Calcium carbonate equivalent: 5 to 40 percent; averages more than 15 percent below a depth of 5 inches
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
• Combate soils, which do not have accumulations of calcium carbonate and are in drainageways
• Tombstone, Eloma, and Caralampi soils, which have more than 35 percent rock fragments
• Buntline soils, which are very shallow or shallow to a hardpan
• White House soils, which do not have accumulations of calcium carbonate within a depth of 40 inches

Similar inclusions:
• Soils that have slopes of less than 10 percent

• Elgin and McAllister soils, which have accumulations of calcium carbonate below a depth of 20 inches

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Stronghold—slope, a very gravelly surface layer, a high content of calcium carbonate
Bernardino—moderate shrink-swell potential, slope, gravelly surface

Dominant vegetation on the Stronghold soil:
• In the potential plant community—sideoats grama, black grama, blue threeawn, red threeawn, New Mexico feathergrass, false mesquite, Mormon tea, soaptree yucca, hairy grama, cane beardgrass
• In the present plant community—blue threeawn, red threeawn, black grama, cane beardgrass, false mesquite, desert zinnia

Dominant vegetation on the Bernardino soil:
• In the potential plant community—sideoats grama, plains lovegrass, cane beardgrass, curly mesquite, hairy grama, false mesquite, shrubby buckwheat, Mormon tea, black grama, blue grama
• In the present plant community—curly mesquite, hairy grama, cane beardgrass, red threeawn, false mesquite, yucca, Mormon tea, yerba de pasmo

Special Management Concerns

• This is a grassland site capable of producing a large volume of high-quality feed.
• The moderate shrink-swell potential of the Bernardino soil should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• These soils have a slight or moderate hazard of water erosion; therefore, special consideration should be given to water management.
• The Stronghold soil is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site:
Stronghold—Limy Slopes, 12- to 16-inch precipitation zone, 041XC308AZ
Bernardino—Loamy Hills, 12- to 16-inch precipitation zone, 041XC314AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

135—Surge-Rock outcrop complex, 3 to 45 percent slopes

Setting

Landform: volcanic surge conglomerate rings
Slope range: 3 to 45 percent
Elevation: 3,800 to 5,200 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Surge and similar soils: 60 percent
Rock outcrop: 30 percent
Contrasting inclusions: 10 percent

Typical Profile

Surge

About 15 to 40 percent of the surface is covered with gravel and cobbles.

0 to 2 inches—brown sandy loam
2 to 7 inches—brown sandy clay loam
7 inches—unweathered basalt surge conglomerate

Soil Properties and Qualities

Surge

Parent material: slope alluvium and residuum derived from basalt surge conglomerate
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderate or moderately slow
Available water capacity: very low
Potential rooting depth: 5 to 15 inches
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—moderately high
Shrink-swell potential: low
Content of rock fragments: 0 to 20 percent gravel and cobbles
Calcium carbonate equivalent: 1 to 10 percent
Corrosivity: steel—high; concrete—low

Characteristics of Rock Outcrop

Rock outcrop consists of barren rock that occurs as ledges and nearly vertical cliffs of tilted and folded volcanic flows, basalt surge conglomerate, and basalt rock. It also includes areas where the depth to bedrock

is less than 4 inches. The higher percentage of the outcrop is in areas near the top of the rings.

Inclusions

Contrasting inclusions:
- Graham and Boss soils, which have more than 35 percent clay
- Paramore and Epitaph soils, which are moderately deep
- Soils that have more than 20 percent rock fragments

Similar inclusions:
- Soils that have slopes of less than 3 percent or more than 45 percent
- Soils that have less than 15 percent clay

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: slope, depth to bedrock, hazards of water erosion and wind erosion

Dominant vegetation on the Surge soil:
- In the potential plant community—sideoats grama, black grama, bush muhly, plains bristlegrass, cane beardgrass, blue threeawn, Arizona cottontop, fluffgrass, Mormon tea, mariola, desert zinnia, mintleaf lippia, mesquite, burroweed, yucca
- In the present plant community—blue threeawn, fluffgrass, Arizona cottontop, bush muhly, plains bristlegrass, desert zinnia, mariola, burroweed, mesquite, Mormon tea, yucca

Special Management Concerns

- A rough surface and steep slopes greatly restrict livestock movement.
- The rooting depth limits the growth of plants.
- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- The Surge soil has a slight to severe hazard of water erosion; therefore, special consideration should be given to water management.
- Steep slopes cause management problems.
- The Surge soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification:
Surge—VIe nonirrigated
Rock outcrop—VIII
Ecological site:
Surge—Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Rock outcrop—none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

136—Sutherland-Mule complex, 3 to 15 percent slopes

Setting

Landform: fan terraces
Slope range: 3 to 15 percent
Elevation: 4,000 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Sutherland and similar soils: 55 percent
Mule and similar soils: 35 percent
Contrasting inclusions: 10 percent

Typical Profile

Sutherland

About 35 to 55 percent of the surface is covered with gravel, cobbles, and hardpan fragments.

0 to 1 inch—brown gravelly fine sandy loam
1 to 8 inches—brown, calcareous very gravelly fine sandy loam
8 to 18 inches—light brown, calcareous very gravelly fine sandy loam
18 to 42 inches—a fractured hardpan cemented with calcium carbonate
42 to 60 inches—pink, calcareous very gravelly sandy loam

Mule

About 45 to 55 percent of the surface is covered with gravel and cobbles.

0 to 2 inches—brown very gravelly fine sandy loam
2 to 10 inches—brown, calcareous very gravelly fine sandy loam
10 to 22 inches—light brown and pinkish white, calcareous very gravelly loam
22 to 60 inches—light brown and pinkish white, calcareous very gravelly loam

Soil Properties and Qualities

Sutherland

Parent material: mixed calcareous fan alluvium
Depth class: very shallow or shallow to a hardpan

Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 5 to 20 inches
Runoff rate: medium or high
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Depth to a calcic horizon: 1 to 10 inches
Calcium carbonate equivalent: 40 to 60 percent
Corrosivity: steel—high; concrete—low

Mule

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderate
Available water capacity: low or moderate
Potential rooting depth: 60 inches or more
Runoff rate: low or medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Depth to a calcic horizon: 2 to 10 inches
Calcium carbonate equivalent: 30 to 70 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Mabray soils, which are very shallow or shallow to bedrock
- Bonita soils, which have more than 35 percent clay
- Nolam soils, which have an argillic horizon

Similar inclusions:
- Soils that have slopes of more than 15 percent
- Pedregosa soils, which are very shallow or shallow to a hardpan and have less than 40 percent calcium carbonate
- Tombstone and Stronghold soils, which have less than 40 percent calcium carbonate

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Sutherland—droughtiness, slope, depth to a hardpan, a high content of calcium carbonate
Mule—droughtiness, slope, a high content of calcium carbonate

Dominant vegetation on the Sutherland soil:
- In the potential plant community—sandpaper plant, whitethorn, littleleaf sumac, javelina brush, desert zinnia, tarbush, ratear coldenia, creosotebush, bush muhly, black grama, plains bristlegrass, desert needlegrass, mariola
- In the present plant community—sandpaper plant, whitethorn, desert zinnia, ratear coldenia, sacahuista, javelina brush, spike dropseed, blue threeawn, slim tridens, black grama, plains bristlegrass, desert needlegrass

Dominant vegetation on the Mule soil:
- In the potential plant community—whitethorn, tarbush, mariola, desert zinnia, sandpaper plant, black grama, bush muhly, slim tridens, desert needlegrass, sideoats grama, creosotebush, allthorn
- In the present plant community—whitethorn, tarbush, desert zinnia, creosotebush, allthorn, sandpaper plant, mariola, black grama, bush muhly

Special Management Concerns

- This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.
- Sandpaper plant is an important part of the plant community and tends to dominate this unit.
- Excavation in areas of the Sutherland soil can be difficult because of the restrictive hardpan.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

137—Swisshelm sandy loam, 1 to 3 percent slopes

Setting

Landform: stream terraces and alluvial fans
Slope range: 1 to 3 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Swisshelm and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 12 inches—brown sandy loam
12 to 22 inches—light brown loam
22 to 42 inches—light brown fine sandy loam

42 to 60 inches—light brownish gray clay loam

Soil Properties and Qualities

Parent material: mixed and stratified alluvium derived from rhyolite, andesite, granite, limestone, tuff, and quartzite
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid in the upper part of the soil and moderately slow in the lower part
Available water capacity: moderate to very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low in the upper part of the soil and moderate in the lower part
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Guest, Forrest, and Sasabe soils, which have more than 35 percent clay
- Courtland and Diaspar soils, which have an argillic horizon
- Bodecker soils, which have more than 35 percent rock fragments
- Riveroad soils, which have accumulations of calcium carbonate

Similar inclusions:
- Swisshelm soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazard of wind erosion, piping

Dominant vegetation:
- In the potential plant community—plains lovegrass, sideoats grama, blue grama, black grama, bush muhly, spike dropseed, Arizona cottontop, shrubby buckwheat, Mormon tea, yucca, fourwing saltbush
- In the present plant community—cane beardgrass, blue grama, spike dropseed, Arizona cottontop, Mormon tea, shrubby buckwheat, burroweed, yucca

Special Management Concerns

- This unit has few limitations and should be productive if proper management is applied.
- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Water movement across this unit may cause piping.

Interpretive Groups

Land capability classification: IIe irrigated and VIe nonirrigated
Ecological site: Sandy Loam, Deep, 12- to 16-inch precipitation zone, 041XC318AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

138—Swisshelm sandy loam, saline-sodic, 1 to 3 percent slopes

Setting

Landform: stream terraces and alluvial fans
Slope range: 1 to 3 percent
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Swisshelm and similar soils: 85 percent
Contrasting inclusions: 15 percent

Typical Profile

0 to 12 inches—brown sandy loam
12 to 22 inches—light brown loam
22 to 42 inches—light brown fine sandy loam
42 to 60 inches—light brownish gray clay loam

Soil Properties and Qualities

Parent material: mixed and stratified alluvium derived from rhyolite, andesite, granite, limestone, tuff, and quartzite
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid in the upper part of the soil and moderately slow in the lower part
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low in the upper part of the soil and moderate in the lower part
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Contrasting Inclusions

- Guest, Forrest, and Sasabe soils, which have more than 35 percent clay
- Courtland and Diaspar soils, which have an argillic horizon
- Bodecker soils, which have more than 35 percent rock fragments
- Riveroad soils, which have accumulations of calcium carbonate

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazard of wind erosion, piping, excess salts, sodium, and gypsum

Dominant vegetation:
- In the potential plant community—plains lovegrass, sideoats grama, blue grama, black grama, bush muhly, spike dropseed, Arizona cottontop, shrubby buckwheat, yucca, fourwing saltbush, alkali sacaton, giant sacaton, inland saltgrass, mesquite
- In the present plant community—cane beardgrass, blue grama, spike dropseed, burroweed, yucca, alkali sacaton, annual grasses, mesquite, wolfberry

Special Management Concerns

- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Water movement across this unit may cause piping.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIe irrigated and VIe nonirrigated
Ecological site: Sandy Loam, Deep, 12- to 16-inch precipitation zone, 041XC318AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

139—Tenneco fine sandy loam, 0 to 2 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 0 to 2 percent
Frequency of flooding: none or rare
Elevation: 3,800 to 4,700 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Tenneco and similar soils: 80 percent
Contrasting inclusions: 20 percent

Typical Profile

0 to 2 inches—yellowish brown fine sandy loam
2 to 11 inches—dark yellowish brown loam
11 to 26 inches—dark yellowish brown loam
26 to 41 inches—light yellowish brown loam
41 to 60 inches—light yellowish brown sandy loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderate or moderately slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: moderate
Calcium carbonate equivalent: 3 to 15 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
- Sasabe soils, which have more than 35 percent clay
- Ubik, Combate, and Mallet soils, which have less than 18 percent clay
- Courtland and Baboquivari soils, which have an argillic horizon

Similar inclusions:
- Tenneco soils that have a buried paleosol

Use and Management

Major current uses: livestock grazing, irrigated cropland, and wildlife habitat

Soil-related factors: hazards of wind erosion and flooding

Dominant vegetation:
• In the potential plant community—blue grama, vine mesquite, sideoats grama, mesquite, soaptree yucca, cane beardgrass, threeawn, staghorn cholla, creeping muhly, tobosa
• In the present plant community—Lehmann lovegrass, mesquite, vine mesquite, blue grama

Special Management Concerns

• This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
• Structures should be located above the expected level of flooding.
• This unit has few limitations and should be very productive if proper management is applied.

Interpretive Groups

Land capability classification: IIe irrigated and VIe nonirrigated
Ecological site: Loamy Bottom, Swales, 12- to 16-inch precipitation zone, 041XC311AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

140—Terrarossa complex, 0 to 45 percent slopes

Setting

Landform: fan terraces
Slope range: 0 to 45 percent
Elevation: 4,600 to 5,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Terrarossa sandy loam and similar soils: 30 percent
Terrarossa gravelly loam and similar soils: 25 percent
Terrarossa very gravelly sandy loam and similar soils: 25 percent
Contrasting inclusions: 20 percent

Typical Profile

Terrarossa sandy loam

0 to 9 inches—reddish brown sandy loam
9 to 27 inches—yellowish red and red clay
27 to 60 inches—dark red and yellowish red clay

Terrarossa gravelly loam

0 to 4 inches—dark brown gravelly loam
4 to 8 inches—dark reddish brown very gravelly loam
8 to 27 inches—reddish brown clay
27 to 46 inches—yellowish brown and brown clay
46 to 60 inches—dark reddish brown and strong brown clay

Terrarossa very gravelly sandy loam

0 to 3 inches—dark brown very gravelly sandy loam
3 to 10 inches—dark brown gravelly clay
10 to 19 inches—reddish brown and yellowish red clay
19 to 27 inches—red and reddish brown clay
27 to 60 inches—dark red and yellowish red very gravelly clay

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: medium to very high
Hazard of erosion: by water—slight to severe; by wind—slight or moderately high
Shrink-swell potential: high
Content of rock fragments: averages less than 35 percent, ranges to 50 percent
Depth to an abrupt textural change: 5 to 15 inches
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
• Haplustolls and Fluvaquents, which are wet and are in drainageways
• Gardencan and Stanford soils, which have 18 to 35 percent clay
• Cherrycow soils, which are moderately deep to bedrock
• Lanque, Rafter, and Hayhollow soils, which have less than 18 percent clay
• Carbine soils, which are very shallow or shallow to a hardpan
• Denab and Castledome soils, which are very shallow or shallow to tuff bedrock
• Ashcreek soils on inset fans

Similar inclusions:
• Soils that have more than 35 percent gravel in the control section

Use and Management

Major current uses: wildlife habitat and livestock grazing

Soil-related factors: slow permeability, high shrink-

swell potential, slope, clayey texture, hazard of water erosion

Dominant vegetation:
• In the potential and present plant communities—plains lovegrass, sideoats grama, Texas bluestem, cane beardgrass, false mesquite, velvetpod mimosa, agave, blue grama, green sprangletop, Arizona cottontop, Emory oak, Mexican blue oak

Special Management Concerns

• This unit responds well to managed, natural and prescribed fires.
• The high content of clay in the soils restricts water infiltration and permeability.
• The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• These soils have a slight to severe hazard of water erosion; therefore, special consideration should be given to water management.
• Steep slopes cause management problems.
• The Terrarossa soils have different range sites because of differences in texture of the surface layer and in slope. The different range sites support the same plant communities.

Interpretive Groups

Land capability classification:
Slopes of 0 to 30 percent—VIs nonirrigated
Slopes of 30 to 45 percent—VIe nonirrigated
Ecological site:
Terrarossa sandy loam—Sandy Loam Upland, 16- to 20-inch precipitation zone, 041XA110AZ
Terrarossa gravelly loam—Loamy Hills, 16- to 20-inch precipitation zone, 041XA107AZ
Terrarossa very gravelly sandy loam—Loamy Upland, 16- to 20-inch precipitation zone, 041XA108AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

141—Terrarossa-Blacktail-Pyeatt complex, 1 to 40 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 40 percent
Elevation: 4,800 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Terrarossa and similar soils: 40 percent
Blacktail and similar soils: 35 percent
Pyeatt and similar soils: 15 percent
Contrasting inclusions: 10 percent

Typical Profile

Terrarossa

0 to 9 inches—reddish brown gravelly loam
9 to 30 inches—dark red clay
30 to 42 inches—dark reddish brown clay
42 to 60 inches—reddish brown clay

Blacktail

0 to 3 inches—dark brown gravelly loam
3 to 7 inches—dark reddish brown clay loam
7 to 17 inches—dark reddish brown clay
17 to 23 inches—brown, calcareous clay loam
23 to 32 inches—pinkish white, calcareous sandy loam
32 to 60 inches—pink and light brown, calcareous gravelly sandy loam

Pyeatt

0 to 9 inches—brown gravelly loam
9 to 35 inches—brown, calcareous gravelly fine sandy loam
35 to 41 inches—light brown, calcareous fine sandy loam
41 to 60 inches—pink and brown, calcareous fine sandy loam

Soil Properties and Qualities

Terrarossa

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high
Potential rooting depth: 60 inches or more
Runoff rate: low to very high
Hazard of erosion: by water—slight to severe; by wind—slight
Shrink-swell potential: high
Content of rock fragments: averages less than 35 percent, but can range to 50 percent in individual horizons
Depth to an abrupt textural change: 5 to 15 inches
Corrosivity: steel—high; concrete—moderate

Blacktail

Parent material: mixed fan alluvium
Depth class: very deep

Drainage class: well drained
Permeability: slow
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low to very high
Hazard of erosion: by water—slight to severe; by wind—slight
Shrink-swell potential: high
Content of rock fragments: averages less than 35 percent, but can range to 50 percent in individual horizons
Depth to a calcic horizon: 15 to 30 inches
Calcium carbonate equivalent: 1 to 60 percent
Corrosivity: steel—moderate; concrete—moderate

Pyeatt

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low to high
Hazard of erosion: by water—slight to severe; by wind—slight
Shrink-swell potential: low
Content of rock fragments: less than 35 percent
Depth to a calcic horizon: 3 to 20 inches
Calcium carbonate equivalent: 10 to 30 percent below a depth of 3 inches
Corrosivity: steel—moderate; concrete—low

Inclusions

Contrasting inclusions:
- Woodcutter, Lutzcan, and Budlamp soils, which are very shallow or shallow to bedrock
- Cherrycow soils, which are moderately deep
- Haplustolls and Fluvaquents, which are wet and are in drainageways
- Gardencan and Stanford soils, which have 18 to 35 percent clay
- Lanque, Rafter, and Hayhollow soils, which do not have accumulations of calcium carbonate and have less than 18 percent clay
- Carbine soils, which are very shallow or shallow to a hardpan
- Hathaway soils, which have more than 35 percent rock fragments and have accumulations of calcium carbonate
- Denab and Castledome soils, which are very shallow or shallow to tuff bedrock
- Ashcreek soils on inset fans

Similar inclusions:
- Soils that have more than 35 percent gravel in the control section

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Terrarossa and Blacktail—slow permeability, high shrink-swell potential, clayey texture, slope
Pyeatt—slope, hazard of water erosion

Dominant vegetation on the Terrarossa soil:
- In the potential plant community—blue grama, crinkleawn, mimosa, beggartick threeawn, Texas bluestem, Palmer agave, false mesquite, sideoats grama, cane beardgrass, plains lovegrass
- In the present plant community—plains lovegrass, sideoats grama, Texas bluestem, cane beardgrass, false mesquite, velvetpod mimosa, crinkleawn, beggartick threeawn, sotol, agave, Emory oak, Mexican blue oak, Arizona white oak

Dominant vegetation on the Blacktail soil:
- In the potential plant community—plains lovegrass, sideoats grama, Texas bluestem, cane beardgrass, false mesquite, velvetpod mimosa, crinkleawn, beggartick threeawn, sotol, agave, Emory oak, Mexican blue oak, Arizona white oak, green sprangletop, yerba de pasmo
- In the present plant community—plains lovegrass, sideoats grama, Texas bluestem, cane beardgrass, false mesquite, velvetpod mimosa, crinkleawn, beggartick threeawn, sotol, agave, Emory oak, Mexican blue oak, Arizona white oak

Dominant vegetation on the Pyeatt soil:
- In the potential plant community—sideoats grama, false mesquite, black grama, New Mexico feathergrass, rough tridens, shortleaf tridens, range ratany, agave, oneseed juniper, sotol, sacahuista, blue threeawn, crinkleawn
- In the present plant community—sideoats grama, sotol, black grama, New Mexico feathergrass, rough tridens, shortleaf tridens, ratany, agave, oneseed juniper

Special Management Concerns

- This unit responds well to managed, natural and prescribed fires.
- The high content of clay in the Terrarossa and Blacktail soils restricts water infiltration and permeability.

• The high shrink-swell potential of the Terrarossa and Blacktail soils should be considered when foundations, concrete structures, and paved areas are designed and constructed.
• The Terrarossa, Blacktail, and Pyeatt soils have a slight to severe hazard of water erosion; therefore, special consideration should be given to water management.
• Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Slopes of 1 to 30 percent—VIs nonirrigated
Slopes of 30 to 40 percent—VIe nonirrigated
Ecological site:
Terrarossa—Loamy Upland, 16- to 20-inch precipitation zone, 041XA108AZ
Blacktail—Loamy Hills, 16- to 20-inch precipitation zone, 041XA107AZ
Pyeatt—Limy Slopes, 16- to 20-inch precipitation zone, 041XA104AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

142—Tombstone very gravelly fine sandy loam, 8 to 15 percent slopes

Setting

Landform: fan terraces
Slope range: 8 to 15 percent
Elevation: 4,200 to 5,000 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Tombstone and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

About 50 to 65 percent of the surface is covered with gravel and cobbles.

0 to 1 inch—grayish brown very gravelly fine sandy loam
1 to 5 inches—dark grayish brown, calcareous gravelly fine sandy loam
5 to 13 inches—pinkish white, calcareous gravelly sandy loam
13 to 27 inches—pinkish gray, calcareous very gravelly sandy loam
27 to 60 inches—pinkish gray, calcareous very gravelly loamy sand

Soil Properties and Qualities

Parent material: mixed calcareous fan alluvium
Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Available water capacity: very low or low
Potential rooting depth: 60 inches or more
Runoff rate: medium
Hazard of erosion: by water—slight; by wind—slight
Shrink-swell potential: low
Content of rock fragments: more than 35 percent
Depth to a calcic horizon: 1 to 20 inches
Calcium carbonate equivalent: 5 to 30 percent
Corrosivity: steel—high; concrete—low

Inclusions

Contrasting inclusions:
• Pedregosa soils, which are very shallow or shallow to a hardpan
• Bernardino soils, which have more than 35 percent clay
• Soils that are moderately deep to bedrock

Similar inclusions:
• Soils that have slopes of more than 15 percent
• Luckyhills and Stronghold soils, which have less than 35 percent gravel

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: droughtiness, slope, content of rock fragments, gravelly and cobbly surface, a high content of calcium carbonate

Dominant vegetation:
• In the potential plant community—littleleaf sumac, desert zinnia, sacahuista, mariola, whitethorn, prickleaf dogweed, black grama, bush muhly, desert needlegrass, slim tridens, sideoats grama, creosotebush, blue threeawn
• In the present plant community—littleleaf sumac, desert zinnia, prickleaf dogweed, sacahuista, whitethorn, mariola, blue threeawn, black grama, bush muhly, slim tridens, fluffgrass

Special Management Concerns

• The very low or low available water capacity is the main limitation.
• Excess rock fragments in the soil interfere with excavations.

• This unit responds well to managed, natural and prescribed fires.
• This unit is slow to respond to all forms of management because of the high concentrations of calcium carbonate.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Limy Upland, 12- to 16-inch precipitation zone, 041XC309AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

143—Turquoise-Nugget complex, 3 to 45 percent slopes

Setting

Landform: hills and mountains
Slope range: 3 to 45 percent
Elevation: 4,800 to 6,200 feet
Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Turquoise and similar soils: 55 percent
Nugget and similar soils: 25 percent
Contrasting inclusions: 20 percent

Typical Profile

Turquoise

About 100 percent of the surface is covered with fine gravel.

0 to 1 inch—brown loamy coarse sand
1 to 5 inches—brown sandy loam
5 to 22 inches—weathered granodiorite
22 inches—unweathered granodiorite

Nugget

About 80 to 100 percent of the surface is covered with gravel and cobbles.

0 to 1 inch—brown sandy loam
1 to 5 inches—dark brown gravelly sandy loam
5 to 12 inches—dark reddish brown gravelly sandy clay
12 to 24 inches—weathered granodiorite
24 inches—unweathered granodiorite

Soil Properties and Qualities

Turquoise

Parent material: slope alluvium and residuum derived from quartzite and granodiorite
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 20 to 40 inches
Runoff rate: low to very high
Hazard of erosion: by water—slight to severe; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 0 to 20 percent
Corrosivity: steel—moderate; concrete—low

Nugget

Parent material: slope alluvium and residuum derived from quartzite and granodiorite
Depth class: shallow
Drainage class: well drained
Permeability: slow
Available water capacity: very low
Potential rooting depth: 20 to 40 inches
Runoff rate: low to very high
Hazard of erosion: by water—slight to severe; by wind—slight
Shrink-swell potential: moderate
Content of rock fragments: less than 35 percent
Corrosivity: steel—moderate; concrete—low

Inclusions

Contrasting inclusions:
• Rock outcrop
• Lanque and Gardencan soils, which are very deep
• Budlamp and Woodcutter soils, which are very shallow or shallow to unweathered bedrock

Similar inclusions:
• Soils that are moderately deep or deep

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: depth to weathered bedrock, droughtiness, slope, hazard of water erosion

Dominant vegetation on the Turquoise and Nugget soils:
• In the potential plant community—Texas bluestem, sideoats grama, bullgrass, plains lovegrass, beggartick

threeawn, hairy grama, Emory oak, sacahuista, manzanita
• In the present plant community—mesquite, turpentinebush, ocotillo, lippia, sotol, agave, Lehmann lovegrass, sideoats grama, green sprangletop, false mesquite, plains lovegrass, hairy grama

Special Management Concerns

• The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
• These soils have a slight to severe hazard of water erosion; therefore, special consideration should be given to water management.
• On sites for roads, special design is needed to overcome the slope.
• Livestock grazing can be limited by the slope.
• Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Slopes of 3 to 30 percent—VIs nonirrigated
Slopes of 30 to 45 percent—VIe nonirrigated
Ecological site: Shallow Hills, 16- to 20-inch precipitation zone, 041XA102AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

144—Ubik complex, 0 to 3 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 0 to 3 percent
Frequency of flooding: occasional
Elevation: 3,900 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Ubik silt loam and similar soils: 50 percent
Ubik fine sandy loam and similar soils: 30 percent
Contrasting inclusions: 20 percent

Typical Profile

Ubik silt loam

0 to 10 inches—brown silt loam
10 to 32 inches—brown loam
32 to 60 inches—brown fine sandy loam

Ubik fine sandy loam

0 to 8 inches—brown fine sandy loam
8 to 30 inches—brown loam
30 to 60 inches—brown fine sandy loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderate or moderately rapid
Available water capacity: moderate to very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight or moderate; by wind—slight or moderately high
Shrink-swell potential: low
Salinity: none to slight
Sodicity: none to slight
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
• Guest soils, which have more than 35 percent clay
• Major soils, which have 18 to 35 percent clay
• Combate soils, which have loamy sand and sandy loam textures

Similar inclusions:
• Ubik soils that have gypsum and are adjacent to the San Pedro River

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: hazards of flooding, water erosion, and piping

Dominant vegetation:
• In the potential and present plant communities—giant sacaton, mesquite, sideoats grama, black grama, blue grama, cane beardgrass, green sprangletop, vine mesquite, desert willow, graythorn, annual forbs

Special Management Concerns

• Structures should be located above the expected level of flooding.
• These soils have a slight or moderate hazard of water erosion; therefore, special consideration should be given to water management.
• Water movement across this unit may cause piping.
• This unit has few limitations and should be productive under proper management.
• These soils have dual range sites that have the

same plant communities. The Loamy Bottom, Subirrigated, site receives more moisture than the Loamy Bottom, Swales, site and is more productive.

Interpretive Groups

Land capability classification: IIe irrigated and VIe nonirrigated
Ecological site:
Ubik silt loam—Loamy Bottom, Subirrigated, 12- to 16-inch precipitation zone, 041XC312AZ
Ubik fine sandy loam—Loamy Bottom, Swales, 12- to 16-inch precipitation zone, 041XC311AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

145—Ubik loam, 1 to 3 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 1 to 3 percent
Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Ubik and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 7 inches—brown loam
7 to 16 inches—brown loam
16 to 36 inches—pinkish gray very fine sandy loam
36 to 55 inches—pinkish gray loam
55 to 63 inches—light brown, stratified sandy loam, silt loam, and loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: low
Salinity: none to slight
Sodicity: none to slight
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Guest, Forrest, and Bonita soils, which have more than 35 percent clay
- McNeal and McAllister soils, which have 18 to 35 percent clay
- Mallet, Hooks, and Altar soils, which do not have accumulations of calcium carbonate
- Blakeney soils, which are very shallow or shallow to a hardpan
- Luckyhills soils, which have more than 5 percent calcium carbonate
- Comoro soils, which have loamy sand and sandy loam textures

Similar inclusions:
- Ubik soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazards of flooding, wind erosion, and piping

Dominant vegetation:
- In the potential and present plant communities—giant sacaton, mesquite, sideoats grama, black grama, blue grama, cane beardgrass, green sprangletop, vine mesquite, desert willow, graythorn, annual forbs

Special Management Concerns

- Structures should be located above the expected level of flooding.
- This soil has a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Water movement across this unit may cause piping.
- This unit has few limitations and should be productive under proper management.

Interpretive Groups

Land capability classification: IIs irrigated and VIs nonirrigated
Ecological site: Loamy Bottom, Subirrigated, 12- to 16-inch precipitation zone, 041XC312AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

146—Ubik loam, saline-sodic, 1 to 3 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 1 to 3 percent
Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Ubik and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 7 inches—brown loam
7 to 16 inches—brown, saline-sodic loam
16 to 36 inches—pinkish gray, saline-sodic very fine sandy loam
36 to 55 inches—pinkish gray, saline-sodic loam
55 to 63 inches—light brown, saline-sodic, stratified sandy loam, silt loam, and loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderate
Shrink-swell potential: low
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Contrasting Inclusions

- Guest, Forrest, and Bonita soils, which have more than 35 percent clay
- McNeal and McAllister soils, which have 18 to 35 percent clay
- Mallet, Hooks, and Altar soils, which do not have accumulations of calcium carbonate
- Blakeney soils, which are very shallow or shallow to a hardpan
- Luckyhills soils, which have more than 5 percent calcium carbonate
- Comoro soils, which have loamy sand and sandy loam textures

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazards of flooding and wind erosion, piping, excess salts, sodium, and gypsum

Dominant vegetation:
- In the potential and present plant communities—giant sacaton, mesquite, sideoats grama, black grama, blue grama, cane beardgrass, green sprangletop, vine mesquite, desert willow, graythorn, annual forbs, alkali sacaton, inland saltgrass, fourwing saltbush, wolfberry

Special Management Concerns

- Structures should be located above the expected level of flooding.
- This soil has a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Water movement across this unit may cause piping.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIs irrigated and VIs nonirrigated
Ecological site: Loamy Bottom, Subirrigated, 12- to 16-inch precipitation zone, 041XC312AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

147—Ubik sandy loam, 1 to 3 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 1 to 3 percent
Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches

Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Ubik and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 7 inches—brown sandy loam
7 to 16 inches—brown loam
16 to 36 inches—pinkish gray very fine sandy loam
36 to 55 inches—pinkish gray loam
55 to 63 inches—light brown, stratified sandy loam, silt loam, and loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Salinity: none to slight
Sodicity: none to slight
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Guest soils, which have more than 35 percent clay
- Sasabe, Courtland, Diaspar, Combate, Mallet, Hooks, and Altar soils, which do not have accumulations of calcium carbonate
- McNeal and McAllister soils, which have 18 to 35 percent clay
- Comoro soils, which have loamy sand and sandy loam textures

Similar inclusions:
- Ubik soils that have salts and sodium in the lower part and are adjacent to Whitewater Draw

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazards of flooding, wind erosion, and piping

Dominant vegetation:
- In the potential and present plant communities—giant sacaton, mesquite, sideoats grama, black grama, blue grama, cane beardgrass, green sprangletop, vine mesquite, desert willow, graythorn, annual forbs

Special Management Concerns

- Structures should be located above the expected level of flooding.
- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Water movement across this unit may cause piping.
- This unit has few limitations and should be productive under proper management.

Interpretive Groups

Land capability classification: IIe irrigated and VIe nonirrigated
Ecological site: Loamy Bottom, Swales, 12- to 16-inch precipitation zone, 041XC311AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

148—Ubik sandy loam, saline-sodic, 1 to 3 percent slopes

Setting

Landform: flood plains and alluvial fans
Slope range: 1 to 3 percent
Frequency of flooding: occasional
Elevation: 4,000 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Ubik and similar soils: 90 percent
Contrasting inclusions: 10 percent

Typical Profile

0 to 7 inches—brown sandy loam
7 to 16 inches—brown, saline-sodic loam
16 to 36 inches—pinkish gray, saline-sodic very fine sandy loam
36 to 55 inches—pinkish gray, saline-sodic loam
55 to 63 inches—light brown, saline-sodic, stratified sandy loam, silt loam, and loam

Soil Properties and Qualities

Parent material: mixed alluvium
Depth class: very deep
Drainage class: well drained

Permeability: moderately rapid
Available water capacity: moderate or high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—slight; by wind—moderately high
Shrink-swell potential: low
Content of gypsum: 0 to 4 percent
Salinity: slight to strong
Sodicity: moderate or strong
Corrosivity: steel—high; concrete—high

Contrasting Inclusions

- Guest soils, which have more than 35 percent clay
- Sasabe, Courtland, Diaspar, Combate, Mallet, Hooks, and Altar soils, which do not have accumulations of calcium carbonate
- McNeal and McAllister soils, which have 18 to 35 percent clay
- Comoro soils, which have loamy sand and sandy loam textures

Use and Management

Major current uses: irrigated cropland, livestock grazing, and wildlife habitat

Soil-related factors: hazards of flooding and wind erosion, piping, excess salts, sodium, and gypsum

Dominant vegetation:
- In the potential and present plant communities—giant sacaton, mesquite, sideoats grama, black grama, blue grama, cane beardgrass, green sprangletop, vine mesquite, desert willow, graythorn, annual forbs, alkali sacaton, inland saltgrass, fourwing saltbush, wolfberry

Special Management Concerns

- Structures should be located above the expected level of flooding.
- This soil has a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.
- Water movement across this unit may cause piping.
- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Concentrated runoff in drainage ditches can dissolve gypsum in the subsurface layers and cause settling.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- This soil is very strongly alkaline. The alkalinity restricts plant growth.
- The saline-sodic condition causes a high risk of corrosion to uncoated steel and concrete.
- The crop varieties, lawn grasses, shrubs, and trees selected for planting should be those that are tolerant of excessive amounts of salts.

Interpretive Groups

Land capability classification: IIIe irrigated and VIe nonirrigated
Ecological site: Loamy Bottom, Swales, 12- to 16-inch precipitation zone, 041XC311AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

149—Vana fine sandy loam, 1 to 10 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 10 percent
Elevation: 4,200 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Vana and similar soils: 80 percent
Contrasting inclusions: 20 percent

Typical Profile

About 15 to 35 percent of the surface is covered with gravel and/or cobbles.

0 to 1 inch—reddish brown fine sandy loam
1 to 8 inches—reddish brown sandy loam
8 to 14 inches—yellowish red sandy clay loam
14 to 24 inches—a continuous hardpan cemented with gypsum and calcium carbonate
24 to 60 inches—reddish brown, calcareous, gypsiferous sandy loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately slow
Available water capacity: very low
Potential rooting depth: 8 to 20 inches
Runoff rate: medium or high
Hazard of erosion: by water—moderate or severe; by wind—moderate
Shrink-swell potential: moderate
Content of rock fragments: 0 to 20 percent gravel and/or cobbles above the hardpan and more than

35 percent gravel and/or cobbles below the hardpan
Calcium carbonate equivalent: 0 to 10 percent above the hardpan and 40 to 70 percent below the hardpan
Content of gypsum: 0 to 5 percent above the hardpan and 5 to 15 percent below the hardpan
Corrosivity: steel—high; concrete—high

Inclusions

Contrasting inclusions:
- Bella soils, which have less than 18 percent clay
- Sierravista and Graveyard soils, which have more than 35 percent rock fragments and petronodes
- Libby, Gulch, and Major soils, which are very deep

Similar inclusions:
- Soils that are moderately deep to a hardpan
- Soils that do not have gypsum

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: depth to a hardpan, excess gypsum below the hardpan, hazards of wind erosion, water erosion, and piping

Dominant vegetation:
- In the potential plant community—sideoats grama, burrograss, black grama, tarbush, creosotebush, whitethorn, desert zinnia
- In the present plant community—Lehmann lovegrass, whitethorn, catclaw acacia, bush muhly, cane beardgrass, tarbush, creosotebush, whitethorn

Special Management Concerns

- Excavation can be difficult because of the restrictive hardpan.
- Gypsum below the hardpan can induce electrochemical action that corrodes concrete.
- This soil has a moderate or severe hazard of water erosion; therefore, special consideration should be given to water management.
- Water movement across this unit may cause piping.
- This soil has a moderate hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site: Shallow Upland, 12- to 16-inch precipitation zone, 041XC322AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

150—Vana-Moco complex, 1 to 5 percent slopes

Setting

Landform: Vana—fan terraces; Moco—basin floors
Slope range: 1 to 5 percent
Elevation: 4,200 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

Vana and similar soils: 50 percent
Moco and similar soils: 40 percent
Contrasting inclusions: 10 percent

Typical Profile

Vana

0 to 2 inches—brown sandy loam
2 to 8 inches—brown sandy clay loam
8 to 13 inches—brown clay loam
13 to 18 inches—a fractured hardpan cemented with gypsum and calcium carbonate
18 to 60 inches—light brown, calcareous, gypsiferous gravelly loam

Moco

0 to 1 inch—brown fine sandy loam
1 to 10 inches—brown clay loam
10 to 20 inches—brown, calcareous clay loam
20 to 31 inches—light brown and pinkish white, calcareous, gypsiferous clay loam
31 to 48 inches—brown and pinkish white, calcareous, gypsiferous clay loam
48 to 60 inches—pinkish gray and pinkish white, calcareous, gypsiferous clay loam

Soil Properties and Qualities

Vana

Parent material: mixed fan alluvium
Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately slow
Available water capacity: very low
Potential rooting depth: 10 to 20 inches
Runoff rate: medium
Hazard of erosion: by water—moderate; by wind—moderately high

Shrink-swell potential: moderate
Content of rock fragments: 0 to 20 percent gravel above the hardpan and more than 35 percent gravel below the hardpan
Calcium carbonate equivalent: 0 to 10 percent above the hardpan and 40 to 70 percent below the hardpan
Content of gypsum: 0 to 5 percent above the hardpan and 5 to 15 percent below the hardpan
Corrosivity: steel—high; concrete—high

Moco

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low
Hazard of erosion: by water—moderate; by wind—moderately high
Shrink-swell potential: moderate
Petronodic feature: 5 to 20 percent petronodes
Depth to a calcic horizon: 5 to 20 inches
Calcium carbonate equivalent: 0 to 55 percent
Depth to a gypsic horizon: 20 to 60 inches
Content of gypsum: 1 to 20 percent
Corrosivity: steel—high; concrete—high

Contrasting Inclusions

- Ubik soils, which have less than 18 percent clay
- Sierravista soils, which have more than 35 percent rock fragments and petronodes
- Major soils, which do not have an argillic horizon

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors:
Vana—hazards of wind erosion and water erosion, excess gypsum, depth to a hardpan
Moco—hazards of wind erosion and water erosion, excess gypsum, a high content of calcium carbonate, subsidence

Dominant vegetation on the Vana soil:
- In the potential plant community—sideoats grama, burrograss, black grama, tarbush, creosotebush, whitethorn, desert zinnia
- In the present plant community—Lehmann lovegrass, whitethorn, catclaw acacia, bush muhly, cane beardgrass, tarbush, creosotebush, whitethorn

Dominant vegetation on the Moco soil:
- In the potential and present plant communities—blue grama, tobosa, giant sacaton, velvet mesquite, catclaw acacia, Mormon tea, soaptree yucca, burrograss, desert holly, whitethorn, and plains bristlegrass

Special Management Concerns

- Soils that have a high content of gypsum can induce electrochemical action that corrodes concrete.
- Soils that have a high content of gypsum are very susceptible to piping, settling, and erosion.
- Excavation in areas of the Vana soil can be difficult because of the restrictive hardpan.
- These soils have a moderate hazard of water erosion; therefore, special consideration should be given to water management.
- These soils have a moderately high hazard of wind erosion. When vegetation is removed, care should be taken to prevent excessive dust and soil loss.

Interpretive Groups

Land capability classification:
Vana—IVe irrigated and VIe nonirrigated
Moco—IIIe irrigated and VIe nonirrigated
Ecological site:
Vana—Shallow Upland, 12- to 16-inch precipitation zone, 041XC322AZ
Moco—Limy Fan, 12- to 16-inch precipitation zone, 041XC320AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

151—White House complex, 1 to 30 percent slopes

Setting

Landform: fan terraces
Slope range: 1 to 30 percent
Elevation: 4,500 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 60 to 67 degrees F
Frost-free period: 180 to 230 days

Composition

White House gravelly loam and similar soils: 40 percent
White House gravelly sandy loam and similar soils: 35 percent

Contrasting inclusions: 25 percent

Typical Profile

White House gravelly loam

About 5 to 30 percent of the surface is covered with gravel and/or cobbles.

0 to 2 inches—reddish brown gravelly loam
2 to 5 inches—dark red clay loam
5 to 18 inches—dark red clay
18 to 29 inches—dark red gravelly clay loam
29 to 33 inches—yellowish red loamy sand
33 to 60 inches—yellowish red and red clay loam

White House gravelly sandy loam

About 10 to 20 percent of the surface is covered with gravel and cobbles.

0 to 5 inches—reddish brown gravelly sandy loam
5 to 25 inches—dark reddish brown clay
25 to 45 inches—dark red gravelly clay loam
45 to 60 inches—yellowish red clay loam

Soil Properties and Qualities

Parent material: mixed fan alluvium
Depth class: very deep
Drainage class: well drained
Permeability: slow
Available water capacity: high or very high
Potential rooting depth: 60 inches or more
Runoff rate: low to high
Hazard of erosion: by water—slight or moderate; by wind—slight
Shrink-swell potential: high
Content of rock fragments: less than 35 percent
Calcium carbonate equivalent: less than 15 percent in the lower part of the profile
Corrosivity: steel—high; concrete—moderate

Inclusions

Contrasting inclusions:
- Graveyard and Sierravista soils, which have more than 35 percent rock fragments and petronodes
- Gardencan, Lanque, and Pyeatt soils, which receive more precipitation than the White House soils
- Tombstone and Caralampi soils, which have more than 35 percent rock fragments

Similar inclusions:
- Bernardino soils, which have accumulations of calcium carbonate between depths of 5 and 20 inches
- Terrarossa and Blacktail soils, which receive more precipitation than the White House soils

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: slow permeability, high shrink-swell potential, slope, clayey texture, hazard of water erosion

Dominant vegetation:
- In the potential plant community—Lehmann lovegrass, sideoats grama, cane beardgrass, plains lovegrass, false mesquite, black grama, ratany, blue grama, mesquite, sprucetop grama, Arizona cottontop, sand dropseed, threeawn, yerba de pasmo, mesquite
- In the present plant community—plains lovegrass, sideoats grama, cane beardgrass, black grama, blue grama, sprucetop grama, Arizona cottontop, sand dropseed, threeawn, ratany, false mesquite, yerba de pasmo

Special Management Concerns

- These soils have a slight or moderate hazard of water erosion; therefore, special consideration should be given to water management.
- This unit responds well to managed, natural and prescribed fires.
- The high shrink-swell potential should be considered when foundations, concrete structures, and paved areas are designed and constructed.
- The high content of clay in the soils restricts water infiltration and permeability.

Interpretive Groups

Land capability classification: VIs nonirrigated
Ecological site:
White House gravelly loam—Loamy Upland, 12- to 16-inch precipitation zone, 041XC313AZ
White House gravelly sandy loam—Sandy Loam Upland, 12- to 16-inch precipitation zone, 041XC319AZ
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-3AZ—Southern Arizona Semidesert Grassland

152—Yarbam-Rock outcrop complex, 25 to 60 percent slopes

Setting

Landform: hills and mountains
Slope range: 25 to 60 percent
Elevation: 4,700 to 6,700 feet

Mean annual precipitation: 16 to 20 inches
Mean annual air temperature: 57 to 62 degrees F
Frost-free period: 160 to 210 days

Composition

Yarbam and similar soils: 60 percent
Rock outcrop: 30 percent
Contrasting inclusions: 10 percent

Typical Profile

Yarbam

About 35 to 70 percent of the surface is covered with gravel, cobbles, and/or stones.

0 to 2 inches—very dark brown very cobbly loam
2 to 9 inches—very dark grayish brown very gravelly loam
9 inches—unweathered limestone

Soil Properties and Qualities

Yarbam

Parent material: slope alluvium and residuum derived from limestone, marble, and calcareous sandstone
Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Available water capacity: very low
Potential rooting depth: 6 to 20 inches
Runoff rate: very high
Hazard of erosion: by water—moderate or severe; by wind—slight
Shrink-swell potential: low
Content of rock fragments: 35 to 70 percent gravel, cobbles, and/or stones
Calcium carbonate equivalent: 20 to 40 percent
Corrosivity: steel—high; concrete—low

Characteristics of Rock Outcrop

Rock outcrop consists of barren rock that occurs as ledges and nearly vertical cliffs of titled and folded limestone, marble, and calcareous sandstone. It also includes areas where the depth to bedrock is less than 4 inches. The higher percentage of the outcrop is in areas near hilltops and mountaintops.

Contrasting Inclusions

- Carbine soils, which are very shallow or shallow to a hardpan
- Hathaway soils, which are very deep
- Soils that have more than 18 percent clay
- Soils that have less than 35 percent rock fragments

Use and Management

Major current uses: livestock grazing and wildlife habitat

Soil-related factors: content of rock fragments, depth to bedrock, hazard of water erosion, content of calcium carbonate, slope

Dominant vegetation on the Yarbam soil:
- In the potential and present plant communities—southwestern stipa, black grama, bullgrass, sideoats grama, sotol, false mesquite, Schott yucca, rough tridens, tanglehead, silk tassel

Special Management Concerns

- The limited depth to bedrock interferes with excavation when utilities are installed. The soil depth is not adequate for septic tank absorption fields.
- The Yarbam soil has a moderate or severe hazard of water erosion because of the slope; therefore, special consideration should be given to water management.
- Steep slopes and a rough surface can limit the use of this unit.
- Excess rock fragments in the Yarbam soil interfere with excavations.
- Steep slopes cause management problems.

Interpretive Groups

Land capability classification:
Yarbam soil in areas where slopes are 25 to 30 percent—VIs nonirrigated
Yarbam soil in areas where slopes are 30 to 60 percent—VIe nonirrigated
Rock outcrop—VIII
Ecological site:
Yarbam—Limestone Hills, 16- to 20-inch precipitation zone, 041XA103AZ
Rock outcrop—none assigned
Major land resource area: 41—Southeastern Arizona Basin and Range
Land resource unit: 41-1AZ—Mexican Oak-Pine Woodland and Oak Savannah

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 as 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 verbal and numerical.

Rating Class Terms

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

Numerical Ratings

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

Irrigated Crops

Donald L. Walther, Cropland Specialist, Natural Resources Conservation Service, assisted in writing this section.

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

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 Cooperative Extension Service.

About 42,000 acres in the survey area is currently

being farmed. The total acreage being farmed varies slightly from year to year because of prevailing economic conditions. The main crops currently being grown are alfalfa hay, white and yellow corn, wheat, red chili, green chili, cotton, small grain, pecans, pinto beans, forage grasses for pasture, rangeland grass seed, evergreen trees for landscaping, and a variety of specialty crops, such as tomatoes, melons, and squash.

All of the cropland, hayland, and pasture in the survey area is irrigated. The main methods of irrigation are surface, sprinkler, and trickle (drip) systems. Ground water is the source of all irrigation water. Proper management of irrigation water and crop residue and measures that maintain the condition of the soil are needed.

Surface irrigation systems include downslope irrigation using the natural grade, a uniform leveling of fields by removal of surface irregularities, and level (no slope) basin systems. Irrigation efficiency can be improved by standardizing the slope. This standardization can be accomplished by removing surface irregularities and by reducing or eliminating the slope through precision land leveling methods. Precision land leveling utilizes a laser to control the leveling equipment. In some sloping fields, tailwater recovery (pump-back) systems are used to capture irrigation runoff for reuse. The main method of conveying water from the well to the field is by underground pipelines. Once it is at the field, the water is distributed across the field with gated pipe. The efficiency of gated pipe systems can be enhanced by the use of a surge valve, which regulates the flow of water to different sections of gated pipe. Surge valves can be programmed to apply water at a variable rate and thus help to control runoff and deep percolation. There are some earthen ditches in the survey area, and concrete-lined ditches are used on limited basis. Siphon hoses deliver water to the field from ditch conveyance systems.

Sprinkler irrigation is gaining in popularity in the survey area. The center-pivot sprinkler is the system of choice. It covers approximately 120 acres, although the system may cover larger or smaller acreages. Water is delivered to the center of the pivot by underground pipeline. Sprinklers can apply water more efficiently than most surface systems. The installation cost is higher than that of most surface systems, but a sprinkler affords the land user a higher level of management. It provides a means to achieve uniform germination, applies precise amounts of water, eliminates the need to level fields, permits uniform leaching of salts, and can be operated easily.

A trickle (drip) system is used in some areas. It applies water directly to each plant through emitters or drip lines from a distribution system. This system has the highest per acre installation cost, requires the highest level of management, and is capable of the highest application efficiency. It generally is used in areas of high-value crops. Water is supplied to the field through underground pipeline, and the field distribution system is either buried or laid on the surface.

When an irrigation system is planned or managed, a water sample should be obtained from the irrigation well. This test determines if there are any limiting factors that may influence the choice of crops to be grown or the type of irrigation system to be used. For example, salts in the irrigation water may limit the choice of crops that can be successfully grown. Also, high levels of chlorine in the water that is applied through sprinklers can cause foliar damage.

Crops have mature root systems that range in depth from 2 feet (chili) to more than 6 feet (alfalfa). Irrigation systems must be able to apply irrigation water to these depths to ensure that a scarcity of moisture will not limit the development of the crop. Also, the kinds of soil should be considered. Coarse textured soils (sand and sandy loam) can retain less available water than finer textured soils (loam, silt, and clay). The frequency of irrigation should be adjusted during the year so that water is available for plant uptake in the amounts needed, depending on the growth stage of the plant. The design of the irrigation system should be based on the crop grown, the intake rate of the soil, the available water capacity of the soil, water quality, available water supply, availability of farm labor, and the level of management the operator is willing to apply.

The soils in the survey area are low in content of organic matter. Crop residue can increase the content of organic matter. Excessive tillage operations reduce the amount of organic matter remaining in the soil. Organic matter acts as a buffer against disease, improves air and water movement into and through the soil, improves the available water capacity of the soil, and enhances the biological activity in the soil. Maintaining or increasing the content of organic matter retains nutrients for plant use, reduces the runoff rate and the hazard of erosion, and improves the condition of the soil. A stable or improving soil condition can be achieved through proper tillage, crop rotations, and management of crop residue, pests, plant nutrients, and irrigation water.

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 5. 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.

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

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. Only class and subclass are used in this survey.

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

Class I soils have slight limitations that restrict their use.

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

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

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

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

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

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, VIe. 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 I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

The capability classification of map units in this survey area is given in the section “Detailed Soil Map Units” and in table 5.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. In this survey area slope ranges mainly from 0 to 3 percent, but it can range to 10 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A recent 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 in the survey area that are considered prime farmland are listed in table 6. 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."

About 477,750 acres in the survey area, or nearly 28 percent of the total acreage, would meet the requirements for prime farmland if an adequate and dependable supply of irrigation water were available and the frequently flooded soils were protected from flooding.

Rangeland and Forestland

Daniel G. Robinett, Rangeland Conservationist, Natural Resources Conservation Service, wrote this section.

About 908,000 acres in this survey area is classified as rangeland, and 41,000 acres is forestland. Rangeland is defined as areas where the native potential vegetation is dominated by grasses, forbs, and shrubs. Forestland is defined as areas where the native potential vegetation is dominated by trees and where the canopy cover exceeds 15 percent. Most of the forestland in the survey area is in the Mule, Peloncillo, Swisshelm, Perilla, Huachuca, and Pedregosa Mountains, but about 2,000 acres occurs as riparian forestland along the San Pedro River, Babocómari Creek, and Rucker Canyon Wash.

This survey area is a region of diverse vegetation in which the Sonoran, Chihuahuan, and Madraen life zones all come together (Brown, 1982). It receives both cool-season and warm-season moisture and ranges in elevation from 3,550 to 8,410 feet. The average annual precipitation ranges from 11.5 inches at Fairbanks to 16 inches at Fort Huachuca and is well over 20 inches on the mountain peaks (Sellars and Hill, 1974). Geology of the mountainous areas is diverse. Alluvial deposits in the valley range from ancient lakebed sediments to sediments on recent flood plains and are derived from many different kinds of parent material.

The vegetation in this region is dynamic. Fossil pollen studies show tremendous changes in the area's vegetation as climate has changed in the last 40,000 years (Betancourt and others, 1990). Many changes have occurred in the area's 300 years of recorded history. The events and conditions responsible for these changes are well documented in numerous books and reports (Hastings and Turner, 1965; Cooke and Reeves, 1976; Bahre, 1977 and 1991; DuBois and Smith, 1980; Humphrey, 1987; Hereford, 1993; and Hendrickson and Minckley, 1984).

A brief history of this region helps to illustrate the changes in vegetation that have occurred in the last 200 years. Humans have occupied the region for at least 12,000 years (Bahre, 1977). Native Americans impacted the landscape by woodcutting, hunting, burning, and limited cultivation, but they probably had only a minor impact on the overall character of the

landscape. It was not until the mid-1500's that livestock were introduced to the region by Spanish explorers, such as de Niza and Coronado (Hereford, 1993). The Spanish missionary Kino established the first herd of cattle in the area in 1697, at Quiburi, in the San Pedro Valley (Bahre, 1977). The Apache Indians, however, controlled the area until the mid-1850's, and stock raising was largely unsuccessful until they were defeated. After the Mexican revolution in 1821, large grants of land were made to prominent citizens in the region. These grants included the San Bernardino, the San Ignacio del Babocómari, the San Jan de las Boquillas, and the San Rafael del Valle, all of which were made to various members of the Elias family from Sonora (Mattison, 1964). Large numbers of cattle, sheep, and horses were brought into the region. At this time the three valleys of San Bernardino, San Pedro, and Sulphur Springs were vast open grasslands broken only by numerous small mountain ranges. Apache raids forced the abandonment of these holdings until the Gadsden Purchase in 1854. Then, the area became part of the United States.

Over the next 50 years, a series of events set the stage for the transformation of the grassy vegetation in these valleys into the present-day vegetation. The U.S. Army moved into the area to protect settlers and control the Apaches. Forts at Huachuca and Rucker led to rapid development of the nearby areas. Mining at Tombstone and Bisbee boomed and brought more settlers to the region. Americans bought the rights to land grants from the Elias family and their partners and started huge land and cattle companies in the three valleys. John Slaughter bought the San Bernardino right in the valley of that name in the 1870's. The Chiricahua Cattle Company of the White family controlled nearly all of the lower part of Sulphur Springs Valley in the mid-1880's. In the San Pedro Valley, the Greene Cattle Company, Kern County Land and Cattle of the Howard and Hearst families, and the Babocómari of Perrin controlled vast herds of livestock in the late 1890's (Bailey, 1994; Sonnichsen, 1974; Bahre, 1977; and Wilson, 1995).

Homesteading began in all three valleys in 1879. The railroads came into the region in 1881 and 1882 to serve the mining industry and caused more growth and settlement (Myrick, 1981).

Severe drought during the summers of 1891, 1892, and 1893 resulted in the loss of half to two-thirds of the livestock in the region (Hastings and Turner, 1965). The grasslands were devastated. A large earthquake in May of 1887 caused changes in spring flows and fissured the bottoms in all three valleys (DuBois and Smith, 1980). By the early 1900's, massive erosion started on the valley bottoms. Hugh gullies started in Black Draw, Whitewater Draw, the San Pedro River, and Babocómari Creek. The upland vegetation in the area began to change. Repeat photography of pictures show the magnitude of the change (Hastings and Turner, 1965; Humphrey, 1987).

Homesteading continued at a rapid pace through 1900 (Rodgers, 1965). With statehood in 1912, Arizona selected land from the public domain. The areas of rangeland not already patented in the three valleys was still of good enough quality to be selected by the State of Arizona. In 1916 and 1917, these areas were adjudicated to the historic range users and owners of watering locations. The rangeland livestock industry rebounded after the 1890's drought. Open rangeland, overgrazing, and continued homesteading, however, caused another crisis, which prompted the Taylor Grazing Act of 1934. Ranch boundary fencing began shortly thereafter. For the first time in 100 years, there began to be some control of grazing; however, it was too late to reverse the processes of erosion and brush invasion already set in motion. Between 1920 and 1930, brush density increased 200 to 300 percent in the San Pedro Valley (Rodgers, 1965).

In 1905, forestland began to recover with the establishment of forest reserves in the Chiricahua, Huachuca, Dragoon, and Peloncillo Mountains. During the Depression the Civilian Conservation Corps applied erosion-control measures throughout the area. People staying at campsites in the Chiricahua and Huachuca Mountains did work on forestland. People staying at a large camp at Warren, near Bisbee, did work on private and State lands under the direction of the newly formed Soil Conservation Service. The results of this effort are still very much in evidence today.

In the late 1940's, conservation districts were formed in Arizona. Ranchers and farmers in the area formed the Hereford and Whitewater Draw Soil Conservation Districts. With assistance from the Soil Conservation Service, they began to improve wornout ranges. Early practices included contour ripping and seeding or brush plowing and seeding. Pasture fences were built, and ponds, wells, pipelines, and troughs were developed to distribute grazing uniformly and to allow periodic deferment of grazing. The rangeland began to recover, and the native vegetation in the San Pedro and Babocómari developed and stabilized the stream channels and banks.

An analysis of the relationship between summer rainfall and runoff intensity in the valley of the San Pedro River indicates improving watershed conditions since 1960. Before 1960, 1 to 2 days of high-intensity rainfall would produce 7 to 8 days of runoff, whereas

after 1960, the same rainfall would produce only 3 to 4 days of runoff. This change has occurred in the face of increasing rainfall in the area since 1955 (Hereford, 1993).

Upland vegetation has deteriorated in response to overgrazing, drought, and the absence of naturally occurring wildfires during the last 100 years. Cattle grazed out fine fuels, and settlers put out fires that may have helped check invasion by shrubs. The basic change from more open grassland to shrub land was accompanied by a loss of dark surface soil, especially in the calcareous soils now dominated by creosotebush and whitethorn. Changes of this type are not reversible. On reddish soils that have been invaded by mesquite, tarbush, and whitethorn, enough sandy loam surface soil generally is left to enable the areas to return to grassland with shrub removal.

The development of riparian vegetation along the San Pedro River and Babocómari Creek is a recent occurrence. Prior to the channel cutting in both streams, flood plains were marshy and dominated by sedges, rushes, and sacaton. Mesquite *bosques* did not occur south of Saint David, and early descriptions and photographs of both rivers show little cottonwood or willow. Photos as late as 1930 show no tree growth in the deepening and widening channels. As the channels widened and began to stabilize, gallery forests of cottonwood and willow developed. Most of the trees currently in these channels are less than 60 years old. The former flood plains of both streams have now become stream terraces and are no longer flooded by the rivers. As the water table fell, the *cienegas* dried and mesquite was able to move in. Deep-rooted mesquite is able to tap the 20- to 30-foot water table and forms dense forestlands called *bosques*. Remnant *cienegas* of sacaton were left only on low stream terraces and valley side tributaries where erosion-control structures prevented headcutting or allowed gullies to fill in (Hereford, 1993; Hendrickson and Minckley, 1984). Mesquite *bosques* are natural to the site and occurred prior to the 1900's along the San Pedro River north of Benson (Hastings and Turner, 1965; Bahre, 1991).

Some changes in vegetation in the survey area are a result of the introduction of non-native plant species. Hundreds of species have been introduced to this region, but only a few have been able to survive in the wild. African lovegrasses have proven to be especially adapted to this region. Lehmann, Boer, Wilman, and weeping lovegrasses have been seeded throughout the survey area on roadsides, on rights-of-way, and in areas of brush-clearing projects on rangeland. Lehmann lovegrass was introduced in southeast Arizona in the mid-1930's. This hardy bunchgrass from southern Africa has spread on its own from seeds and dominates nearly 50,000 acres in the upper valley of the San Pedro River. It forms nearly monotypic stands with native shrubs, such as mesquite, whitethorn, and ocotillo, on reddish sandy loams on rangeland sites in the uplands. Lehmann lovegrass has tremendous utility for grazing and provides excellent soil protection, but it excludes native grasses and forbs from the plant community. The mechanisms by which it spreads and thickens are well documented (Cable, 1971; Robinett, 1992).

On the forestlands in the Huachuca Mountains, both the tree density and the percentage of canopy cover have increased as the frequency of naturally occurring wildfires has decreased. Studies of tree rings done on Ramsey peak indicate a mean fire return interval of $8^1/_2$ years for the period from 1700 to 1899. Since 1900, only a few fires have occurred in the pine forests in this mountain rangeland (Danzer, 1995). Old photographs taken of the oak forestland in Fort Huachuca show stands that are more open, with "fire-pruned" canopies, than the stands of today (Robinett, 1994). Most of these forestlands have not burned since 1900.

One of the few areas that have not changed in the last century is the plains grassland area on the west and south ranges of Fort Huachuca. This grassland occupies a higher and wetter zone than the desert grasslands. Also, it has had an active fire history up to the present time because of fires started during military training (Robinett, 1994). Another area that has changed little is the plains grassland in the northern San Bernardino Valley. This grassland occurs on clayey soils that have a high-shrink swell potential and that resist invasion of mesquite and other shrubs. It is dominated by tobosa, a grass species that is relatively impervious to overgrazing.

Most of the rangeland in the survey area has reached an equilibrium between present-day vegetation and climate. An exception is a large area bordered by Charleston on the south and Benson on the north and falling on either side of the San Pedro River for a distance of 4 to 5 miles. This area is still actively eroding. The soils in this area formed in old lakebed sediments high in content of carbonates, salts, and gypsum. They are very erodible. Valley side drainageways continue to headcut and downcut, adjusting to the present-day base level of the San Pedro and Babocómari Creek.

Table 7 shows, for each soil that supports vegetation suitable for grazing, the ecological site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each

species. An explanation of the column headings in table 7 follows.

An *ecological site* is the product of all the environmental factors responsible for its development. Such factors as soil type, climate, topographic position, recurrence of drought, and natural rates of erosion and sedimentation all influence a rangeland or forestland site. An ecological site 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 provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service.

Rangeland condition is determined by comparing the present plant community on a site to the potential plant community for the site. It is a measure of the departure of the present vegetation from that shown as potential for the site. A brief statement describing the present plant communities is included in each map unit description under the heading “Detailed Soil Map Units.”

Total production is the amount of vegetation that can be expected to grow annually in a well managed area 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.

Characteristic vegetation—the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil—is listed by common name. Under *composition* there are two categories—*forest understory* and *range*. Under these headings, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Descriptions of the potential plant communities shown in table 7 are based on information gathered about the sites when they are in the best condition to date in the region and on historic accounts and old photographs that identify or show the potential plant communities of the sites. For rangeland sites, individual plant species composition is the percentage of the total annual production. For forestland sites, the composition of individual tree species is by percentage of the total canopy cover and the understory composition is the percentage of the total annual production of the understory vegetation.

Rangeland management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present rangeland similarity index and rangeland trend. Rangeland 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 rangeland 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 rangeland similarity index and rangeland trend is available in chapter 4 of the “National Rangeland and Pasture Handbook,” which is available in local offices of the Natural Resources Conservation Service.

The objective in rangeland management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a rangeland similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Table 8 can help forest owners or managers plan the use of soils for wood crops. It shows the potential productivity of the soils for wood crops and lists trees to manage.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of

a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forest managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

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

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

Recreation

Recreational activities in this survey area include hunting, camping, picnicking, hiking, historical sightseeing, target shooting, rock hounding, and bird watching. The survey area has a few developed recreational areas. Caverns State Park and a few local parks at Fort Huachuca, McNeal, Tombstone, and the Slaughter Ranch have picnicking facilities. Cochise County is one of the best bird-watching areas in the Nation. The Bureau of Land Management and the U.S. Fish & Wildlife Service manage several developed bird-watching facilities, including San Pedro Riparian National Conservation Area, San Bernardino National Wildlife Refuge, and Leslie Canyon National Wildlife Refuge. The county has several towns and sites of historical significance that offer tours. These include Bisbee, Fort Huachuca, Tombstone, Douglas, and the Slaughter Ranch.

The soils of the survey area are rated in tables 9A and 9B according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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

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

The information in tables 9A and 9B can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, and sanitary facilities.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas.

The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large

stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

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

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

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

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. Irrigation is not considered in the ratings. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Wildlife Habitat

Peter L. Warren, The Nature Conservancy, Arizona Chapter, wrote this section.

In the Southwest—a region known for its biological diversity—southern Cochise County stands out for its extraordinary diversity of wildlife species. This high degree of diversity results in part from southern Cochise County's location in an area where several different biogeographical regions intermingle, bringing species together that are not found together anywhere else. Another major factor contributing to the diversity of the area is its varied topography; rugged mountains alternating with broad valleys create a wide variety of habitats.

Southern Cochise County encompasses the headwaters of two major watersheds, each of which has different kinds of wildlife habitat and species. These are the watershed of the Gila River, which flows north then west to the Colorado, and the watershed of the Rio Bavispe, which flows south until it reaches the Rio Yaqui and finally the Gulf of California. The northernmost headwaters of the Rio Yaqui begin in the foothills of the Chiricahua and Peloncillo Mountains and flow south down Whitewater Draw and Black Draw into Sonora, Mexico. This divide is important because the Gila watershed lies primarily in a temperate region, whereas the Bavispe and Yaqui watershed to the south lies dominantly within a subtropical region. The two major watersheds support very different assemblages of wildlife species

The fauna of Cochise County includes many animals that are widespread and familiar throughout much of the Southwest. These include mammals, such as coyote, bobcat, mountain lion, raccoon, striped skunk, white-throated woodrat, white-footed mouse, mule deer, and whitetail deer. The most common birds include red-tailed hawk, Cooper's hawk, golden eagle, prairie falcon, common raven, turkey vulture,

meadowlark, ladder-back woodpecker, ash-throated flycatcher, canyon wren, and rough-winged swallow. In the winter, majestic flocks of sandhill cranes can forage in the Sulfur Springs Valley. The reptiles and amphibians with widespread distribution in the survey area include gopher snake, common king snake, western diamond-back rattlesnake, prairie rattlesnake, coachwhip, patch-nosed snake, western whiptail lizard, side-blotched lizard, tree lizard, canyon tree frog, and western spade-foot toad. In addition to the more common species, this corner of southeast Arizona harbors a number of species that are endemic to the area, are rare in the United States, or occupy habitats of special concern.

What makes the wildlife community in Cochise County so interesting is the unusual combination of species with distributions that overlap in the county but with ranges that extend to the county from very different ecological regions. One result is that the survey area has the highest diversity of small mammals anywhere in North America. Also, the area is widely known for birds that can be seen nowhere else in the United States.

Ecoregions That Influence Southern Cochise County

The landscape of Cochise County is a fascinating mosaic of habitats that are derived from several different biogeographic regions. The entire region lies in the Basin and Range Physiographic Province, which is characterized by fault-block mountains separated by wide alluvial valleys. The pattern of high mountains and semiarid valleys creates a range of climate, topographic, and soil conditions that allows natural communities with affinities to very different regions to occur within a few miles of each other.

Because of the varied landscape, the survey area has a mixture of habitats from strikingly different geographic regions. At the highest elevations are coniferous forests that represent the southernmost distribution of many Rocky Mountain species. At mid elevations evergreen-oak woodlands with affinities to the Sierra Madre have the highest diversity of plant species of any natural community in the Southwest. Where limestone bedrock is at the surface, the vegetation typically consists of frost-tolerant shrubs from the Chihuahuan Desert. The broad valleys are grasslands made up of many species from the Great Plains to the east. At the lowest elevations, on warm, arid hillsides that are protected from frost, are the easternmost examples of Sonoran desert scrub, but evidence of frost damage on many species indicates that this is the limit of distribution for many subtropical species as well.

Subtropical Wildlife From the South

Black Draw flows from the San Bernardino Valley to the south, where it enters the Rio Bavispe in an area less than 30 miles south of the border between the U.S. and Mexico. A short distance below that area, the Bavispe is joined by Whitewater Draw, which drains the south end of the Sulfur Springs Valley and enters Mexico at Douglas. The Bavispe flows south until it enters the Rio Yaqui, which continues to flow south, creating a low-elevation, warm-climate corridor from the San Bernardino Valley into tropical deciduous woodland and forest habitat in central Sonora, less than 150 miles to the south. This corridor brings mammals, reptiles, birds, and fish from the south into the border country.

The mammals of tropical origin in the survey area include common species, such as javelina and coatimundi, and species that occasionally wander into the area from the south, such as jaguar and ocelot. In recent years the population of some of the tropical mammals has apparently been increasing in Arizona, especially the population of javelina, which seem to be expanding their range into central Arizona, and the population of opossum, which have been seen with increasing regularity in a few border region mountains, such as the Huachucas. Another group of tropical mammals in the survey area are nectar-feeding bats, two species of which reach southern Arizona. These two species—the lesser long-nosed bat and the Mexican long-tongued bat—both reach the northern limit of their distribution in southern Arizona and are seasonal visitors of the survey area.

The San Bernardino Valley is the easternmost extent of several Sonoran Desert reptiles, the distribution of which extends up the Rio Yaqui corridor. The most noteworthy of these reptiles are desert tortoise, Gila monster, and giant spotted whiptail lizard. These Sonoran Desert species are generally restricted to local populations persisting in warm, rocky foothills that buffer them from cold weather.

The fish fauna of the Rio Yaqui consists of species that are completely different from those of the Gila River. In the United States, Rio Yaqui fish occur only in the Rio San Bernardino (Black Draw) and Leslie Creek. Many of these fish are considered threatened or endangered because of declines in Mexico. Examples are Yaqui chub, Yaqui topminnow, beautiful shiner, Mexican stoneroller, Yaqui sucker, and Yaqui catfish, which is the only native catfish west of the Continental Divide.

Some of the birds that follow the Yaqui corridor north into the San Bernardino area are zone-tailed hawk, black hawk, buff-collared nightjar, thick-billed kingbird, tropical kingbird, elegant trogon, and rose-

throated becard. These subtropical species generally migrate into survey the area in late spring to breed in the woodlands along streams and canyon bottoms, then return south in the fall to spend the winter months in the warmer climate of Mexico.

Declining Grassland Fauna

Historically, grasslands were the most extensive of all natural habitats in this survey area, blanketing the valleys with miles of small- and mid-sized bunchgrasses, especially grama grasses (*Bouteloua*), such as sideoats, blue, hairy, black, and Rothrock grama, as well as other bunchgrasses, such as tobosa, plains lovegrass, cane beardgrass, green sprangletop, wolftail, and tanglehead. Early accounts of settlers, explorers, surveyors, and ranchers—including photographs from as early as the 1880's—document unbroken grasslands that extended for miles and had few woody species. These grasslands were maintained in large part by periodic lightning-ignited fires that swept across the landscape every few years and limited the encroachment of woody species.

One of the most dramatic landscape changes that has occurred in this survey area over the last 100 years or so has been the decline of the native grasslands. When European settlers moved into the area, they viewed fire as a destructive force and initiated an era of fire suppression that has continued to the present time. This suppression, in turn, has allowed woody trees and shrubs to invade the grasslands. At the same time, when livestock were first brought to this area, the grasslands appeared to be a limitless resource and were heavily stocked with herds from the East. A combination of devastating droughts in the 1890's and early 1900's resulted in extensive damage to the grasslands. The combination of heavy grazing and fire suppression shifted the ecological balance from grasses to woody species in many areas.

Native grasslands support an assemblage of animals that are dependent on relatively healthy stands of grass to survive. The entire community of grassland-dependent wildlife has suffered extensive declines in southeast Arizona, paralleling that of the grassland itself. While many of these species have extensive distributions across the Great Plains to the east, they are represented in this survey area by western varieties, including not only large animals, such as pronghorn antelope, but also many species that breed in or hide among the bunchgrasses. Studies have shown that, through limited use of prescribed fire, the abundance of woody plants can be reduced and the ecological balance can be shifted back toward native grasses in some areas. It has not been determined whether the native grassland habitat and associated wildlife can be restored over the extensive area that it once dominated.

The grassland fauna includes mammals, birds, reptiles, and amphibians. Several grassland-dependent birds, including savannah sparrow, Botteri's sparrow, and grasshopper sparrow, inhabit only areas with a dense cover of native bunchgrasses. The reptiles that inhabit principally grassland habitat include bunchgrass lizard, western pygmy rattlesnake, hog-nosed snake, western hook-nosed snake, and western box turtle. A variety of small mammals, including yellow-nosed cotton rat, pygmy mouse, and western grasshopper mouse, hide among the bunchgrasses.

Native Fishes and Other Aquatic Species

The animals that depend on perennial surface water in this survey area include native fish of the Gila River and the Rio Yaqui and a number of amphibians and reptiles. Aquatic species as a group are probably the most imperiled of any comparable habitat-dependent assemblage of wildlife in the Southwest. Declines in perennial surface water have occurred in many southern Arizona streams because of the water pumping and diversion associated with urban and rural development. These declines have reduced the extent of the habitat for native fish, amphibians, and reptiles.

Native fish, frogs, and some semiaquatic reptiles are threatened by introduced predators, particularly game fish and bullfrogs. Introduced game fish, such as bass, bluegill, and catfish, are in virtually all of the major streams in Arizona. What makes these fish appealing for sport fishing is exactly what makes them a threat to the native aquatic fauna: they are aggressive predators. Because they did not evolve with these predators, the native fish appear to have no defense or escape behavior. As a result, their population quickly declines when the exotics are introduced. The typical pattern that has developed along major streams is that introduced predatory fish have come to dominate the main channels, often completely excluding the native fish, which now usually inhabit only small tributary streams. In Cochise County this pattern is evident along the San Pedro River, the Babocómari River, and some of the smaller streams.

Fortunately, native fish have persisted in tributaries that have steeper gradients and less deep-pool habitat than the big rivers and streams. The introduced predators generally inhabit quiet pools. When occasional floods wash through these canyon streams, many of the exotics are washed out, whereas

the native fish are able to hold their own against the turbulent flows and even migrate upstream during high flows.

Migratory Birds

The wildlife of Cochise County is probably best known across the country for its migratory birds. Many bird species that come to southeastern Arizona to breed in summer can be seen nowhere else in the United States. Birdwatchers from all over the country tally sightings of the migratory species nesting along the streams and in the mountain canyons in the survey area.

Several bird families are much better represented than others among these neotropical migrants. For example, there are many flycatchers in this group, such as vermillion flycatcher, buff-breasted flycatcher, thick-billed kingbird, tropical kingbird, rose-throated becard, lesser tyrannulet, and others that occur more irregularly. Hummingbirds also are well represented. The foothill canyons are inhabited by as many as 14 hummingbird species, including Lucifer, white-eared, magnificent, Rivoli's, and violet-crowned hummingbirds and, occasionally, the blue-throated hummingbird.

Migratory birds of prey are among the most sought after of the summer visitors. Several of these, including greater black hawk, zone-tail hawk, gray hawk, and white-tailed kite, nest in cottonwood-willow forests along the larger streams. The Aplomado falcon is occasionally spotted in areas of open grassland. As grassland restoration progresses, perhaps this rare raptor will return in more significant numbers to southeastern Arizona.

A few of the migratory birds are reminders of how close the survey area is to tropical habitats in Mexico. Examples are the elegant and eared trogons, which nest in tree hollows, frequently using sycamores that are prone to heart rot. At one time thick-billed parrots, which feed on pine nuts, were common in the mountains. They are still evident in the mountains of Sonora, Mexico, close to the border.

Engineering

This section provides information for planning land uses related to urban development. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, and construction materials. The ratings are based on observed performance of the soils and on the estimated 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. Tables 10A and 10B show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, shallow excavations, and lawns and landscaping.

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

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

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

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

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

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

of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

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

Sanitary Facilities

Tables 11A and 11B show the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, sanitary landfills, and daily cover for landfill. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the 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

Tables 12A and 12B give information about the soils as potential sources of gravel, sand, topsoil, reclamation material, and roadfill. Normal compaction, minor processing, and other standard construction practices are assumed.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 12A, 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 as *good, fair,* or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a

source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

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

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

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

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

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

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Soil Properties

Data relating to soil properties are collected during the course of the soil survey.

Soil properties are ascertained by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. 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 index properties, physical and chemical properties, and pertinent soil and water features.

Engineering Index Properties

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

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

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 1998) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1998).

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

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

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

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

The estimates of particle-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2

percentage points) across classification boundaries, the classification in the marginal zone is generally omitted in the table.

Physical Properties

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

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

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

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

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$- or $^1/_{10}$-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (K_{sat}) refers to the ability of a soil to transmit water or air. The term “permeability,” as used in soil surveys, indicates saturated hydraulic conductivity (K_{sat}). The estimates in the table indicate the rate of water movement, in inches per hour, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

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

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

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 14, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in table 14 as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of several factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt,

sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

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

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

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

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

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

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

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

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

Chemical Properties

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

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

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

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 at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and

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

Soil Features

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

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. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

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

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

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

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

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

Water Features

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

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface,

and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

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

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

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). *Common* is used when the occasional and frequent classes are grouped for certain purposes.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

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

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1998 and 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 18 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

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

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 Argid (*Arg*, meaning argillic horizon, plus *id*, from Aridisol).

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 Haplargids (*Hapl*, meaning minimal horizonation, plus *argid*, the suborder of the Aridisols that has an argillic horizon).

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

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, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, superactive, thermic Ustic Haplargids.

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.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” (Soil Survey Staff, 1999) and in “Keys to Soil Taxonomy” (Soil Survey Staff, 1998). Unless otherwise stated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

Altar Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Landform: alluvial fans
Parent material: mixed fan alluvium

Slope range: 0 to 8 percent
Elevation: 4,200 to 5,000 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Ustic Haplocambids

Typical Pedon

Altar sandy loam, in an area of Altar-Mallet complex, 0 to 8 percent slopes, at a latitude of 31 degrees, 47 minutes, 5 seconds north and a longitude of 109 degrees, 5 minutes, 45 seconds west; 2,500 feet west and 1,000 feet south of the northeast corner of sec. 17, T. 19 S., R. 32 E.

About 10 to 30 percent of the surface is covered with gravel and cobbles.

A—0 to 1 inch; brown (7.5YR 5/3) sandy loam, very dark grayish brown (7.5YR 3/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine irregular pores; 5 percent gravel; noneffervescent; slightly acid (pH 6.2); abrupt smooth boundary.

Bw1—1 to 10 inches; brown (7.5YR 4/3) sandy loam, very dark brown (7.5YR 2.5/2) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; common very fine and fine roots; few fine tubular pores; noneffervescent; neutral (pH 6.6); abrupt wavy boundary.

Bw2—10 to 25 inches; dark brown (7.5YR 3/3) very gravelly sandy loam, very dark brown (7.5YR 2.5/2) moist; weak fine and medium subangular blocky structure; soft, friable, nonsticky and nonplastic; many very fine and fine and few medium roots; few fine irregular pores; 40 percent gravel and 5 percent cobbles; noneffervescent; neutral (pH 7.0); abrupt wavy boundary.

C1—25 to 40 inches; light brown (7.5YR 4/3) very cobbly sandy loam, very dark brown (7.5YR 2.5/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; few fine irregular pores; 25 percent gravel and 25 percent cobbles; noneffervescent; neutral (pH 7.0); abrupt wavy boundary.

C2—40 to 60 inches; brown (7.5YR 5/3) extremely cobbly coarse sand, brown (7.5YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; few fine irregular pores; 30 percent gravel and 40 percent cobbles; noneffervescent; neutral (pH 6.8).

Range in Characteristics

Content of rock fragments: 40 to 75 percent gravel and cobbles

Content of clay: 10 to 20 percent in the control section

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, loamy sand
Reaction—slightly acid or neutral

Bw horizon:
Hue—10YR, 7.5YR
Value—2 to 5 dry or moist
Chroma—2 or 3 dry or moist
Texture—sandy loam, loam
Reaction—slightly acid or neutral

C horizon:
Hue—10YR, 7.5YR
Value—2 to 5 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, coarse sand, sand
Reaction—neutral or slightly alkaline

Andrada Series

Depth class: very deep
Drainage class: well drained
Permeability: moderate
Landform: hills
Parent material: slope alluvium and residuum derived from calcareous bedrock
Slope range: 3 to 20 percent
Elevation: 4,000 to 5,400 feet

Classification: Loamy-skeletal over fragmental, mixed, superactive, thermic Ustic Haplocalcids

Typical Pedon

Andrada gravelly sandy loam, in an area of Brunkcow-Chiricahua-Andrada complex, 3 to 20 percent slopes, at a latitude of 31 degrees, 39 minutes, 15 seconds north and a longitude of 110 degrees, 08 minutes, 40 seconds west; about 800 feet north and 1,400 feet east of the southwest corner of sec. 25, T. 20 S., R. 21 E.

About 60 to 80 percent of the surface is covered with gravel.

A—0 to 1 inch; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few fine vesicular pores; 25 percent gravel; strongly effervescent; 17 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt smooth boundary.

Bk1—1 to 6 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few fine tubular pores; common distinct calcium carbonate coatings on rock fragments; 20 percent gravel; violently effervescent; 24 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bk2—6 to 19 inches; grayish brown (10YR 5/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, slightly sticky and moderately plastic; many fine and common medium roots; many distinct calcium carbonate coatings on rock fragments; 50 percent gravel; violently effervescent; 21 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt smooth boundary.

C—19 to 60 inches; fragmental, highly fractured, calcareous diorite.

Range in Characteristics

Content of rock fragments: ranges from 20 to 60 percent gravel; averages more than 35 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: 5 to 25 percent
Content of organic matter: 1 to 2 percent
Calcium carbonate equivalent: 10 to 30 percent
Depth to fragmental material: 6 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, fine sandy loam

Bk horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry or moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, loam, fine sandy loam

Anthony Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Landform: alluvial fans
Parent material: mixed alluvium
Slope range: 0 to 5 percent
Elevation: 3,600 to 3,800 feet
Classification: Coarse-loamy, mixed, superactive, calcareous, thermic Typic Torrifluvents

Typical Pedon

Anthony sandy loam, in an area of Anthony-Maricopa complex, 0 to 5 percent slopes, at a latitude of 31 degrees, 52 minutes, 39 seconds north and a longitude of 110 degrees, 12 minutes, 27 seconds west; about 800 feet north and 2,000 feet east of the southwest corner of sec. 9, T. 18 S., R. 21 E.

C1—0 to 15 inches; brown (7.5YR 4/3) sandy loam, dark brown (7.5YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; few fine irregular pores; 3 percent gravel; noneffervescent; slightly alkaline (pH 7.6); clear smooth boundary.

C2—15 to 40 inches; brown (7.5YR 5/3) sandy loam, brown (7.5YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; few fine irregular pores; 3 to 5 percent gravel; strongly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

C3—40 to 60 inches; brown (7.5YR 5/4) sandy loam, brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; few fine irregular pores; few faint calcium carbonate coatings on rock fragments; 5 percent gravel; slightly effervescent; slightly alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: less than 15 percent in the control section
Reaction: neutral or slightly alkaline
Content of clay: 5 to 15 percent

C horizon:
Hue—10YR, 7.5YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—sandy loam, loamy sand

Arizo Family

Depth class: very deep
Drainage class: excessively drained
Permeability: very rapid
Landform: alluvial fans and flood plains
Parent material: mixed alluvium
Slope range: 0 to 3 percent
Elevation: 3,700 to 4,100 feet

Classification: Sandy-skeletal, mixed, thermic Typic Torriorthents

Typical Pedon

Arizo family very cobbly sand, in an area of Arizo family-Riverwash complex, 0 to 3 percent slopes, at a latitude of 31 degrees, 52 minutes, 01 second north and a longitude of 110 degrees, 15 minutes, 20 seconds west; about 2,640 feet east and 50 feet north of the southwest corner of sec. 13, T. 18 S., R. 19 E.

About 20 to 45 percent of the surface is covered with gravel and cobbles.

C1—0 to 4 inches; yellowish brown (10YR 5/4) very cobbly sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; many very fine roots; many very fine irregular pores; 20 percent cobbles and 20 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

C2—4 to 12 inches; light yellowish brown (10YR 6/4) gravelly coarse sand, dark yellowish brown (10YR 4/4) moist; massive; loose, nonsticky and nonplastic; many very fine and few fine roots; many fine irregular pores; 30 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

C3—12 to 26 inches; brown (7.5YR 5/4) extremely cobbly coarse sand, brown (7.5YR 5/4) moist; massive; loose, nonsticky and nonplastic; few very fine and fine roots; many fine irregular pores; 40 percent cobbles and 30 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Ck—26 to 60 inches; brown (7.5YR 5/4) gravelly loamy coarse sand, brown or dark brown (7.5YR 4/4) moist; massive; loose, nonsticky and nonplastic; common very fine roots; few fine tubular pores; few fine calcium carbonate filaments; 25 percent gravel; strongly effervescent; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: averages more than 35 percent in the control section
Reaction: slightly alkaline or moderately alkaline
Content of clay: 1 to 10 percent
Calcium carbonate equivalent: 0 to 3 percent
Content of gypsum: 0 to 1 percent

C horizon:
Hue—10YR, 7.5YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—coarse sand, loamy coarse sand, sand, loamy sand, sandy loam

Ashcreek Series

Depth class: very deep
Drainage class: well drained
Permeability: very slow
Landform: alluvial fans and inset fans
Parent material: mixed alluvium
Slope range: 0 to 10 percent
Elevation: 4,600 to 6,200 feet

Classification: Fine, smectitic, thermic Torrertic Haplustolls

Typical Pedon

Ashcreek clay, in an area of Ashcreek-Stanford complex, 0 to 10 percent slopes, at a latitude of 33 degrees, 42 minutes, 20 seconds north and a longitude of 109 degrees, 28 minutes, 40 seconds west; about 2,200 feet north and 200 feet west of the southeast corner of sec. 9, T. 20 S., R. 28 E.

A—0 to 6 inches; dark brown (7.5YR 3/2) clay, very dark brown (7.5YR 2.5/2) moist; moderate very fine and fine subangular blocky structure parting to weak fine granular; hard, very friable, very sticky and very plastic; many very fine and fine roots; many very fine tubular pores; noneffervescent; neutral (pH 6.8); clear smooth boundary.

Bw1—6 to 36 inches; dark brown (7.5YR 3/2) clay, black (7.5YR 2.5/1) moist; strong medium and coarse wedges parting to strong fine and medium angular blocky structure; hard, very friable, very sticky and very plastic; common very fine and fine roots; many very fine tubular pores; many distinct pressure faces; noneffervescent; neutral (pH 6.8); abrupt wavy boundary.

Bw2—36 to 52 inches; dark brown (7.5YR 3/2) cobbly clay, dark brown (7.5YR 3/2) moist; moderate fine and medium wedges parting to moderate fine and medium angular blocky structure; hard, very friable, very sticky and very plastic; few very fine and fine roots; many fine irregular pores; many distinct pressure faces; 5 percent gravel and 15 percent cobbles; noneffervescent; neutral (pH 7.0); abrupt wavy boundary.

2Btb—52 to 60 inches; reddish brown (5YR 4/3) clay, dark reddish brown (5YR 3/4) moist; strong fine and medium subangular blocky structure; hard, very friable, very sticky and very plastic; few very fine and fine roots; many very fine tubular pores;

many distinct clay films on rock fragments and on faces of peds; common organic coatings on faces of peds; 10 percent gravel; noneffervescent; neutral (pH 7.2).

Range in Characteristics

Content of rock fragments: less than 25 percent gravel and cobbles
Soil cracking: many vertical cracks 0.5 inch to 2 inches wide; extending from the surface to a depth of 36 inches or more
Reaction: slightly acid or neutral
Content of clay: more than 35 percent in the control section
Content of organic matter: 1 to 3 percent

A horizon:
Hue—7.5YR, 5YR
Value—3 or 4 dry, 2.5 or 3 moist
Chroma—1 to 3 dry or moist
Texture—clay

Bw horizon:
Hue—7.5YR, 5YR
Value—3 or 4 dry, 2.5 to 4 moist
Chroma—1 to 3 dry or moist
Texture—clay

2Btb horizon:
Hue—7.5YR, 5YR
Value—3 or 4 dry or moist
Chroma—2 to 4 dry or moist
Texture—clay

Baboquivari Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: fan terraces and stream terraces
Parent material: mixed fan alluvium
Slope range: 1 to 3 percent
Elevation: 4,000 to 5,000 feet

Classification: Fine-loamy, mixed, superactive, thermic Ustic Haplargids

Typical Pedon

Baboquivari sandy loam, in an area of Baboquivari-Combate complex, 0 to 3 percent slopes, at a latitude of 31 degrees, 43 minutes, 30 seconds north and a longitude of 110 degrees, 00 minutes, 55 seconds west; about 1,800 feet south and 900 feet west of the northeast corner of sec. 5, T. 20 S., R. 23 E.

A—0 to 1 inch; brown (7.5YR 5/3) sandy loam, dark brown (7.5YR 3/3) moist; moderate thin platy structure; loose, very friable, nonsticky and nonplastic; few fine roots; common very fine and fine tubular pores; 10 percent gravel; noneffervescent; neutral (pH 6.8); abrupt smooth boundary.

Bt1—1 to 4 inches; brown (7.5YR 5/2) loam, dark brown (7.5YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and moderately plastic; common very fine and fine roots; common very fine and fine tubular pores; 10 percent gravel; common prominent clay films on faces of peds, coating sand grains, and on pebbles; common prominent organic coatings on sand grains and pebbles; noneffervescent; neutral (pH 7.0); abrupt smooth boundary.

Bt2—4 to 24 inches; reddish brown (5YR 4/3) sandy clay loam, dark reddish brown (5YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common fine roots; common very fine and fine tubular pores; 10 percent gravel; common distinct clay films on pebbles, on faces of peds, and in pores; common distinct organic coatings on sand grains and pebbles; noneffervescent; slightly alkaline (pH 7.4); clear smooth boundary.

C1—24 to 34 inches; brown (7.5YR 5/3) sandy loam, brown or dark brown (7.5YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common fine roots; common fine irregular and tubular pores; noneffervescent; slightly alkaline (pH 7.4); clear smooth boundary.

C2—34 to 43 inches; brown (7.5YR 5/4) gravelly loamy sand, dark brown (7.5YR 3/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common fine roots; common fine irregular pores; 18 percent gravel; noneffervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

C3—43 to 60 inches; brown (7.5YR 5/3) coarse sandy loam, brown or dark brown (7.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and moderately plastic; few fine roots; common very fine and fine tubular pores; slightly effervescent; slightly alkaline (pH 7.8).

Range in Characteristics

Reaction: neutral or slightly alkaline
Content of clay: 20 to 30 percent in the control section
Content of organic matter: 1 to 2 percent
Depth to calcium carbonate: more than 40 inches
Other features: in some pedons, a buried Btk horizon

A horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, loamy sand, coarse sandy loam

Bt horizon:
Hue—7.5YR, 5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—loam, sandy clay loam
Content of rock fragments—5 to 15 percent

C horizon:
Hue—7.5YR, 5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, loamy sand, coarse sandy loam, loam
Content of rock fragments—0 to 35 percent gravel
Calcium carbonate equivalent—0 to 10 percent

Banshee Series

Depth class: very deep
Drainage class: moderately well drained
Permeability: slow
Landform: alluvial fans
Parent material: mixed alluvium (derived from prehistoric lakes and marshes) and fan alluvium
Slope range: 0 to 5 percent
Elevation: 3,900 to 4,400 feet

Classification: Fine, mixed, active, thermic Vertic Paleargids

Typical Pedon

Banshee sandy loam, in an area of Banshee complex, 0 to 5 percent slopes, at a latitude of 31 degrees, 49 minutes, 10 seconds north and a longitude of 109 degrees, 05 minutes, 05 seconds west; about 1,800 feet east and 800 feet north of the southwest corner of sec. 28, T. 18 S., R. 32 E.

About 0 to 10 percent of the surface is covered with gravel and cobbles.

A/C—0 to 3 inches; pinkish gray (7.5YR 6/2) sandy loam, brown (7.5YR 5/2) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; many fine roots; common fine irregular pores; 10 percent gravel; noneffervescent; neutral (pH 7.0); abrupt smooth boundary.

Bt—3 to 19 inches; very dark grayish brown (10YR 3/2) clay, very dark grayish brown (10YR 3/2) moist; strong medium prismatic structure parting to strong fine and medium angular blocky; hard, firm, very sticky and very plastic; common very fine and fine roots; few fine tubular pores; common distinct clay films on faces of peds; common pressure faces; noneffervescent to slightly effervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.

Btk—19 to 26 inches; grayish brown (10YR 5/2) clay, grayish brown (10YR 5/2) moist; moderate fine subangular blocky structure; soft, very friable, very sticky and very plastic; common fine and medium roots; common fine tubular pores; common distinct clay films on faces of peds and on rock fragments; many calcium carbonate coatings on faces of peds and on rock fragments; common calcium carbonate filaments; 5 percent gravel; slightly effervescent or strongly effervescent; slightly alkaline (pH 7.8); clear wavy boundary.

2Bkyg—26 to 42 inches; light brownish gray (10YR 6/2) clay, light brownish gray (10YR 6/2) moist; strong medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; few very fine roots; common medium tubular pores; common distinct organic coatings on faces of peds; many fine soft calcium carbonate and gypsum masses; noneffervescent to slightly effervescent; slightly alkaline (pH 7.7); abrupt wavy boundary.

3Cg—42 to 60 inches; white (10YR 8/1) cobbly fine sandy loam, light gray (10YR 7/2) moist; massive; soft and slightly hard, friable, nonsticky and nonplastic; common fine and medium tubular pores; common hard brownish yellow (10YR 6/6 and 6/8) iron masses; 10 percent gravel and 20 percent cobbles; noneffervescent; slightly alkaline (pH 7.6).

Range in Characteristics

Soil cracking: many vertical cracks 0.12 to 1.50 inch wide; extending from the surface to a depth of 20 inches or more
Reaction: neutral to moderately alkaline
Content of clay: 35 to 60 percent in the control section
Content of organic matter: 1 to 2 percent

A/C horizon:
Hue—10YR, 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist
Texture—sandy loam, very fine sandy loam, fine sandy loam, loam

Bt horizon:
Hue—10YR, 7.5YR

Value—3 or 4 dry or moist
Chroma—1 to 3 dry or moist
Texture—clay

Btk horizon:
Hue—10YR, 7.5YR
Value—5 or 6 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—clay, clay loam (more than 35 percent clay)
Calcium carbonate equivalent—5 to 15 percent

2Bkyg horizon:
Hue—2.5Y, 10YR
Value—5 or 6 dry or moist
Chroma—2 or 3 dry or moist
Texture—clay, clay loam
Calcium carbonate equivalent—1 to 10 percent
Content of gypsum—0 to 4 percent
Salinity—none or slight (EC of 0 to 8 dS/m)
Sodicity—none or slight (SAR of 0 to 13)

3Cg horizon:
Hue—7.5Y, 10YR
Value—5 to 8 dry, 5 to 7 moist
Chroma—1 to 6 dry, 2 or 3 moist
Texture—sandy loam, fine sandy loam, sand
Content of rock fragments—5 to 40 percent gravel and/or cobbles
Content of gypsum—0 to 4 percent
Salinity—none or slight (EC of 0 to 8 dS/m)
Sodicity—none or slight (SAR of 0 to 13)

Bella Series

Depth class: shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid above the hardpan and moderately slow below the hardpan
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 1 to 10 percent
Elevation: 4,100 to 4,600 feet

Classification: Loamy, mixed, superactive, thermic, shallow Calcic Petrocalcids

Typical Pedon

Bella fine sandy loam, 1 to 10 percent slopes, at a latitude of 31 degrees, 44 minutes, 12 seconds north and a longitude of 110 degrees, 17 minutes, 20 seconds west; about 2,300 feet north and 2,100 feet east of the southwest corner of sec. 34, T. 19 S., R. 20 E.

A—0 to 1 inch; brown (7.5YR 4/3) fine sandy loam, dark brown (7.5YR 3/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine roots; few fine irregular pores; 3 percent gravel; strongly effervescent; 6 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); clear smooth boundary.

Bw—1 to 10 inches; brown (7.5YR 4/3) loam, dark brown (7.5YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine and few medium roots; many fine irregular and tubular pores; 5 percent gravel; violently effervescent; 7 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bk—10 to 15 inches; brown (7.5YR 4/4) gravelly fine sandy loam, dark brown (7.5YR 3/4) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and few medium roots; few fine irregular pores; 30 percent hardpan fragments; violently effervescent; 15 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bkym—15 to 25 inches; fractured hardpan; indurated with a 0.25-inch-thick laminar cap; cemented with calcium carbonate and gypsum; common very fine roots in fractures; abrupt wavy boundary.

Bkyc—25 to 45 inches; light brown (7.5YR 6/4) gravelly loam, brown (7.5YR 5/4) moist; massive; soft, very friable, moderately sticky and moderately plastic; few very fine and fine roots; few fine tubular pores; common fine soft calcium carbonate and gypsum masses; 20 percent petronodes and hardpan fragments; violently effervescent; 45 percent calcium carbonate equivalent and 5 percent gypsum; moderately alkaline (pH 8.0); abrupt wavy boundary.

2Btky—45 to 60 inches; reddish brown (5YR 4/4) sandy clay loam, reddish brown (5YR 5/4) moist; moderate fine angular blocky structure; slightly hard, firm, moderately sticky and moderately plastic; few fine tubular pores; common distinct clay films on faces of peds and in pores; many distinct calcium carbonate coatings on faces of peds; common fine soft calcium carbonate and gypsum masses; 10 percent petronodes; violently effervescent; 15 percent calcium carbonate equivalent and 10 percent gypsum; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: 0 to 20 percent gravel, hardpan fragments, and/or petronodes
Reaction: slightly alkaline or moderately alkaline

Content of clay: less than 18 percent in the control section
Depth to a calcic horizon: 1 to 4 inches
Depth to a petrocalcic horizon: 10 to 20 inches
Thickness of the petrocalcic horizon: 5 to 15 inches

A horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry or moist
Chroma—3 to 6 dry or moist
Texture—fine sandy loam, sandy loam, loam
Calcium carbonate equivalent—3 to 10 percent

Bw and Bk horizons:
Hue—7.5YR, 10YR
Value—3 to 5 dry or moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, fine sandy loam, loam
Calcium carbonate equivalent—5 to 20 percent

Bkyc horizon:
Hue—5YR, 7.5YR
Value—5 to 8 dry or moist
Chroma—3 to 6 dry or moist
Texture—sandy clay loam, loam (20 to 35 percent clay)
Calcium carbonate equivalent—15 to 55 percent
Content of gypsum—2 to 10 percent

2Btky horizon:
Hue—5YR, 7.5YR
Value—5 to 8 dry or moist
Chroma—1 to 6 dry or moist
Texture—sandy loam, sandy clay loam, loam (20 to 35 percent clay)
Content of rock fragments—more than 35 percent gravel and/or cobbles in some pedons
Calcium carbonate equivalent—10 to 20 percent
Content of gypsum—5 to 15 percent

Bernardino Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 10 to 30 percent
Elevation: 4,500 to 5,200 feet

Classification: Fine, mixed, superactive, thermic Ustic Calciargids

Typical Pedon

Bernardino very gravelly fine sandy loam, in an area of Stronghold-Bernardino complex, 10 to 30 percent slopes, at a latitude of 31 degrees, 40 minutes, 56 seconds north and a longitude of 109 degrees, 57 minutes, 25 seconds west; 1,390 feet north and 710 feet east of the southwest corner of sec. 25, T. 19 S., R. 23 E.

About 45 to 55 percent of the surface is covered with gravel.

A—0 to 2 inches; dark grayish brown (10YR 4/2) very gravelly fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few fine roots; few fine irregular pores; 49 percent gravel; noneffervescent; neutral (pH 6.8); abrupt smooth boundary.

Bt—2 to 7 inches; dark reddish brown (5YR 3/2) clay loam, dark reddish brown (5YR 2.5/2) moist; moderate fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; many distinct clay films on rock fragments and on faces of peds; 10 percent gravel; noneffervescent; neutral (pH 7.2); clear smooth boundary.

Btk1—7 to 15 inches; reddish brown (5YR 4/4) clay, dark reddish brown (5YR 3/4) moist; moderate fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine and few medium roots; few fine tubular pores; many distinct clay films on pebbles and on faces of peds; 10 percent gravel; strongly effervescent; neutral (pH 6.8); abrupt smooth boundary.

Btk2—15 to 18 inches; brown (7.5YR 5/3) gravelly clay loam, brown (7.5YR 4/3) moist; weak fine subangular blocky structure; soft, friable, moderately sticky and moderately plastic; common very fine and fine and few medium roots; few fine tubular pores; many distinct calcium carbonate coatings on pebbles and on faces of peds; 30 percent gravel; violently effervescent; 36 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt wavy boundary.

2Bk1—18 to 48 inches; 70 percent pinkish gray (7.5YR 7/2) and 30 percent light brown (7.5YR 6/3) gravelly sandy loam, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common fine irregular and tubular pores; many distinct calcium carbonate coatings on pebbles; 30 percent gravel; violently effervescent; 32 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear wavy boundary.

2Bk2—48 to 60 inches; pinkish white (7.5YR 8/2) and

light brown (7.5YR 6/3) gravelly loamy sand, pinkish gray (7.5YR 7/2) and brown (7.5YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few fine irregular and tubular pores; many distinct calcium carbonate coatings on pebbles; 33 percent gravel; violently effervescent; 10 percent calcium carbonate equivalent; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: less than 35 percent
Reaction: neutral to moderately alkaline
Depth to a calcic horizon: 5 to 20 inches
Content of clay: more than 35 percent in the control section
Calcium carbonate equivalent: ranges from 5 to 40 percent; averages 15 to 40 percent
Content of organic matter: 1 to 2 percent

A horizon:
Hue—10YR, 7.5YR
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—fine sandy loam, sandy loam, loam

Bt horizon:
Hue—5YR, 7.5YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, clay

2Bk horizon:
Hue—7.5YR, 10YR
Value—5 to 8 dry, 4 to 7 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, loamy sand, clay loam

Blacktail Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: fan terraces and pediments
Parent material: mixed fan alluvium
Slope range: 1 to 40 percent
Elevation: 4,600 to 6,200 feet

Classification: Fine, mixed, superactive, thermic Calcidic Argiustolls

Typical Pedon

Blacktail gravelly loam, in an unsectioned area of Terrarossa-Blacktail-Pyeatt complex, 1 to 40 percent slopes, at a latitude of 31 degrees, 34 minutes, 25 seconds north and a longitude of 110 degrees, 26 minutes, 30 seconds west.

A—0 to 3 inches; dark brown (7.5YR 3/2) gravelly loam, dark reddish brown (5YR 3/2) moist; weak fine granular structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine irregular pores; 20 percent gravel; very slightly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bt—3 to 7 inches; dark reddish brown (5YR 3/2) clay loam, dusky red (2.5YR 3/2) moist; moderate fine subangular blocky structure; soft, friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine irregular pores; common distinct clay films on faces of peds and in pores; 5 percent gravel; very slightly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Btk1—7 to 17 inches; dark reddish brown (5YR 3/4) clay, dark reddish brown (5YR 3/3) moist; moderate medium prismatic structure parting to strong medium angular blocky; extremely hard, very firm, very sticky and very plastic; common very fine and fine roots; common fine irregular pores; many distinct clay films on faces of peds and in pores and few patchy organic coatings on faces of peds; few fine filaments and few fine irregular soft masses of calcium carbonate; 5 percent gravel; strongly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

Btk2—17 to 23 inches; brown (7.5YR 5/4) clay loam, brown or dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common fine and medium roots; common very fine and fine irregular pores; very few distinct clay films on faces of peds; common coarse irregular soft masses of calcium carbonate; 10 percent gravel; violently effervescent; 28 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear wavy boundary.

Btk3—23 to 32 inches; pinkish white (7.5YR 8/2) sandy loam, pink (7.5YR 7/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many distinct clay films on rock fragments; 10 percent gravel; violently effervescent; 60 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); clear wavy boundary.

2Bk—32 to 60 inches; pink (7.5YR 7/4) and light brown (7.5YR 6/4) gravelly sandy loam, light brown (7.5YR 6/4) and brown (7.5YR 5/4) moist; massive; soft, very friable, slightly sticky and

moderately plastic; few very fine and fine roots; many distinct calcium carbonate coatings on rock fragments; strongly weathered limestone and conglomerate; 30 percent gravel; violently effervescent; 42 percent calcium carbonate equivalent; moderately alkaline (pH 8.4).

Range in Characteristics

Content of rock fragments: averages less than 35 percent, but can range to 50 percent in any one horizon
Reaction: slightly acid to moderately alkaline
Content of clay: more than 35 percent
Content of organic matter: 1 to 2 percent
Depth to a calcic horizon: 15 to 30 inches

A horizon:
Hue—7.5YR, 5YR, N
Value—3 or 4 dry, 2 or 3 moist
Chroma—0 to 4 dry or moist
Texture—sandy loam, loam, fine sandy loam

Bt horizon:
Hue—7.5YR, 5YR, 2.5YR
Value—3 or 4 dry, 3 moist
Chroma—2 to 4 dry, 0 to 4 moist
Texture—clay loam, clay, sandy clay

Btk horizon:
Hue—5YR, 7.5YR
Value—3 to 8 dry or moist
Chroma—2 to 6 dry or moist
Texture—clay, clay loam, sandy clay loam
Calcium carbonate equivalent—15 to 60 percent

2Bk horizon:
Value—5 to 8 dry, 4 to 7 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, coarse sand
Calcium carbonate equivalent—30 to 45 percent

Blakeney Series

Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 3 to 15 percent
Elevation: 3,900 to 4,600 feet

Classification: Loamy, mixed, superactive, thermic, shallow Ustic Petrocalcids

Typical Pedon

Blakeney fine sandy loam, in an area of Blakeney-Luckyhills complex, 3 to 15 percent slopes, at a latitude of 31 degrees, 35 minutes, 15 seconds north and a longitude of 110 degrees, 03 minutes, 30 seconds west; about 1,250 feet north and 1,650 feet west of the southeast corner of sec. 24, T. 21 S., R. 22 E.

A—0 to 11 inches; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; common very fine and fine irregular pores; 10 percent gravel; strongly effervescent; 12 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt wavy boundary.

Bkm—11 to 18 inches; highly fractured, petrocalcic material; strongly cemented with calcium carbonate; thin laminar capping; roots penetrating to cracks; abrupt wavy boundary.

2Bk—18 to 41 inches; pinkish white (7.5YR 8/2) fine sandy loam, light brown (7.5YR 6/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine and fine irregular pores; many soft and hard calcium carbonate masses; many fine calcium carbonate filaments; violently effervescent; 36 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt smooth boundary.

2Btkb—41 to 60 inches; light brown (7.5YR 6/4) and white (7.5YR 8/1) loam, brown (7.5YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine and fine irregular and tubular pores; many soft calcium carbonate masses; common calcium carbonate coatings on faces of peds; common distinct clay films on faces of peds and in pores; violently effervescent; 74 percent calcium carbonate equivalent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: 0 to 20 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: 8 to 18 percent
Depth to a petrocalcic horizon: 6 to 20 inches

A horizon:
Hue—7.5YR, 10YR
Value—4 or 5 dry, 3 to 5 moist

Chroma—3 to 6 dry, 3 or 4 moist
Texture—fine sandy loam, sandy loam
Calcium carbonate equivalent—5 to 20 percent

Bkm horizon:
Highly fractured; strongly cemented with calcium carbonate

2Bk horizon:
Hue—7.5YR, 10YR
Value—6 to 8 dry or moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam, sandy loam
Calcium carbonate equivalent—20 to 40 percent

2Btkb horizon:
Hue—7.5YR, 10YR
Value—5 to 8 dry or moist
Chroma—1 to 4 dry or moist
Texture—sandy loam, loam
Calcium carbonate equivalent—40 to 80 percent

Bodecker Series

Depth class: very deep
Drainage class: excessively drained
Permeability: rapid or very rapid
Landform: flood plains and alluvial fans
Parent material: mixed stream alluvium
Slope range: 0 to 5 percent
Elevation: 4,000 to 5,200 feet

Classification: Sandy-skeletal, mixed, thermic Ustic Torriorthents

Typical Pedon

Bodecker very gravelly sandy loam, 0 to 2 percent slopes, at a latitude of 31 degrees, 41 minutes, 50 seconds north and a longitude of 109 degrees, 39 minutes, 50 seconds west; about 1,900 feet east and 1,700 feet south of the northwest corner of sec. 14, T. 20 S., R. 26 E.

Ap1—0 to 1 inch; brown (7.5YR 5/3) very gravelly sandy loam, brown (7.5YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; many fine roots; many fine irregular pores; 65 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Ap2—1 to 14 inches; brown (7.5YR 5/4) very gravelly sandy loam, brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine roots; many fine irregular pores; 55 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

C1—14 to 52 inches; pale brown (10YR 6/3) extremely gravelly sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common very fine roots; many fine irregular pores; 75 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

C2—52 to 60 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; slightly effervescent; slightly alkaline (pH 7.5).

Range in Characteristics

Content of rock fragments: averages more than 35 percent in the control section
Reaction: slightly alkaline or moderately alkaline
Content of clay: 3 to 10 percent

C horizon:
Hue—10YR, 7.5YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—loamy fine sand, sand, coarse sand, sandy loam

Bonita Series

Depth class: very deep
Drainage class: well drained
Permeability: very slow
Landform: flood plains and fan terraces
Parent material: mixed stream alluvium
Slope range: 0 to 8 percent
Elevation: 4,000 to 4,750 feet

Classification: Fine, smectitic, thermic Typic Haplotorrerts

Typical Pedon

Bonita silt loam, in an area of Forrest-Bonita complex, 0 to 3 percent slopes, at a latitude of 31 degrees, 41 minutes, 04 seconds north and a longitude of 109 degrees, 59 minutes, 18 seconds west; about 1,825 feet west and 950 feet south of the northeast corner of sec. 21, T. 20 S., R. 23 E.

C—0 to 2 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, very friable, nonsticky and moderately plastic; common very fine and fine roots; common fine irregular pores; noneffervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

Cy—2 to 5 inches; dark grayish brown (10YR 4/2) silty

clay loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common fine roots; few fine tubular pores; few fine gypsum crystals; noneffervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bssy—5 to 20 inches; dark brown (7.5YR 3/2) silty clay, black (7.5YR 2.5/1) moist; strong coarse angular blocky structure parting to moderate coarse wedges; hard, firm, very sticky and very plastic; common fine roots; few fine tubular pores; common pressure faces; common intersecting slickensides; few fine gypsum crystals; very slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.

2Btyb—20 to 40 inches; dark reddish gray (5YR 4/2) and reddish brown (5YR 5/4 and 4/4) clay, dark reddish brown (5YR 3/3) moist; strong medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; common distinct clay films on faces of peds and few distinct organic coatings on faces of peds and in pores; few fine and medium gypsum crystals; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

2Btkyb—40 to 60 inches; 80 percent reddish brown (5YR 5/4) and 20 percent pink (5YR 8/3) clay loam, 80 percent reddish brown (5YR 4/4) and 20 percent pink (5YR 7/3) moist; moderate medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; many distinct calcium carbonate coatings on faces of peds and in pores; common fine calcium carbonate filaments and few fine and medium gypsum crystals; violently effervescent; 6 percent calcium carbonate equivalent; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: less than 15 percent
Reaction: slightly alkaline or moderately alkaline
Depth to a buried horizon: 25 to 40 inches
Content of organic matter: 1 to 2 percent

C horizon:
Hue—7.5YR, 10YR, N
Value—3 to 5 dry, 2 or 3 moist
Chroma—0 to 3 dry or moist
Texture—silt loam, silty clay loam, silty clay, clay, loam
Calcium carbonate equivalent—0 to 5 percent
Content of gypsum—0 to 4 percent

B horizon:
Hue—5YR, 7.5YR
Value—3 to 5 dry, 2.5 to 4 moist
Chroma—2 to 4 dry, 1 to 4 moist
Texture—clay loam, clay
Calcium carbonate equivalent—5 to 10 percent
Content of gypsum—0 to 4 percent

Borderland Series

Depth class: very deep
Drainage class: well drained
Permeability: very slow
Landform: alluvial fans and relict seeps
Parent material: alluvium derived from basalt and volcanic rocks
Slope range: 1 to 10 percent
Elevation: 4,600 to 5,400 feet

Classification: Clayey over loamy, smectitic over mixed, superactive, thermic Aridic Calciusterts

Typical Pedon

Borderland sandy clay loam, 1 to 10 percent slopes, at a latitude of 31 degrees, 26 minutes, 16 seconds north and a longitude of 109 degrees, 05 minutes, 11 seconds west; about 1,500 feet west and 700 feet north of the southeast corner of sec. 9, T. 23 S., R. 32 E.

About 30 to 50 percent of the surface is covered with gravel and/or cobbles.

A—0 to 1 inch; brown (10YR 4/3) sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to weak fine granular; soft, very friable, moderately sticky and moderately plastic; many very fine and fine roots; many fine irregular pores; 5 percent gravel; noneffervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt—1 to 10 inches; brown (7.5YR 4/2) clay, dark brown (7.5YR 3/2) moist; strong fine and medium angular blocky structure; hard, firm, very sticky and very plastic; many very fine and fine roots; many fine irregular pores; many distinct clay films on faces of peds and on rock fragments; many distinct pressure faces; 5 percent gravel; noneffervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.

Btk—10 to 23 inches; brown (7.5YR 5/3) clay, brown (7.5YR 4/3) moist; strong medium wedges parting to moderate fine and medium angular blocky

structure; hard, firm, very sticky and very plastic; common very fine and few medium roots; common fine irregular and tubular pores; many distinct pressure faces; common distinct clay films on faces of peds; common distinct calcium carbonate coatings on faces of peds; common distinct organic coatings on faces of peds; violently effervescent; 13 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt smooth boundary.

2Bk—23 to 60 inches; brown (7.5YR 5/3) cobbly sandy loam, brown (7.5YR 4/3) moist; massive; very hard, firm, nonsticky and nonplastic; few very fine and fine roots; many fine irregular pores; many distinct calcium carbonate coatings on faces of peds and on rock fragments; few manganese coatings on faces of peds; common medium soft calcium carbonate masses; few fine calcium carbonate filaments; common soft calcium carbonate bands 0.12 to 0.50 inch wide; 20 percent cobbles; violently effervescent; 18 percent calcium carbonate equivalent; moderately alkaline (pH 8.0).

Range in Characteristics

Soil cracking: many vertical cracks 0.12 inch to 2.50 inches wide; extending from the surface to a depth of 17 inches or more
Reaction: neutral to moderately alkaline
Content of clay: 40 to 65 percent; averages less than 60 percent
Content of organic matter: 1 to 3 percent
Depth to a calcic horizon: 20 to 60 inches

A horizon:
Hue—10YR, 7.5YR
Value—2 to 5 dry or moist
Chroma—1 to 4 dry or moist
Texture—sandy clay loam, loam, clay loam

Bt horizon:
Hue—5YR, 7.5YR
Value—2.5 to 5 dry or moist
Chroma—1 to 4 dry or moist
Texture—clay, silty clay

Btk horizon:
Hue—5YR, 7.5YR
Value—3 to 6 dry or moist
Chroma—2 to 6 dry or moist
Texture—clay loam, clay
Calcium carbonate equivalent—5 to 15 percent

2Bk horizon:
Hue—7.5YR
Value—3 to 5 dry, 4 to 6 moist
Chroma—3 to 6 dry or moist
Texture—loam, sandy loam, loamy sand
Content of rock fragments—15 to 40 percent gravel and cobbles
Calcium carbonate equivalent—15 to 35 percent

Borderline Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 2 to 15 percent
Elevation: 3,800 to 4,100 feet

Classification: Coarse-loamy, mixed, superactive, thermic Typic Calcigypsids

Typical Pedon

Borderline fine sandy loam, 2 to 15 percent slopes, at a latitude of 31 degrees, 48 minutes, 54 seconds north and a longitude of 110 degrees, 15 minutes, 22 seconds west; about 2,650 feet east and 1,200 feet south of the northwest corner of sec. 1, T. 19 S., R. 20 E.

About 70 to 80 percent of the surface is covered with gravel.

A—0 to 2 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 4/4) moist; moderate thick platy structure; soft, very friable, nonsticky and slightly plastic; few fine roots; many fine vesicular pores; violently effervescent; 3 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bky1—2 to 18 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 5/4) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; many very fine and fine and few medium roots; common fine irregular and tubular pores; few fine distinct calcium carbonate and gypsum filaments; many fine soft calcium carbonate and gypsum masses; many distinct calcium carbonate and gypsum coatings on faces of peds and on rock fragments; many very fine gypsum crystals throughout; 10 percent gravel; violently effervescent; 28 percent calcium carbonate equivalent and 10 percent gypsum; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bky2—18 to 41 inches; 50 percent strong brown (7.5YR 5/6) and 50 percent light brown (7.5YR 6/4) sandy loam, brown (7.5YR 5/4) moist;

moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many fine and medium tubular pores; common fine calcium carbonate and gypsum filaments; many distinct calcium carbonate and gypsum coatings on faces of peds and on rock fragments; many very fine and fine gypsum crystals throughout and on faces of peds; common distinct organic coatings on faces of peds; 10 percent gravel; violently effervescent; 12 percent calcium carbonate equivalent and 10 percent gypsum; moderately alkaline (pH 8.0); clear smooth boundary.

Bk1—41 to 50 inches; brown (7.5YR 5/3) sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many fine and medium irregular and tubular pores; few distinct calcium carbonate coatings on rock fragments; few distinct organic coatings on seams; 5 percent gravel; violently effervescent; 16 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bk2—50 to 60 inches; brown (7.5YR 5/3) gravelly sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; few distinct calcium carbonate coatings on rock fragments; few distinct organic coatings on seams; 25 percent gravel; violently effervescent; 11 percent calcium carbonate equivalent; moderately alkaline (pH 8.0).

Range in Characteristics

Reaction: slightly alkaline or moderately alkaline
Content of clay: less than 18 percent in the control section
Depth to a calcic horizon: 2 to 20 inches
Depth to a gypsic horizon: 2 to 20 inches

A horizon:
Hue—7.5YR, 10YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—4 or 6 dry, 3 or 4 moist
Texture—fine sandy loam, sandy loam
Calcium carbonate equivalent—0 to 5 percent

Bky horizon:
Hue—7.5YR, 10YR
Value—5 to 7 dry, 3 to 6 moist
Chroma—4 to 6 dry or moist
Texture—loam, sandy loam, fine sandy loam
Content of rock fragments—0 to 15 percent gravel
Calcium carbonate equivalent—10 to 30 percent
Content of gypsum—5 to 10 percent

Bk horizon:
Hue—7.5YR, 10YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—sandy loam, loam, fine sandy loam, silt loam
Content of rock fragments—5 to 30 percent gravel
Calcium carbonate equivalent—10 to 20 percent
Content of gypsum—0 to 2 percent

Boss Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: slow
Landform: cinder cones
Parent material: slope alluvium and residuum derived from basalt, cinders, bombs, and volcanic rocks
Slope range: 15 to 55 percent
Elevation: 3,800 to 5,200 feet

Classification: Clayey, mixed, superactive, thermic Lithic Ustic Haplargids

Typical Pedon

Boss clay loam, in an area of Boss, Krentz, and Paramore soils, and Rock outcrop, 15 to 55 percent slopes, at a latitude of 31 degrees, 29 minutes, 44 seconds north and a longitude of 109 degrees, 14 minutes, 55 seconds west; about 2,400 feet north and 900 feet east of the southwest corner of sec. 24, T. 22 S., R. 30 E.

About 75 to 85 percent of the surface is covered with cinders and with basalt gravel, cobbles, and stones.

A—0 to 2 inches; brown (7.5YR 4/2) clay loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, moderately sticky and moderately plastic; many very fine and fine roots; common fine irregular pores; 10 percent gravel; noneffervescent; neutral (pH 6.8); abrupt smooth boundary.

Bt1—2 to 14 inches; dark brown (7.5YR 3/2) clay, dark brown (7.5YR 3/2) moist; strong fine and medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; many very fine and fine roots; common fine tubular pores; common distinct clay films on faces of peds, in pores, and

on rock fragments; common pressure faces; 10 percent gravel; noneffervescent; neutral (pH 7.0); clear wavy boundary.

R—14 inches; unweathered basalt and welded tuff.

Range in Characteristics

Reaction: neutral or slightly alkaline
Content of clay: more than 35 percent
Content of organic matter: 1 to 3 percent
Depth to unweathered bedrock: 5 to 20 inches

A horizon:
Hue—5YR, 7.5YR
Value—2.5 to 4 dry or moist
Chroma—1 to 3 dry or moist
Texture—clay loam, silty clay loam, loam

B horizon:
Hue—5YR, 7.5YR
Value—2.5 to 4 dry or moist
Chroma—1 to 4 dry or moist
Texture—clay, clay loam, silty clay

Brookline Series

Depth class: very deep
Drainage class: somewhat poorly drained
Permeability: moderately rapid
Landform: flood plains
Parent material: mixed stream alluvium
Slope range: 0 to 3 percent
Elevation: 3,700 to 4,700 feet

Classification: Sandy, mixed, thermic Aquic Torrifluvents

Typical Pedon

Brookline fine sandy loam, in an area of Brookline-Fluvaqents-Riverwash complex, 0 to 3 percent slopes, at a latitude of 31 degrees, 45 minutes, 45 seconds north and a longitude of 110 degrees, 14 minutes, 45 seconds west; about 2,300 feet north and 1,000 feet east of the southwest corner of sec. 18, T. 20 S., R. 21 E.

C1—0 to 3 inches; brown (7.5YR 5/3) fine sandy loam, dark brown (7.5YR 3/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine irregular pores; strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

C2—3 to 18 inches; brown (7.5YR 5/3) fine sandy loam, dark brown (7.5YR 3/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; many very fine and fine, few medium, and common coarse roots; many fine and medium irregular and tubular pores; common distinct organic coatings on faces of peds; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

C3—18 to 29 inches; coarse sand, dark brown (7.5YR 3/3) moist; massive; loose, nonsticky and nonplastic; common fine roots; common fine irregular pores; 10 percent gravel; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Cg—29 to 60 inches; very gravelly coarse sand, dark bluish gray (5B 4/1) and dark gray (N 4/0) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; many fine irregular pores; 10 to 20 percent cobbles and 35 percent gravel; strongly effervescent; slightly alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: averages less than 35 percent, but ranges to 70 percent in any one horizon
Reaction: slightly alkaline or moderately alkaline
Calcium carbonate equivalent: 0 to 5 percent
Depth to a high water table: 2 to 5 feet
Other features: in some pedons, gravel lenses 2 to 3 inches thick

C horizon:
Hue—7.5YR, 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam, fine sand, coarse sand (less than 10 percent clay)

Cg horizon:
Hue—5B, 5BG, N
Value—3 to 5 moist
Chroma—0 or 1 moist
Texture—loamy sand, coarse sand, sand (less than 10 percent clay)

Brunkcow Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately slow
Landform: hills and mountains
Parent material: slope alluvium derived from granite and diorite
Slope range: 3 to 60 percent
Elevation: 4,000 to 5,400 feet

Classification: Loamy, mixed, superactive, thermic, shallow Ustic Haplargids

Typical Pedon

Brunkcow coarse sandy loam, in an area of Brunkcow-Chiricahua-Andrada complex, 3 to 20 percent slopes, at a latitude of 31 degrees, 40 minutes, 00 seconds north and a longitude of 110 degrees, 14 minutes, 20 seconds west; about 2,000 feet south and 1,900 feet west of the northeast corner of sec. 30, T. 28 S., R. 21 E.

About 30 to 50 percent of the surface is covered with gravel and cobbles.

A—0 to 2 inches; brown (7.5YR 4/4) coarse sandy loam, dark brown (7.5YR 3/4) moist; moderate thick platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; noneffervescent; moderately acid (pH 6.0); abrupt smooth boundary.

Bt—2 to 8 inches; reddish brown (5YR 4/4) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; soft, friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine irregular and tubular pores; common distinct clay films on faces of peds and between sand grains; noneffervescent; slightly acid (pH 6.2); abrupt wavy boundary.

2Crt—8 to 12 inches; partially weathered granite (grus); common distinct clay films coating sand grains; common distinct organic stains on sand grains.

2R—12 inches; unweathered granite.

Range in Characteristics

Content of rock fragments: less than 35 percent
Content of clay: 18 to 35 percent
Reaction: moderately acid to neutral
Content of organic matter: 1 to 2 percent
Depth to unweathered bedrock: 5 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—coarse sandy loam, sandy loam, loamy coarse sand

Bt horizon:
Hue—7.5YR, 5YR
Value—3 to 5 dry or moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, sandy clay loam, clay loam

Brunopeak Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 15 to 40 percent
Elevation: 4,600 to 6,200 feet

Classification: Clayey-skeletal, mixed, superactive, thermic Aridic Paleustolls

Typical Pedon

Brunopeak very gravelly sandy loam, in an area of Crowbar-Brunopeak association, 1 to 40 percent slopes, at a latitude of 31 degrees, 46 minutes, 40 seconds north and a longitude of 109 degrees, 27 minutes, 35 seconds west; about 2,200 feet north and 300 feet west of the southeast corner of sec. 15, T. 19 S., R. 28 E.

About 60 to 90 percent of the surface is covered with gravel and cobbles.

A—0 to 3 inches; dark brown (7.5YR 3/2) very gravelly sandy loam, very dark brown (7.5YR 2.5/2) moist; weak thick platy structure parting to weak fine subangular blocky; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular and tubular pores; 45 percent gravel; noneffervescent; moderately acid (pH 6.0); abrupt smooth boundary.

Bt1—3 to 16 inches; dark reddish brown (5YR 3/2) extremely gravelly clay loam, dark reddish brown (5YR 3/2) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine irregular and tubular pores; many distinct clay films on faces of peds and on rock fragments; 50 percent gravel and 20 percent cobbles; noneffervescent; slightly acid (pH 6.2); clear smooth boundary.

Bt2—16 to 42 inches; dark reddish brown (2.5YR 3/4) extremely cobbly sandy clay, dark reddish brown (2.5YR 3/4) moist; moderate very fine, fine, and medium subangular blocky structure; moderately hard, firm, moderately sticky and moderately plastic; common very fine and fine and few coarse roots; common fine irregular and tubular pores; many distinct clay films on faces of peds and on rock fragments; common distinct organic coatings on faces of peds; 35 percent gravel and 30 percent cobbles; noneffervescent; slightly acid (pH 6.4); clear smooth boundary.

Bt3—42 to 60 inches; dark reddish brown (2.5YR 3/4)

extremely cobbly sandy clay, dark reddish brown (2.5YR 3/4) moist; moderate very fine and fine subangular blocky structure; moderately hard, firm, moderately sticky and moderately plastic; common very fine, fine, and medium roots; common fine irregular and tubular pores; many distinct clay films on faces of peds and on rock fragments; common organic coatings on faces of peds; 30 percent gravel and 40 percent cobbles; noneffervescent; neutral (pH 6.6).

Range in Characteristics

Content of rock fragments: more than 35 percent gravel and cobbles
Content of clay: more than 35 percent in the control section
Content of organic matter: 1 to 3 percent

A horizon:
Hue—7.5YR, 5YR
Value—3 or 4 dry, 2.5 or 3 moist
Chroma—2 or 3 dry or moist
Texture—fine sandy loam, sandy loam
Reaction—moderately acid or slightly acid

Bt horizon:
Hue—5YR, 2.5YR
Value—3 or 4 dry, 2.5 to 4 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, sandy clay, clay
Reaction—slightly acid or neutral

Budlamp Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Landform: hills and mountains
Parent material: slope alluvium derived from granite, granodiorite, and schist
Slope range: 15 to 60 percent
Elevation: 4,500 to 6,600 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Lithic Haplustolls

Typical Pedon

Budlamp very gravelly fine sandy loam, in an unsectioned area of Budlamp-Woodcutter complex, 15 to 60 percent slopes, at a latitude of 31 degrees, 32 minutes, 30 seconds north and a longitude of 110 degrees, 22 minutes, 30 seconds west.

A—0 to 2 inches; dark brown (10YR 3/3) very gravelly fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; noneffervescent; 45 percent gravel; moderately acid (pH 6.0); abrupt smooth boundary.

C—2 to 8 inches; very dark grayish brown (10YR 3/2) extremely gravelly fine sandy loam, black (10YR 2/1) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular and tubular pores; many distinct organic coatings on rock fragments; noneffervescent; 60 percent gravel and 15 percent cobbles; moderately acid (pH 6.0); abrupt smooth boundary.

2R—8 inches; unweathered granite.

Range in Characteristics

Content of rock fragments: more than 35 percent
Content of clay: 5 to 18 percent
Reaction: moderately acid to neutral
Content of organic matter: 1 to 3 percent
Depth to unweathered bedrock: 5 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—fine sandy loam, sandy loam

C horizon:
Hue—10YR, 7.5YR
Value—3 to 6 dry, 2 to 5 moist
Chroma—1 to 6 dry or moist
Texture—fine sandy loam, sandy loam, coarse sandy loam

Buntline Series

Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid above the hardpan
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 0 to 10 percent
Elevation: 3,900 to 4,600 feet

Classification: Loamy, mixed, superactive, thermic, shallow Ustalfic Petrocalcids

Typical Pedon

Buntline gravelly fine sandy loam, in an area of Nolam-Libby-Buntline complex, 1 to 10 percent slopes, at a latitude of 31 degrees, 35 minutes, 00 seconds north and a longitude of 110 degrees, 05 minutes, 20 seconds west; about 100 feet north and 200 feet west of the southeast corner of sec. 22, T. 21 S., R. 22 E.

A—0 to 1 inch; reddish brown (5YR 4/4) gravelly fine sandy loam, reddish brown (5YR 4/4) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine interstitial pores; 20 percent gravel; very slightly effervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

Btk—1 to 8 inches; yellowish red (5YR 4/6) sandy loam, reddish brown (5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine roots matted on top of the hardpan; many very fine and fine irregular and tubular pores; common distinct clay films on faces of peds and bridging sand grains; many distinct calcium carbonate coatings on rock fragments; slightly effervescent; large pebbles directly above the hardpan; slightly alkaline (pH 7.4); abrupt wavy boundary.

Bkm—8 to 23 inches; a fractured hardpan; strongly cemented with calcium carbonate; a 0.12- to 0.25-inch laminar cap; many very fine and fine roots in the fractures; abrupt smooth boundary.

Ck—23 to 47 inches; pinkish gray (5YR 7/2) extremely cobbly sandy loam, yellowish red (5YR 4/6) moist; massive; hard, weakly cemented, very friable, nonsticky and nonplastic; many very fine and fine roots; few fine irregular pores; many distinct calcium carbonate coatings on rock fragments; 20 percent gravel and 50 percent cobbles; violently effervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.

2Btkb—47 to 60 inches; reddish brown (5YR 4/3) and white (5YR 8/1) sandy clay loam, dark reddish brown (5YR 3/3) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine and medium roots; few fine irregular and tubular pores; many distinct clay films on faces of peds and in pores; many distinct calcium carbonate coatings on faces of peds and in pores; many fine and medium hard and soft calcium carbonate masses; 5 percent gravel; violently effervescent; slightly alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: 0 to 20 percent gravel and/or cobbles above the hardpan and as much as 75 percent below the hardpan

Reaction: slightly alkaline or moderately alkaline

Calcium carbonate equivalent: 0 to 5 percent above the hardpan and 5 to 30 percent below the hardpan

Depth to a petrocalcic horizon: 5 to 15 inches

A horizon:
Hue—5YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, sandy loam, clay loam

Btk horizon:
Hue—5YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 to 6 dry or moist
Texture—sandy loam, loam, clay loam (10 to 30 percent clay)

Ck horizon:
Hue—5YR, 7.5YR
Value—4 to 7 dry, 4 or 5 moist
Chroma—3 to 6 dry or moist
Texture—sandy loam, fine sandy loam, loam

2Btkb horizon:
Hue—5YR, 7.5YR
Value—4 to 8 dry, 3 to 5 moist
Chroma—1 to 3 dry, 3 or 4 moist
Texture—sandy clay loam, sandy loam, loam, clay loam

Caralampi Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 1 to 15 percent
Elevation: 4,200 to 4,800 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Ustic Haplargids

Typical Pedon

Caralampi sandy loam, in an unsectioned area of Eloma-Caralampi-White House complex, 1 to 15 percent slopes, at a latitude of 31 degrees, 38 minutes, 47 seconds north and a longitude of 110 degrees, 21 minutes, 21 seconds west.

About 60 to 80 percent of the surface is covered with gravel and cobbles.

A—0 to 1 inch; reddish brown (5YR 4/4) sandy loam, dark reddish brown (5YR 3/4) moist; moderate thin platy structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; common fine irregular pores; 5 percent gravel; noneffervescent; slightly acid (pH 6.2); abrupt smooth boundary.

Bt1—1 to 12 inches; dark reddish brown (2.5YR 3/4) gravelly clay loam, dark reddish brown (2.5YR 3/3) moist; moderate very fine subangular blocky

structure; slightly hard, firm, moderately sticky and moderately plastic; many very fine and fine roots; few fine tubular pores; many distinct clay films on faces of peds and on rock fragments; 25 percent gravel and 5 percent cobbles; noneffervescent; slightly acid (pH 6.4); clear wavy boundary.

Bt2—12 to 50 inches; dark red (2.5YR 3/4) very cobbly clay loam, dusky red (2.5YR 3/4) moist; moderate very fine subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; few fine tubular pores; many distinct clay films on faces of peds and on rock fragments; 30 percent gravel and 15 percent cobbles; noneffervescent; slightly acid (pH 6.2); abrupt smooth boundary.

Bk—50 to 60 inches; reddish brown (5YR 4/4) very gravelly coarse sandy loam, yellowish red (5YR 4/6) moist; massive; hard, friable, nonsticky and nonplastic; few very fine roots; many distinct calcium carbonate coatings on rock fragments; 45 percent gravel and 5 percent cobbles; strongly effervescent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: more than 35 percent gravel and cobbles
Content of clay: 18 to 35 percent in the control section
Calcium carbonate equivalent: 0 to 10 percent below a depth of 40 inches

A horizon:
Hue—7.5YR, 5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, sandy loam
Reaction—slightly acid or neutral

Bt horizon:
Hue—2.5YR, 5YR
Value—3 or 4 dry or moist
Chroma—3 or 4 dry, 3 to 6 moist
Texture—sandy clay loam, clay loam
Reaction—slightly acid or neutral

Bk horizon:
Hue—5YR
Value—3 or 4 dry or moist
Chroma—4 to 6 dry or moist
Texture—coarse sandy loam, sandy loam
Reaction—neutral to moderately alkaline

Carbine Series

Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid
Landform: fan terraces
Parent material: fan alluvium derived from limestone and calcareous sandstone
Slope range: 3 to 45 percent
Elevation: 4,400 to 6,200 feet

Classification: Loamy, mixed, superactive, thermic, shallow Petrocalcic Calciustolls

Typical Pedon

Carbine very gravelly loam, 3 to 30 percent slopes, in an unsectioned area at a latitude of 31 degrees, 30 minutes, 20 seconds north and a longitude of 110 degrees, 17 minutes, 40 seconds west.

About 20 to 45 percent of the surface is covered with gravel and/or cobbles.

A—0 to 2 inches; dark brown (10YR 3/3) very gravelly loam, very dark brown (10YR 2/2) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; many distinct calcium carbonate coatings on rock fragments; 40 percent gravel; slightly effervescent; 15 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); clear smooth boundary.

Bk1—2 to 9 inches; dark brown (10YR 3/3) gravelly fine sandy loam, very dark gray (10YR 3/1) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine irregular pores; many distinct calcium carbonate coatings on rock fragments; 10 percent cobbles and 20 percent gravel; strongly effervescent; 18 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); clear smooth boundary.

Bk2—9 to 16 inches; brown (10YR 4/3) gravelly loam, very dark brown (10YR 2/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular and tubular pores; many distinct calcium carbonate coatings on rock fragments; 10 percent cobbles and 20 percent gravel; violently effervescent; 27 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bkm—16 to 60 inches; very hard, strongly cemented petrocalcic material of varying thickness; loamy alluvium below the hardpan; violently effervescent.

Range in Characteristics

Content of rock fragments: less than 35 percent gravel and/or cobbles
Reaction: slightly alkaline or moderately alkaline
Content of clay: 5 to 18 percent

Content of organic matter: 1 to 3 percent
Depth to a petrocalcic horizon: 5 to 20 inches
Depth to a calcic horizon: 2 to 20 inches

A horizon:
Hue—7.5YR, 10YR
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—fine sandy loam, sandy loam, loam
Calcium carbonate equivalent—3 to 15 percent

Bk horizon:
Hue—7.5YR, 10YR
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—fine sandy loam, sandy loam, loam
Calcium carbonate equivalent—15 to 40 percent

Castledome Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: slow
Landform: pediments
Parent material: slope and fan alluvium overlying tuff
Slope range: 3 to 45 percent
Elevation: 4,600 to 6,200 feet

Classification: Clayey, mixed, superactive, thermic, shallow Aridic Haplustalfs

Typical Pedon

Castledome fine sandy loam, in an area of Denab-Castledome complex, 3 to 45 percent slopes, at a latitude of 31 degrees, 36 minutes, 44 seconds north and a longitude of 109 degrees, 27 minutes, 03 seconds west; about 100 feet north and 1,400 feet east of the southwest corner of sec. 12, T. 21 S., R. 28 E.

About 5 to 15 percent of the surface is covered with gravel.

A—0 to 1 inch; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; moderate medium platy structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many fine irregular pores; noneffervescent; slightly alkaline (pH 7.6); clear smooth boundary.

Bt1—1 to 2 inches; dark reddish brown (5YR 3/3) clay loam, dark reddish brown (5YR 3/3) moist; weak very fine and fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine roots; common very fine tubular pores; common distinct clay films on faces of peds and on rock fragments; 3 percent gravel; noneffervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bt2—2 to 9 inches; dark reddish brown (2.5YR 3/4) clay, dark reddish brown (5YR 3/4) moist; strong very fine and fine subangular blocky structure; hard, firm, very sticky and very plastic; common fine and few medium roots; many very fine tubular pores; many distinct clay films on faces of peds and on rock fragments; 10 percent gravel; noneffervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

2Crtk—9 to 21 inches; fractured, decomposed tuff; rigid; many distinct clay films and calcium carbonate coatings on rock fragments; common fine and few medium roots along fractures; violently effervescent; clear smooth boundary.

2Crk—21 to 34 inches; tuff and calcareous loam; extremely hard; many distinct calcium carbonate coatings on rock fragments; common fine roots along fractures and in the soil material; violently effervescent; abrupt smooth boundary.

2R—34 inches; unweathered tuff.

Range in Characteristics

Reaction: slightly alkaline or moderately alkaline
Content of clay: 35 to 50 percent
Content of organic matter: 0.5 to 2 percent
Depth to weathered bedrock: 7 to 20 inches
Depth to unweathered bedrock: 25 to 40 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, sandy loam, loam

Bt horizon:
Hue—5YR, 2.5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, clay

Cazador Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: alluvial fans and flood plains
Parent material: mixed alluvium
Slope range: 0 to 10 percent
Elevation: 4,600 to 6,200 feet

Classification: Fine, smectitic, thermic Torrertic Haplustolls

Typical Pedon

Cazador clay loam, in an area of Cazador-Lesliecreek complex, 0 to 10 percent slopes, at a latitude of 31 degrees, 36 minutes, 44 seconds north and a longitude of 109 degrees, 28 minutes, 35 seconds west; about 2,800 feet north and 200 feet west of the southeast corner of sec. 10, T. 21 S., R. 28 E.

A—0 to 2 inches; brown (7.5YR 4/2) clay loam, dark brown (7.5YR 3/3) moist; moderate thin platy structure; soft, very friable, moderately sticky and moderately plastic; many very fine and fine roots; common fine vesicular and many fine tubular pores; strongly effervescent; 7.5 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); clear smooth boundary.

AB—2 to 9 inches; dark brown (7.5YR 3/2) clay, dark brown (7.5YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, firm, very sticky and very plastic; many very fine and fine roots; many very fine and fine tubular pores; strongly effervescent; 5 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt wavy boundary.

B1—9 to 30 inches; brown (7.5YR 4/2) clay, dark brown (7.5YR 3/2) moist; strong medium and coarse wedges parting to strong medium and coarse angular blocky structure; hard, firm, very sticky and very plastic; many very fine and fine roots; common very fine tubular pores; many distinct pressure faces; disseminated calcium carbonate; violently effervescent; 6.5 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); clear smooth boundary.

B2—30 to 50 inches; dark brown (7.5YR 3/2) clay, dark brown (7.5YR 3/2) moist; strong medium and coarse wedges parting to strong medium and coarse angular blocky structure; hard, firm, very sticky and very plastic; few fine roots; common very fine tubular pores; many distinct pressure faces; disseminated calcium carbonate; 2 percent gravel; violently effervescent; 6.5 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); clear smooth boundary.

Bk—50 to 60 inches; dark brown (7.5YR 3/2) clay, dark brown (7.5YR 3/2) moist; moderate coarse subangular blocky structure; slightly hard, firm, very sticky and very plastic; few very fine roots; common fine tubular pores; common soft medium calcium carbonate masses; 3 percent gravel; violently effervescent; 6.5 percent calcium carbonate equivalent; slightly alkaline (pH 7.8).

Range in Characteristics

Soil cracking: many vertical cracks 0.25 inch to 2 inches wide; extending from the surface to a depth of 30 inches or more
Reaction: slightly alkaline or moderately alkaline
Content of clay: more than 35 percent in the control section
Content of organic matter: 1 to 3 percent

A horizon:
Hue—7.5YR, 10YR
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—clay loam, clay
Calcium carbonate equivalent—0 to 10 percent

B horizon:
Hue—7.5YR, 10YR
Value—3 or 4 dry, 2 to 4 moist
Chroma—2 or 3 dry or moist
Texture—clay
Calcium carbonate equivalent—5 to 15 percent

Bk horizon:
Hue—7.5YR, 10YR
Value—3 or 4 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—clay
Calcium carbonate equivalent—5 to 15 percent

Cherrycow Series

Depth class: moderately deep
Drainage class: moderately well drained
Permeability: very slow
Landform: hills, mountains, and pediments
Parent material: slope alluvium and residuum derived from andesite, rhyolite, basalt, arkose, dacite porphyry lava, and noncalcareous breccia
Slope range: 0 to 65 percent
Elevation: 4,600 to 6,200 feet

Classification: Fine, smectitic, thermic Aridic Argiustolls

Typical Pedon

Cherrycow sandy loam, in an area of Cherrycow-Magoffin-Rock outcrop complex, 15 to 65 percent slopes, at a latitude of 31 degrees, 24 minutes, 15 seconds north and a longitude of 109 degrees, 05 minutes, 01 second west; about 700 feet north and 1,250 feet west of the southeast corner of sec. 21, T. 23 S., R. 32 E.

About 20 to 50 percent of the surface is covered with gravel and cobbles, and 10 percent is covered with stones.

A—0 to 2 inches; very dark grayish brown (10YR 3/2) sandy loam, very dark brown (10YR 2/2) moist; single grain or massive; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common fine irregular and tubular pores; 5 percent gravel; noneffervescent; slightly acid (pH 6.4); abrupt smooth boundary.

Bt—2 to 14 inches; very dark grayish brown (10YR 3/2) clay, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; hard, firm, very sticky and very plastic; many very fine and fine roots; few fine tubular pores; common distinct clay films on faces of peds and in pores; 5 percent gravel; noneffervescent; neutral (pH 6.6); abrupt wavy boundary.

B/C—14 to 20 inches; brown (7.5YR 4/3) sandy clay loam, brown (7.5YR 4/2) moist; weak medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine roots; few fine tubular pores; many distinct manganese coatings on faces of peds; 5 percent gravel; noneffervescent; neutral (pH 6.8); clear smooth boundary.

C—20 to 30 inches; light brown (7.5YR 6/3) sandy clay loam, brown (7.5YR 5/2) moist; massive; slightly hard, firm, slightly sticky and slightly plastic; few fine irregular pores; 5 percent gravel; noneffervescent; neutral (pH 6.8); abrupt wavy boundary.

R—30 inches; unweathered rhyolite.

Range in Characteristics

Content of rock fragments: 0 to 10 percent gravel
Reaction: moderately acid to neutral
Content of clay: 45 to 60 percent in the control section
Content of organic matter: 0.5 to 3 percent
Depth to unweathered bedrock: generally 20 to 40 inches, but can range to 10 inches

A horizon:
Hue—10YR, 7.5YR
Value—2 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—sandy loam, loam, clay loam, sandy clay loam

Bt horizon:
Hue—10YR, 7.5YR, 5YR
Value—2 to 4 dry, 2 or 3 moist
Chroma—1 to 4 dry or moist
Texture—clay, clay loam, sandy clay

B/C and C horizons:
Hue—7.5YR, 5YR
Value—4 to 6 dry, 2 to 6 moist
Chroma—2 to 6 dry or moist
Texture—sandy loam, coarse sand, clay loam, sandy clay loam, clay

Chiricahua Series

Depth class: shallow
Drainage class: well drained
Permeability: slow
Landform: hills and mountains
Parent material: slope alluvium and residuum derived from granite, granodiorite, diorite, gneiss, and quartzite
Slope range: 3 to 60 percent
Elevation: 4,000 to 5,400 feet

Classification: Clayey, mixed, superactive, thermic, shallow Ustic Haplargids

Typical Pedon

Chiricahua very gravelly clay loam, in an area of Mabray-Chiricahua-Rock outcrop complex, 3 to 45 percent slopes, at a latitude of 31 degrees, 41 minutes, 53 seconds north and a longitude of 110 degrees, 05 minutes, 40 seconds west; about 1,400 feet south and 100 feet east of the northwest corner of sec. 15, T. 20 S., R. 22 E.

About 40 to 50 percent of the surface is covered with gravel and cobbles.

A—0 to 1 inch; reddish brown (2.5YR 4/4) very gravelly clay loam, dark reddish brown (2.5YR 3/4) moist; weak thin and medium platy structure; slightly hard, friable, slightly sticky and moderately plastic; common very fine and fine roots; common fine irregular and few fine tubular pores; 45 percent gravel; noneffervescent; slightly acid (pH 6.5); abrupt smooth boundary.

Bt1—1 to 4 inches; reddish brown (2.5YR 4/4) gravelly clay loam, dark reddish brown (2.5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine irregular and few fine tubular pores; few distinct clay films on faces of peds; 30 percent gravel; noneffervescent; slightly acid (pH 6.5); clear smooth boundary.

Bt2—4 to 9 inches; dark reddish brown (2.5YR 3/4) gravelly clay, dark reddish brown (2.5YR 3/4) moist; moderate fine and medium subangular

blocky structure; hard, friable, moderately sticky and moderately plastic; few fine and medium and common very fine roots; common very fine tubular pores; common distinct clay films on faces of peds; 30 percent gravel; noneffervescent; neutral (pH 6.8); clear smooth boundary.

Bt3—9 to 18 inches; dark red (2.5YR 3/6) clay, dark reddish brown (2.5YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, firm, moderately sticky and very plastic; common very fine and fine roots; common very fine and fine tubular pores; 5 percent gravel; many distinct clay films on faces of peds; noneffervescent; neutral (pH 7.0); abrupt wavy boundary.

Bt4—18 to 20 inches; dark red (2.5YR 3/6) gravelly clay, dark reddish brown (2.5YR 3/4) moist; weak medium subangular blocky structure; hard, friable, moderately sticky and very plastic; common fine and medium roots; common very fine and fine tubular pores; many distinct clay films on faces of peds; 30 percent gravel; noneffervescent; neutral (pH 7.0); abrupt irregular boundary.

Crt—20 to 24 inches; highly fractured quartzite; many distinct clay films on the fractured bedrock.

R—24 inches; unweathered quartzite.

Range in Characteristics

Content of rock fragments: ranges from 15 to 40 percent; averages less than 35 percent
Reaction: slightly acid or neutral
Content of clay: more than 35 percent
Content of organic matter: 1 to 2 percent
Depth to weathered bedrock: 10 to 20 inches
Thickness of the weathered bedrock: 1 to 3 inches
Depth to unweathered bedrock: 20 to 30 inches

A horizon:
Hue—2.5YR, 5YR, 7.5YR
Value—3 or 4 dry or moist
Chroma—2 to 4 dry or moist
Texture—clay loam, loam, sandy loam

Bt horizon:
Hue—2.5YR, 5YR
Value—3 to 5 dry or moist
Chroma—2 to 6 dry or moist
Texture—clay, clay loam, sandy clay

Chorro Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: flood plains, basin floors, and alluvial fans
Parent material: mixed alluvium
Slope range: 0 to 5 percent
Elevation: 3,600 to 4,600 feet

Classification: Fine-loamy, mixed, active, thermic Sodic Ustic Haplocalcids

Typical Pedon

Chorro silt loam, in an area of Chorro-Guest complex, 0 to 3 percent slopes, at a latitude of 31 degrees, 20 minutes, 03 seconds north and a longitude of 109 degrees, 16 minutes, 00 seconds west; about 1,000 feet east and 200 feet south of the northwest corner of sec. 23, T. 24 S., R. 30 E.

A—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak thin platy structure parting to weak fine subangular blocky; soft, very friable, slightly sticky and moderately plastic; many very fine and fine roots; few very fine and fine irregular and tubular pores; slightly effervescent; 7 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bknyz1—5 to 14 inches; very dark gray (10YR 3/1) clay, black (10YR 2/1) moist; moderate very fine and fine prismatic structure parting to moderate fine angular blocky; slightly hard, firm, slightly sticky and very plastic; many very fine and fine roots; few very fine and fine irregular and tubular pores; many fine soft calcium carbonate and gypsum masses; strongly effervescent; 15 percent calcium carbonate equivalent; very strongly alkaline (pH 9.2); abrupt wavy boundary.

Bknyz2—14 to 27 inches; brown (7.5YR 5/3) loam, brown (7.5YR 5/2) moist; massive; soft, very friable, slightly sticky and moderately plastic; common very fine and fine roots; many fine and common medium vesicular pores; few fine gypsum crystals throughout; common fine and medium soft calcium carbonate and gypsum masses; violently effervescent; 16 percent calcium carbonate equivalent; very strongly alkaline (pH 9.4); clear wavy boundary.

Bknyz3—27 to 60 inches; pink (7.5YR 7/3) fine sandy loam, brown (7.5YR 5/3) moist; massive; slightly hard, firm, slightly sticky and moderately plastic; common very fine and few fine roots; many fine and common medium vesicular pores; common fine gypsum crystals; common fine and medium soft calcium carbonate and gypsum masses; common distinct organic coatings on faces of peds and in root pores; violently effervescent; 19 percent calcium carbonate equivalent; very strongly alkaline (pH 9.6).

Range in Characteristics

Reaction: slightly alkaline to very strongly alkaline
Content of clay: averages 18 to 35 percent in the control section
Content of organic matter: 1 to 2 percent
Depth to a calcic horizon: 10 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—2 to 4 dry or moist
Chroma—1 to 3 dry or moist
Texture—silty clay loam, silt loam, clay loam, fine sandy loam

Bknyz1 horizon:
Hue—10YR, 7.5YR
Value—2 to 4 dry or moist
Chroma—1 or 2 dry or moist
Texture—clay, silty clay, silty clay loam, loam
Calcium carbonate equivalent—10 to 25 percent
Content of gypsum—2 to 5 percent
Salinity—slight to strong (EC of 4 to 16 dS/m)
Sodicity—moderate or strong (SAR of 13 to 50)

Bknyz2 and Bknyz3 horizons:
Hue—10YR, 7.5YR
Value—3 to 7 dry, 3 to 6 moist
Chroma—2 or 3 dry or moist
Texture—fine sandy loam, loam, clay loam, silty clay loam
Calcium carbonate equivalent—15 to 25 percent
Content of gypsum—1 to 5 percent
Salinity—slight to strong (EC of 4 to 32 dS/m)
Sodicity—moderate or strong (SAR of 13 to 60)

Cogswell Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: flood plains and alluvial fans
Parent material: mixed alluvium
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet

Classification: Fine, mixed, superactive, thermic Ustic Haplocalcids

Typical Pedon

Cogswell silty clay loam, in an area of Guest-Cogswell complex, saline-sodic, 0 to 1 percent slopes, at a latitude of 31 degrees, 42 minutes, 10 seconds north and a longitude of 109 degrees, 43 minutes, 30 seconds west; about 800 feet west and 700 feet north of the southeast corner of sec. 7, T. 20 S., R. 26 E.

An1—0 to 5 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure; slightly hard, friable, very sticky and very plastic; many very fine and fine roots; few very fine vesicular and few very fine interstitial pores; EC of 1.7 dS/m; SAR of 8; slightly effervescent; strongly alkaline (pH 8.8); clear smooth boundary.

An2—5 to 20 inches; grayish brown (10YR 5/2) silty clay, very dark grayish brown (10YR 3/2) moist; moderate coarse prismatic structure parting to strong medium and coarse subangular blocky; very hard, firm, very sticky and very plastic; many very fine and few fine roots; many very fine and fine interstitial and few fine tubular pores; EC of 2.0 dS/m; SAR of 27; strongly effervescent; 6 percent calcium carbonate equivalent; very strongly alkaline (pH 9.0); clear smooth boundary.

Bknz1—20 to 33 inches; pale brown (10YR 6/3) and very pale brown (10YR 8/2) clay, brown (10YR 4/3) and pale brown (10YR 6/3) moist; strong medium subangular blocky structure; very hard, firm, very sticky and very plastic; common very fine and few fine roots; many very fine and fine interstitial and few fine tubular pores; many medium soft calcium carbonate masses; EC of 10.7 dS/m; SAR of 33; violently effervescent; 31 percent calcium carbonate equivalent; very strongly alkaline (pH 9.4); clear wavy boundary.

Bknz2—33 to 42 inches; light brownish gray (10YR 6/2) and very pale brown (10YR 8/2) clay loam, dark grayish brown (10YR 4/2) and light brownish gray (10YR 6/2) moist; weak fine and medium subangular blocky structure, appearing massive in place; hard, firm, very sticky and very plastic; common very fine and few fine roots; common very fine and fine interstitial and few very fine tubular pores; many medium soft calcium carbonate masses; EC of 12.0 dS/m; SAR of 39; violently effervescent; 12 percent calcium carbonate equivalent; very strongly alkaline (pH 9.2); clear wavy boundary.

Bknz3—42 to 53 inches; light yellowish brown (10YR 6/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and few fine roots; few very fine tubular pores; common fine soft calcium carbonate masses; EC of 10.8 dS/m; SAR of 31; strongly effervescent; 1 percent calcium carbonate equivalent; strongly alkaline (pH 8.8); abrupt wavy boundary.

Bknz4—53 to 57 inches; light brownish gray (10YR 6/2) loam, brown (10YR 5/3) moist; massive; hard, friable, very sticky and very plastic; few very fine

roots; few very fine interstitial and tubular pores; many fine and medium soft calcium carbonate masses; EC of 9.3 dS/m; SAR of 24; strongly effervescent; 7 percent calcium carbonate equivalent; very strongly alkaline (pH 9.0); clear wavy boundary.

C—57 to 63 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 5/3) moist; massive; hard, friable, moderately sticky and very plastic; few very fine tubular pores; slightly effervescent; strongly alkaline (pH 8.8).

Range in Characteristics

Reaction: moderately alkaline to very strongly alkaline
Content of clay: more than 35 percent in the control section
Depth to a calcic horizon: 18 to 38 inches
Calcium carbonate equivalent: 15 to 40 percent
Other features: in some pedons, a buried horizon, which generally has more than 15 percent calcium carbonate

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—silty clay loam, silty clay, clay

B horizon:
Hue—10YR, 7.5YR
Value—5 to 8 dry, 4 to 6 moist
Chroma—2 to 4 dry or moist
Texture—silty clay loam, clay, loam, silty clay; can have thin layers of fine sandy loam or sandy loam

Combate Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Landform: alluvial fans
Parent material: fan alluvium derived from granite and gneiss
Slope range: 0 to 5 percent
Elevation: 4,000 to 5,000 feet

Classification: Coarse-loamy, mixed, superactive, nonacid, thermic Ustic Torrifluvents

Typical Pedon

Combate loamy sand, in an area of Baboquivari-Combate complex, 0 to 3 percent slopes, at a latitude of 31 degrees, 44 minutes, 03 seconds north and a longitude of 110 degrees, 06 minutes, 20 seconds west; about 1,800 feet east and 1,000 feet north of the southwest corner of sec. 33, T. 19 S., R. 22 E.

C1—0 to 2 inches; brown (7.5YR 5/3) loamy sand, dark brown (7.5YR 3/3) moist; weak medium platy structure; loose, nonsticky and nonplastic; common very fine roots; common fine irregular pores; noneffervescent; neutral (pH 6.8); abrupt smooth boundary.

C2—2 to 8 inches; brown (10YR 4/3) sandy loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine irregular and tubular pores; noneffervescent; slightly alkaline (pH 7.4); clear smooth boundary.

C3—8 to 26 inches; dark grayish brown (10YR 4/2) sandy loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine irregular and tubular pores; noneffervescent; slightly alkaline (pH 7.4); clear smooth boundary.

C4—26 to 32 inches; dark yellowish brown (10YR 4/4) coarse sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine tubular pores; noneffervescent or very slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.

Ck—32 to 60 inches; yellowish brown (10YR 5/4) sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few fine tubular pores; few fine calcium carbonate filaments; slightly effervescent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: 5 to 20 percent
Reaction: neutral to moderately alkaline
Content of clay: 5 to 15 percent
Content of organic matter: 1 to 2 percent
Calcium carbonate equivalent: 0 to 3 percent below a depth of 20 inches

C horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, coarse sandy loam, loamy sand, loamy fine sand

Comoro Series

Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid

Landform: alluvial fans
Parent material: mixed alluvium
Slope range: 0 to 5 percent
Elevation: 4,000 to 5,200 feet

Classification: Coarse-loamy, mixed, superactive, calcareous, thermic Ustic Torrifluvents

Typical Pedon

Comoro sandy loam, 0 to 2 percent slopes, at a latitude of 31 degrees, 42 minutes, 30 seconds north and a longitude of 109 degrees, 41 minutes, 45 seconds west; about 2,500 feet east and 2,000 feet south of the northwest corner of sec. 9, T. 20 S., R. 26 E.

Ap—0 to 8 inches; brown (7.5YR 5/2) sandy loam, dark brown (7.5YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many fine irregular pores; slightly alkaline (pH 7.5); clear smooth boundary.

C1—8 to 19 inches; brown (7.5YR 5/3) sandy loam, dark brown (7.5YR 3/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine tubular pores; moderately alkaline (pH 8.0); clear wavy boundary.

C2—19 to 46 inches; light brown (7.5YR 6/3) fine sandy loam, brown (7.5YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine tubular pores; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

C3—46 to 60 inches; light brown (7.5YR 6/3) sandy loam, brown (7.5YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine tubular pores; slightly effervescent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: 0 to 15 percent
Reaction: neutral to moderately alkaline
Content of clay: 5 to 18 percent
Content of organic matter: 1 to 2 percent
Calcium carbonate equivalent: 1 to 5 percent

C horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, coarse sandy loam, loamy sand, sand, fine sandy loam

Contention Series

Depth class: very deep
Drainage class: well drained
Permeability: very slow
Landform: dissected relict lakebeds
Parent material: mixed alluvium derived from prehistoric lakes and marshes
Slope range: 0 to 60 percent
Elevation: 3,800 to 4,100 feet

Classification: Fine, smectitic, thermic Typic Gypsitorrerts

Typical Pedon

Contention silt loam, in an area of Contention, Crystalgyp, Monzingo, and Redington soils, breaks, 5 to 60 percent slopes, at a latitude of 31 degrees, 51 minutes, 34 seconds north and a longitude of 110 degrees, 15 minutes, 11 seconds west; about 3,370 feet east and 800 feet south of the northwest corner of sec. 24, T. 18 S., R. 19 E.

About 10 to 20 percent of the surface is covered with gravel, cobbles, and hardpan fragments and/or limestone.

A—0 to 3 inches; reddish brown (5YR 5/3) silt loam, reddish brown (5YR 5/3) moist; weak fine granular structure; loose, moderately sticky and very plastic; common very fine and fine roots; many very fine tubular pores; violently effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bky1—3 to 11 inches; reddish brown (5YR 4/3) silty clay, reddish brown (5YR 5/3) moist; moderate medium subangular blocky structure; soft, firm, very sticky and very plastic; common very fine and fine roots; few fine tubular pores; common very fine soft calcium carbonate and gypsum masses; few fine gypsum crystals throughout; violently effervescent; 12 percent calcium carbonate equivalent and 15 percent gypsum; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bky2—11 to 21 inches; reddish brown (5YR 5/3) clay, reddish brown (5YR 5/3) moist; strong medium angular blocky structure with weak medium wedges; hard, firm, very sticky and very plastic; few very fine roots; few fine tubular pores; common fine gypsum crystals in clusters on faces of peds; few very fine soft calcium carbonate and gypsum masses; few light yellowish brown (2.5Y 6/3) relict redoximorphic features; violently effervescent; 12 percent calcium carbonate equivalent and 15 percent gypsum; slightly alkaline (pH 7.8); abrupt smooth boundary.

Bssky1—21 to 34 inches; reddish brown (5YR 5/3) clay, reddish brown (5YR 5/3) moist; strong medium angular blocky structure parting to strong fine angular blocky structure and weak medium and fine wedges; hard, firm, very sticky and very plastic; few very fine roots matted between faces of peds; few fine tubular pores; common fine gypsum crystals in clusters on faces of peds and in seams; few very fine soft calcium carbonate and gypsum masses; common distinct pressure faces and slickensides; violently effervescent; 15 percent calcium carbonate equivalent and 15 percent gypsum; moderately alkaline (pH 8.4); abrupt smooth boundary.

Bssky2—34 to 60 inches; reddish brown (5YR 5/3) clay, reddish brown (5YR 5/3) moist; strong medium angular blocky structure parting to strong fine and very fine angular blocky structure and weak medium wedges; hard; very firm, very sticky and very plastic; few very fine roots matted between faces of peds; few fine and very fine gypsum crystals throughout; many distinct manganese coatings on faces of peds; many distinct pressure faces and slickensides; violently effervescent; 10 percent calcium carbonate equivalent and 15 percent gypsum; slightly alkaline (pH 7.8).

Range in Characteristics

Soil cracking: many vertical cracks 0.12 inch to 1.5 inches wide; extending from the surface to a depth of 26 inches or more
Reaction: slightly alkaline or moderately alkaline
Content of clay: more than 35 percent in the control section
Calcium carbonate equivalent: 1 to 15 percent
Depth to a gypsic horizon: 3 to 20 inches
Content of gypsum: 0.5 to 15 percent
Other features: pressure faces and slickensides, which are common in the lower horizons

A horizon:
Hue—7.5YR, 5YR
Value—4 to 6 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist
Texture—silt loam, loam, silty clay loam, clay loam

Bky horizon:
Hue—7.5YR, 5YR
Value—4 or 5 dry, 3 to 5 moist
Chroma—2 to 4 dry, 2 or 3 moist
Texture—clay, silty clay, silty clay loam

Bssky horizon:
Hue—7.5YR, 5YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—clay, silty clay, silty clay loam

Courtland Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: fan terraces
Parent material: fan alluvium derived from granite and gneiss
Slope range: 0 to 3 percent
Elevation: 4,200 to 4,600 feet

Classification: Fine-loamy, mixed, superactive, thermic Ustic Haplargids

Typical Pedon

Courtland sandy loam, in an area of Courtland-Diaspar complex, 0 to 3 percent slopes, at a latitude of 31 degrees, 41 minutes, 10 seconds north and a longitude of 109 degrees, 44 minutes, 50 seconds west; about 2,200 feet north and 1,600 feet east of the southwest corner of sec. 24, T. 20 S., R. 25 E.

Ap—0 to 8 inches; brown (7.5YR 5/4) sandy loam, brown (7.5YR 4/4) moist; moderate medium platy structure parting to moderate fine subangular blocky; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; common fine vesicular and few fine irregular pores; 5 percent gravel; noneffervescent; neutral (pH 7.0); clear smooth boundary.

A—8 to 14 inches; brown (7.5YR 5/4) sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; 5 percent gravel; noneffervescent; neutral (pH 7.0); clear wavy boundary.

Bt—14 to 20 inches; reddish brown (5YR 5/4) sandy loam, reddish brown (5YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and nonplastic; few very fine roots; common fine tubular pores; few faint clay bridges and clay films in pores; 5 percent gravel; noneffervescent; slightly alkaline (pH 7.5); clear wavy boundary.

Btk1—20 to 49 inches; yellowish red (5YR 5/6) sandy clay loam, yellowish red (5YR 4/6) moist; moderate fine and medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; few very fine roots; common fine tubular pores; common faint clay bridges and clay films in pores; few fine soft calcium carbonate

masses; 5 percent gravel; slightly effervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Btk2—49 to 60 inches; red (2.5YR 5/6) sandy clay loam, red (2.5YR 4/6) moist; moderate medium subangular blocky structure; hard, friable, moderately sticky and slightly plastic; common fine tubular pores; many faint clay bridges and clay films in pores; few fine soft calcium carbonate masses; slightly effervescent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: less than 35 percent
Reaction: neutral to moderately alkaline
Content of clay: 18 to 35 percent in the control section
Content of organic matter: less than 1 percent

A horizon:
Hue—7.5YR, 5YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, sandy loam, sandy clay loam

Bt horizon:
Hue—2.5YR, 5YR
Value—4 to 6 dry or moist
Chroma—4 to 6 dry or moist
Texture—sandy clay loam, sandy loam, clay loam

Btk horizon:
Hue—2.5YR, 5YR
Value—4 to 6 dry or moist
Chroma—4 to 6 dry or moist
Texture—sandy clay loam, clay loam, sandy clay, clay
Calcium carbonate equivalent—less than 15 percent

Crowbar Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 1 to 15 percent
Elevation: 4,600 to 6,200 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Aridic Haplustalfs

Typical Pedon

Crowbar fine sandy loam, in an area of Crowbar-Brunopeak association, 1 to 40 percent slopes, at a latitude of 31 degrees, 48 minutes, 54 seconds north and a longitude of 109 degrees, 28 minutes, 27 seconds west; about 1,350 feet east and 800 feet south of the northwest corner of sec. 3, T. 19 S., R. 28 E.

About 20 to 50 percent of the surface is covered with gravel.

A—0 to 1 inch; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 3/3) moist; moderate thick platy structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; common fine vesicular and tubular pores; 5 percent gravel; noneffervescent; moderately acid (pH 6.0); abrupt smooth boundary.

Bt1—1 to 12 inches; brown (7.5YR 5/4) gravelly sandy clay loam, dark brown (7.5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine and fine and common medium tubular pores; few patchy clay films on faces of peds and on rock fragments; 25 percent gravel; noneffervescent; slightly acid (pH 6.4); abrupt wavy boundary.

Bt2—12 to 26 inches; brown (7.5YR 4/3) extremely gravelly sandy clay loam, dark brown (7.5YR 3/3) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine and fine and few medium roots; common fine tubular pores; common distinct clay films on faces of peds and on rock fragments; 45 percent gravel and 20 percent cobbles; noneffervescent; neutral (pH 6.8); abrupt wavy boundary.

2Bt—26 to 60 inches; brown (7.5YR 4/4) extremely gravelly sandy clay loam, brown (10YR 4/3) moist; moderate fine and medium angular blocky structure; moderately hard, firm, very sticky and very plastic; few very fine roots; many very fine tubular pores; many distinct clay films on faces of peds and on rock fragments; common distinct manganese and organic coatings on faces of peds; 45 percent gravel and 20 percent cobbles; noneffervescent; neutral (pH 7.0).

Range in Characteristics

Content of rock fragments: more than 35 percent gravel and cobbles
Content of clay: 18 to 35 percent in the control section
Content of organic matter: 0.5 to 2 percent

A horizon:
Hue—7.5YR, 5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Texture—fine sandy loam, sandy loam, loam
Reaction—moderately acid or slightly acid

Bt horizon:
Hue—2.5YR, 5YR, 7.5YR
Value—3 to 5 dry or moist
Chroma—3 or 4 dry, 2 to 4 moist
Texture—sandy clay loam, clay loam, loam, sandy loam
Reaction—slightly acid or neutral

2Bt horizon:
Hue—7.5YR, 5YR
Value—3 or 4 dry or moist
Chroma—3 to 6 dry or moist
Texture—sandy clay loam, clay loam
Reaction—neutral

Crystalgyp Series

Depth class: moderately deep
Drainage class: well drained
Permeability: moderately rapid
Landform: dissected relict lakebeds
Parent material: mixed alluvium or residuum derived from gypsiferous sandstone
Slope range: 5 to 60 percent
Elevation: 3,800 to 4,100 feet

Classification: Coarse-loamy, gypsic, thermic Typic Haplogypsids

Typical Pedon

Crystalgyp sandy loam, in an area of Contention, Crystalgyp, Monzingo, and Redington soils, breaks, 5 to 60 percent slopes, at a latitude of 31 degrees, 51 minutes, 39 seconds north and a longitude of 110 degrees, 15 minutes, 13 seconds west; about 3,180 feet east and 400 feet south of the northwest corner of sec. 24, T. 18 S., R. 19 E.

A—0 to 1 inch; gray (10YR 5/1) cryptogams, brown (10YR 5/3) moist; very pale brown (10YR 7/3) sandy loam, light yellowish brown (10YR 6/4) moist; weak thin platy structure under the cryptogams; soft, very friable, nonsticky and nonplastic; many very fine roots; many fine vesicular pores; many fine gypsum crystals throughout; noneffervescent to slightly effervescent; 7 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.

By—1 to 10 inches; very pale brown (10YR 7/4) sandy loam, light yellowish brown (10YR 6/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; few fine tubular pores; many very fine and fine gypsum crystals throughout; noneffervescent to slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Cy1—10 to 17 inches; brown (7.5YR 5/4) loam, brown (7.5YR 5/4) moist; massive; hard, friable, slightly sticky and moderately plastic; common fine roots; few fine tubular pores; common fine gypsum filaments; common fine and medium soft and hard gypsum masses; many very fine and fine crystalline gypsum clusters, weakly cemented together between seams; noneffervescent to slightly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Cy2—17 to 30 inches; brown (7.5YR 5/3) loam, brown (7.5YR 4/4) moist; massive; hard, friable, moderately sticky and moderately plastic; common fine roots matted between seams; few fine tubular pores; common fine gypsum filaments; common fine and medium soft and hard gypsum masses; many very fine and fine crystalline gypsum clusters, weakly cemented together between seams; noneffervescent to slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Cr—30 to 60 inches; brown (7.5YR 5/4), weathered, gypsiferous sandstone, brown (7.5YR 5/4) moist; noneffervescent to slightly effervescent.

Range in Characteristics

Reaction: slightly alkaline or moderately alkaline
Content of clay: less than 10 percent
Depth to a gypsic horizon: 1 to 30 inches
Depth to a buried horizon: interbedded layers with clay textures below the Cr horizon in some pedons
Depth to weathered bedrock: 30 to 40 inches

A horizon:
Hue—7.5YR, 10YR
Value—5 to 8 dry or moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, loamy sand
Calcium carbonate equivalent—0 to 10 percent
Content of gypsum—5 to 10 percent

By horizon:
Hue—7.5YR, 10YR, 2.5Y
Value—4 to 8 dry or moist
Chroma—2 or 4 dry or moist
Texture—sandy loam, loamy sand
Calcium carbonate equivalent—0 to 3 percent
Content of gypsum—10 to 50 percent

Cy horizon:
Hue—7.5YR, 10YR

Value—4, 5, or 8 dry or moist
Chroma—2 to 4 dry or moist
Texture—loam, sandy loam
Calcium carbonate equivalent—0 to 3 percent
Content of gypsum—20 to 80 percent

Deloro Series

Depth class: shallow
Drainage class: well drained
Permeability: moderately slow
Landform: hills and mountains
Parent material: colluvium and residuum derived from quartzite, granodiorite, and feldspathic sandstone
Slope range: 3 to 55 percent
Elevation: 4,400 to 5,590 feet

Classification: Clayey-skeletal, mixed, superactive, thermic, shallow Ustic Haplargids

Typical Pedon

Deloro very gravelly sandy loam, in an area of Deloro-Leyte-Lampshire complex, 3 to 55 percent slopes, at a latitude of 31 degrees, 53 minutes, 30 seconds north and a longitude of 109 degrees, 45 minutes, 20 seconds west; about 1,500 feet north and 1,600 feet east of the southwest corner of sec. 1, T. 18 S., R. 25 E.

About 75 to 90 percent of the surface is covered with gravel and cobbles.

A—0 to 2 inches; reddish brown (5YR 4/4) very gravelly sandy loam, dark reddish brown (5YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; few fine tubular pores; noneffervescent; 45 percent gravel; slightly acid (pH 6.4); abrupt smooth boundary.

Bt1—2 to 11 inches; dark reddish brown (5YR 3/2) extremely gravelly sandy clay loam, dark reddish brown (5YR 3/2) moist; weak fine subangular blocky structure; soft, friable, moderately sticky and moderately plastic; many very fine roots along fractures; many fine tubular pores; many distinct clay films on rock fragments and common distinct clay films on faces of peds; 55 percent gravel and 10 percent cobbles; noneffervescent; slightly acid (pH 6.4); clear wavy boundary.

Bt2—11 to 19 inches; dark reddish brown (2.5YR 3/3) extremely gravelly clay, dark reddish brown (2.5YR 3/3) moist; weak very fine and fine subangular blocky structure; soft, friable, very sticky and very plastic; many very fine and fine roots along fractures; common fine tubular pores; many distinct clay films on rock fragments and common distinct clay films on faces of peds; 70 percent gravel and 10 percent cobbles; noneffervescent; slightly acid (pH 6.4); abrupt wavy boundary.

Crt—19 to 29 inches; highly fractured granodiorite; many thick clay films on rock fragments; noneffervescent; abrupt wavy boundary.

R—29 inches; unweathered granodiorite.

Range in Characteristics

Content of rock fragments: more than 35 percent gravel and cobbles
Reaction: slightly acid or neutral
Content of clay: averages more than 35 percent in the control section
Depth to unweathered bedrock: 10 to 20 inches

A horizon:
Hue—7.5YR, 5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam, sandy loam

Bt horizon:
Hue—2.5YR, 5YR
Value—3 or 4 dry or moist
Chroma—2 to 6 dry and moist
Texture—sandy clay loam, clay, clay loam

Denab Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Landform: pediments
Parent material: slope alluvium and residuum derived from tuff
Slope range: 3 to 45 percent
Elevation: 4,600 to 6,200 feet

Classification: Loamy, mixed, superactive, thermic, shallow Aridic Calciustolls

Typical Pedon

Denab gravelly sandy loam, in an area of Denab-Castledome complex, 3 to 45 percent slopes, at a latitude of 31 degrees, 36 minutes, 15 seconds north and a longitude of 109 degrees, 29 minutes, 01 second west; about 2,100 feet west and 1,800 feet south of the northeast corner of sec. 15, T. 21 S., R. 28 E.

About 60 to 80 percent of the surface is covered with fine gravel.

A—0 to 1 inch; brown (7.5YR 5/2) gravelly sandy loam, dark brown (7.5YR 3/2) moist; weak thin platy structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; many very fine roots; common very fine irregular and interstitial pores; many calcium carbonate coatings on rock fragments; 20 percent gravel; strongly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

Bk—1 to 7 inches; brown (7.5YR 5/2) loam, brown (7.5YR 4/2) moist; moderate fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; common soft fine and medium calcium carbonate masses and many calcium carbonate coatings on rock fragments; 5 percent gravel; violently effervescent; 15.5 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Crk—7 to 15 inches; interbedded tuff and calcareous loam; extremely hard; many distinct calcium carbonate coatings on rock fragments; common very fine and fine roots along fractures; clear wavy boundary.

R—15 inches; unweathered tuff.

Range in Characteristics

Content of rock fragments: 0 to 20 percent gravel
Reaction: slightly alkaline or moderately alkaline
Content of clay: 3 to 18 percent in the control section
Content of organic matter: 1 to 3 percent
Depth to a calcic horizon: 0 to 5 inches
Depth to weathered bedrock: 5 to 15 inches
Depth to unweathered bedrock: 10 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry or moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, loam

Bk horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry or moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, loam
Calcium carbonate equivalent—5 to 20 percent

Diaspar Series

Depth class: very deep
Drainage class: well drained
Permeability: moderate
Landform: fan terraces
Parent material: fan alluvium derived from granite and gneiss
Slope range: 0 to 5 percent
Elevation: 4,000 to 4,600 feet

Classification: Coarse-loamy, mixed, superactive, thermic Ustic Haplargids

Typical Pedon

Diaspar sandy loam, in an area of Courtland-Sasabe-Diaspar complex, 1 to 8 percent slopes, at a latitude of 31 degrees, 35 minutes, 45 seconds north and a longitude of 110 degrees, 16 minutes, 00 seconds west; about 700 feet south and 2,400 feet west of the northeast corner of sec. 23, T. 21 S., R. 20 E.

A—0 to 2 inches; yellowish red (5YR 4/6) sandy loam, reddish brown (5YR 4/4) moist; weak thin platy structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; few fine roots; common fine irregular pores; noneffervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt1—2 to 5 inches; yellowish red (5YR 4/6) sandy loam, dark reddish brown (5YR 3/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular and tubular pores; common distinct clay films on sand grains and pebbles and in root channels and/or pores and few faint clay films on faces of peds; noneffervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt2—5 to 20 inches; reddish brown (5YR 4/4) sandy loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common fine tubular pores; many distinct clay films on faces of peds and in pores; many distinct clay bridges; noneffervescent; slightly alkaline (pH 7.6); clear smooth boundary.

2Bt1—20 to 32 inches; yellowish red (5YR 4/6) sandy clay loam, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine tubular pores; many distinct clay films on faces of peds and in pores; many distinct clay bridges; noneffervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

2Bt2—32 to 41 inches; dark red (2.5YR 3/6) sandy clay loam, red (2.5YR 4/6) moist; moderate medium angular blocky structure; slightly hard,

firm, moderately sticky and moderately plastic; few fine roots; few fine tubular pores; many distinct clay films on sand grains and pebbles, on faces of peds, and in pores; 10 percent gravel; noneffervescent; slightly alkaline (pH 7.6); clear smooth boundary.

2Bt3—41 to 60 inches; dark red (2.5YR 3/6) gravelly sandy clay loam, red (2.5YR 4/6) moist; strong medium angular blocky structure; slightly hard, firm, moderately sticky and moderately plastic; few fine roots; few fine tubular pores; many distinct clay films on sand grains and pebbles, on faces of peds, and in pores; 20 percent gravel; noneffervescent; slightly alkaline (pH 7.6).

Range in Characteristics

Content of rock fragments: 10 to 35 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: less than 18 percent in the control section
Content of organic matter: less than 1 percent

A horizon:
Hue—7.5YR, 5YR
Value—4 or 5 dry or moist
Chroma—4 or 6 dry or moist
Texture—sandy loam

Bt horizon:
Hue—2.5YR, 5YR
Value—3 to 5 dry or moist
Chroma—3, 4, or 6 dry or moist
Texture—sandy loam, sandy clay loam
Calcium carbonate equivalent—0 to 5 percent

Dona Ana Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 1 to 5 percent
Elevation: 3,600 to 4,200 feet

Classification: Fine-loamy, mixed, superactive, thermic Typic Calciargids

Typical Pedon

Dona Ana sandy loam, in an area of Dona Ana-Mohave complex, 1 to 5 percent slopes, at a latitude of 31 degrees, 48 minutes, 00 seconds north and a longitude of 110 degrees, 09 minutes, 15 seconds west; about 800 feet east and 1,800 feet south of the northwest corner of sec. 12, T. 19 S., R. 22 E.

A—0 to 2 inches; brown (7.5YR 5/4) sandy loam, brown (7.5YR 4/3) moist; weak moderately thick platy structure; soft, very friable, nonsticky and nonplastic; few fine roots; common very fine and fine irregular pores; strongly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

Btk1—2 to 11 inches; brown (7.5YR 5/4) clay loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine tubular pores; many distinct clay films on faces of peds; few organic coatings on faces of peds; common fine calcium carbonate filaments; few fine soft calcium carbonate masses; violently effervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.

Btk2—11 to 16 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; many distinct clay films on faces of peds and bridging sand grains; few organic coatings on faces of peds; many fine soft calcium carbonate masses; violently effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk1—16 to 24 inches; 80 percent light brown (7.5YR 6/4) and 20 percent pinkish white (7.5YR 8/2) clay loam, brown (7.5YR 5/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; few distinct manganese coatings on faces of peds; many fine and medium soft and common very fine and fine hard calcium carbonate masses; violently effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bk2—24 to 38 inches; brown (7.5YR 5/4) very gravelly coarse sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common fine irregular pores; many distinct calcium carbonate coatings on faces of peds and on rock fragments; many very fine and fine hard calcium carbonate masses; 40 percent gravel; violently effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bk3—38 to 60 inches; brown (7.5YR 5/4) very cobbly coarse sand, brown (7.5YR 4/4) moist; massive; loose, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; many distinct calcium carbonate coatings on rock

fragments; 25 percent gravel and 20 percent cobbles; violently effervescent; moderately alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: less than 15 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: 18 to 35 percent
Content of organic matter: less than 1 percent
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: ranges from 5 to 55 percent; averages more than 15 percent

A horizon:
Hue—7.5YR, 5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, sandy loam

Btk horizon:
Hue—7.5YR, 5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—4 or 6 dry, 3 to 6 moist
Texture—loam, clay loam

Bk horizon:
Hue—7.5YR, 5YR
Value—5 to 8 dry, 4 to 6 moist
Chroma—2 to 6 dry or moist
Texture—sandy clay loam, clay loam, sandy loam, coarse sandy loam, coarse sand

Doubleadobe Series

Depth class: very deep
Drainage class: moderately well drained
Permeability: slow
Landform: flood plains and basin floors
Parent material: mixed alluvium
Slope range: 0 to 5 percent
Elevation: 3,600 to 4,600 feet

Classification: Fine, mixed, active, thermic Petronodic Natrargids

Typical Pedon

Doubleadobe sandy loam, 1 to 3 percent slopes, at a latitude of 31 degrees, 34 minutes, 39 seconds north and a longitude of 109 degrees, 43 minutes, 55 seconds west; about 1,200 feet west and 500 feet north of the southeast corner of sec. 19, T. 21 S., R. 26 E.

A—0 to 1 inch; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 3/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and common fine roots; few very fine vesicular pores; strongly effervescent; 8 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Btknzy1—1 to 4 inches; brown (7.5YR 5/3) clay loam, brown (7.5YR /3) moist; strong fine angular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine and fine roots; common very fine irregular pores; many distinct clay films on faces of peds; few calcium carbonate coatings on faces of peds; few fine soft gypsum and calcium carbonate masses; EC of 21 dS/m; violently effervescent; 17 percent calcium carbonate equivalent; very strongly alkaline (pH 9.4); abrupt wavy boundary.

Btknzy2—4 to 13 inches; brown (7.5YR 5/4) clay, brown (7.5YR 5/3) moist; weak fine subangular blocky structure; soft, very friable, very sticky and very plastic; few very fine roots; common very fine tubular pores; few distinct clay films on faces of peds; many fine soft gypsum and salt masses in clusters and seams; EC of 24 dS/m; violently effervescent; 15 percent calcium carbonate equivalent; strongly alkaline (pH 8.8); abrupt wavy boundary.

Btknzy3—13 to 31 inches; pinkish gray (7.5YR 7/2) and light brown (7.5YR 6/3) clay, pinkish gray (7.5YR 7/2) moist; moderate fine subangular blocky structure; hard, friable, very sticky and very plastic; many very fine and fine tubular pores; few patchy clay films in root channels and on faces of peds; many fine gypsum and salt crystals; many fine and medium soft calcium carbonate and gypsum masses; common manganese coatings on faces of peds; EC of 17 dS/m; 3 percent fine and medium petronodes; violently effervescent; 50 percent calcium carbonate equivalent; strongly alkaline (pH 8.8); clear smooth boundary.

Bknzyc—31 to 60 inches; white (7.5YR 8/1) and light brown (7.5YR 6/3) gravelly clay loam, pinkish gray (7.5YR 6/2) moist; moderate fine subangular blocky structure; slightly hard, firm, moderately sticky and moderately plastic; many very fine and fine tubular pores; many manganese coatings on faces of peds; many fine gypsum and salt crystals; many fine and medium soft calcium carbonate and gypsum masses; common areas of iron depletions; few fine yellow iron masses; EC of 16 dS/m; 25 percent fine and medium petronodes; violently effervescent; 15 percent calcium carbonate equivalent; very strongly alkaline (pH 9.6).

Range in Characteristics

Content of rock fragments: generally less than 35 percent gravel and/or petronodes
Petronodic feature: 1 to 35 percent petronodes
Reaction: slightly alkaline to very strongly alkaline
Content of clay: averages more than 35 percent in the control section
Content of organic matter: 0.5 to 2 percent
Depth to a natric horizon: 1 to 15 inches
Depth to a calcic horizon: 10 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 to 6 dry or moist
Chroma—2 to 4 dry or moist
Texture—silty clay loam, silt loam, clay loam, sandy loam

Btknzy horizon:
Hue—7.5YR, 5YR
Value—3 to 5 dry or moist
Chroma—2 to 4 dry or moist
Texture—clay, silty clay, clay loam
Calcium carbonate equivalent—5 to 20 percent
Content of gypsum—2 to 5 percent
Salinity—slight to strong (EC of 4 to 32 dS/m)
Sodicity—moderate or strong (SAR of 13 to 50)

Bknzyc horizon:
Hue—10YR, 7.5YR
Value—5 to 8 dry, 4 to 7 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, loam, clay, silty clay
Calcium carbonate equivalent—15 to 60 percent
Content of gypsum—1 to 5 percent
Salinity—slight to strong (EC of 4 to 32 dS/m)
Sodicity—moderate or strong (SAR of 13 to 60)

Durazo Series

Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: rapid in the upper part of the soils and moderately slow to moderately rapid in the lower part
Landform: dunes and stream terraces
Parent material: sandy eolian material
Slope range: 1 to 15 percent
Elevation: 4,000 to 4,600 feet

Classification: Mixed, thermic Ustic Torripsamments

Typical Pedon

Durazo loamy sand, 0 to 2 percent slopes, at a latitude of 31 degrees, 44 minutes, 45 seconds north and a longitude of 109 degrees, 43 minutes, 40 seconds west; about 900 feet west and 29 feet north of the southeast corner of sec. 30, T. 19 S., R. 26 E.

A—0 to 8 inches; brown (7.5YR 5/4) loamy sand, dark brown (7.5YR 4/4) moist; weak thin platy structure parting to weak fine granular; soft, friable, nonsticky and nonplastic; common fine roots; many very fine interstitial pores; noneffervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
C—8 to 48 inches; brown (7.5YR 5/4) loamy sand, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, friable, nonsticky and nonplastic; common fine roots; many fine interstitial pores; noneffervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.
2Btb—48 to 60 inches; reddish brown (5YR 5/4) sandy clay loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and nonplastic; few fine roots; many fine interstitial pores; few thin clay films on faces of peds; noneffervescent; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: less than 5 percent
Reaction: neutral to moderately alkaline
Content of clay: 1 to 5 percent in the control section

A horizon:
Hue—7.5YR, 5YR
Value—4 or 5 dry or moist
Chroma—4 or 6 dry or moist
Texture—loamy fine sand, loamy sand, sand

C horizon:
Hue—7.5YR, 5YR
Value—4 to 6 dry or moist
Chroma—3 to 6 dry or moist
Texture—loamy fine sand, loamy sand, sand

2Btb horizon:
Hue—2.5YR, 5YR
Value—3 to 5 dry or moist
Chroma—3 to 6 dry or moist
Texture—sandy loam, sandy clay loam
Calcium carbonate equivalent—0 to 5 percent

Elfrida Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: alluvial fans
Parent material: mixed stream alluvium

Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet

Classification: Fine-loamy, mixed, superactive, thermic Ustic Haplocalcids

Typical Pedon

Elfrida clay loam, 0 to 2 percent slopes, at a latitude of 31 degrees, 40 minutes, 30 seconds north and a longitude of 109 degrees, 37 minutes, 45 seconds west; about 1,200 feet west and 2,000 feet south of the northeast corner of sec. 19, T. 20 S., R. 27 E.

Ap1—0 to 9 inches; brown (7.5YR 5/3) clay loam, dark brown (7.5YR 3/3) moist; moderate fine and medium granular structure, appearing massive in place; hard, friable, moderately sticky and moderately plastic; many very fine and fine and few coarse roots; many very fine and fine tubular and few very fine interstitial pores; slightly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Ap2—9 to 23 inches; brown (7.5YR 5/3) clay loam, dark brown (7.5YR 3/3) moist; weak coarse prismatic structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine and few fine roots; many fine and medium tubular pores; slightly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Ck1—23 to 30 inches; brown (7.5YR 5/3) clay loam, brown (7.5YR 4/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; common very fine and few fine roots; many fine tubular pores; few patchy clay films in pores; strongly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

Ck2—30 to 46 inches; very pale brown (10YR 8/2) and pale red (2.5YR 7/2) clay loam, light gray (10YR 7/2) and pale red (2.5YR 6/2) moist; massive; hard, friable, moderately sticky and moderately plastic; common fine roots; many very fine and fine and few medium tubular pores; common medium soft calcium carbonate masses; strongly effervescent; strongly alkaline (pH 8.6); clear wavy boundary.

2Btk—46 to 60 inches; brown (7.5YR 4/4) clay, brown (7.5YR 4/4) moist; massive; very hard, firm, very sticky and very plastic; common very fine roots; common fine tubular pores; many distinct clay films on faces of peds and in pores; many medium soft calcium carbonate masses; common medium grayish brown (2.5Y 5/2) gley mottles; violently effervescent; strongly alkaline (pH 8.6).

Range in Characteristics

Reaction: moderately alkaline or strongly alkaline
Content of clay: 18 to 35 percent
Depth to a calcic horizon: 20 to 30 inches
Calcium carbonate equivalent: 15 to 40 percent
Other features: in some pedons, no calcareous B horizon below the Ck horizon

A horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—silty clay loam, clay loam, silt loam

C horizon:
Hue—10YR, 7.5YR
Value—4 to 8 dry or moist
Chroma—2 to 4 dry or moist
Texture—clay loam, clay, loam, silty clay loam

Elgin Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 1 to 20 percent
Elevation: 3,800 to 5,200 feet

Classification: Fine, mixed, superactive, thermic Calcic Paleargids

Typical Pedon

Elgin very gravelly fine sandy loam, in an area of Elgin-Stronghold complex, 3 to 20 percent slopes, at a latitude of 31 degrees, 44 minutes, 28 seconds north and a longitude of 109 degrees, 56 minutes, 30 seconds west; about 2,325 feet north and 350 feet west of the southeast corner of sec. 36, T. 19 S., R. 23 E.

About 25 to 30 percent of the surface is covered with gravel.

A—0 to 1 inch; brown (10YR 4/3) very gravelly fine sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common fine irregular and tubular pores; 38 percent gravel and 5 percent cobbles; noneffervescent; neutral (pH 6.8); abrupt smooth boundary.

Bt1—1 to 6 inches; dark reddish brown (5YR 3/2) clay, dark reddish brown (5YR 2.5/2) moist; moderate

medium angular blocky structure; slightly hard, firm, very sticky and very plastic; common very fine and fine roots; common fine tubular pores; many distinct clay films on faces of peds and on rock fragments; 10 percent gravel; noneffervescent; neutral (pH 6.8); clear smooth boundary.

Bt2—6 to 15 inches; dark reddish brown (5YR 3/4) clay, dark reddish brown (5YR 3/3) moist; moderate medium angular blocky structure; slightly hard, firm, very sticky and very plastic; common very fine and fine roots; common fine tubular pores; many distinct clay films on faces of peds and on rock fragments; 10 percent gravel; noneffervescent; neutral (pH 7.2); abrupt smooth boundary.

Btk—15 to 21 inches; reddish brown (5YR 5/4) gravelly sandy clay loam, reddish brown (5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, firm, moderately sticky and moderately plastic; few very fine roots; few fine tubular pores; common distinct clay films on rock fragments; common distinct calcium carbonate coatings on rock fragments; 25 percent gravel; slightly effervescent; 11 percent calcium carbonate equivalent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bk1—21 to 27 inches; 70 percent light reddish brown (5YR 6/4) and 30 percent reddish brown (5YR 4/4) gravelly sandy loam, 70 percent pink (5YR 7/4) and 30 percent reddish brown (5YR 5/4) moist; massive; soft, friable, nonsticky and nonplastic; common fine roots; few fine irregular and tubular pores; many distinct calcium carbonate coatings on rock fragments; 30 percent gravel; violently effervescent; 11 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk2—27 to 60 inches; pinkish gray (7.5YR 7/2) very gravelly sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; few fine irregular and tubular pores; many distinct calcium carbonate coatings on rock fragments; 40 percent gravel; violently effervescent; 20 percent calcium carbonate equivalent; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: less than 35 percent in the control section
Content of clay: more than 35 percent
Content of organic matter: 1 to 2 percent
Depth to a calcic horizon: 20 to 40 inches

A horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, fine sandy loam, loam
Reaction—slightly acid or neutral

Bt horizon:
Hue—2.5YR, 5YR
Value—2.5 to 5 dry or moist
Chroma—2 to 6 dry or moist
Texture—clay loam, clay, sandy clay
Reaction—neutral or slightly alkaline

Btk horizon:
Hue—2.5YR, 5YR
Value—4 to 7 dry or moist
Chroma—3 to 6 dry or moist
Texture—clay, clay loam, sandy clay loam
Reaction—neutral to moderately alkaline
Calcium carbonate equivalent—5 to 15 percent

Bk horizon:
Hue—5YR, 7.5YR
Value—4 to 7 dry or moist
Chroma—2 to 6 dry or moist
Texture—clay loam, loam, sandy loam, coarse sandy loam, sandy clay loam
Reaction—slightly alkaline or moderately alkaline
Calcium carbonate equivalent—10 to 25 percent

Eloma Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 1 to 15 percent
Elevation: 3,800 to 4,800 feet

Classification: Clayey-skeletal, mixed, superactive, thermic Ustic Haplargids

Typical Pedon

Eloma very gravelly sandy loam, in an unsectioned area of Eloma-Caralampi-White House complex, 1 to 15 percent slopes, at a latitude of 31 degrees, 38 minutes, 30 seconds north and a longitude of 110 degrees, 21 minutes, 30 seconds west.

About 20 to 50 percent of the surface is covered with gravel and/or cobbles.

A—0 to 1 inch; dark reddish brown (5YR 3/3) very gravelly sandy loam, dark reddish brown (5YR

2.5/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few fine roots; few fine interstitial pores; 35 percent gravel and 5 percent cobbles; noneffervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt1—1 to 10 inches; dark reddish brown (5YR 3/3) very gravelly clay loam, dark reddish brown (5YR 2.5/2) moist; moderate fine subangular blocky structure; hard, firm, moderately sticky and very plastic; many very fine and fine roots; few fine tubular pores; many distinct clay films on faces of peds, on rock fragments, and in pores; 50 percent gravel; noneffervescent; neutral (pH 7.2); abrupt smooth boundary.

Bt2—10 to 27 inches; dark reddish brown (2.5YR 3/4) very gravelly clay, dark reddish brown (2.5YR 2.5/4) moist; moderate fine and medium subangular blocky structure; hard, firm, very sticky and very plastic; many very fine and fine roots; few fine tubular pores; many distinct clay films on faces of peds, on rock fragments, and in pores; 50 percent gravel and 5 percent cobbles; noneffervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt3—27 to 60 inches; dark reddish brown (2.5YR 3/4) extremely cobbly clay, dark reddish brown (2.5YR 2.5/4) moist; strong fine and medium angular blocky structure; hard, firm, very sticky and very plastic; many very fine and fine roots; few fine tubular pores; many distinct clay films on faces of peds, on rock fragments, and in pores; 35 percent gravel and 30 percent cobbles; noneffervescent; neutral (pH 7.2).

Range in Characteristics

Content of rock fragments: more than 35 percent gravel, cobbles, and/or stones
Reaction: neutral or slightly alkaline
Content of clay: more than 35 percent
Content of organic matter: 1 to 2 percent in the surface layer

A horizon:
Hue—7.5YR, 5YR
Value—3 to 5 dry, 2.5 to 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, loam

Bt horizon:
Hue—2.5YR, 5YR
Value—3 or 4 dry, 2.5 to 4 moist
Chroma—2 to 6 dry or moist
Texture—clay loam, clay, sandy clay, sandy clay loam

Epitaph Series

Depth class: moderately deep to a hardpan
Drainage class: well drained
Permeability: very slow
Landform: hills and volcanic flows
Parent material: slope alluvium and residuum derived from basalt, cinders, bombs, and volcanic rocks
Slope range: 0 to 15 percent
Elevation: 3,800 to 4,900 feet

Classification: Fine, smectitic, thermic Petrocalcic Calcitorrerts

Typical Pedon

Epitaph very cobbly clay loam, 3 to 15 percent slopes, at a latitude of 31 degrees, 54 minutes, 35 seconds north and a longitude of 110 degrees, 42 minutes, 16 seconds west; about 510 feet north and 990 feet west of the southeast corner of sec. 9, T. 20 S., R. 23 E.

About 40 to 50 percent of the surface is covered with gravel and cobbles.

A—0 to 1 inch; dark brown (7.5YR 3/2) very cobbly clay loam, very dark brown (7.5YR 2/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and moderately plastic; few fine roots; few very fine tubular pores; common vertical cracks 0.25 to 1 inch thick; 15 percent gravel and 30 percent cobbles; noneffervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bt—1 to 6 inches; dark reddish brown (5YR 3/2) clay, dark reddish brown (5YR 2.5/2) moist; weak medium wedges parting to strong medium angular blocky structure; very hard, firm, very sticky and very plastic; common very fine and fine and few medium roots; few very fine tubular pores; common vertical cracks 0.25 to 1 inch thick; common distinct clay films on faces of peds and in pores; noneffervescent; slightly alkaline (pH 7.6); clear smooth boundary.

Btss—6 to 27 inches; dark reddish brown (5YR 3/2) clay, dark reddish brown (5YR 2.5/2) moist; weak medium wedges parting to strong medium angular blocky structure; very hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine tubular pores; common distinct clay films on faces of peds and in pores; few intersecting slickensides; slightly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

2Bkm—27 to 38 inches; an indurated hardpan; extremely hard; strongly cemented by calcium carbonate; violently effervescent; abrupt wavy boundary.

3R—38 inches; unweathered basalt.

Range in Characteristics

Soil cracking: common vertical cracks 0.25 inch to 1.5 inches wide; extending from the surface to the hardpan
Reaction: slightly alkaline or moderately alkaline
Content of clay: more than 35 percent
Content of organic matter: 1 to 2 percent
Depth to a petrocalcic horizon: 20 to 40 inches
Depth to unweathered bedrock: 25 to 40 inches

A horizon:
Hue—5YR, 7.5YR
Value—2.5 or 3 dry or moist
Chroma—2 or 3 dry or moist
Texture—clay loam, silt loam, loam, silty clay loam

B horizon:
Hue—2.5YR, 5YR
Value—2.5 or 3 dry, 2.5 to 4 moist
Chroma—2 or 3 dry, 2 to 4 moist
Texture—clay, clay loam, silty clay

Far Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Landform: hills and mountains
Parent material: mixed slope alluvium
Slope range: 25 to 60 percent
Elevation: 5,600 to 7,700 feet

Classification: Loamy-skeletal, mixed, superactive, mesic Lithic Haplustolls

Typical Pedon

Far stony fine sandy loam, in an unsectioned area of Far-Hogris association, 15 to 60 percent slopes, at a latitude of 31 degrees, 28 minutes, 00 seconds north and a longitude of 110 degrees, 21 minutes, 15 seconds west.

Oi—0 to 1 inch; slightly decomposed oak and pine litter.
A1—1 to 3 inches; dark brown (10YR 3/3) stony fine sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; 10 percent gravel and 20 percent stones; noneffervescent; moderately acid (pH 6.0); clear smooth boundary.
A2—3 to 16 inches; brown (10YR 4/3) very cobbly fine sandy loam, very dark brown (10YR 2/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; many distinct organic coatings on rock fragments; 20 percent gravel and 30 percent cobbles; noneffervescent; moderately acid (pH 6.0); abrupt smooth boundary.
2R—16 inches; unweathered sandstone.

Range in Characteristics

Content of rock fragments: averages more than 35 percent, but ranges to 60 percent in any one horizon
Reaction: moderately acid or slightly acid
Content of clay: 5 to 15 percent
Content of organic matter: 2 to 4 percent
Depth to unweathered bedrock: 5 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—fine sandy loam, sandy loam, loam

Fluvaquents, Mesic

Depth class: deep or very deep
Drainage class: somewhat poorly drained or poorly drained
Permeability: moderately rapid to very rapid
Landform: flood plains
Parent material: mixed stream alluvium
Slope range: 0 to 4 percent
Elevation: 5,700 to 7,200 feet

Typical Pedon

Fluvaquents extremely cobbly fine sandy loam, in an unsectioned area of Haplustolls-Fluvaquents association, mesic, 0 to 4 percent slopes, at a latitude of 31 degrees, 30 minutes, 10 seconds north and a longitude of 110 degrees, 22 minutes, 45 seconds west.

C1—0 to 1 inch; yellowish brown (10YR 5/4) extremely cobbly fine sandy loam, brown (10YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few fine roots; few fine irregular pores; 20 percent gravel and 40 percent cobbles; noneffervescent; neutral (pH 7.0); abrupt smooth boundary.
C2—1 to 2 inches; brown (10YR 4/3) extremely cobbly coarse sand, dark brown (10YR 3/3) moist; massive; loose, very friable, nonsticky and nonplastic; few fine roots; common fine irregular pores; 20 percent gravel and 45 percent cobbles; noneffervescent; neutral (pH 7.0); abrupt smooth boundary.

Cg1—2 to 5 inches; grayish brown (10YR 5/2) and greenish gray (5BG 5/1) extremely cobbly fine sandy loam, dark brown (10YR 3/3) and dark greenish gray (5BG 4/1) moist; massive; loose, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine tubular pores; 20 percent gravel and 60 percent cobbles; noneffervescent; neutral (pH 7.2); abrupt smooth boundary.

Cg2—5 to 20 inches; brown (7.5YR 5/3) and greenish gray (5BG 5/1) extremely cobbly fine sandy loam, dark brown (7.5YR 3/4) and dark greenish gray (5BG 4/1) moist; massive; loose, very friable, nonsticky and nonplastic; few medium and coarse roots; common fine tubular pores; 15 percent gravel and 60 percent cobbles; noneffervescent; neutral (pH 7.2); clear smooth boundary.

Cg3—20 to 60 inches; brown (7.5YR 5/3) and greenish gray (5BG 5/1) extremely cobbly coarse sand, dark brown (7.5YR 3/4) and dark greenish gray (5BG 4/1) moist; massive; extremely firm; compacted layers of gravel and cobbles in the lower part; 10 percent gravel and 70 percent cobbles.

Range in Characteristics

Content of rock fragments: 40 to 80 percent in any one horizon
Reaction: neutral or slightly alkaline
Content of clay: 3 to 10 percent
Content of organic matter: 1 to 2 percent
Redoximorphic features: episaturation—water saturation in one or more layers; in some pedons, zones of iron and manganese oxide masses in varying shapes within the matrix; reduced matrix—when exposed to air, undergoes a change in hue or chroma

C horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—coarse sand, fine sandy loam

Cg horizon:
Hue—10YR, 7.5YR, 5BG
Value—4 or 5 dry, 3 to 5 moist
Chroma—1 to 5 dry or moist
Texture—fine sandy loam, coarse sand

Fluvaquents, Thermic

Depth class: deep or very deep
Drainage class: somewhat poorly drained or poorly drained
Permeability: moderately rapid to very rapid
Landform: flood plains
Parent material: mixed stream alluvium
Slope range: 0 to 5 percent
Elevation: 3,600 to 5,700 feet

Typical Pedon

Fluvaquents extremely cobbly coarse sand, in an unsectioned area of Haplustolls-Fluvaquents association, thermic, 0 to 4 percent slopes, at a latitude of 31 degrees, 33 minutes, 30 seconds north and a longitude of 110 degrees, 22 minutes, 00 seconds west.

C1—0 to 2 inches; brown (10YR 4/3) extremely cobbly coarse sand, dark yellowish brown (10YR 3/4) moist; weak fine granular structure; loose, very friable, nonsticky and nonplastic; common fine roots; few fine irregular pores; 20 percent gravel and 40 percent cobbles; noneffervescent; slightly alkaline (pH 7.6); clear smooth boundary.

C2—2 to 10 inches; dark yellowish brown (10YR 4/4) extremely cobbly coarse sand, dark yellowish brown (10YR 3/4) moist; massive; loose, very friable, nonsticky and nonplastic; few fine roots; common fine irregular pores; 20 percent gravel and 45 percent cobbles; noneffervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

C3—10 to 25 inches; yellowish brown (10YR 5/4) extremely cobbly coarse sand, dark yellowish brown (10YR 3/4) moist; massive; loose, very friable, nonsticky and nonplastic; common fine and medium roots; common fine tubular pores; 20 percent gravel and 60 percent cobbles; noneffervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

C4—25 to 60 inches; dark yellowish brown (10YR 4/4) extremely cobbly coarse sand, dark yellowish brown (10YR 3/4) moist; massive; loose, nonsticky and nonplastic; 20 percent gravel and 70 percent cobbles; compacted layers of gravel and cobbles in the lower part.

Range in Characteristics

Content of rock fragments: 40 to 80 percent in any one horizon
Reaction: neutral or slightly alkaline
Content of clay: 3 to 10 percent
Content of organic matter: 1 to 2 percent
Depth to a water table: frequently changing because of the amount of rainfall throughout the year; ranging from a few inches to 6 feet
Redoximorphic features: episaturation—water saturation in one or more layers; in some pedons, zones of iron and manganese oxide masses in

varying shapes within the matrix; reduced matrix—when exposed to air, undergoes a change in hue or chroma

C horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—coarse sand, loamy coarse sand, sand, fine sandy loam

Forrest Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: basin floors and fan terraces
Parent material: mixed fan alluvium
Slope range: 0 to 8 percent
Elevation: 4,000 to 4,750 feet

Classification: Fine, mixed, superactive, thermic Ustic Calciargids

Typical Pedon

Forrest fine sandy loam, in an area of Forrest-Bonita complex, 0 to 3 percent slopes, at a latitude of 31 degrees, 41 minutes, 01 second north and a longitude of 109 degrees, 59 minutes, 57 seconds west; about 1,525 feet west and 1,150 feet south of the northeast corner of sec. 21, T. 20 S., R. 23 E.

A—0 to 1 inch; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; weak thick platy structure; loose, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine vesicular pores; noneffervescent; neutral (pH 6.8); abrupt smooth boundary.

Bt—1 to 7 inches; reddish brown (5YR 4/4) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate fine and medium angular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine and fine roots; common very fine and fine irregular and tubular pores; many distinct clay films on faces of peds and in pores; very slightly effervescent; 2 percent calcium carbonate equivalent; neutral (pH 7.0); clear smooth boundary.

Bty—7 to 22 inches; reddish brown (5YR 4/4) clay, dark reddish brown (5YR 3/4) moist; moderate fine and medium prismatic structure parting to moderate fine and medium angular blocky; hard, firm, very sticky and very plastic; common very fine and fine roots; common very fine and fine irregular and tubular pores; many distinct clay films on faces of peds and in pores; few fine gypsum crystals; very slightly effervescent; 2 percent calcium carbonate equivalent; neutral (pH 7.2); abrupt smooth boundary.

Btky1—22 to 39 inches; 60 percent yellowish red (5YR 4/6) and 40 percent pinkish white (5YR 8/2) clay loam, 60 percent reddish brown (5YR 4/4) and 40 percent light reddish brown (5YR 6/3) moist; moderate fine subangular blocky structure; slightly hard, firm, very sticky and very plastic; common very fine and fine roots; common fine irregular and tubular pores; many distinct clay films and calcium carbonate coatings on faces of peds; common medium and coarse round soft calcium carbonate masses; few fine gypsum crystals; violently effervescent; 23 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); gradual smooth boundary.

Btky2—39 to 50 inches; 70 percent reddish brown (5YR 5/4) and 30 percent pinkish gray (5YR 7/2) sandy clay loam, reddish brown (5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular and tubular pores; many distinct calcium carbonate coatings and common clay films on faces of peds; common medium and coarse round soft calcium carbonate masses; few fine gypsum crystals; violently effervescent; 9 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bky—50 to 60 inches; 70 percent light reddish brown (5YR 6/3) and 30 percent pinkish white (5YR 8/2) sandy clay loam, reddish brown (5YR 5/4) moist; weak fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; common fine vesicular, irregular, and tubular pores; many distinct calcium carbonate coatings on faces of peds; common fine gypsum crystals; violently effervescent; 18 percent calcium carbonate equivalent; moderately alkaline (pH 8.4).

Range in Characteristics

Content of rock fragments: 0 to 5 percent
Content of clay: more than 35 percent in the control section
Content of organic matter: 1 to 2 percent in the surface layer
Depth to a calcic horizon: 20 to 40 inches

A horizon:
Hue—5YR, 7.5YR
Value—3 to 5 dry or moist
Chroma—3 or 4 dry or moist

Texture—fine sandy loam, loam, clay loam, sandy loam, silt loam
Reaction—neutral to moderately alkaline

Bt and Bty horizons:
Hue—2.5YR, 5YR, 7.5YR
Value—3, 4, or 6 dry or moist
Chroma—3 or 4 dry or moist
Texture—sandy clay loam, clay loam, clay
Reaction—neutral to moderately alkaline
Calcium carbonate equivalent—2 to 8 percent
Content of gypsum—trace amounts in some pedons

Btky horizon:
Hue—5YR, 7.5YR
Value—4 to 8 dry, 4 to 6 moist
Chroma—2 to 6 dry, 3 or 4 moist
Texture—clay loam, sandy clay loam, clay
Reaction—slightly alkaline or moderately alkaline
Calcium carbonate equivalent—8 to 30 percent
Content of gypsum—trace amounts in some pedons

Bky horizon:
Hue—5YR, 7.5YR
Value—6 to 8 dry, 5 to 7 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, sandy clay loam, clay loam
Reaction—slightly alkaline or moderately alkaline
Calcium carbonate equivalent—15 to 30 percent
Content of gypsum—trace amounts in some pedons

Gardencan Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: fan terraces
Parent material: fan alluvium derived from granite and gneiss
Slope range: 0 to 5 percent
Elevation: 4,600 to 6,200 feet

Classification: Fine-loamy, mixed, superactive, thermic Aridic Haplustalfs

Typical Pedon

Gardencan sandy loam, in an unsectioned area of Gardencan-Lanque complex, 0 to 5 percent slopes, at a latitude of 31 degrees, 32 minutes, 00 seconds north and a longitude of 110 degrees, 18 minutes, 50 seconds west.

A—0 to 2 inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 3/4) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular and tubular pores; noneffervescent; moderately acid (pH 6.0); abrupt smooth boundary.

AB—2 to 4 inches; strong brown (7.5YR 4/6) sandy loam, dark reddish brown (5YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine irregular and common fine tubular pores; common distinct clay films on rock fragments and bridging sand grains; noneffervescent; moderately acid (pH 6.0); abrupt smooth boundary.

Bt1—4 to 9 inches; reddish brown (5YR 4/4) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine irregular and common fine tubular pores; common distinct clay films on faces of peds and in pores; noneffervescent; slightly acid (pH 6.4); clear smooth boundary.

Bt2—9 to 14 inches; yellowish red (5YR 4/6) sandy clay loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; common distinct clay films on faces of peds and in pores; noneffervescent; slightly acid (pH 6.4); clear smooth boundary.

Bt3—14 to 20 inches; yellowish red (5YR 4/6) sandy clay loam, yellowish red (5YR 4/6) moist; moderate medium angular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; common distinct clay films on faces of peds and in pores; noneffervescent; neutral (pH 7.0); abrupt smooth boundary.

Bt4—20 to 39 inches; red (2.5YR 4/6) gravelly clay loam, red (2.5YR 4/8) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, friable, very sticky and very plastic; few very fine roots; few fine tubular pores; many distinct clay films on faces of peds, in pores, and on rock fragments; 18 percent gravel; noneffervescent; neutral (pH 7.0); clear wavy boundary.

Bt5—39 to 60 inches; yellowish red (5YR 4/6) very cobbly sandy clay loam, dark red (2.5YR 3/6) moist; moderate medium subangular blocky

structure; slightly hard, friable, very sticky and very plastic; few very fine roots; few fine tubular pores; many distinct clay films on faces of peds, in pores, and on rock fragments; common iron-manganese stains on faces of peds and in pores; 40 percent cobbles and 15 percent gravel; noneffervescent; slightly alkaline (pH 7.4).

Range in Characteristics

Content of rock fragments: averages less than 35 percent, but can range to 55 percent in any one horizon
Content of clay: 18 to 35 percent in the control section
Content of organic matter: less than 1 percent

A horizon:
Hue—7.5YR, 5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 or 6 dry or moist
Texture—sandy loam, coarse sandy loam
Reaction—moderately acid or slightly acid

Bt horizon:
Hue—2.5YR, 5YR
Value—3 to 5 dry or moist
Chroma—4, 6, or 8 dry or moist
Texture—sandy clay loam, clay loam
Reaction—slightly acid to slightly alkaline

Glendale Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: flood plains and stream terraces
Parent material: mixed stream alluvium
Slope range: 0 to 2 percent
Elevation: 3,600 to 3,800 feet

Classification: Fine-silty, mixed superactive, calcareous, thermic Typic Torrifluvents

Typical Pedon

Glendale very fine sandy loam, 0 to 2 percent slopes, at a latitude of 31 degrees, 49 minutes, 10 seconds north and a longitude of 110 degrees, 12 minutes, 48 seconds west; about 800 feet north and 600 feet east of the southwest corner of sec. 33, T. 18 S., R. 21 E.

C1—0 to 7 inches; brown (7.5YR 5/4) very fine sandy loam, brown (7.5YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; few fine tubular pores; violently effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
C2—7 to 19 inches; brown (7.5YR 4/3) silty clay loam, dark brown (7.5YR 3/3) moist; massive; soft, very friable, moderately sticky and moderately plastic; many very fine and fine and few medium roots; common fine irregular and tubular pores; violently effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
C3—19 to 31 inches; brown (7.5YR 5/2) silty clay loam, dark brown (7.5YR 3/2) moist; massive; soft, very friable, very sticky and very plastic; common very fine and few fine roots; common fine irregular and tubular pores; violently effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
C4—31 to 45 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 3/4) moist; massive; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine tubular pores; violently effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.
Ck—45 to 60 inches; light brown (7.5YR 6/4) silty clay loam, brown (7.5YR 4/3) moist; massive; soft, very friable, moderately sticky and moderately plastic; few fine roots; many fine vesicular pores; few fine calcium carbonate filaments; violently effervescent; moderately alkaline (pH 8.0).

Range in Characteristics

Reaction: slightly alkaline or moderately alkaline
Content of clay: averages 18 to 35 percent

C horizon:
Hue—7.5YR, 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—loam, silty clay loam, very fine sandy loam; may have strata of finer or coarser textured material

Gothard Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: basin floors and flood plains
Parent material: mixed alluvium
Slope range: 0 to 5 percent
Elevation: 3,600 to 4,600 feet

Classification: Fine-loamy, mixed, superactive, thermic Ustic Natrargids

Typical Pedon

Gothard sandy loam, 0 to 2 percent slopes, at a latitude of 31 degrees, 37 minutes, 11 seconds north and a longitude of 109 degrees, 42 minutes, 53

seconds west; about 300 feet west and 2,250 feet north of the southeast corner of sec. 8, T. 21 S., R. 20 E.

A—0 to 3 inches; brown (7.5YR 5/3) sandy loam, brown (7.5YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine tubular pores; slightly effervescent or strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

AB—3 to 8 inches; brown (7.5YR 5/3) sandy loam, brown (7.5YR 4/3) moist; moderate coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine tubular pores; few fine salt crystals; noneffervescent to slightly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Btnz—8 to 18 inches; dark reddish brown (5YR 3/3) sandy clay loam, dark reddish brown (5YR 3/3) moist; moderate medium prismatic structure parting to strong fine and medium angular blocky; very hard, firm, moderately sticky and moderately plastic; many fine roots; few fine tubular pores; many distinct clay films on faces of peds; many fine salt crystals; noneffervescent to slightly effervescent; strongly alkaline (pH 9.0); clear smooth boundary.

Btknyz—18 to 30 inches; reddish brown (5YR 4/4) sandy clay loam, yellowish red (5YR 4/6) moist; moderate fine subangular blocky structure; soft, friable, slightly sticky and moderately plastic; few very fine roots; few fine tubular pores; many distinct clay films on faces of peds; many fine salt and gypsum crystals; many fine and medium soft calcium carbonate and gypsum masses; strongly effervescent; 9 percent calcium carbonate equivalent; very strongly alkaline (pH 9.4); abrupt smooth boundary.

Bknyz—30 to 60 inches; reddish brown (5YR 4/4) clay, reddish brown (5YR 4/4) moist; strong very fine and fine angular blocky structure; very hard, very firm, very sticky and very plastic; many fine salt and gypsum crystals; common fine and medium soft calcium carbonate and gypsum masses; common distinct calcium carbonate coatings on faces of peds; common pressure faces; strongly effervescent; 16 percent calcium carbonate equivalent; very strongly alkaline (pH 9.6).

Range in Characteristics

Reaction: slightly alkaline to very strongly alkaline
Content of clay: averages 18 to 35 percent in the control section
Content of organic matter: 1 to 2 percent
Depth to a calcic horizon: 20 to 40 inches

A horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry or moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, loam, sandy clay loam

Btnz horizon:
Hue—5YR, 7.5YR
Value—3 or 4 dry or moist
Chroma—3 or 4 dry or moist
Texture—sandy clay loam, clay loam
Content of gypsum—0 to 3 percent
Salinity—slight to strong (EC of 4 to 16 dS/m)
Sodicity—moderate or strong (SAR of 13 to 50)

Btknyz and Bknyz horizons:
Hue—5YR, 7.5YR
Value—3 to 8 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—sandy clay loam, clay, clay loam
Calcium carbonate equivalent—10 to 25 percent
Content of gypsum—1 to 5 percent
Salinity—slight to strong (EC of 4 to 32 dS/m)
Sodicity—moderate or strong (SAR of 13 to 60)

Graham Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: very slow
Landform: hills and mountains
Parent material: slope alluvium and residuum derived from basalt
Slope range: 8 to 40 percent
Elevation: 4,400 to 5,590 feet

Classification: Clayey, smectitic, thermic Lithic Ustic Haplargids

Typical Pedon

Graham very cobbly loam, in an area of Graham-Lampshire complex, 8 to 60 percent slopes, at a latitude of 31 degrees, 42 minutes, 24 seconds north and a longitude of 110 degrees, 00 minutes, 03 seconds west; about 2,425 feet west and 1,910 feet north of the southeast corner of sec. 9, T. 20 S., R. 23 E.

About 45 to 55 percent of the surface is covered with gravel, cobbles, and stones.

A—0 to 1 inch; brown (7.5YR 4/2) very cobbly loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; slightly hard, friable, slightly

sticky and moderately plastic; common very fine and fine roots; common fine tubular pores; 40 percent cobbles; noneffervescent; neutral (pH 6.8); clear smooth boundary.

Bt—1 to 10 inches; reddish brown (5YR 3/2) clay, dark reddish brown (5YR 2.5/2) moist; strong medium angular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; common fine tubular pores; common distinct clay films on faces of peds; noneffervescent; neutral (pH 7.0); abrupt smooth boundary.

R—10 inches; unweathered basalt.

Range in Characteristics

Content of rock fragments: 10 to 40 percent gravel and cobbles
Reaction: neutral or slightly alkaline
Content of clay: more than 35 percent
Content of organic matter: 1 to 3 percent
Depth to unweathered bedrock: 8 to 20 inches

A horizon:
Hue—7.5YR, 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—clay loam, loam, fine sandy loam

Bt horizon:
Hue—5YR, 7.5YR
Value—3 or 4 dry, 2.5 or 3 moist
Chroma—1 to 3 dry or moist
Texture—clay, silty clay

Graveyard Series

Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Landform: stream terraces and fan terraces
Parent material: mixed alluvium
Slope range: 0 to 8 percent
Elevation: 4,200 to 4,600 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Petronodic Haplocalcids

Typical Pedon

Graveyard fine sandy loam, in an area of Graveyard-Sierravista complex, 0 to 8 percent slopes, at a latitude of 31 degrees, 37 minutes, 33 seconds north and a longitude of 110 degrees, 18 minutes, 30 seconds west; about 300 feet north and 1,200 feet east of the southwest corner of sec. 3, T. 21 S., R. 20 E.

A—0 to 3 inches; strong brown (7.5YR 4/6) fine sandy loam, dark brown (7.5YR 3/4) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; 5 percent gravel; slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

Bk—3 to 9 inches; brown (7.5YR 5/4) sandy loam, brown (7.5YR 4/4) moist; weak very fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine irregular pores; common distinct calcium carbonate coatings on rock fragments; 10 percent gravel; strongly effervescent; 19 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear wavy boundary.

Bkc—9 to 16 inches; brown (7.5YR 5/4) very gravelly sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and moderately plastic; common very fine and fine roots; few fine irregular pores; common distinct organic coatings on faces of peds and in pores; 45 percent hard petronodes; violently effervescent; 40 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bky—16 to 34 inches; 60 percent brown (7.5YR 5/4) and 40 percent light brown (7.5YR 6/4) extremely gravelly sandy loam, 60 percent brown (7.5YR 4/4) and 40 percent brown (7.5YR 5/4) moist; massive; hard, firm, slightly sticky and moderately plastic; common very fine and fine roots; few fine irregular pores; many distinct calcium carbonate coatings on rock fragments; few gypsum crystals; 70 percent gravel; violently effervescent; 30 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bkyc—34 to 56 inches; 70 percent brown (7.5YR 5/4) and 30 percent light brown (7.5YR 6/4) very gravelly sandy loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, very firm, slightly sticky and moderately plastic; common very fine and fine roots; common fine tubular pores; many distinct calcium carbonate coatings on faces of peds; common fine and medium soft calcium carbonate masses; few fine gypsum crystals; 5 percent gravel and 45 percent hard petronodes; violently effervescent; 15 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt smooth boundary.

Bky´—56 to 60 inches; 80 percent brown (7.5YR 5/4) and 20 percent light brown (7.5YR 6/4) extremely gravelly sandy loam, brown (7.5YR 4/4) moist;

massive; hard, firm, slightly sticky and moderately plastic; few fine roots; few fine tubular pores; many distinct calcium carbonate coatings on rock fragments; few fine gypsum crystals; 65 percent gravel; violently effervescent; 20 percent calcium carbonate equivalent; slightly alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: more than 35 percent gravel and/or petronodes
Petronodic feature: more than 35 percent petronodes
Reaction: slightly alkaline or moderately alkaline
Content of clay: 5 to 18 percent
Depth to a calcic horizon: 3 to 20 inches

A horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 or 6 dry or moist
Texture—fine sandy loam, sandy loam
Calcium carbonate equivalent—3 to 14 percent

B horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, sandy loam
Calcium carbonate equivalent—15 to 40 percent
Content of gypsum—0 to 5 percent

Grizzle Series

Depth class: moderately deep
Drainage class: well drained
Permeability: moderately slow
Landform: hills
Parent material: slope alluvium and residuum derived from sandstone and shale
Slope range: 3 to 8 percent
Elevation: 4,500 to 5,000 feet

Classification: Fine-loamy, mixed, superactive, thermic Ustic Calciargids

Typical Pedon

Grizzle coarse sandy loam, 3 to 8 percent slopes, at a latitude of 32 degrees, 41 minutes, 02 seconds north and a longitude of 109 degrees, 59 minutes, 40 seconds west; about 200 feet west and 1,050 feet south of the northeast corner of sec. 20, T. 20 S., R. 23 E.

A—0 to 1 inch; reddish brown (5YR 5/3) coarse sandy loam, reddish brown (5YR 4/3) moist; weak fine granular structure; loose, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; violently effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

Btk—1 to 6 inches; reddish brown (5YR 5/3) clay loam, reddish brown (5YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine tubular pores; common distinct clay films between sand grains; common distinct calcium carbonate coatings on faces of peds; violently effervescent; 24 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt smooth boundary.

2Cdk1—6 to 14 inches; reddish brown (5YR 5/4) loam, reddish brown (5YR 4/4) moist; massive; hard, very firm and brittle, slightly sticky and moderately plastic; common very fine and fine roots; many distinct white (5YR 8/1) calcium carbonate coatings on plates and in pores; violently effervescent; 18 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.

2Cdk2—14 to 32 inches; reddish brown (5YR 5/4) loam, reddish brown (5YR 4/4) moist; massive; very hard, very firm and brittle, slightly sticky and moderately plastic; common very fine and fine roots; many distinct white (5YR 8/1) calcium carbonate coatings on plates and in pores; violently effervescent; 12 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.

3Crk—32 to 50 inches; weathered sandstone; many distinct calcium carbonate coatings between rock fractures; violently effervescent.

3R—50 inches; unweathered sandstone.

Range in Characteristics

Reaction: slightly alkaline or moderately alkaline
Content of clay: 18 to 35 percent
Depth to a calcic horizon: 1 to 10 inches
Depth to weathered bedrock: 20 to 40 inches
Depth to unweathered bedrock: 25 to 60 inches

A horizon:
Hue—7.5YR, 5YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—coarse sandy loam, loam, fine sandy loam
Calcium carbonate equivalent—5 to 10 percent

Btk horizon:
Hue—5YR, 2.5YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Texture—clay loam, loam
Calcium carbonate equivalent—15 to 30 percent

2Cdk horizon:
Hue—5YR, 2.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture (when crushed)—loam, clay loam
Calcium carbonate equivalent—10 to 25 percent
Other features—in most pedons, hard or very hard and breaking down after prolonged soaking and shaking in water

Guest Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: flood plains, stream terraces, and alluvial fans
Parent material: mixed alluvium
Slope range: 0 to 3 percent
Elevation: 3,600 to 4,600 feet

Classification: Fine, mixed, superactive, calcareous, thermic Ustertic Torrifluvents

Typical Pedon

Guest clay loam, in an area of Guest-Riveroad association, 0 to 1 percent slopes, at a latitude of 31 degrees, 22 minutes, 25 seconds north and a longitude of 110 degrees, 07 minutes, 00 seconds west; about 2,900 feet north and 1,700 feet east of the southwest corner of sec. 4, T. 24 S., R. 22 E.

Apy1—0 to 1 inch; brown (7.5YR 5/2) clay loam, dark brown (7.5YR 3/4) moist; moderate medium cloddy structure; slightly hard, very friable, moderately sticky and moderately plastic; common fine roots; common fine irregular pores; few fine gypsum crystals; strongly effervescent; 2 percent gypsum; moderately alkaline (pH 8.0); abrupt smooth boundary.

Apy2—1 to 10 inches; brown (7.5YR 5/3) clay, dark brown (7.5YR 3/4) moist; massive; soft, very friable, very sticky and very plastic; common very fine and fine roots; common fine tubular pores; few fine gypsum crystals; slightly effervescent; 2 percent gypsum; slightly alkaline (pH 7.8); abrupt wavy boundary.

Cy1—10 to 20 inches; brown (7.5YR 5/2) clay, dark brown (7.5YR 3/2) moist; massive; slightly hard, friable, very sticky and very plastic; common very fine and fine roots; common fine and medium tubular pores; few pressure faces; few fine gypsum crystals; slightly effervescent; 1 percent gypsum; slightly alkaline (pH 7.8); abrupt smooth boundary.

Cy2—20 to 38 inches; brown (7.5YR 5/2) clay, dark brown (7.5YR 3/2) moist; moderate medium wedges; slightly hard, friable, very sticky and very plastic; common very fine and fine roots; common fine tubular pores; many pressure faces; few fine gypsum crystals; strongly effervescent; 1 percent gypsum; slightly alkaline (pH 7.8); abrupt wavy boundary.

Cy3—38 to 60 inches; brown (7.5YR 4/2) clay, dark brown (7.5YR 3/3) moist; massive; soft, friable, very sticky and very plastic; common fine roots; few fine tubular pores; few pressure faces; few fine gypsum crystals; strongly effervescent; 1 percent gypsum; slightly alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: less than 15 percent
Soil cracking: many vertical cracks 0.125 inch to 1.5 inches wide
Reaction: slightly alkaline or moderately alkaline
Content of clay: 35 to 60 percent in the control section
Calcium carbonate equivalent: 0 to 10 percent
Content of gypsum: 0 to 4 percent
Salinity: none or slight (EC of 0 to 8 dS/m)
Sodicity: none or slight (SAR of 0 to 13)

A and C horizons:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2 to 4 moist
Chroma—1 to 6 dry or moist
Texture—silty clay loam, silty clay, clay loam, clay

Gulch Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: stream terraces, fan terraces, and relict basin floors
Parent material: mixed calcareous alluvium
Slope range: 0 to 10 percent
Elevation: 3,900 to 4,600 feet

Classification: Fine-loamy, mixed, superactive, thermic Ustic Calciargids

Typical Pedon

Gulch gravelly fine sandy loam, in an area of Libby-Gulch complex, 0 to 10 percent slopes, at a latitude of 31 degrees, 37 minutes, 05 seconds north and a longitude of 110 degrees, 13 minutes, 10 seconds west; about 2,200 feet south and 600 feet east of the northwest corner of sec. 4, T. 21 S., R. 21 E.

A—0 to 1 inch; yellowish red (5YR 5/6) gravelly fine sandy loam, dark reddish brown (5YR 3/4) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few fine irregular pores; 20 percent gravel; slightly effervescent; 5 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt smooth boundary.

Btk1—1 to 3 inches; yellowish red (5YR 4/6) sandy loam, dark reddish brown (5YR 3/3) moist; weak fine subangular blocky structure; soft, friable, nonsticky and nonplastic; few fine roots; few fine irregular pores; few distinct clay films on faces of peds and in pores; few patchy calcium carbonate coatings on sand grains and pebbles; 10 percent gravel; strongly effervescent; 5 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Btk2—3 to 10 inches; yellowish red (5YR 4/6) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; common distinct clay films on faces of peds and in pores; common patchy calcium carbonate coatings on sand grains and pebbles; common fine calcium carbonate filaments; 10 percent gravel; violently effervescent; 16 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.

Btky1—10 to 24 inches; yellowish red (5YR 5/6) clay loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; common distinct clay films on faces of peds and in pores; few fine gypsum crystals; common fine calcium carbonate filaments; violently effervescent; 17 percent calcium carbonate equivalent and 4 percent gypsum; moderately alkaline (pH 8.2); clear smooth boundary.

Btky2—24 to 30 inches; yellowish red (5YR 5/6) gravelly clay loam, yellowish red (5YR 4/6) moist; strong medium subangular blocky structure; slightly hard, firm, moderately sticky and moderately plastic; few fine roots; few fine tubular pores; many distinct clay films on faces of peds and in pores; few fine gypsum crystals; common fine soft calcium carbonate masses; common fine calcium carbonate filaments; common fine soft iron-manganese masses; 20 percent gravel; violently effervescent; 8 percent calcium carbonate equivalent and 4 percent gypsum; moderately alkaline (pH 8.2); clear smooth boundary.

Btky3—30 to 40 inches; yellowish red (5YR 5/8) gravelly clay loam, yellowish red (5YR 5/8) moist; strong medium subangular blocky structure; slightly hard, firm, moderately sticky and moderately plastic; few fine tubular pores; many distinct clay films on faces of peds and in pores; few fine gypsum crystals; common distinct calcium carbonate coatings on rock fragments and common medium calcium carbonate filaments; few fine soft iron-manganese masses; 18 percent gravel; strongly effervescent; 13 percent calcium carbonate equivalent and 2 percent gypsum; moderately alkaline (pH 8.0); clear wavy boundary.

2Btk—40 to 60 inches; yellowish red (5YR 5/6) and white (5YR 8/1) gravelly clay loam, yellowish red (5YR 4/6) and reddish yellow (5YR 5/6) moist; strong medium subangular blocky structure; very hard, firm, moderately sticky and moderately plastic; few fine tubular pores; many distinct clay films on faces of peds and in pores; many distinct calcium carbonate coatings on rock fragments; common distinct organic coatings in root channels and/or pores; 20 percent gravel; violently effervescent; 51 percent calcium carbonate equivalent; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: less than 35 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: 18 to 35 percent
Content of organic matter: less than 1 percent
Depth to a calcic horizon: 1 to 20 inches

A horizon:
Hue—7.5YR, 5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 or 6 dry or moist
Texture—fine sandy loam, sandy loam
Calcium carbonate equivalent—0 to 5 percent

Btk horizon:
Hue—7.5YR, 5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 or 6 dry, 3 or 4 moist
Texture—sandy clay loam, sandy loam
Calcium carbonate equivalent—10 to 20 percent

Btky and 2Btk horizons:
Hue—7.5YR, 5YR
Value—4, 5, or 8 dry or moist
Chroma—1, 6, or 8 dry, 4 to 6 moist
Texture—sandy clay loam, clay loam

Calcium carbonate equivalent—15 to 55 percent
Content of gypsum—0 to 4 percent

Hantz Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: flood plains
Parent material: mixed alluvium
Slope range: 0 to 3 percent
Elevation: 3,600 to 3,800 feet

Classification: Fine, mixed, superactive, calcareous, thermic Vertic Torrifluvents

Typical Pedon

Hantz silt loam, saline-sodic, 0 to 3 percent slopes, at a latitude of 31 degrees, 49 minutes, 45 seconds north and a longitude of 110 degrees, 12 minutes, 40 seconds west; about 1,100 feet south and 600 feet east of the northwest corner of sec. 33, T. 18 S., R. 21 E.

C—0 to 3 inch; light brown (7.5YR 6/3) silt loam, dark brown (7.5YR 4/3) moist; strong thick and weak thin platy structure; soft, very friable, moderately sticky and moderately plastic; few very fine roots; many fine and medium vesicular pores; violently effervescent; strongly alkaline (pH 8.8); abrupt wavy boundary.

Cnyz1—3 to 14 inches; brown (7.5YR 5/2) silty clay loam, brown (7.5YR 4/2) moist; moderate medium subangular blocky structure; soft, very friable, very sticky and very plastic; many very fine and fine roots; common fine vesicular pores; many distinct salt crystals on faces of peds; few fine gypsum crystals; violently effervescent; strongly alkaline (pH 8.8.); abrupt wavy boundary.

Cnyz2—14 to 42 inches; brown (7.5YR 5/3) silty clay, brown (7.5YR 4/3) moist; weak medium wedges; slightly hard, very friable, very sticky and very plastic; few very fine roots; common fine irregular and tubular pores; common distinct salt crystals on faces of peds; few gypsum crystals; violently effervescent; very strongly alkaline (pH 9.6); abrupt smooth boundary.

Cnz—42 to 60 inches; brown (7.5YR 5/4) silty clay, dark brown (7.5YR 4/4) moist; massive; slightly hard, very friable, very sticky and very plastic; common fine roots; few fine irregular and tubular pores; many distinct salt crystals on faces of peds; violently effervescent; very strongly alkaline (pH 9.6).

Range in Characteristics

Soil cracking: many vertical cracks 0.25 to 0.50 inch wide; extending from the surface to a depth of 20 inches or more
Reaction: moderately alkaline to very strongly alkaline
Content of clay: 35 to 50 percent in the control section
Content of gypsum: 0 to 2 percent
Salinity: slight or moderate (EC of 2 to 16 dS/m)
Sodicity: moderate or strong (SAR of 13 to 50)

C horizon:
Hue—10YR, 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—silty clay loam, silty clay

Haplustolls, Mesic

Depth class: very deep
Drainage class: somewhat poorly drained or poorly drained
Permeability: moderately rapid to very rapid
Landform: flood plains
Parent material: mixed stream alluvium
Slope range: 0 to 4 percent
Elevation: 5,700 to 7,200 feet

Typical Pedon

Haplustolls very cobbly loamy sand, in an unsectioned area of Haplustolls-Fluvaquents association, mesic, 0 to 4 percent slopes, at a latitude of 31 degrees, 30 minutes, 10 seconds north and a longitude of 110 degrees, 22 minutes, 45 seconds west.

Oi—0 to 2 inches; slightly decomposed oak leaves, twigs, and grass litter.

A—2 to 8 inches; brown (10YR 4/3) very cobbly loamy sand, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; 10 percent gravel and 45 percent cobbles; slightly effervescent; neutral (pH 7.0); abrupt smooth boundary.

C1—8 to 27 inches; brown (10YR 4/3) very cobbly coarse sandy loam, black (10YR 2/1) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; 10 percent gravel and 40 percent cobbles; strongly effervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

C2—27 to 37 inches; brown (10YR 4/3) very cobbly coarse sand, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and

nonplastic; common medium and coarse roots; common fine irregular pores; 10 percent gravel and 45 percent cobbles; slightly effervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

C3—37 to 42 inches; very dark grayish brown (10YR 3/2) very cobbly sandy loam, black (10YR 2/1) moist; massive; soft, very friable, nonsticky and nonplastic; common medium and coarse roots; few fine irregular and tubular pores; 25 percent gravel and 25 percent cobbles; slightly effervescent; slightly alkaline (pH 7.4); abrupt wavy boundary.

C4—42 to 60 inches; brown (10YR 4/3) extremely gravelly coarse sand, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; common medium and coarse roots; common fine irregular pores; 60 percent gravel and 10 percent cobbles; strongly effervescent; slightly alkaline (pH 7.4).

Range in Characteristics

Content of rock fragments: 40 to 80 percent gravel and cobbles in any one horizon
Reaction: neutral or slightly alkaline
Content of clay: 3 to 10 percent
Content of organic matter: 1 to 3 percent

A and C horizons:
Hue—10YR, 7.5YR
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—loamy sand, coarse sandy loam, sandy loam, coarse sand

Haplustolls, Thermic

Depth class: very deep
Drainage class: somewhat poorly drained or poorly drained
Permeability: moderately rapid to very rapid
Landform: flood plains
Parent material: mixed stream alluvium
Slope range: 0 to 4 percent
Elevation: 4,700 to 5,700 feet

Typical Pedon

Haplustolls gravelly fine sandy loam, in an unsectioned area of Haplustolls-Fluvaquents association, thermic, 0 to 4 percent slopes, at a latitude of 31 degrees, 33 minutes, 30 seconds north and a longitude of 110 degrees, 22 minutes, 00 seconds west.

Oi—0 to 2 inches; slightly decomposed oak leaves, twigs, and grass litter.

A—2 to 10 inches; brown (10YR 4/3) gravelly fine sandy loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; 20 percent gravel; noneffervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

C1—10 to 22 inches; dark brown (10YR 3/3) extremely cobbly coarse sand, dark brown (10YR 3/3) moist; massive; loose, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common fine irregular pores; 15 percent gravel and 55 percent cobbles; noneffervescent; neutral (pH 7.2); abrupt smooth boundary.

C2—22 to 60 inches; brown (10YR 5/3 and 4/3) extremely cobbly coarse sand, very dark grayish brown (10YR 3/2) moist; massive; loose, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common fine irregular pores; 10 percent gravel and 65 percent cobbles; slightly effervescent; slightly alkaline (pH 7.4).

Range in Characteristics

Content of rock fragments: 40 to 80 percent gravel and cobbles in any one horizon
Reaction: neutral or slightly alkaline
Content of clay: 3 to 10 percent in the control section
Content of organic matter: 1 to 3 percent

A and C horizons:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—fine sandy loam, coarse sandy loam, coarse sand

Hathaway Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Landform: fan terraces
Parent material: mixed calcareous fan alluvium
Slope range: 3 to 45 percent
Elevation: 4,600 to 6,200 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Aridic Calciustolls

Typical Pedon

Hathaway gravelly fine sandy loam, in an area of Carbine-Hathaway complex, 3 to 45 percent slopes, at a latitude of 31 degrees, 42 minutes, 33 seconds north

and a longitude of 109 degrees, 29 minutes, 50 seconds west; about 300 feet west and 1,400 feet south of the northeast corner of sec. 8, T. 20 S., R. 28 E.

About 60 to 80 percent of the surface is covered with gravel and cobbles.

A1—0 to 2 inches; very dark gray (7.5YR 3/1) gravelly fine sandy loam, black (7.5YR 2.5/1) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine irregular and vesicular pores; 25 percent gravel; slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

A2—2 to 9 inches; very dark gray (7.5YR 3/1) very gravelly loam, black (7.5YR 2.5/1) moist; moderate very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine tubular pores; 30 percent gravel and 10 percent cobbles; slightly effervescent or strongly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

Bk1—9 to 25 inches; brown (7.5YR 5/3) very gravelly loam, brown (7.5YR 5/2) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine irregular and interstitial pores; many distinct calcium carbonate coatings on rock fragments; many fine and medium soft and hard calcium carbonate masses; 30 percent gravel and 10 percent cobbles; violently effervescent; 20 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bk2—25 to 60 inches; brown (7.5YR 5/3) extremely gravelly sandy loam, brown (7.5YR 5/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many fine irregular pores; many distinct calcium carbonate coatings on rock fragments; 55 percent gravel and 15 percent cobbles; violently effervescent; 16.5 percent calcium carbonate equivalent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: more than 35 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: 5 to 20 percent
Content of organic matter: 1 to 3 percent
Depth to a calcic horizon: 5 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2 to 3 moist
Chroma—1 to 3 dry or moist
Texture—fine sandy loam, loam, sandy loam
Calcium carbonate equivalent—0 to 10 percent

Bk horizon:
Hue—10YR, 7.5YR
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam, sandy loam, loam
Calcium carbonate equivalent—15 to 40 percent

Hayhollow Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Landform: flood plains
Parent material: mixed stream alluvium
Slope range: 0 to 5 percent
Elevation: 4,300 to 5,300 feet

Classification: Coarse-loamy, mixed, superactive, nonacid, thermic Aridic Ustifluvents

Typical Pedon

Hayhollow sand, in an area of Hayhollow-Rafter-Riverwash complex, 0 to 5 percent slopes, at a latitude of 31 degrees, 20 minutes, 34 seconds north and a longitude of 109 degrees, 04 minutes, 07 seconds west; about 2,200 feet south and 1,600 feet west of the northeast corner of sec. 15, T. 24 S., R. 32 E.

Oi—0 to 2 inches; slightly decomposed oak and sycamore leaves.

C1—2 to 9 inches; dark brown (7.5YR 3/2) sand, dark brown (7.5YR 3/2) moist; single grain; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many fine vesicular pores; 10 percent gravel; noneffervescent; slightly acid (pH 6.4); abrupt wavy boundary.

C2—9 to 22 inches; brown (7.5YR 5/3) sandy loam, dark brown (7.5YR 3/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; many fine irregular and tubular pores; noneffervescent; slightly acid (pH 6.4); abrupt smooth boundary.

C3—22 to 34 inches; brown (7.5YR 5/2) sand, dark brown (7.5YR 3/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine and few medium roots; many fine irregular and tubular and common fine vesicular pores; slightly effervescent; neutral (pH 6.8); clear smooth boundary.

C4—34 to 51 inches; brown (7.5YR 5/2) sandy loam, dark brown (7.5YR 3/2) moist; massive; slightly

hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common medium vesicular and many fine irregular and tubular pores; noneffervescent; neutral (pH 6.8); abrupt smooth boundary.

C5—51 to 60 inches; grayish brown (10YR 5/2) sandy loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine, fine, and medium roots; many medium irregular and tubular pores; noneffervescent; moderately acid (pH 6.0).

Range in Characteristics

Content of rock fragments: averages less than 35 percent, but can range to 50 percent in any one horizon
Reaction: moderately acid to neutral
Content of clay: 3 to 15 percent
Content of organic matter: 1 to 3 percent

C horizon:
Hue—10YR, 7.5YR
Value—2 to 5 dry, 2 to 4 moist
Chroma—1 to 4 dry or moist
Texture—sandy loam, coarse sand, sand, fine sandy loam

Hogris Series

Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Landform: hills and mountains
Parent material: mixed slope alluvium
Slope range: 15 to 50 percent
Elevation: 5,600 to 7,700 feet

Classification: Loamy-skeletal, mixed, superactive, nonacid, mesic Typic Ustorthents

Typical Pedon

Hogris extremely cobbly fine sandy loam, in an unsectioned area of Far-Hogris association, 15 to 60 percent slopes, at a latitude of 31 degrees, 30 minutes, 30 seconds north and a longitude of 110 degrees, 23 minutes, 15 seconds west.

Oi—0 to 2 inches; slightly decomposed oak and pine litter.

A—2 to 5 inches; very dark grayish brown (10YR 3/2) extremely cobbly fine sandy loam, black (10YR 2/1) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; 40 percent gravel and 20 percent cobbles; noneffervescent; slightly acid (pH 6.4); abrupt smooth boundary.

C1—5 to 14 inches; brown (10YR 5/3) extremely cobbly sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; 20 percent gravel and 40 percent cobbles; noneffervescent; neutral (pH 6.6); clear smooth boundary.

C2—14 to 38 inches; grayish brown (10YR 5/2) extremely cobbly sandy loam, brown (10YR 4/3) moist; massive; loose, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common fine irregular and tubular pores; 20 percent gravel and 40 percent cobbles; noneffervescent; neutral (pH 7.0); abrupt smooth boundary.

C3—38 to 60 inches; brown (10YR 4/3) extremely cobbly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; loose, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; common fine irregular and tubular pores; 15 percent gravel and 60 percent cobbles; very slightly effervescent; neutral (pH 7.2).

Range in Characteristics

Content of rock fragments: 40 to 80 percent in any one horizon
Reaction: slightly acid or neutral
Content of clay: 5 to 15 percent
Content of organic matter: less than 1 percent in the lower horizons

A horizon:
Hue—10YR, 7.5YR
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—fine sandy loam, sandy loam, loam

C horizon:
Hue—10YR, 7.5YR
Value—4 to 6 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, fine sandy loam, loam

Hooks Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: stream terraces and alluvial fans
Parent material: mixed alluvium
Slope range: 0 to 5 percent
Elevation: 3,900 to 4,600 feet

Classification: Fine-loamy, mixed, superactive, thermic Ustic Haplocambids

Typical Pedon

Hooks sandy loam, in an area of Mallet-Hooks complex, 0 to 5 percent slopes, at a latitude of 31 degrees, 41 minutes, 24 seconds north and a longitude of 109 degrees, 07 minutes, 10 seconds west; about 2,700 feet south and 50 feet west of the northeast corner of sec. 13, T. 20 S., R. 31 E.

A—0 to 2 inches; brown (7.5YR 5/3) sandy loam, dark brown (7.5YR 3/3) moist; moderate thick platy structure; soft, very friable, slightly sticky and nonplastic; common very fine roots; common very fine and fine irregular and tubular and few medium vesicular pores; noneffervescent; slightly acid (pH 6.2); clear wavy boundary.

Bw—2 to 14 inches; dark brown (7.5YR 3/3) silty clay loam, very dark brown (7.5YR 2.5/3) moist; weak fine and medium subangular blocky structure; slightly hard, firm, moderately sticky and moderately plastic; common very fine and fine roots; common fine irregular and few fine tubular pores; common distinct clay bridges; noneffervescent; neutral (pH 6.6); gradual wavy boundary.

C1—14 to 46 inches; brown (7.5YR 4/3) silty clay loam, dark brown (7.5YR 3/3) moist; massive; slightly hard, firm, moderately sticky and moderately plastic; common very fine and fine roots; common very fine and fine irregular and few fine tubular pores; common distinct clay bridges; noneffervescent; neutral (pH 6.6); clear wavy boundary.

C2—46 to 60 inches; brown (7.5YR 4/3) clay loam, dark brown (7.5YR 3/3) moist; massive; slightly hard, firm, moderately sticky and moderately plastic; few very fine roots; few fine irregular and tubular pores; common distinct clay bridges; few faint pressure faces; noneffervescent; neutral (pH 6.8).

Range in Characteristics

Content of rock fragments: less than 15 percent
Reaction: slightly acid to slightly alkaline
Content of clay: 18 to 35 percent
Content of organic matter: 1 to 2 percent

A horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry, 2.5 to 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, loam

Bw horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry, 2.5 to 4 moist
Chroma—2 to 4 dry or moist
Texture—silt loam, silty clay loam, clay loam, sandy loam

C horizon:
Hue—7.5YR, 10YR
Value—3 to 6 dry, 2.5 to 5 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, silty clay loam, loam
Stratification—thin strata of contrasting textures are common.

Huachuca Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderate
Landform: hills and mountains
Parent material: slope alluvium derived from limestone
Slope range: 25 to 70 percent
Elevation: 6,000 to 8,410 feet

Classification: Loamy-skeletal, mixed, superactive, mesic Lithic Haplustolls

Typical Pedon

Huachuca very stony loam, in an unsectioned area of Far-Huachuca-Hogris association, 15 to 70 percent slopes, at a latitude of 31 degrees, 27 minutes, 50 seconds north and a longitude of 110 degrees, 21 minutes, 30 seconds west.

Oi—0 to 3 inches; slightly decomposed oak and grass litter.

A—3 to 8 inches; brown (10YR 4/3) very stony loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; many fine roots; common fine irregular pores; 10 percent gravel, 10 percent cobbles, and 35 percent stones; slightly effervescent; slightly alkaline (pH 7.6); abrupt wavy boundary.

2R—8 inches; unweathered limestone.

Range in Characteristics

Content of rock fragments: more than 35 percent
Reaction: neutral or slightly alkaline
Content of clay: 5 to 18 percent in the control section
Content of organic matter: 1 to 3 percent
Depth to unweathered bedrock: 5 to 20 inches
Calcium carbonate equivalent: less than 5 percent

A horizon:
Hue—10YR, 7.5YR
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—fine sandy loam, loam

Kaboom Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately slow
Landform: stream terraces and relict basin floors
Parent material: mixed alluvium
Slope range: 0 to 5 percent
Elevation: 4,000 to 4,300 feet

Classification: Loamy, mixed, superactive, thermic Lithic Calcigypids

Typical Pedon

Kaboom very gravelly sandy loam, in an area of Kaboom-Reeup complex, 0 to 45 percent slopes, at a latitude of 31 degrees, 36 minutes, 58 seconds north and longitude of 110 degrees, 12 minutes, 15 seconds west; about 1,200 feet north and 500 feet east of the southwest corner of sec. 9, T. 21 S., R. 21 E.

A—0 to 2 inches; light brown (7.5YR 6/3) very gravelly sandy loam, brown (7.5YR 5/4) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; few fine roots; few fine tubular pores; 50 percent gravel; violently effervescent; moderately alkaline (pH 8.4); abrupt smooth boundary.

Bky1—2 to 5 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 4/4) and white (7.5YR 8/1) moist; massive; soft, very friable, slightly sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; common fine soft irregular calcium carbonate and gypsum masses; violently effervescent; 30 percent calcium carbonate equivalent and 9.7 percent gypsum; moderately alkaline (pH 8.2); clear smooth boundary.

Bky2—5 to 9 inches; brown (7.5YR 5/3) clay loam, brown (7.5YR 4/3) and white (7.5YR 8/1) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; common medium and coarse irregular soft calcium carbonate and gypsum masses; violently effervescent; 35 percent calcium carbonate equivalent and 17.6 percent gypsum; moderately alkaline (pH 8.2); clear wavy boundary.

Bky3—9 to 13 inches; brown (7.5YR 5/3) clay loam, brown (7.5YR 4/3) and white (7.5YR 8/1) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common fine roots; few fine tubular pores; many distinct calcium carbonate and gypsum coatings on faces of peds and in pores; 12 percent fine petronodes; violently effervescent; 35 percent calcium carbonate equivalent and 5.7 percent gypsum; moderately alkaline (pH 8.0); abrupt wavy boundary.

2R—13 inches; interbedded sandstone, limestone, and loamy soil material; extremely hard; violently effervescent.

Range in Characteristics

Content of rock fragments: 0 to 20 percent petronodes
Reaction: slightly alkaline or moderately alkaline
Content of clay: averages 20 to 35 percent in the control section
Depth to a gypsic horizon: 2 to 10 inches
Depth to a calcic horizon: 2 to 10 inches
Depth to interbedded bedrock: 5 to 20 inches

A horizon:
Hue—7.5YR, 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Content of gypsum—0 to 3 percent
Calcium carbonate equivalent—1 to 10 percent

Bky horizon:
Hue—7.5YR, 10YR
Value—5 to 7 dry, 4 to 8 moist
Chroma—1 to 4 dry or moist
Texture—clay loam, clay
Content of gypsum—5 to 20 percent
Calcium carbonate equivalent—15 to 40 percent

Kahn Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: alluvial fans and relict basin floors
Parent material: mixed fan alluvium
Slope range: 0 to 15 percent
Elevation: 3,700 to 4,600 feet

Classification: Fine-loamy, mixed, superactive, thermic Ustic Haplocalcids

Typical Pedon

Kahn silt loam, in an area of Kahn complex, 0 to 3 percent slopes, at a latitude of 31 degrees, 36 minutes, 20 seconds north and longitude of 110

degrees, 06 minutes, 55 seconds west; about 1,500 feet south and 2,500 feet east of the northwest corner of sec. 16, T. 21 S., R. 22 E.

A—0 to 1 inch; brown (10YR 5/3) silt loam, dark grayish brown (10YR 4/2) moist; strong thin platy structure; soft, very friable, nonsticky and nonplastic; common fine roots; many fine and medium vesicular pores; strongly effervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.

Bw—1 to 15 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; common fine irregular pores; violently effervescent; 19 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt smooth boundary.

Bk1—15 to 29 inches; pink (7.5YR 7/4) clay loam, light brown (7.5YR 6/4) moist; moderate fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; few very fine and fine irregular and tubular pores; many fine soft calcium carbonate masses; violently effervescent; 43 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); clear smooth boundary.

Bk2—29 to 43 inches; light brown (7.5YR 6/4) clay loam, light brown (7.5YR 6/4) moist; moderate fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few fine roots; few very fine and fine irregular and tubular pores; common fine soft calcium carbonate masses; violently effervescent; 10 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Btkb—43 to 60 inches; light reddish brown (5YR 6/4) clay loam, light reddish brown (5YR 6/4) moist; moderate fine prismatic structure parting to strong medium angular blocky; hard, firm, very sticky and very plastic; few fine roots; few fine tubular pores; many fine and medium soft calcium carbonate masses; common distinct reddish brown (5YR 4/3) clay films on faces of peds; violently effervescent; 8 percent calcium carbonate equivalent and 2 percent gypsum; slightly alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: less than 15 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: 18 to 35 percent
Depth to a calcic horizon: 15 to 43 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 to 6 dry or moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam, loam, silt loam
Calcium carbonate equivalent—0 to 5 percent

Bw horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—silt loam, loam, clay loam
Calcium carbonate equivalent—0 to 20 percent

Bk horizon:
Hue—10YR, 7.5YR
Value—5 to 7 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—clay loam, loam, silty clay loam
Calcium carbonate equivalent—10 to 45 percent

Btkb horizon:
Hue—5YR, 7.5YR
Value—5 to 8 dry, 4 or 6 moist
Chroma—2 to 4 dry, 4 or 6 moist
Texture—clay loam, loam
Calcium carbonate equivalent—5 to 20 percent
Content of gypsum—0 to 5 percent

Karro Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: alluvial fans
Parent material: mixed alluvium
Slope range: 1 to 3 percent
Elevation: 4,000 to 4,600 feet

Classification: Fine-loamy, carbonatic, thermic Ustic Haplocalcids

Typical Pedon

Karro loam, 1 to 3 percent slopes, at a latitude of 31 degrees, 41 minutes, 30 seconds north and a longitude of 109 degrees, 37 minutes, 40 seconds west; about 1,700 feet north of the southwest corner of sec. 30, T. 20 S., R. 27 E.

A1—0 to 6 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; few very fine vesicular and common very fine and fine interstitial pores; strongly effervescent; 21 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); clear smooth boundary.

A2—6 to 14 inches; brown (10YR 5/3) loam, brown

(10YR 4/3) moist; moderate medium and coarse subangular blocky structure; very hard, firm, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular and interstitial pores; strongly effervescent; 22 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk1—14 to 25 inches; white (10YR 8/1) clay loam, light gray (10YR 7/2) moist; moderate medium platy structure; hard, firm, moderately sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; many fine, medium, and coarse hard calcium carbonate concretions within a matrix of soft calcium carbonate; violently effervescent; 62 percent calcium carbonate equivalent; strongly alkaline (pH 8.6); clear wavy boundary.

Bk2—25 to 33 inches; white (10YR 8/1) clay loam, light gray (10YR 7/2) moist; moderate medium platy structure; hard, friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine and fine tubular and few very fine interstitial pores; few patchy clay films in pores; many fine and medium hard calcium carbonate concretions within a matrix of soft calcium carbonate; violently effervescent; 60 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk3—33 to 44 inches; white (10YR 8/1) clay loam, light gray (10YR 7/2) moist; massive; hard, friable, moderately sticky and slightly plastic; few very fine roots; common very fine and fine tubular and few very fine interstitial pores; many fine, medium, and coarse hard calcium carbonate concretions within a matrix of soft calcium carbonate; violently effervescent; 55 percent calcium carbonate equivalent; strongly alkaline (pH 8.6); clear wavy boundary.

2Btk—44 to 61 inches; very pale brown (10YR 7/3) clay loam, light yellowish brown (10YR 6/4) moist; weak fine and medium subangular blocky structure; hard, friable, moderately sticky and moderately plastic; few very fine roots; common very fine and fine tubular and few very fine interstitial pores; few patchy clay films in pores and on faces of peds; strongly effervescent; 45 percent calcium carbonate equivalent; strongly alkaline (pH 8.8).

Range in Characteristics

Reaction: moderately alkaline or strongly alkaline
Content of clay: 18 to 35 percent
Depth to a calcic horizon: 10 to 24 inches
Calcium carbonate equivalent: more than 40 percent in the control section
Salinity: none to moderate

A horizon:
Hue—10YR, 7.5YR
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—loam, clay loam

Bk and 2Btk horizons:
Hue—10YR, 7.5YR
Value—6 to 8 dry, 4 to 8 moist
Chroma—1 to 4 dry or moist
Texture—loam, clay loam

Keysto Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Landform: alluvial fans and stream terraces
Parent material: mixed fan and stream alluvium
Slope range: 1 to 5 percent
Elevation: 4,500 to 5,200 feet

Classification: Loamy-skeletal, mixed, superactive, nonacid, thermic Ustic Torrifluvents

Typical Pedon

Keysto very cobbly sandy loam, in an area of Keysto-Riverwash complex, 1 to 5 percent slopes, at a latitude of 31 degrees, 49 minutes, 55 seconds north and a longitude of 110 degrees, 22 minutes, 00 seconds west; about 1,400 feet east and 250 feet south of the northwest corner of sec. 36, T. 18 S., R. 19 E.

About 25 to 70 percent of the surface is covered with gravel, cobbles, stones, and/or boulders.

C1—0 to 9 inches; brown (10YR 5/3) very cobbly sandy loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure; loose, nonsticky and nonplastic; many very fine and fine and common medium roots; few fine irregular pores; 10 percent gravel, 30 percent cobbles, and 5 percent stones; noneffervescent; slightly acid (pH 6.2); clear wavy boundary.

C2—9 to 30 inches; brown (7.5YR 5/3) extremely bouldery sandy loam, dark brown (7.5YR 3/3) moist; massive; loose, nonsticky and nonplastic; many fine and very fine and common medium roots; few fine irregular pores; 10 percent gravel, 35 percent cobbles, 15 percent stones, and 15

percent boulders; noneffervescent; slightly acid (pH 6.4); abrupt wavy boundary.

C3—30 to 60 inches; brown (7.5YR 5/4) extremely bouldery coarse sand, dark brown (7.5YR 3/4) moist; massive; loose, nonsticky and nonplastic; common fine and very fine roots; few fine irregular pores; 10 percent gravel, 20 percent cobbles, 20 percent stones, and 20 percent boulders; noneffervescent; neutral (pH 6.6).

Range in Characteristics

Content of rock fragments: 40 to 75 percent gravel, cobbles, stones, and/or boulders
Reaction: slightly acid or neutral
Content of clay: 3 to 10 percent
Content of organic matter: 1 to 3 percent, decreasing irregularly with increasing depth

C horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam, sandy loam, loamy sand, coarse sand

Krentz Series

Depth class: very deep
Drainage class: well drained
Permeability: moderate
Landform: cinder cones
Parent material: slope alluvium and residuum derived from cinders
Slope range: 15 to 55 percent
Elevation: 3,800 to 5,200 feet

Classification: Loamy-skeletal over cindery, mixed, superactive, thermic Vitrandic Haplocambids

Typical Pedon

Krentz gravelly loam, in an area of Boss, Krentz, and Paramore soils, and Rock outcrop, 15 to 55 percent slopes, at a latitude of 31 degrees, 26 minutes, 18 seconds north and a longitude of 109 degrees, 18 minutes, 40 seconds west; about 500 feet north and 800 feet east of the southwest corner of sec. 8, T. 23 S., R. 30 E.

About 80 to 95 percent of the surface is covered with cinders.

A—0 to 1 inch; brown (7.5YR 4/3) gravelly loam, dark brown (7.5YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine vesicular pores; 30 percent cinders; noneffervescent; neutral (pH 7.2); clear smooth boundary.

Bw1—1 to 10 inches; brown (7.5YR 4/2) very gravelly loam, dark brown (7.5YR 3/2) moist; moderate fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; many very fine and fine roots; common fine tubular pores; 40 percent cinders; noneffervescent; slightly alkaline (pH 7.6); clear smooth boundary.

Bw2—10 to 21 inches; brown (7.5YR 5/3) very gravelly loam, dark brown (7.5YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; many very fine and fine roots; few fine tubular pores; 50 percent cinders; noneffervescent; slightly alkaline (pH 7.6); abrupt wavy boundary.

Bk—21 to 37 inches; brown (7.5YR 5/3) extremely gravelly sandy loam, dark brown (7.5YR 3/3) moist; massive; soft, very friable, moderately sticky and moderately plastic; many very fine and fine roots; few fine irregular pores; many calcium carbonate coatings on rock fragments; 65 percent cinders; strongly effervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.

Ck—37 to 60 inches; pink (7.5YR 7/3) and light brown (7.5YR 6/4) extremely gravelly sand and loamy sand, brown (7.5YR 4/3) moist; massive; very hard and brittle, firm, nonsticky and nonplastic; many fine vesicular pores; common fine calcium carbonate filaments; 80 percent gravel-size cinders and 10 percent cobble-size cinders; strongly effervescent; slightly alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: 30 to 90 percent gravel- and cobble-size cinders
Reaction: neutral or slightly alkaline
Content of clay: 10 to 30 percent in the upper part of the soils and less than 10 percent in the lower part
Content of organic matter: 1 to 3 percent

A horizon:
Hue—5YR, 7.5YR
Value—2.5 to 4 dry or moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, loam

Bw horizon:
Hue—5YR, 7.5YR
Value—2.5 to 5 dry, 2.5 or 3 moist
Chroma—2 to 6 dry or moist
Texture—loam, sandy clay loam

Bk horizon:
Hue—5YR, 7.5YR
Value—3 to 5 dry or moist

Chroma—2 to 4 dry or moist
Texture—sandy loam, loam

Ck horizon:
Hue—5YR, 7.5YR
Value—4 to 7 dry or moist
Chroma—3 or 4 dry or moist
Texture—sand, loamy sand

Kuykendall Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: very slow
Landform: hills and mountains
Parent material: slope alluvium and residuum derived from basalt and other volcanic rocks
Slope range: 3 to 45 percent
Elevation: 4,600 to 6,200 feet

Classification: Clayey, smectitic, thermic Aridic Lithic Argiustolls

Typical Pedon

Kuykendall clay, in an area of Kuykendall-Rock outcrop complex, 3 to 45 percent slopes, at a latitude of 31 degrees, 42 minutes, 25 seconds north and a longitude of 109 degrees, 28 minutes, 30 seconds west; about 2,300 feet north and 800 feet west of the southeast corner of sec. 9, T. 20 S., R. 28 E.

About 30 to 60 percent of the surface is covered with gravel.

A—0 to 1 inch; dark brown (7.5YR 3/2) clay, dark brown (7.5YR 3/2) moist; weak very fine and fine subangular blocky structure parting weak fine granular; soft, very friable, very sticky and very plastic; common very fine and fine roots; many very fine tubular pores; noneffervescent; neutral (pH 7.0); clear smooth boundary.

Bt1—1 to 7 inches; dark reddish brown (5YR 3/3) clay, dark reddish brown (5YR 3/2) moist; strong fine and medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; many very fine and fine tubular pores; many distinct clay films on faces of peds; many distinct pressure faces; noneffervescent; neutral (pH 7.2); abrupt smooth boundary.

Bt2—7 to 18 inches; dark reddish brown (5YR 3/3) clay, dark reddish brown (5YR 3/4) moist; strong fine and medium angular blocky structure; extremely hard, firm, very sticky and very plastic; common very fine and fine roots; many very fine and fine tubular pores; many distinct clay films on faces of peds; many distinct pressure faces; 10 percent gravel; slightly effervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

R—18 inches; unweathered basalt.

Range in Characteristics

Reaction: neutral or slightly alkaline
Content of clay: averages more than 35 percent in the control section
Content of organic matter: 0.5 to 3 percent
Depth to unweathered bedrock: 5 to 20 inches

A horizon:
Hue—7.5YR, 5YR
Value—3 or 4 dry, 2.5 or 3 moist
Chroma—1 to 3 dry or moist
Texture—clay, clay loam

Bt horizon:
Hue—5YR, 2.5YR
Value—3 or 4 dry, 2.5 or 3 moist
Chroma—1 to 4 dry or moist
Texture—clay, silty clay

Lampshire Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderate
Landform: hills and mountains
Parent material: slope alluvium and residuum derived from igneous rock
Slope range: 3 to 60 percent
Elevation: 4,100 to 5,600 feet

Classification: Loamy-skeletal, mixed, superactive, nonacid, thermic Lithic Ustic Torriorthents

Typical Pedon

Lampshire very stony loam, in an area of Graham-Lampshire complex, 8 to 60 percent slopes, at a latitude of 31 degrees, 42 minutes, 22 seconds north and a longitude of 110 degrees, 00 minutes, 02 seconds west; about 2,430 feet west and 1,825 feet north of the southeast corner of sec. 9, T. 20 S., R. 23 E.

About 45 to 55 percent of the surface is covered with gravel, cobbles, and stones.

A—0 to 5 inches; brown (7.5YR 4/2) very stony loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular and tubular pores; 15 percent stones, 15 percent cobbles, and 20

percent gravel; noneffervescent; neutral (pH 7.2); abrupt smooth boundary.

R—5 inches; unweathered basalt.

Range in Characteristics

Content of rock fragments: 35 to 70 percent
Reaction: neutral or slightly alkaline
Content of clay: 10 to 20 percent
Content of organic matter: 1 to 2 percent
Depth to unweathered bedrock: 4 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 or 4 dry or moist
Chroma—2 to 4 dry or moist
Texture—loam, fine sandy loam, sandy loam

Lanque Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Landform: alluvial fans, fan terraces, inset fans, and stream terraces
Parent material: fan alluvium and stream alluvium derived from granite and gneiss
Slope range: 0 to 5 percent
Elevation: 4,600 to 6,200 feet

Classification: Coarse-loamy, mixed, superactive, thermic Pachic Haplustolls

Typical Pedon

Lanque sandy loam, in an unsectioned area of Gardencan-Lanque complex, 0 to 5 percent slopes, at a latitude of 31 degrees, 31 minutes, 45 seconds north and a longitude of 110 degrees, 18 minutes, 45 seconds west.

A—0 to 4 inches; dark brown (10YR 3/3) sandy loam, very dark brown (10YR 2/2) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common fine and few medium roots; common fine irregular pores; 10 percent gravel; noneffervescent; neutral (pH 6.6); clear smooth boundary.

C1—4 to 19 inches; dark brown (10YR 3/3) sandy loam, black (10YR 2/1) moist; massive; soft, very friable, nonsticky and nonplastic; common fine roots; common fine irregular pores; 10 percent gravel; noneffervescent; neutral (pH 6.6); clear smooth boundary.

C2—19 to 46 inches; dark grayish brown (10YR 4/2) coarse sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; common fine roots; common fine tubular pores; 10 percent gravel; noneffervescent; neutral (pH 6.8); abrupt smooth boundary.

2Bb—46 to 60 inches; dark grayish brown (10YR 4/2) sandy clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, firm, moderately sticky and moderately plastic; common fine tubular pores; 10 percent gravel; noneffervescent; neutral (pH 6.8).

Range in Characteristics

Content of rock fragments: averages less than 35 percent, but can range to 50 percent in any one horizon
Reaction: slightly acid to slightly alkaline
Content of clay: 3 to 15 percent
Content of organic matter: 1 to 3 percent
Other features: in some pedons, no buried paleosol in the lower part of the substratum

A and C horizons:
Hue—10YR, 7.5YR
Value—2 to 4 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—loamy sand, sandy loam, coarse sandy loam, fine sandy loam, loam

2Bb horizon:
Hue—10YR, 7.5YR
Value—2 to 7 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—neutral or slightly alkaline
Texture—sandy clay loam, loam

Lesliecreek Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: flood plains and alluvial fans
Parent material: mixed alluvium
Slope range: 0 to 10 percent
Elevation: 4,600 to 6,200 feet

Classification: Fine-loamy, mixed, superactive, thermic Torrifluventic Haplustolls

Typical Pedon

Lesliecreek loam, in an area of Cazador-Lesliecreek complex, 0 to 10 percent slopes, at a latitude of 31 degrees, 42 minutes, 20 seconds north and a longitude of 109 degrees, 28 minutes, 10 seconds west; about 2,400 feet north and 1,400 feet west of the southeast corner of sec. 10, T. 20 S., R. 28 E.

A—0 to 4 inches; dark brown (10YR 3/3) loam, very

dark grayish brown (10YR 3/2) moist; moderate very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine interstitial pores; noneffervescent; slightly alkaline (pH 7.8); clear smooth boundary.

Bk1—4 to 12 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; many very fine and fine tubular pores; common soft fine calcium carbonate masses; common calcium carbonate filaments; slightly effervescent; 3 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bk2—12 to 32 inches; grayish brown (10YR 5/2) loam, dark yellowish brown (10YR 3/4) moist; massive; soft, very friable, slightly sticky and moderately plastic; common very fine and fine and few medium roots; many fine and common medium tubular pores; many soft fine calcium carbonate masses; many calcium carbonate filaments; strongly effervescent; 6 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bk3—32 to 50 inches; brown (10YR 5/3) silty clay loam, dark brown (7.5YR 3/3) moist; moderate fine and medium subangular blocky structure; soft, friable, very sticky and very plastic; common very fine and fine and few medium roots; many very fine and fine and few medium tubular pores; many soft fine calcium carbonate masses; many calcium carbonate filaments; common distinct calcium carbonate coatings on rock fragments; 10 percent gravel; violently effervescent; 5.5 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk4—50 to 60 inches; brown (10YR 5/3) clay loam, dark brown (7.5YR 3/3) moist; moderate fine and medium subangular blocky structure; soft, friable, very sticky and very plastic; common very fine and medium roots; many very fine and fine tubular pores; many soft fine calcium carbonate masses; many calcium carbonate filaments; common distinct calcium carbonate coatings on rock fragments; 5 percent gravel; violently effervescent; 5.5 percent calcium carbonate equivalent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: less than 20 percent gravel in any one horizon

Reaction: slightly alkaline or moderately alkaline
Content of clay: 18 to 35 percent in the control section
Content of organic matter: 1 to 3 percent

A horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—fine sandy loam, loam, silt loam

Bk horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry, 2 to 4 moist
Chroma—1 to 4 dry or moist
Texture—loam, clay loam, silty clay loam
Calcium carbonate equivalent—3 to 10 percent

Leyte Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: slow
Landform: hills and mountains
Parent material: slope alluvium and residuum derived from quartzite, granodiorite, and rhyolite porphyry
Slope range: 3 to 55 percent
Elevation: 4,400 to 5,590 feet

Classification: Clayey, mixed, superactive, thermic Lithic Ustic Haplargids

Typical Pedon

Leyte gravelly sandy loam, in an area of Deloro-Leyte-Lampshire complex, 3 to 55 percent slopes, at a latitude of 31 degrees, 34 minutes, 00 seconds north and a longitude of 109 degrees, 35 minutes, 30 seconds west; about 2,300 feet east and 1,500 feet south of the northwest corner of sec. 34, T. 21 S., R. 27 E.

About 60 to 80 percent of the surface is covered with gravel, cobbles, and stones.

A—0 to 1 inch; brown (7.5YR 4/2) gravelly sandy loam, dark brown (7.5YR 3/2) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common fine vesicular pores; 20 percent gravel; noneffervescent; moderately acid (pH 6.0); clear smooth boundary.

Bt1—1 to 4 inches; dark reddish brown (5YR 3/2) very cobbly clay loam, dark reddish brown (5YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine irregular and tubular pores; common distinct clay

films on faces of peds and on rock fragments; 20 percent gravel and 20 percent cobbles; noneffervescent; moderately acid (pH 6.0); abrupt wavy boundary.

Bt2—4 to 12 inches; dark reddish brown (5YR 3/2) cobbly clay, black (5YR 2.5/1) moist; moderate fine and medium subangular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine roots; common fine irregular and tubular pores; many distinct clay films on faces of peds and on rock fragments; 10 percent gravel and 20 percent cobbles; noneffervescent; neutral (pH 6.6); abrupt wavy boundary.

R—12 inches; unweathered rhyolite porphyry.

Range in Characteristics

Content of rock fragments: averages less than 35 percent gravel and cobbles, but can be as much as 40 percent in any one horizon
Reaction: moderately acid to neutral
Content of clay: more than 35 percent
Content of organic matter: 1 to 3 percent
Depth to unweathered bedrock: 5 to 20 inches

A horizon:
Hue—7.5YR, 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—sandy loam

Bt horizon:
Hue—5YR, 2.5YR
Value—3 or 4 dry, 2.5 or 3 moist
Chroma—1 to 3 dry, 4 or 6 moist
Texture—clay, clay loam

Libby Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: stream terraces, fan terraces, and relict basin floors
Parent material: mixed alluvium
Slope range: 0 to 10 percent
Elevation: 3,900 to 4,600 feet

Classification: Fine, mixed, superactive, thermic Petronodic Paleargids

Typical Pedon

Libby very gravelly sandy loam, in an area of Libby-Gulch complex, 0 to 10 percent slopes, at a latitude of 31 degrees, 36 minutes, 32 seconds north and a longitude of 110 degrees, 13 minutes, 54 seconds west; about 2,100 feet north and 400 feet east of the southwest corner of sec. 8, T. 21 S., R. 21 E.

A—0 to 1 inch; yellowish red (5YR 5/6) very gravelly sandy loam, dark red (2.5YR 3/6) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine irregular pores; 40 percent gravel; noneffervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bt—1 to 13 inches; dark red (2.5YR 3/6) clay, dark reddish brown (2.5YR 3/4) moist; strong fine angular blocky structure; hard, firm, moderately sticky and moderately plastic; common fine roots; few fine tubular pores; many distinct clay films on faces of peds and in pores; common fine iron-manganese coatings on faces of peds; noneffervescent; slightly alkaline (pH 7.4); clear smooth boundary.

2Btyc1—13 to 25 inches; red (2.5YR 4/6 and 5/6) gravelly clay, dark reddish brown (2.5YR 3/4) and red (2.5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, firm, moderately sticky and moderately plastic; few fine roots; few fine tubular pores; many distinct clay films on faces of peds, in pores, and on rock fragments; few fine iron-manganese coatings on faces of peds; 18 percent petronodes; few gypsum crystals; 10 percent gravel; strongly effervescent; 33 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt wavy boundary.

2Btyc2—25 to 60 inches; red (2.5YR 4/6) very gravelly clay loam, dark red (2.5YR 3/6) moist; moderate fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few fine roots; few fine tubular pores; common distinct clay films on rock fragments; 55 percent petronodes; few gypsum crystals; violently effervescent; 37 percent calcium carbonate equivalent; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: averages less than 35 percent gravel and/or petronodes, but ranges to 55 percent in any one horizon
Petronodic feature: 18 to 55 percent petronodes
Reaction: slightly alkaline or moderately alkaline
Content of clay: more than 35 percent in the control section
Calcium carbonate equivalent: 5 to 40 percent
Depth to an abrupt textural change: 1 to 15 inches

A horizon:
Hue—2.5YR, 5YR
Value—3 to 5 dry or moist

Chroma—4 or 6 dry or moist
Texture—fine sandy loam, sandy loam, silty clay loam, loam

Bt horizon:
Hue—2.5YR, 5YR
Value—3 to 5 dry or moist
Chroma—4 or 6 dry or moist
Texture—clay, sandy clay

2Btyc horizon:
Hue—2.5YR, 5YR
Value—3 to 5 dry or moist
Chroma—4 or 6 dry or moist
Texture—clay, clay loam
Content of gypsum—0 to 2 percent

Luckyhills Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Landform: fan terraces
Parent material: mixed calcareous fan alluvium
Slope range: 0 to 15 percent
Elevation: 3,900 to 4,800 feet

Classification: Coarse-loamy, mixed, superactive, thermic Ustic Haplocalcids

Typical Pedon

Luckyhills very gravelly sandy loam, in an area of Luckyhills-McNeal complex, 3 to 15 percent slopes, at a latitude of 31 degrees, 41 minutes, 35 seconds north and a longitude of 110 degrees, 03 minutes, 02 seconds west; about 1,520 feet south and 75 feet east of the northwest corner of sec. 36, T. 19 S., R. 22 E.

About 10 to 55 percent of the surface is covered with gravel.

A—0 to 2 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine vesicular and irregular pores; 37 percent gravel; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bk1—2 to 13 inches; 70 percent pale brown (10YR 6/3) and 30 percent white (10YR 8/2) gravelly sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine irregular and tubular pores; many distinct calcium carbonate coatings on rock fragments; 29 percent gravel; violently effervescent; 25 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bk2—13 to 31 inches; 70 percent pinkish white (7.5YR 8/2) and 30 percent pinkish gray (7.5YR 7/2) sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; common very fine and fine roots; few fine tubular pores; many distinct calcium carbonate coatings on rock fragments; common fine soft calcium carbonate masses; 12 percent gravel; violently effervescent; 28 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); gradual wavy boundary.

Bk3—31 to 39 inches; 80 percent light brown (7.5YR 6/3) and 20 percent pinkish white (7.5YR 8/2) gravelly sandy loam, brown (7.5YR 5/4) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common fine tubular pores; many distinct calcium carbonate coatings on faces of peds and on rock fragments; common fine soft calcium carbonate masses; 27 percent gravel; violently effervescent; 22 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk4—39 to 60 inches; 80 percent light brown (7.5YR 6/3) and 20 percent pink (7.5YR 8/3) gravelly loam, brown (7.5YR 5/4) moist; weak fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; common fine tubular pores; many distinct calcium carbonate coatings on rock fragments and on faces of peds; common fine soft calcium carbonate masses; 29 percent gravel; strongly effervescent; 18 percent calcium carbonate equivalent; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: less than 35 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: 5 to 18 percent
Depth to a calcic horizon: 2 to 20 inches
Calcium carbonate equivalent: 6 to 30 percent

A horizon:
Hue—10YR, 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—coarse sandy loam, sandy loam, loamy sand, fine sandy loam

Bk horizon:
Hue—10YR, 7.5YR
Value—5 to 8 dry, 4 to 7 moist
Chroma—2 to 4 dry, 3 to 6 moist

Texture—sandy loam, loam, fine sandy loam, silt loam

Lutzcan Series

Depth class: shallow
Drainage class: well drained
Permeability: moderately slow
Landform: hills and mountains
Parent material: residuum and colluvium derived from sandstone
Slope range: 25 to 50 percent
Elevation: 4,800 to 6,000 feet

Classification: Loamy-skeletal, mixed, superactive, thermic, shallow Aridic Argiustolls

Typical Pedon

Lutzcan very cobbly sandy clay loam, in an area of Lutzcan-Yarbam complex, 25 to 50 percent slopes, at the Coronado National Memorial; at a latitude of 31 degrees, 21 minutes, 10 seconds north and a longitude of 110 degrees, 13 minutes, 7 seconds west; about 1,100 feet north and 1,000 feet west of the southeast corner of sec. 8, T. 24 S., R. 21 E.

A—0 to 2 inches; brown (7.5YR 5/3) very cobbly sandy clay loam, dark brown (7.5YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few medium roots; common very fine irregular and few fine tubular pores; 15 percent gravel and 30 percent cobbles; noneffervescent; neutral (pH 6.8); abrupt smooth boundary.

Bt1—2 to 9 inches; brown (7.5YR 5/3) very cobbly loam, dark brown (7.5YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, moderately sticky and moderately plastic; common very fine and few fine to coarse roots; common very fine irregular and few very fine and fine tubular pores; few faint clay films on faces of peds and in pores; 10 percent gravel and 30 percent cobbles; noneffervescent; neutral (pH 6.8); clear smooth boundary.

Bt2—9 to 18 inches; light brown (7.5YR 6/4) very cobbly clay loam, dark brown (7.5YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine to coarse roots; few very fine irregular and common very fine and fine tubular pores; common faint and few distinct clay films on faces of peds and in pores; 10 percent gravel and 30 percent cobbles; noneffervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Crk—18 inches; weathered sandstone.

Range in Characteristics

Content of rock fragments: averages 40 to 60 percent
Reaction: neutral or slightly alkaline
Content of clay: averages 28 to 35 percent
Content of organic matter: averages 1 to 3 percent
Depth to weathered bedrock: 14 to 20 inches

A horizon:
Value—4 or 5 dry, 2.5 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, loam

Mabray Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderate
Landform: hills and mountains
Parent material: slope alluvium and residuum derived from limestone
Slope range: 3 to 45 percent
Elevation: 4,100 to 5,400 feet

Classification: Loamy-skeletal, carbonatic, thermic Lithic Ustic Torriorthents

Typical Pedon

Mabray extremely cobbly loam, in an area of Mabray-Rock outcrop complex, 3 to 45 percent slopes, at a latitude of 31 degrees, 41 minutes, 02 seconds north and a longitude of 110 degrees, 02 minutes, 01 second west; about 700 feet south and 3,040 feet east of the northwest corner of sec. 19, T. 20 S., R. 23 E.

About 50 to 60 percent of the surface is covered with gravel, cobbles, and stones.

A—0 to 8 inches; dark grayish brown (10YR 4/2) extremely cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine tubular pores; many distinct calcium carbonate coatings on rock fragments; 45 percent gravel and 25 percent cobbles; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Ck—8 to 11 inches; dark grayish brown (10YR 4/2)

very cobbly loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine tubular pores; many distinct calcium carbonate coatings on rock fragments; 20 percent gravel and 20 percent cobbles; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

R—11 inches; unweathered limestone.

Range in Characteristics

Content of rock fragments: 15 to 50 percent cobbles and 20 to 45 percent gravel
Reaction: slightly alkaline or moderately alkaline
Content of clay: ranges from 15 to 25 percent; averages more than 18 percent
Content of organic matter: 1 to 2 percent
Calcium carbonate equivalent: 40 to 60 percent
Depth to unweathered bedrock: 4 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—2 to 4 dry, 2 or 3 moist
Chroma—2 to 4 dry, 1 to 3 moist
Texture—loam, fine sandy loam

Ck horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry or moist
Chroma—2 to 4 dry or moist
Texture—loam, fine sandy loam

Magoffin Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Landform: hills and mountains
Parent material: slope alluvium and residuum derived from andesite, rhyolite, basalt, dacite porphyry lava, and noncalcareous breccia
Slope range: 0 to 65 percent
Elevation: 4,600 to 6,200 feet

Classification: Loamy, mixed, superactive, thermic Lithic Haplustolls

Typical Pedon

Magoffin gravelly sandy loam, in an area of Cherrycow-Magoffin-Rock outcrop complex, 15 to 65 percent slopes, at a latitude of 31 degrees, 24 minutes, 15 seconds north and a longitude of 109 degrees, 5 minutes, 10 seconds west; about 1,000 feet north and 1,300 feet west of the southeast corner of sec. 21, T. 23 S., R. 32 E.

About 30 to 50 percent of the surface is covered with gravel and cobbles, and 5 percent is covered with stones.

A1—0 to 2 inches; very dark grayish brown (10YR 3/2) gravelly sandy loam, very dark brown (7.5YR 2.5/2) moist; single grain or massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine irregular pores; 20 percent gravel; noneffervescent; moderately acid (pH 6.0); clear smooth boundary.

A2—2 to 10 inches; dark brown (7.5YR 3/2) sandy loam, very dark brown (7.5YR 2.5/3) moist; weak fine subangular blocky structure; soft, friable slightly sticky and slightly plastic; common very fine and fine roots; few fine tubular pores; 10 percent gravel; noneffervescent; slightly acid (pH 6.2); abrupt smooth boundary.

R—10 inches; unweathered rhyolite.

Range in Characteristics

Content of rock fragments: 0 to 20 percent
Reaction: moderately acid to neutral
Content of clay: 5 to 18 percent
Content of organic matter: 1 to 3 percent
Depth to bedrock: 5 to 20 inches

A horizon:
Hue—7.5YR, 10YR
Value—2 to 4 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—sandy loam, loam

Major Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: stream terraces and relict basin floors
Parent material: mixed alluvium
Slope range: 0 to 5 percent
Elevation: 4,000 to 4,400 feet

Classification: Fine-loamy, carbonatic, thermic Petronodic Calcigypsids

Typical Pedon

Major fine sandy loam, in an area of Major complex, 0 to 5 percent slopes, at a latitude of 31 degrees, 39 minutes, 50 seconds north and a longitude of 110 degrees, 15 minutes, 09 seconds west; about 1,800 feet north and 850 feet west of the southeast corner of sec. 25, T. 20 S., R. 20 E.

A—0 to 2 inches; light brown (7.5YR 6/3) fine sandy loam, brown (7.5YR 5/4) moist; weak thin platy

structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine irregular pores; disseminated calcium carbonate and gypsum; 10 percent gravel; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

By—2 to 7 inches; brown (7.5YR 5/3) sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few fine irregular pores; disseminated calcium carbonate and gypsum; violently effervescent; 40 percent calcium carbonate equivalent and 3.8 percent gypsum; moderately alkaline (pH 8.2); clear wavy boundary.

Bkyc—7 to 22 inches; light brown (7.5YR 6/3) gravelly loam, light brown (7.5YR 6/4) moist; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine roots; few fine irregular pores; many distinct calcium carbonate coatings on sand grains and pebbles; 20 percent petronodes; disseminated calcium carbonate and gypsum; violently effervescent; 60 percent calcium carbonate equivalent and 2.4 percent gypsum; moderately alkaline (pH 8.2); clear wavy boundary.

Bky—22 to 36 inches; light brown (7.5YR 6/3) loam, light brown (7.5YR 6/4) moist; weak medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots; few fine irregular pores; common fine irregular soft calcium carbonate masses; 5 percent gravel; violently effervescent; 60 percent calcium carbonate equivalent and 3.4 percent gypsum; moderately alkaline (pH 8.2); abrupt wavy boundary.

2Byb—36 to 60 inches; weak red (2.5YR 5/2) clay loam, dusky red (2.5YR 3/2) moist; strong very fine angular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; common fine tubular pores; few patchy organic coatings on faces of peds; very slightly effervescent; 3 percent calcium carbonate equivalent and 10.4 percent gypsum; neutral (pH 7.3).

Range in Characteristics

Content of rock fragments: less than 35 percent gravel and/or petronodes in the control section
Petronodic feature: 20 to 30 percent petronodes
Reaction: neutral to moderately alkaline
Depth to a calcic horizon: 2 to 35 inches
Depth to a gypsic horizon: 20 to 60 inches

A horizon:
Hue—7.5YR, 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, silt loam
Calcium carbonate equivalent—5 to 20 percent
Content of gypsum—0 to 3 percent

B horizon:
Hue—7.5YR, 10YR
Value—5 to 7 dry, 4 to 6 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, loam, fine sandy loam
Calcium carbonate equivalent—20 to 60 percent
Content of gypsum—0 to 4 percent

2Byb horizon:
Hue—5YR, 2.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, loam, silty clay
Calcium carbonate equivalent—2 to 10 percent
Content of gypsum—5 to 15 percent

Mallet Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Landform: stream terraces and alluvial fans
Parent material: mixed alluvium
Slope range: 0 to 8 percent
Elevation: 3,900 to 5,000 feet

Classification: Coarse-loamy, mixed, superactive, thermic Ustic Haplocambids

Typical Pedon

Mallet fine sandy loam, in an area of Altar-Mallet complex, 0 to 8 percent slopes, at a latitude of 31 degrees, 47 minutes, 23 seconds north and a longitude of 109 degrees, 05 minutes, 45 seconds west; about 2,600 feet east and 2,100 feet north of the southwest corner of sec. 8, T. 19 S., R. 32 E.

About 5 to 10 percent of the surface is covered with gravel.

A—0 to 6 inches; brown (7.5YR 5/3) fine sandy loam, brown (7.5YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine irregular pores; noneffervescent; slightly acid (pH 6.2); clear smooth boundary.

Bw1—6 to 22 inches; brown (7.5YR 4/3) fine sandy

loam, dark brown (7.5YR 3/3) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine irregular and tubular pores; noneffervescent; neutral (pH 6.6); abrupt smooth boundary.

Bw2—22 to 55 inches; brown (7.5YR 4/3) fine sandy loam, dark brown (7.5YR 3/3) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; many very fine and fine tubular pores; 5 percent gravel; noneffervescent; neutral (pH 6.8); abrupt smooth boundary.

Ck—55 to 60 inches; brown (7.5YR 4/3) extremely gravelly loamy sand, dark brown (7.5YR 3/3) moist; massive; loose, nonsticky and nonplastic; few very fine roots; common calcium carbonate coatings on rock fragments; 65 percent gravel and 5 percent cobbles; slightly effervescent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: 5 to 35 percent
Content of clay: 2 to 18 percent
Content of organic matter: 1 to 2 percent

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2.5 to 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, fine sandy loam
Reaction—slightly acid or neutral

Bw horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2.5 to 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, fine sandy loam, loam
Reaction—slightly acid to slightly alkaline

Ck horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2.5 to 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, sand, coarse sandy loam, loamy sand, fine sandy loam
Reaction—neutral to moderately alkaline
Calcium carbonate—can have coatings on rock fragments

Maricopa Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid or rapid
Landform: alluvial fans
Parent material: mixed alluvium
Slope range: 0 to 5 percent
Elevation: 3,600 to 3,800 feet

Classification: Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, calcareous, thermic Typic Torrifluvents

Typical Pedon

Maricopa sandy loam, in an area of Anthony-Maricopa complex, 0 to 5 percent slopes, at a latitude of 31 degrees, 52 minutes, 45 seconds north and a longitude of 110 degrees, 12 minutes, 18 seconds west; about 1,200 feet north and 2,500 feet west of the southeast corner of sec. 9, T. 18 S., R. 21 E.

C1—0 to 5 inches; brown (7.5YR 5/4) sandy loam, brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; common fine roots; few fine irregular pores; 2 percent gravel; noneffervescent; slightly alkaline (pH 7.6); clear smooth boundary.

C2—5 to 24 inches; brown (7.5YR 4/3) sandy loam, dark brown (7.5YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; common fine roots; few fine irregular pores; 5 percent gravel; slightly effervescent or strongly effervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

C3—24 to 60 inches; brown (7.5YR 5/3) gravelly sand, brown (7.5YR 4/3) moist; massive; loose, nonsticky and nonplastic; few fine roots; few fine irregular pores; 20 percent gravel; strongly effervescent; slightly alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: averages less than 35 percent in the upper part of the soils and can be more than 35 percent in the lower horizons
Reaction: slightly alkaline or moderately alkaline
Content of clay: 3 to 10 percent

C horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry or moist
Chroma—3 to 6 dry, 3 or 4 moist
Texture—sandy loam, sand, coarse sand

McAllister Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: fan terraces
Parent material: mixed fan alluvium

Slope range: 1 to 20 percent
Elevation: 4,000 to 5,200 feet

Classification: Fine-loamy, mixed, superactive, thermic Ustic Calciargids

Typical Pedon

McAllister gravelly fine sandy loam, in an area of McAllister-Stronghold complex, 3 to 20 percent slopes, at a latitude of 31 degrees, 44 minutes, 35 seconds north and a longitude of 110 degrees, 00 minutes, 58 seconds west; about 2,280 feet west and 395 feet south of the northeast corner of sec. 32, T. 19 S., R. 23 E.

About 35 to 45 percent of the surface is covered with gravel.

A—0 to 2 inches; brown (7.5YR 5/3) gravelly fine sandy loam, brown (7.5YR 4/3) moist; weak medium platy structure; loose, nonsticky and nonplastic; common fine roots; common fine irregular and tubular pores; 27 percent gravel; noneffervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt—2 to 18 inches; reddish brown (5YR 4/4) gravelly sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine tubular pores; common distinct clay films on faces of peds, in pores, and on rock fragments; common distinct organic coatings on rock fragments; 18 percent gravel; noneffervescent; slightly alkaline (pH 7.6); clear wavy boundary.

Btk—18 to 35 inches; yellowish red (5YR 5/6) gravelly sandy clay loam, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; common distinct clay films on faces of peds, in pores, and on rock fragments; few patchy organic coatings and iron-manganese stains on faces of peds; 21 percent gravel; slightly effervescent; disseminated calcium carbonate; 8 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt wavy boundary.

2Btk—35 to 60 inches; 70 percent light brown (7.5YR 6/3) and 30 percent yellowish red (5YR 5/6) sandy loam, reddish brown (5YR 5/3) moist; weak coarse subangular blocky structure; few fine roots; common fine tubular pores; few distinct clay films on faces of peds and in pores; many distinct calcium carbonate coatings on rock fragments; common fine calcium carbonate filaments; 12 percent gravel; strongly effervescent; 22 percent calcium carbonate equivalent; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: 5 to 30 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: 18 to 35 percent
Content of organic matter: 1 to 2 percent in the surface layer
Depth to a calcic horizon: 20 to 40 inches

A horizon:
Hue—5YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—fine sandy loam, sandy loam, loam

Bt horizon:
Hue—5YR, 7.5YR
Value—3 or 4 dry or moist
Chroma—3 or 4 dry or moist
Texture—sandy clay loam, clay loam, loam

Btk horizon:
Hue—5YR, 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—4 to 6 dry, 3 to 6 moist
Texture—sandy clay loam, sandy loam, clay loam
Calcium carbonate equivalent—5 to 10 percent

2Btk horizon:
Hue—5YR, 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6 dry, 3 or 4 moist
Texture—coarse sandy loam, sandy loam
Calcium carbonate equivalent—15 to 30 percent

McNeal Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 1 to 15 percent
Elevation: 4,000 to 4,750 feet

Classification: Fine-loamy, mixed, superactive, thermic Ustic Calciargids

Typical Pedon

McNeal very gravelly sandy loam, in an area of Luckyhills-McNeal complex, 3 to 15 percent slopes, at a latitude of 31 degrees, 44 minutes, 22 seconds north

and a longitude of 110 degrees, 03 minutes, 31 seconds west; 1,275 feet south and 200 feet west of the northeast corner of sec. 36, T. 19 S., R. 22 E.

About 45 to 55 percent of the surface is covered with gravel.

A—0 to 1 inch; strong brown (7.5YR 5/6) very gravelly sandy loam, brown (7.5YR 4/4) moist; weak thin platy structure; loose, moderately sticky and moderately plastic; common very fine and fine roots; common fine irregular and tubular pores; few fine vesicular pores; 38 percent gravel; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Btk1—1 to 6 inches; yellowish red (5YR 4/6) clay loam, reddish brown (5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine and few medium roots; few fine tubular pores; many distinct clay films on faces of peds and common distinct calcium carbonate coatings on rock fragments; 10 percent gravel; strongly effervescent; 4 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Btk2—6 to 13 inches; 80 percent yellowish red (5YR 4/6) and 20 percent pink (5YR 7/4) clay loam, reddish brown (5YR 4/4) moist; moderate fine subangular blocky structure; moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; common distinct clay films on faces of peds and many distinct calcium carbonate coatings on rock fragments; common fine soft calcium carbonate masses; 10 percent gravel; violently effervescent; 43 percent calcium carbonate equivalent; moderately alkaline (pH 8.4) clear smooth boundary.

Btk3—13 to 21 inches; 50 percent light reddish brown (5YR 6/4) and 50 percent pink (5YR 7/4) clay loam, light reddish brown (5YR 6/4) moist; moderate fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common fine roots; many fine tubular pores; common distinct clay films on faces of peds; many distinct calcium carbonate coatings on rock fragments; common fine soft calcium carbonate masses; 10 percent gravel; violently effervescent; 53 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); abrupt smooth boundary.

Btk4—21 to 41 inches; 50 percent light reddish brown (5YR 6/4) and 50 percent pinkish white (5YR 8/2) sandy clay loam, light reddish brown (5YR 6/4) moist; moderate fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common fine roots; many fine tubular pores; common distinct clay films on faces of peds; many distinct calcium carbonate coatings on rock fragments; common fine soft calcium carbonate masses; 10 percent gravel; violently effervescent; 33 percent calcium carbonate equivalent; strongly alkaline (pH 8.4); abrupt smooth boundary.

Btk5—41 to 60 inches; 90 percent strong brown (7.5YR 5/6) and 10 percent pinkish white (7.5YR 8/2) sandy loam, yellowish red (5YR 4/6) moist; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine roots; many fine tubular pores; common distinct clay films on faces of peds; many distinct calcium carbonate coatings on rock fragments; common fine calcium carbonate filaments; 10 percent gravel; violently effervescent; 9 percent calcium carbonate equivalent; strongly alkaline (pH 8.4).

Range in Characteristics

Content of rock fragments: 0 to 15 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: 20 to 35 percent
Depth to a calcic horizon: 5 to 20 inches

A horizon:
Hue—5YR, 7.5YR
Value—3 to 5 dry or moist
Chroma—3 to 6 dry, 3 or 4 moist
Texture—sandy loam, loam
Calcium carbonate equivalent—0 to 5 percent

Btk horizon:
Hue—5YR, 7.5YR
Value—4 to 8 dry, 4 to 6 moist
Chroma—2 to 6 dry, 4 to 6 moist
Texture—clay loam, sandy clay loam, loam, sandy loam
Calcium carbonate equivalent—4 to 55 percent; averages more than 15 percent

Moco Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: basin floors
Parent material: mixed fan alluvium
Slope range: 1 to 5 percent
Elevation: 4,200 to 4,800 feet

Classification: Fine-loamy, gypsic, thermic, Calcic Argigypsids

Typical Pedon

Moco fine sandy loam, in an area of Vana-Moco complex, 1 to 5 percent slopes, at a latitude of 31 degrees, 26 minutes, 15 seconds north and a longitude of 110 degrees, 07 minutes, 10 seconds west; about 1,500 feet east and 1,200 feet south of the northwest corner of sec. 16, T. 23 S., R. 22 E.

A—0 to 1 inch; brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; few fine irregular pores; strongly effervescent; 2 percent calcium carbonate equivalent and 1 percent gypsum; moderately alkaline (pH 8.2); abrupt smooth boundary.

Btk—1 to 10 inches; brown (7.5YR 4/4) clay loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; few distinct clay films on faces of peds; few fine calcium carbonate filaments; strongly effervescent; 10 percent calcium carbonate equivalent and 3 percent gypsum; moderately alkaline (pH 8.2); clear smooth boundary.

Btky—10 to 20 inches; brown (7.5YR 4/4) clay loam, strong brown (7.5YR 5/6) moist; moderate fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine irregular pores; common distinct clay films on faces of peds; common fine soft calcium carbonate and gypsum masses; strongly effervescent; 19 percent calcium carbonate equivalent and 4 percent gypsum; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bky1—20 to 31 inches; 70 percent light brown (7.5YR 6/4) and 30 percent pinkish white (7.5YR 8/2) clay loam, light brown (7.5YR 6/4) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular and irregular pores; common fine soft calcium carbonate and gypsum masses; 6 percent petronodes; violently effervescent; 50 percent calcium carbonate equivalent and 8 percent gypsum; moderately alkaline (pH 8.4); clear smooth boundary.

Bky2—31 to 48 inches; 70 percent brown (7.5YR 5/4) and 30 percent pinkish white (7.5YR 8/2) clay loam, pink (7.5YR 7/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots; few fine tubular and irregular pores; many fine and medium soft and hard calcium carbonate and gypsum masses; 10 percent petronodes; violently effervescent; 47 percent calcium carbonate equivalent and 10 percent gypsum; moderately alkaline (pH 8.4); abrupt smooth boundary.

Bky3—48 to 60 inches; 70 percent pinkish gray (7.5YR 7/2) and 30 percent pinkish white (7.5YR 8/2) clay loam, light gray (10YR 7/2) moist; massive; slightly hard, friable, moderately sticky and moderately plastic; few very fine roots; few fine tubular and irregular pores; many fine and medium soft and hard calcium carbonate and gypsum masses; violently effervescent; 47 percent calcium carbonate equivalent and 10 percent gypsum; moderately alkaline (pH 8.4).

Range in Characteristics

Content of rock fragments: 0 to 35 percent hardpan fragments and/or petronodes
Reaction: slightly alkaline or moderately alkaline
Content of clay: 18 to 35 percent
Depth to a calcic horizon: 5 to 20 inches
Depth to a gypsic horizon: 20 to 60 inches

A horizon:
Hue—7.5YR, 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, sandy loam, loam
Calcium carbonate equivalent—0 to 5 percent
Content of gypsum—0 to 1 percent

Btk and Btky horizons:
Hue—7.5YR, 5YR
Value—4 or 5 dry, 3 to 5 moist
Chroma—4 or 6 dry or moist
Texture—sandy clay loam, clay loam, loam
Calcium carbonate equivalent—5 to 30 percent
Content of gypsum—1 to 5 percent

Bky horizon:
Hue—7.5YR, 10YR
Value—5 to 8 dry or moist
Chroma—2 to 4 dry or moist
Texture—loam, clay loam, silty clay loam
Calcium carbonate equivalent—30 to 55 percent
Content of gypsum—5 to 20 percent

Mohave Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: fan terraces

Parent material: mixed fan alluvium
Slope range: 1 to 5 percent
Elevation: 3,600 to 4,200 feet

Classification: Fine-loamy, mixed, superactive, thermic Typic Calciargids

Typical Pedon

Mohave fine sandy loam, in an area of Dona Ana-Mohave complex, 1 to 5 percent slopes, at a latitude of 31 degrees, 48 minutes, 10 seconds north and a longitude of 110 degrees, 08 minutes, 40 seconds west; about 600 feet west and 900 feet south of the northeast corner of sec. 7, T. 19 S., R. 22 E.

A—0 to 2 inches; strong brown (7.5YR 4/6) fine sandy loam, brown (7.5YR 4/4) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few fine irregular pores; noneffervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bt—2 to 13 inches; yellowish red (5YR 4/6) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and moderately plastic; many fine and common very fine roots; common fine tubular pores; many distinct clay films on faces of peds, on rock fragments, and bridging sand grains; few organic stains on faces of peds; 5 percent gravel; noneffervescent; slightly alkaline (pH 7.6); abrupt wavy boundary.

Btk1—13 to 22 inches; reddish brown (5YR 5/4) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine tubular pores; many distinct clay films on faces of peds and bridging sand grains; few organic coatings on faces of peds; many fine calcium carbonate filaments; 5 percent gravel; strongly effervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.

Btk2—22 to 35 inches; 70 percent brown (7.5YR 5/4), 20 percent pinkish white (7.5YR 8/2), and 10 percent strong brown (7.5YR 5/6) gravelly sandy clay loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and moderately plastic; common very fine and fine roots; common fine tubular pores; few distinct clay films on faces of peds; many calcium carbonate coatings on faces of peds and on rock fragments; many fine and medium soft and common fine hard calcium carbonate masses; 20 percent gravel; violently effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Ck—35 to 60 inches; light brown (7.5YR 6/4) loamy fine sand, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; few fine irregular pores; common fine hard calcium carbonate masses; violently effervescent; moderately alkaline (pH 8.0).

Range in Characteristics

Reaction: slightly alkaline or moderately alkaline
Content of clay: 20 to 35 percent
Content of organic matter: less than 1 percent
Depth to a calcic horizon: 20 to 40 inches

A horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 or 6 dry or moist
Texture—fine sandy loam, sandy loam
Calcium carbonate equivalent—0 to 5 percent

Bt horizon:
Hue—7.5YR, 5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 or 6 dry, 3 or 4 moist
Texture—sandy clay loam, clay loam
Content of rock fragments—less than 20 percent
Calcium carbonate equivalent—0 to 5 percent

Btk horizon:
Hue—7.5YR, 5YR
Value—4 or 5 dry, 4 to 6 moist
Chroma—4 or 6 dry, 3 to 6 moist
Texture—sandy clay loam, clay loam
Content of rock fragments—less than 20 percent
Calcium carbonate equivalent—15 to 55 percent

Ck horizon:
Hue—7.5YR, 5YR
Value—5, 6, or 8 dry or moist
Chroma—2 to 6 dry or moist
Texture—sandy clay loam, loamy fine sand, sandy loam
Content of rock fragments—0 to 40 percent
Calcium carbonate equivalent—10 to 25 percent

Monzingo Series

Depth class: very deep
Drainage class: well drained
Permeability: moderate
Landform: dissected relict lakebeds

Parent material: mixed alluvium derived from prehistoric lakes and marshes
Slope range: 5 to 60 percent
Elevation: 3,800 to 4,100 feet

Classification: Coarse-loamy, mixed, superactive, thermic Typic Calcigypsids

Typical Pedon

Monzingo fine sandy loam, in an area of Contention, Crystalgyp, Monzingo and Redington soils, breaks, 5 to 60 percent slopes, at a latitude of 31 degrees, 48 minutes, 51 seconds north and a longitude of 110 degrees, 11 minutes, 00 seconds west; about 850 feet west and 1,800 feet south of the northeast corner of sec. 3, T. 19 S., R. 21 E.

About 35 to 45 percent of the surface is covered with gravel.

Aky—0 to 3 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 5/4) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few fine roots; few fine tubular pores; few fine soft calcium carbonate and gypsum masses; few fine gypsum filaments; violently effervescent; 12 percent calcium carbonate equivalent; slightly alkaline (pH 7.8); abrupt wavy boundary.

Bky—3 to 19 inches; 90 percent light brown (7.5YR 6/4) and 10 percent strong brown (7.5YR 5/6) loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine tubular pores; many fine gypsum crystals throughout; common fine soft calcium carbonate and gypsum masses; violently effervescent; 33 percent calcium carbonate equivalent and 15 percent gypsum; slightly alkaline (pH 7.8); abrupt wavy boundary.

Cdky—19 to 26 inches; 90 percent light brown (7.5YR 6/4) and 10 percent strong brown (7.5YR 5/6) fine sandy loam, brown (7.5YR 5/4) moist; massive or weak coarse subangular blocky structure; slightly hard, firm, nonsticky and nonplastic; few very fine roots; few fine tubular pores; many fine gypsum crystals throughout; many distinct calcium carbonate and gypsum coatings on faces of peds; violently effervescent; 25 percent calcium carbonate equivalent and 15 percent gypsum; moderately alkaline (pH 8.0); abrupt wavy boundary.

Cky1—26 to 34 inches; 90 percent light brown (7.5YR 6/4) and 10 percent strong brown (7.5YR 5/6) fine sandy loam, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many fine gypsum crystals throughout; many distinct calcium carbonate and gypsum coatings between seams; few distinct manganese coatings between seams; violently effervescent; 20 percent calcium carbonate equivalent and 15 percent gypsum; moderately alkaline (pH 8.0); abrupt wavy boundary.

Cky2—34 to 45 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many fine gypsum crystals throughout; many distinct calcium carbonate and gypsum coatings and common distinct manganese coatings between seams; violently effervescent; 2 percent calcium carbonate equivalent and 15 percent gypsum; moderately alkaline (pH 8.0); abrupt wavy boundary.

C´dky—45 to 55 inches; 50 percent light brown (7.5YR 6/4) and 50 percent brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; massive or weak coarse subangular blocky structure; very hard, firm, nonsticky and nonplastic; few very fine and fine roots; many fine gypsum crystals throughout; common fine soft calcium carbonate and gypsum masses; common distinct manganese coatings on faces of peds; violently effervescent; 16 percent calcium carbonate equivalent and 15 percent gypsum; moderately alkaline (pH 8.0); abrupt wavy boundary.

Cy—55 to 60 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many fine gypsum crystals throughout; disseminated calcium carbonate and gypsum; violently effervescent; 11 percent calcium carbonate equivalent and 15 percent gypsum; slightly alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: 15 to 25 percent gravel in some pedons
Reaction: slightly alkaline or moderately alkaline
Content of clay: less than 18 percent in the control section
Depth to a calcic horizon: 3 to 20 inches
Depth to a gypsic horizon: 3 to 20 inches

Aky horizon:
Hue—7.5YR, 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam, sandy loam
Calcium carbonate equivalent—1 to 15 percent
Content of gypsum—0 to 5 percent

Bky, Cky, and Cy horizons:
Hue—7.5YR, 10YR
Value—5 to 8 dry, 4 to 6 moist
Chroma—2, 3, 4, or 6 dry, 3 or 4 moist
Texture—fine sandy loam, loam, silt loam, sandy loam
Calcium carbonate equivalent—5 to 35 percent
Content of gypsum—5 to 20 percent

Cdky horizon:
Kind of sediments—dense, naturally compacted sediments that are intergrades between soft sediments (C material) and soft bedrock (Cr material); have been subject to a slow reduction in volume and an increase in density because of deep water loading in the geologic past; easily break down in water; and can be penetrated by roots when moist but restrict root penetration when dry
Hue—7.5YR, 10YR
Value—5 or 6 dry, 4 to 6 moist
Chroma—2, 3, 4, or 6 dry or moist
Texture—fine sandy loam, loam, silt loam, sandy loam
Calcium carbonate equivalent—5 to 25 percent
Content of gypsum—5 to 20 percent

Mule Series

Depth class: very deep
Drainage class: well drained
Permeability: moderate
Landform: fan terraces
Parent material: mixed calcareous fan alluvium
Slope range: 3 to 15 percent
Elevation: 4,000 to 4,800 feet

Classification: Loamy-skeletal, carbonatic, thermic Ustic Haplocalcids

Typical Pedon

Mule very gravelly fine sandy loam, in an area of Sutherland-Mule complex, 3 to 15 percent slopes, at a latitude of 31 degrees, 41 minutes, 55 seconds north and a longitude of 110 degrees, 01 minute, 40 seconds west; about 650 feet west and 790 feet south of the northeast corner of sec. 18, T. 20 S., R. 23 E.

About 45 to 55 percent of the surface is covered with gravel and cobbles.

A—0 to 2 inches; brown (7.5YR 5/3) very gravelly fine sandy loam, brown (7.5YR 4/3) moist; weak thin platy structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; few fine roots; few fine irregular and tubular pores; 50 percent gravel; violently effervescent; 40 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bk1—2 to 10 inches; brown (7.5YR 5/3) very gravelly fine sandy loam, brown (7.5YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine tubular pores; many distinct calcium carbonate coatings on rock fragments; 50 percent gravel and 5 percent cobbles; violently effervescent; 49 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk2—10 to 22 inches; light brown (7.5YR 6/3) and pinkish white (7.5YR 8/2) very gravelly loam, brown (7.5YR 5/3) and pinkish gray (7.5YR 7/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine tubular pores; many distinct calcium carbonate coatings on rock fragments; 43 percent gravel and 5 percent cobbles; violently effervescent; 67 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); clear wavy boundary.

Bk3—22 to 60 inches; pinkish white (7.5YR 8/2) and light brown (7.5YR 6/3) very gravelly loam, pinkish gray (7.5YR 7/2) and brown (7.5YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine irregular and tubular pores; many distinct calcium carbonate coatings on rock fragments; 46 percent gravel; violently effervescent; 47 percent calcium carbonate equivalent; moderately alkaline (pH 8.4).

Range in Characteristics

Content of rock fragments: more than 35 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: 5 to 18 percent
Content of organic matter: 1 to 3 percent
Depth to a calcic horizon: 2 to 10 inches

A horizon:
Hue—7.5YR, 10YR
Value—4 or 5 dry or moist
Chroma—2 or 3 dry or moist
Texture—fine sandy loam, loam
Calcium carbonate equivalent—30 to 45 percent

Bk horizon:
Hue—7.5YR, 10YR
Value—5 to 8 dry, 4 to 7 moist
Chroma—2 or 3 dry or moist
Texture—loam, fine sandy loam, sandy loam

Calcium carbonate equivalent—40 to 70 percent

Naco Series

Depth class: very deep
Drainage class: well drained
Permeability: very slow
Landform: fan terraces
Parent material: fan alluvium derived from quartz sandstone and arkose
Slope range: 1 to 5 percent
Elevation: 4,400 to 5,000 feet

Classification: Clayey-skeletal, smectitic, thermic Vertic Paleargids

Typical Pedon

Naco fine sandy loam, in an area of Naco-Ruins soils complex, 1 to 5 percent slopes, at a latitude of 31 degrees, 32 minutes, 15 seconds north and a longitude of 109 degrees, 59 minutes, 55 seconds west; about 100 feet north and 2,800 feet west of the southeast corner of sec. 3, T. 22 S., R. 23 E.

About 50 to 70 percent of the surface is covered with gravel and cobbles.

A—0 to 2 inches; brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; common fine irregular pores; noneffervescent; neutral (pH 6.6); abrupt smooth boundary.

A/B—2 to 8 inches; reddish brown (5YR 5/4) sandy loam, dark reddish brown (5YR 3/3) moist; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; common fine irregular and tubular pores; few distinct clay bridges between sand grains; noneffervescent; neutral (pH 6.6); abrupt wavy boundary.

Bt1—8 to 15 inches; reddish brown (5YR 4/4) very cobbly clay, dark reddish brown (5YR 3/3) moist; moderate fine subangular blocky structure; soft, friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine irregular and tubular pores; many distinct clay films on faces of peds and on rock fragments; 25 percent gravel and 15 percent cobbles; noneffervescent; neutral (pH 6.6); abrupt smooth boundary.

Bt2—15 to 44 inches; dark reddish brown (2.5YR 3/4) very cobbly clay, dark reddish brown (2.5YR 3/4) moist; strong medium and coarse wedges; slightly hard, firm, moderately sticky and moderately plastic; many very fine and fine and common medium roots matted between faces of peds; few fine tubular pores; many distinct clay films on faces of peds and on rock fragments; common distinct pressure faces; 20 percent gravel and 20 percent cobbles; noneffervescent; neutral (pH 6.6); abrupt smooth boundary.

Bt3—44 to 60 inches; yellowish red (5YR 4/6) clay, dark red (2.5YR 3/6) moist; strong medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; few fine tubular pores; many distinct clay films on faces of peds; noneffervescent; neutral (pH 7.0).

Range in Characteristics

Content of rock fragments: 35 to 65 percent gravel and cobbles
Reaction: neutral or slightly alkaline
Content of clay: more than 35 percent

A horizon:
Hue—5YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, fine sandy loam

Bt horizon:
Hue—2.5YR, 5YR
Value—3 or 4 dry or moist
Chroma—3 to 6 dry or moist
Texture—clay loam, clay

Nolam Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 1 to 10 percent
Elevation: 3,900 to 4,600 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Ustic Calciargids

Typical Pedon

Nolam fine sandy loam, in an area of Nolam-Libby-Buntline complex, 1 to 10 percent slopes, at a latitude of 31 degrees, 34 minutes, 50 seconds north and a longitude of 110 degrees, 05 minutes, 10 seconds west; about 1,000 feet south and 250 feet east of the northwest corner of sec. 26, T. 21 S., R. 22 E.

About 5 to 20 percent of the surface is covered with gravel.

A—0 to 1 inch; yellowish red (5YR 5/6) fine sandy loam, dark reddish brown (5YR 3/3) moist; moderate thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; 3 percent gravel; noneffervescent; neutral (pH 7.2); abrupt smooth boundary.

Bt—1 to 19 inches; reddish brown (5YR 4/4) very cobbly sandy clay loam, yellowish red brown (5YR 4/6) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine and few medium roots; common fine irregular and tubular pores; many distinct clay films on rock fragments and on faces of peds; 20 percent cobbles and 30 percent gravel; noneffervescent; slightly alkaline (pH 7.4); abrupt wavy boundary.

Btk—19 to 38 inches; 60 percent yellowish red (5YR 4/6), 30 percent reddish brown (5YR 4/4), and 10 percent yellowish brown (5YR 5/8) extremely cobbly sandy loam, dark reddish brown (5YR 3/4) moist; massive; hard, firm, nonsticky and nonplastic; weakly cemented by calcium carbonate; common fine roots; few fine irregular and tubular pores; common distinct clay films on rock fragments and on faces of peds; many distinct calcium carbonate coatings on rock fragments, on faces of peds, and in pores; 35 percent cobbles and 40 percent gravel; strongly effervescent; slightly alkaline (pH 7.6); abrupt wavy boundary.

Bk—38 to 60 inches; 80 percent reddish brown (5YR 4/4) and 20 percent pinkish white (5YR 8/2) extremely cobbly sandy loam, yellowish red (5YR 4/6) moist; massive; hard, firm, nonsticky and nonplastic; weakly cemented by calcium carbonate; few fine roots; common patchy clay films on rock fragments; many distinct calcium carbonate coatings on rock fragments, on faces of peds, and in pores; 35 percent cobbles and 40 percent gravel; strongly effervescent; slightly alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: more than 35 percent
Reaction: neutral or slightly alkaline
Content of clay: 18 to 35 percent
Depth to a calcic horizon: 20 to 40 inches

A horizon:
Hue—7.5YR, 5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—2 to 6 dry, 3 or 4 moist
Calcium carbonate equivalent—0 to 5 percent

Bt horizon:
Hue—5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 to 6 dry, 3 or 4 moist
Texture—sandy clay loam, sandy loam

Btk horizon:
Hue—5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 to 6 dry, 3 or 4 moist
Texture—sandy clay loam, sandy loam, loam
Calcium carbonate equivalent—15 to 40 percent with weak to strong cementation

Bk horizon:
Hue—5YR, 2.5YR
Value—4, 7, or 8 dry, 3 to 5 moist
Chroma—2 to 6 dry or moist
Texture—sandy clay loam, sandy loam
Calcium carbonate equivalent—15 to 40 percent with weak to strong cementation

Nugget Series

Depth class: shallow
Drainage class: well drained
Permeability: slow
Landform: hills and mountains
Parent material: slope alluvium and residuum derived from granodiorite and quartzite
Slope range: 3 to 45 percent
Elevation: 4,800 to 6,200 feet

Classification: Loamy, mixed, superactive, thermic, shallow Aridic Argiustolls

Typical Pedon

Nugget sandy loam, in an area of Turquoise-Nugget complex, 3 to 45 percent slopes, at a latitude of 31 degrees, 46 minutes, 17 seconds north and a longitude of 109 degrees, 50 minutes, 49 seconds west; about 2,500 feet south and 2,700 feet east of the northwest corner of sec. 19, T. 19 S., R. 25 E.

About 80 to 100 percent of the surface is covered with gravel and cobbles.

A—0 to 1 inch; brown (7.5YR 4/3) sandy loam, dark brown (7.5YR 3/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine irregular pores; 10 percent gravel; noneffervescent; slightly acid (pH 6.2); abrupt smooth boundary.

Bt1—1 to 5 inches; dark brown (7.5YR 3/3) gravelly sandy loam, dark brown (7.5YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; many very fine and fine roots; few fine tubular pores; few distinct clay films on faces of peds and on rock fragments; few distinct organic coatings on faces of peds and on rock fragments; 20 percent gravel; noneffervescent; slightly acid (pH 6.4); clear wavy boundary.

Bt2—5 to 12 inches; dark reddish brown (5YR 3/3) gravelly sandy clay, dark reddish brown (5YR 3/2) moist; moderate fine and medium angular blocky rock structure; hard, firm, very sticky and very plastic; many very fine and fine roots; few fine tubular pores; many distinct clay films on faces of peds and on rock fragments; few distinct organic coatings on faces of peds and on rock fragments; 25 percent gravel; noneffervescent; neutral (pH 6.6); abrupt wavy boundary

Crt—12 to 17 inches; highly fractured, decomposed granodiorite; extremely hard; many distinct clay films and distinct organic coatings on rock fragments; common very fine roots along fractures; abrupt wavy boundary.

Cr—17 to 24 inches; highly fractured, decomposed granodiorite; extremely hard; few very fine roots along fractures; clear wavy boundary

R—24 inches; unweathered granodiorite.

Range in Characteristics

Content of rock fragments: less than 35 percent gravel
Reaction: slightly acid or neutral
Content of clay: 18 to 35 percent in the control section, but can be as much as 40 percent in any one horizon
Content of organic matter: 0.6 to 3 percent; averages 1 to 3 percent in the upper part of the soils
Depth to weathered bedrock: 10 to 30 inches
Depth to unweathered bedrock: 20 to 40 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—sandy loam, coarse sandy loam

Bt horizon:
Hue—5YR, 7.5YR
Value—3 to 5 dry, 2.5 or 3 moist
Chroma—1 to 3 dry or moist
Texture—sandy clay loam, sandy clay, sandy loam

Outlaw Series

Depth class: very deep
Drainage class: well drained
Permeability: very slow
Landform: volcanic flows and fan terraces
Parent material: mixed alluvium derived from basalt, cinders, bombs, and volcanic rocks
Slope range: 0 to 15 percent
Elevation: 3,800 to 5,000 feet

Classification: Fine, smectitic, thermic Typic Calcitorrerts

Typical Pedon

Outlaw silty clay loam, in an area of Outlaw-Epitaph-Paramore complex, 0 to 15 percent slopes, at a latitude of 31 degrees, 28 minutes, 20 seconds north and a longitude of 109 degrees, 14 minutes, 20 seconds west; about 100 feet west and 1,150 feet north of the southeast corner of sec. 36, T. 22 S., R. 30 E.

About 10 to 20 percent of the surface is covered with cinders and with basalt gravel and/or cobbles.

A—0 to 1 inch; reddish brown (5YR 4/3) silty clay loam, dark reddish brown (5YR 3/3) moist; weak thin platy structure parting to weak fine granular; soft, very friable, moderately sticky and moderately plastic; many fine roots; many very fine tubular pores; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bt1—1 to 7 inches; dark reddish brown (5YR 3/2) clay, dark reddish brown (5YR 3/3) moist; moderate fine subangular and angular blocky structure; hard, firm, very sticky and very plastic; many fine roots matted between faces of peds; common fine tubular pores; common distinct clay films on faces of peds; few very fine and fine grains of volcanic glass; disseminated calcium carbonate; slightly effervescent or strongly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Bt2—7 to 22 inches; dark reddish brown (5YR 3/2) clay, dark reddish brown (5YR 3/3) moist; strong medium angular blocky structure parting to strong fine angular blocky structure and moderate medium wedges; very hard, very firm, very sticky and very plastic; common very fine and fine roots matted between faces of peds; common fine tubular pores; common distinct clay films on faces of peds; common very fine and fine grains of volcanic glass; disseminated calcium carbonate;

strongly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bt3—22 to 32 inches; dark reddish brown (5YR 3/2) clay, dark reddish brown (5YR 3/3) moist; strong medium angular blocky structure parting to strong fine angular blocky structure and moderate medium and fine wedges; very hard, very firm, very sticky and very plastic; common very fine and few fine roots matted between faces of peds; common fine tubular pores; common distinct clay films on faces of peds; common very fine and fine grains of volcanic glass; disseminated calcium carbonate; strongly effervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

2Bk—32 to 46 inches; 50 percent yellowish red (5YR 5/6) and 50 percent pinkish white (5YR 8/2) loam, reddish brown (5YR 5/4) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; few very fine roots; common fine tubular pores; many fine soft calcium carbonate masses; many distinct calcium carbonate coatings on rock fragments; 10 percent gravel and 3 percent cobbles; violently effervescent; 44 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt wavy boundary.

3Btkb—46 to 63 inches; dark reddish brown (5YR 3/4) clay loam, light reddish brown (5YR 6/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, moderately sticky and moderately plastic; common fine tubular pores; common distinct clay films on faces of peds; few distinct manganese coatings on faces of peds; many fine soft calcium carbonate masses; many fine hard calcium carbonate nodules; common distinct calcium carbonate coatings on rock fragments; 2 percent gravel; violently effervescent; 15 percent calcium carbonate equivalent; moderately alkaline (pH 8.2).

Range in Characteristics

Soil cracking: many vertical cracks 0.125 inch to 2.5 inches wide; extending from the surface to a depth of 22 inches or more
Reaction: neutral to moderately alkaline
Content of clay: 50 to 70 percent in the control section
Content of organic matter: 1 to 3 percent
Depth to a calcic horizon: 30 to 60 inches

A horizon:
Hue—5YR, 7.5YR
Value—2.5 to 4 dry or moist
Chroma—1 to 4 dry or moist
Texture—silty clay loam, silt loam, loam, sandy loam

Bt horizon:
Hue—5YR, 7.5YR
Value—2.5 to 5 dry or moist
Chroma—1 to 4 dry or moist
Texture—clay, silty clay
Calcium carbonate equivalent—0 to 5 percent

2Bk horizon:
Hue—5YR, 7.5YR
Value—3 to 8 dry, 3 to 6 moist
Chroma—2 to 6 dry or moist
Texture—loam, clay loam, clay
Content of rock fragments—5 to 20 percent basalt gravel, cobbles, and cinders
Calcium carbonate equivalent—20 to 50 percent

3Btkb horizon:
Hue—5YR, 7.5YR
Value—3 to 5 dry, 4 to 6 moist
Chroma—3 to 5 dry or moist
Texture—clay loam, silty clay loam, loam
Calcium carbonate equivalent—0 to 15 percent

Oversight Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid in the upper part of the soils and moderately slow in a buried argillic horizon
Landform: alluvial fans and fan terraces
Parent material: mixed fan alluvium
Slope range: 1 to 35 percent
Elevation: 4,500 to 6,200 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Aridic Haplustepts

Typical Pedon

Oversight fine sandy loam, in an area of Oversight-Lanque complex, 1 to 5 percent slopes, at a latitude of 31 degrees, 17 minutes, 20 seconds north and a longitude of 110 degrees, 27 minutes, 15 seconds west; about 1,900 feet south and 1,100 feet east of the northwest corner of sec. 2, T. 23 S., R. 20 E.

About 35 to 70 percent of the surface is covered with gravel and/or cobbles.

A1—0 to 1 inch; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few fine irregular pores; noneffervescent; neutral (pH 7.2); abrupt smooth boundary.

A2—1 to 4 inches; brown (7.5YR 4/4) sandy loam,

dark brown (7.5YR 3/4) moist; moderate thick platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common fine irregular pores; noneffervescent; neutral (pH 6.8); abrupt wavy boundary.

Bw1—4 to 12 inches; brown (7.5YR 4/3) sandy loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine roots; few fine irregular pores; noneffervescent; neutral (pH 7.0); abrupt wavy boundary.

Bw2—12 to 25 inches; reddish brown (5YR 4/4) very cobbly sandy loam, dark reddish brown (5YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine roots; few fine irregular pores; 30 percent gravel and 20 percent cobbles; noneffervescent; neutral (pH 7.0); abrupt wavy boundary.

Btb1—25 to 45 inches; reddish brown (5YR 5/4) very cobbly sandy loam, yellowish red (5YR 5/6) moist; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few fine irregular and tubular pores; common distinct clay films on faces of peds, in pores, and on rock fragments; few faint manganese coatings on faces of peds; 20 percent gravel and 30 percent cobbles; noneffervescent; neutral (pH 7.2); clear smooth boundary.

Btb2—45 to 60 inches; yellowish red (5YR 5/6) very cobbly sandy clay loam, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine irregular and tubular pores; many distinct clay films on faces of peds, in pores, and on rock fragments; 30 percent gravel and 20 percent cobbles; noneffervescent; neutral (pH 7.2).

Range in Characteristics

Content of rock fragments: averages more than 35 percent gravel and/or cobbles
Reaction: slightly acid or neutral
Content of organic matter: 1 to 2 percent
Other features: in some pedons, no buried argillic horizon

A horizon:
Hue—7.5YR, 5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, fine sandy loam

Bw horizon:
Hue—7.5YR, 5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, fine sandy loam, loam, sandy clay loam

Btb horizon:
Hue—7.5YR, 5YR
Value—4 to 6 dry, 3 to 6 moist
Chroma—3, 4, or 6 dry or moist
Texture—sandy loam, sandy clay loam (10 to 35 percent clay)

Paramore Series

Depth class: moderately deep
Drainage class: well drained
Permeability: very slow
Landform: volcanic flows and cinder cones
Parent material: slope alluvium and residuum derived from basalt, cinders, bombs, and volcanic rocks
Slope range: 0 to 55 percent
Elevation: 3,800 to 5,200 feet

Classification: Fine, smectitic, thermic Leptic Haplotorrerts

Typical Pedon

Paramore silty clay loam, in an area of Outlaw-Epitaph-Paramore complex, 0 to 15 percent slopes, at a latitude of 31 degrees, 28 minutes, 18 seconds north and a longitude of 109 degrees, 14 minutes, 37 seconds west; about 1,000 feet north and 700 feet west of the southeast corner of sec. 36, T. 22 S., R. 30 E.

About 20 to 30 percent of the surface is covered with cinders and with basalt gravel and cobbles.

A—0 to 1 inch; brown (7.5YR 4/3) silty clay loam, dark brown (7.5YR 3/2) moist; weak thin platy structure parting to weak fine granular; soft, very friable, very sticky and plastic; few very fine roots; common coarse tubular pores; noneffervescent; neutral (pH 6.8); abrupt smooth boundary.

Bt1—1 to 8 inches; dark brown (7.5YR 3/3) clay, dark brown (7.5YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, firm, very sticky and very plastic; many very fine roots; few fine tubular pores; many distinct clay films on faces of peds, in pores, and on rock fragments; few distinct pressure faces; few fine grains of volcanic glass; 5 percent gravel; noneffervescent; neutral (pH 7.0); clear wavy boundary.

Bt2—8 to 22 inches; dark reddish brown (5YR 3/3) clay, dark reddish brown (5YR 3/3) moist; strong medium wedges parting to strong fine and

medium angular blocky structure; slightly hard, firm, very sticky and very plastic; common very fine and fine roots; few fine tubular pores; many distinct clay films on faces of peds, in pores, and on rock fragments; common distinct organic coatings on faces of peds; common distinct pressure faces; common fine grains of volcanic glass; 10 percent gravel and 3 percent cobbles; noneffervescent; slightly alkaline (pH 7.4); abrupt wavy boundary.

R—22 inches; unweathered basalt flow.

Range in Characteristics

Content of rock fragments: 5 to 20 percent cinders and basalt gravel and cobbles
Soil cracking: common vertical cracks 0.25 to 1.5 inches wide
Reaction: neutral or slightly alkaline
Content of clay: more than 35 percent
Content of organic matter: 1 to 3 percent
Depth to unweathered bedrock: 20 to 45 inches
Other features: in some pedons, accumulations of calcium carbonate above the bedrock

A horizon:
Hue—5YR, 7.5YR
Value—2.5 to 4 dry, 2.5 or 3 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, silty clay loam, loam

B horizon:
Hue—5YR, 7.5YR
Value—2.5 or 3 dry or moist
Chroma—2 to 4 dry or moist
Texture—clay, clay loam, silty clay

R layer:
Very hard basalt flow to hard, welded cinders and tuff

Pedregosa Series

Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid
Landform: fan terraces
Parent material: mixed calcareous fan alluvium
Slope range: 3 to 20 percent
Elevation: 4,000 to 5,000 feet

Classification: Loamy-skeletal, mixed, superactive, thermic, shallow Ustic Petrocalcids

Typical Pedon

Pedregosa very gravelly fine sandy loam, 3 to 15 percent slopes, at a latitude of 31 degrees, 41 minutes, 55 seconds north and a longitude of 110 degrees, 00 minutes, 57 seconds west; about 2,200 feet west and 1,450 feet south of the northeast corner of sec. 20, T. 20 S., R. 23 E.

About 40 to 50 percent of the surface is covered with gravel and cobbles.

A—0 to 1 inch; brown (7.5YR 4/3) very gravelly fine sandy loam, dark brown (7.5YR 3/3) moist; weak fine granular structure; loose, nonsticky and nonplastic; common very fine and fine roots; few fine irregular pores; 52 percent gravel; violently effervescent; 6.5 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk—1 to 7 inches; brown (7.5YR 4/3) very gravelly fine sandy loam, dark brown (7.5YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine and few medium roots; common fine irregular and tubular pores; many distinct calcium carbonate coatings on rock fragments; 40 percent gravel; violently effervescent; 9 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); abrupt smooth boundary.

Bkm—7 to 13 inches; a fractured hardpan; extremely hard; strongly cemented by calcium carbonate; violently effervescent; abrupt wavy boundary.

2Ck—13 to 60 inches; 70 percent white (7.5YR 8/1) and 30 percent brown (7.5YR 5/4) very gravelly sandy loam, 70 percent pinkish gray (7.5YR 7/2) and 30 percent strong brown (7.5YR 4/6) moist; massive; hard, firm, moderately sticky and moderately plastic; few very fine and fine roots; stratified laminar capping throughout; many distinct calcium carbonate coatings on rock fragments; common fine irregular hard calcium carbonate masses; 54 percent gravel; violently effervescent; 35 percent calcium carbonate equivalent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: more than 35 percent gravel and cobbles
Reaction: slightly alkaline or moderately alkaline
Content of clay: 5 to 18 percent
Content of organic matter: 1 to 2 percent
Depth to a petrocalcic horizon: 5 to 20 inches

A horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry, 2 to 4 moist
Chroma—2 or 3 dry, 2 to 4 moist

Texture—loam, fine sandy loam, sandy loam

Bk horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry, 2 to 5 moist
Chroma—2 or 3 dry, 2 to 4 moist
Texture—loam, fine sandy loam, sandy loam
Calcium carbonate equivalent—5 to 25 percent

2Ck horizon:
Hue—7.5YR, 10YR
Value—5 to 8 dry, 4 to 7 moist
Chroma—1 to 4 dry, 2 to 6 moist
Texture—sandy loam, loamy sand
Calcium carbonate equivalent—15 to 40 percent

Perilla Series

Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Landform: fan terraces and stream terraces
Parent material: mixed fan alluvium
Slope range: 0 to 3 percent
Elevation: 4,000 to 4,600 feet

Classification: Coarse-loamy, mixed, superactive, thermic Ustic Haplocambids

Typical Pedon

Perilla sandy loam, in an area of Perilla-Durazo complex, 0 to 3 percent slopes, at a latitude of 31 degrees, 36 minutes, 10 seconds north and a longitude of 109 degrees, 48 minutes, 45 seconds west; about 1,400 feet west and 1,700 feet south of the northeast corner of sec. 17, T. 21 S., R. 25 E.

A—0 to 5 inches; brown (7.5YR 5/4) sandy loam, dark brown (7/5YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine roots; few very fine irregular pores; about 5 percent gravel; noneffervescent; slightly alkaline; clear wavy boundary.

Bw—5 to 21 inches; brown (7.5YR 5/4) sandy loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, friable, nonsticky and nonplastic; common fine roots; few fine irregular pores; noneffervescent; slightly alkaline; gradual wavy boundary.

2Bk1—21 to 29 inches; brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, friable, nonsticky and nonplastic; few fine roots; few very fine tubular pores; about 5 percent gravel; thin calcium carbonate coatings on the underside of pebbles; strongly effervescent; slightly alkaline; clear wavy boundary.

2Bk2—29 to 43 inches; brown (7.5YR 5/4) gravelly sandy loam, brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; few tubular pores; 20 percent gravel; common fine irregular masses and few fine nodules of calcium carbonate; strongly effervescent; moderately alkaline; gradual wavy boundary.

2Bk3—43 to 60 inches; strong brown (7.5YR 5/6) gravelly sandy loam, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; 25 percent gravel; few fine irregular masses and few fine nodules of calcium carbonate; strongly effervescent; moderately alkaline.

Range in Characteristics

Content of rock fragments: less than 35 percent in any one horizon
Reaction: slightly alkaline or moderately alkaline
Depth to carbonates: 15 to 30 inches (disseminated and/or occurring as masses or petronodes)
Calcium carbonate equivalent: less than 5 percent in any one horizon

A horizon:
Hue—5YR, 7.5YR, 10YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam
Content of organic matter—less than 1 percent

Bw horizon:
Hue—5YR, 7.5YR, 10YR
Value—4 to 6 dry or moist
Chroma—3, 4, or 6 dry or moist
Texture—sandy loam, loam

2Bk horizon:
Hue—5YR, 7.5YR, 10YR
Value—4 to 7 dry or moist
Chroma—3 to 6 dry or moist
Texture—sandy loam, fine sandy loam

Pyeatt Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Landform: fan terraces
Parent material: mixed calcareous fan alluvium

Slope range: 1 to 40 percent
Elevation: 4,800 to 6,200 feet

Classification: Coarse-loamy, mixed, superactive, thermic Aridic Calciustolls

Typical Pedon

Pyeatt gravelly loam, in an unsectioned area of Terrarossa-Blacktail-Pyeatt complex, 1 to 40 percent slopes, at a latitude of 31 degrees, 36 minutes, 30 seconds north and a longitude of 110 degrees, 23 minutes, 20 seconds west.

A—0 to 3 inches; brown (7.5YR 4/3) gravelly loam, dark brown (7.5YR 3/3) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; 20 percent gravel; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bk1—3 to 9 inches; brown (7.5YR 4/2) gravelly loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine tubular pores; common distinct calcium carbonate coatings on the underside of rocks; few fine irregular calcium carbonate filaments; 20 percent gravel; strongly effervescent; 8 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk2—9 to 35 inches; brown (7.5YR 5/3) gravelly fine sandy loam, brown (7.5YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common fine roots; few fine irregular and tubular pores; many distinct calcium carbonate coatings on rock fragments; few fine calcium carbonate filaments; 18 percent gravel; violently effervescent; 20 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk3—35 to 41 inches; light brown (7.5YR 6/3) fine sandy loam, brown (7.5YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few fine roots; few fine irregular and tubular pores; common distinct calcium carbonate coatings on rock fragments; common fine and medium calcium carbonate filaments; 10 percent gravel; violently effervescent; 23 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk4—41 to 60 inches; pink (7.5YR 7/3) and brown (7.5YR 5/3) fine sandy loam, brown (7.5YR 4/3) moist; weak medium subangular blocky structure; very soft, very friable, slightly sticky and slightly plastic; few fine roots; few fine irregular pores; few distinct calcium carbonate coatings on rock fragments; common fine and medium calcium carbonate filaments; 10 percent gravel; violently effervescent; 30 percent calcium carbonate equivalent; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: less than 35 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: less than 18 percent
Content of organic matter: 1 to 2 percent
Depth to a calcic horizon: 3 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—loam, fine sandy loam
Calcium carbonate equivalent—0 to 10 percent

Bk horizon:
Hue—10YR, 7.5YR
Value—4 to 8 dry, 3 to 7 moist
Chroma—2 or 3 dry or moist
Texture—sandy loam, fine sandy loam, loam
Calcium carbonate equivalent—10 to 30 percent

Quiburi Series

Depth class: very deep
Drainage class: moderately well drained
Permeability: moderately rapid
Landform: flood plains
Parent material: mixed stream alluvium
Slope range: 0 to 5 percent
Elevation: 3,600 to 4,000 feet

Classification: Coarse-loamy, mixed, superactive, calcareous, thermic Aquic Torrifluvents

Typical Pedon

Quiburi very fine sandy loam, in an area of Quiburi-Fluvaquents-Riverwash complex, 0 to 5 percent slopes, at a latitude of 31 degrees, 51 minutes, 40 seconds north and a longitude of 110 degrees, 12 minutes, 39 seconds west; about 400 feet north and 200 feet west of the southeast corner of sec. 16, T. 18 S., R. 21 E.

Oi—0 to 1 inch; slightly decomposed leaf litter.

C1—1 to 6 inches; brown (7.5YR 5/3) very fine sandy loam, brown (7.5YR 4/2) moist; massive; soft, very friable, nonsticky and slightly plastic; common very

fine and fine roots; common fine vesicular pores; violently effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

C2—6 to 21 inches; brown (7.5YR 5/3) very fine sandy loam, brown (7.5YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine vesicular pores; violently effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Cn—21 to 36 inches; brown (7.5YR 5/3) very fine sandy loam, brown (7.5YR 4/3) moist; massive; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; common fine irregular pores; violently effervescent; very strongly alkaline (pH 9.2); clear smooth boundary.

Cng—36 to 51 inches; light brown (7.5YR 6/3), stratified very fine sandy loam to silt loam, brown (7.5YR 5/2) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine and fine roots; common fine irregular pores; few fine and medium irregular soft strong brown (7.5YR 5/8) iron accumulations; few fine black (7.5YR 2.5/1) organic masses; violently effervescent; strongly alkaline (pH 9.0); clear smooth boundary.

Cg—51 to 60 inches; light brown (7.5YR 6/3) very fine sandy loam, brown (7.5YR 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common fine irregular pores; common fine and medium irregular soft strong brown (7.5YR 5/8) iron accumulations; few fine black (7.5YR 2.5/1) organic masses; common organic stains in root channels; violently effervescent; moderately alkaline (pH 8.2).

Range in Characteristics

Reaction: moderately alkaline to very strongly alkaline
Calcium carbonate equivalent: 0 to 5 percent
Depth to a water table: 3 to 6 feet
Other features: in some pedons, thin strata of finer or coarser textured material

C and Cn horizons:
Hue—7.5YR, 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry, 2 to 4 moist
Texture—very fine sandy loam, fine sandy loam, sandy loam, silt loam (less than 18 percent clay)

Cng and Cg horizons:
Hue—7.5YR, 10YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 to 6 dry, 2 to 4 moist
Texture—very fine sandy loam, fine sandy loam, sandy loam, silt loam (less than 18 percent clay)

Rafter Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid or rapid
Landform: stream terraces, flood plains, and alluvial fans
Parent material: mixed fan and stream alluvium
Slope range: 0 to 15 percent
Elevation: 4,300 to 6,200 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Cumulic Haplustolls

Typical Pedon

Rafter gravelly sandy loam, in an area of Rafter-Lanque complex, 0 to 5 percent slopes, at a latitude of 31 degrees, 44 minutes, 15 seconds north and a longitude of 109 degrees, 28 minutes, 58 seconds west; about 1,900 feet south and 1,600 feet west of the northeast corner of sec. 33, T. 20 S., R. 28 E.

About 60 to 80 percent of the surface is covered with gravel and cobbles.

A1—0 to 2 inches; brown (7.5YR 5/3) gravelly sandy loam, dark brown (7.5YR 3/2) moist; moderate thick and very thick platy structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine and fine interstitial pores; 30 percent gravel; noneffervescent; moderately acid (pH 6.0); clear smooth boundary.

A2—2 to 12 inches; brown (7.5YR 5/3) very gravelly sandy loam, dark brown (7.5YR 3/2) moist; weak very fine and fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine and fine interstitial pores; 40 percent gravel; noneffervescent; moderately acid (pH 6.0); clear smooth boundary.

A3—12 to 28 inches; brown (7.5YR 5/3) extremely gravelly sandy loam, dark brown (7.5YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; many very fine and fine interstitial pores; 55 percent gravel and 20 percent cobbles; noneffervescent; moderately acid (pH 6.0); abrupt smooth boundary.

C—28 to 60 inches; brown (7.5YR 5/4) extremely gravelly coarse sand, dark brown (7.5YR 3/4) moist; single grain; loose, nonsticky and

nonplastic; few very fine roots; many very fine and fine interstitial pores; 70 percent gravel and 15 percent cobbles; noneffervescent; neutral (pH 6.6).

Range in Characteristics

Content of rock fragments: more than 35 percent gravel and cobbles
Reaction: moderately acid to neutral
Content of clay: 3 to 18 percent in the control section
Content of organic matter: 1 to 3 percent

A horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—fine sandy loam, sandy loam

C horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry, 2 to 4 moist
Chroma—2 to 4 dry, 1 to 4 moist
Texture—coarse sand, sand, sandy loam

Redington Series

Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Landform: dissected relict lakebeds
Parent material: mixed alluvium derived from prehistoric lakes and marshes
Slope range: 5 to 60 percent
Elevation: 3,800 to 4,100 feet

Classification: Sandy, mixed, thermic Typic Torriorthents

Typical Pedon

Redington fine sandy loam, in an area of Contention, Crystalgyp, Monzingo, and Redington soils, breaks, 5 to 60 percent slopes, at a latitude of 31 degrees, 49 minutes, 40 seconds north and a longitude of 110 degrees, 10 minutes, 58 seconds west; about 1,000 feet west and 1,600 feet south of the northeast corner of sec. 34, T. 18 S., R. 21 E.

About 10 to 40 percent of the surface is covered with gravel and/or cobbles.

A—0 to 1 inch; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 5/4) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common fine interstitial pores; violently effervescent; 7 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Cy—1 to 6 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 5/4) moist; moderate medium platy structure; slightly hard and hard, firm, nonsticky and nonplastic; few very fine and fine roots; few fine interstitial pores; few very fine gypsum crystals; disseminated calcium carbonate and gypsum; strongly effervescent; 9 percent calcium carbonate equivalent and 2 percent gypsum; moderately alkaline (pH 8.0); abrupt wavy boundary.

Cky—6 to 16 inches; light brown (7.5YR 6/4) loamy sand, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; very few very fine roots; few very fine tubular pores; common fine soft calcium carbonate and gypsum masses; distinct, 1/2-inch band of pinkish white (7.5YR 8/2) calcium carbonate and gypsum; 5 percent gravel; strongly effervescent; 7 percent calcium carbonate equivalent and 7 percent gypsum; moderately alkaline (pH 8.0); abrupt wavy boundary.

Ckyc—16 to 36 inches; light brown (7.5YR 6/4) sand, light brown (7.5YR 6/4) moist; massive; soft, very friable, nonsticky and nonplastic; very few very fine roots; common fine and medium soft calcium carbonate and gypsum masses; 10 percent petronodes; violently effervescent; 8 percent calcium carbonate equivalent and 7 percent gypsum; moderately alkaline (pH 8.0); abrupt wavy boundary.

Cdy—36 to 42 inches; light brown (7.5YR 6/3 sand, brown (7.5YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; common very fine and fine gypsum crystals; disseminated calcium carbonate and gypsum; violently effervescent; 31 percent calcium carbonate equivalent and 8 percent gypsum; moderately alkaline (pH 8.0); abrupt wavy boundary.

Cy´—42 to 60 inches; light brown (7.5YR 6/3) sand, brown (7.5YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine gypsum crystals; disseminated calcium carbonate and gypsum; violently effervescent; 23 percent calcium carbonate equivalent and 8 percent gypsum; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: less than 15 percent gravel and/or petronodes in the control section
Reaction: slightly alkaline or moderately alkaline
Content of clay: averages less than 8 percent
Depth to a calcic horizon: 6 to 20 inches

Depth to a gypsic horizon: 6 to 30 inches

A horizon:
Hue—7.5YR, 10YR
Value—5 to 7 dry, 4 or 5 moist
Chroma—3 to 6 dry or moist
Texture—fine sand, fine sandy loam
Calcium carbonate equivalent—0 to 10 percent
Content of gypsum—0 to 5 percent

Cy, Cky, and Ckyc horizons:
Hue—7.5YR, 10YR
Value—5 to 7 dry, 4 to 6 moist
Chroma—3 to 6 dry or moist
Texture—sand, loamy sand, fine sand, fine sandy loam, coarse sand
Calcium carbonate equivalent—0 to 25 percent
Content of gypsum—5 to 10 percent

Cd horizon:
Kind of sediments—dense, naturally compacted sediments that are intergrades between soft sediments (C material) and soft bedrock (Cr material); have been subject to a slow reduction in volume and an increase in density because of deep water loading in the geologic past; easily break down in water; and can be penetrated by roots when moist but restrict root penetration when dry
Hue—7.5YR, 5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3, 4, or 6 dry or moist
Texture—fine sand, sand, coarse sand
Calcium carbonate equivalent—10 to 35 percent
Content of gypsum—5 to 10 percent

Reeup Series

Depth class: moderately deep
Drainage class: well drained
Permeability: slow
Landform: stream terraces and relict basin floors
Parent material: mixed alluvium
Slope range: 3 to 45 percent
Elevation: 4,000 to 4,300 feet

Classification: Fine, mixed, superactive, thermic Leptic Haplogypsids

Typical Pedon

Reeup loam, in an area of Kaboom-Reeup complex, 0 to 45 percent slopes, at a latitude of 31 degrees, 36 minutes, 50 seconds north and a longitude of 110 degrees, 12 minutes, 15 seconds west; about 800 feet north and 500 feet east of the southwest corner of sec. 9, T. 21 S., R. 21 E.

A—0 to 2 inches; brown (7.5YR 5/3) loam, dark brown (7.5YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and moderately plastic; few fine roots; few fine tubular pores; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bkyc—2 to 7 inches; brown (7.5YR 5/4) gravelly clay loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; soft, friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; common fine and medium irregular soft calcium and magnesium masses; common fine calcium carbonate filaments; 20 percent hard petronodes; strongly effervescent; 12 percent calcium carbonate equivalent and 6.15 percent gypsum; moderately alkaline (pH 8.4); abrupt smooth boundary.

Bky1—7 to 12 inches; light brown (7.5YR 6/4) clay, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, firm, very sticky and very plastic; common fine roots; few fine tubular pores; common distinct organic coatings on faces of peds and in pores; many iron-manganese stains on faces of peds; common fine irregular soft calcium and magnesium masses; 5 percent hard petronodes; violently effervescent; 10 percent calcium carbonate equivalent and 8.54 percent gypsum; moderately alkaline (pH 8.4); clear smooth boundary.

Bky2—12 to 21 inches; brown (7.5YR 5/4) clay, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, firm, very sticky and very plastic; few fine roots; few fine tubular pores; common fine irregular soft calcium and magnesium masses; 5 percent hard petronodes; strongly effervescent; 8 percent calcium carbonate equivalent and 7.64 percent gypsum; moderately alkaline (pH 8.2); clear wavy boundary.

Bky3—21 to 29 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; slightly hard, firm, very sticky and very plastic; few fine tubular pores; few fine patchy organic coatings on faces of peds and in pores; few fine iron-manganese stains on faces of peds; many fine and medium irregular soft calcium and magnesium masses; violently effervescent; 10 percent calcium carbonate equivalent and 5.65 percent gypsum; moderately alkaline (pH 8.2); clear wavy boundary.

Bkyc´—29 to 32 inches; brown (7.5YR 5/4) and white (7.5YR 8/1) very gravelly clay loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, firm, very sticky and very plastic; few fine tubular pores; common distinct calcium carbonate and magnesium coatings on faces of peds; 50 percent hard petronodes, which can be easily crushed when moist but are very hard when dry; violently effervescent; 4 percent gypsum; moderately alkaline (pH 8.2); abrupt wavy boundary.

2R—32 inches; interbedded sandstone, limestone, and loamy soil material; extremely hard; gypsum crystals in the bedrock; violently effervescent.

Range in Characteristics

Content of rock fragments: 5 to 50 percent gravel and petronodes; averages less than 30 percent in the control section
Reaction: moderately alkaline
Depth to a gypsic horizon: 2 to 40 inches
Depth to interbedded bedrock: 25 to 40 inches

A horizon:
Hue—7.5YR, 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Content of gypsum—0 to 3 percent
Calcium carbonate equivalent—0 to 10 percent

Bky horizon:
Hue—7.5YR, 10YR
Value—5 to 8 dry, 4 to 6 moist
Chroma—1 to 4 dry or moist
Texture—clay loam, clay
Content of gypsum—4 to 10 percent
Calcium carbonate equivalent—5 to 15 percent

Riveroad Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow or slow
Landform: flood plains and alluvial fans
Parent material: mixed stream alluvium
Slope range: 0 to 5 percent
Elevation: 3,900 to 4,600 feet

Classification: Fine-silty, mixed, superactive, calcareous, thermic Ustic Torrifluvents

Typical Pedon

Riveroad fine sandy loam, in an area of Guest-Riveroad association, 0 to 1 percent slopes, at a latitude of 31 degrees, 21 minutes, 20 seconds north and a longitude of 110 degrees, 07 minutes, 25 seconds west; about 400 feet west and 300 feet south of the northeast corner of sec. 8, T. 24 S., R. 22 E.

Ap1—0 to 4 inches; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; moderate medium cloddy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine irregular pores; slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

Ap2—4 to 14 inches; brown (7.5YR 4/4) fine sandy loam, dark brown (7.5YR 3/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine irregular pores; slightly effervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.

Cy1—14 to 22 inches; brown (7.5YR 5/4) and dark brown (7.5YR 3/4) silt loam, brown (7.5YR 4/2) moist; moderate medium and fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine tubular pores; common distinct organic coatings on faces of peds; slightly effervescent; 1 percent gypsum; slightly alkaline (pH 7.8); abrupt wavy boundary.

Cy2—22 to 27 inches; dark brown (7.5YR 3/2) silty clay loam, dark brown (7.5YR 3/2) moist; moderate medium and fine subangular blocky structure; soft, friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine tubular pores; slightly effervescent; 1 percent gypsum; slightly alkaline (pH 7.8); abrupt wavy boundary.

Cy3—27 to 33 inches; brown (7.5YR 4/4) silty clay loam, dark brown (7.5YR 3/3) moist; moderate fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; slightly effervescent; 2 percent gypsum; slightly alkaline (pH 7.8); abrupt wavy boundary.

Cy4—33 to 53 inches; dark brown (7.5YR 3/2) silty clay, dark brown (7.5YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, firm, very sticky and very plastic; common very fine and fine roots; few fine tubular pores; common pressure faces; slightly effervescent; 2 percent gypsum; slightly alkaline (pH 7.8); abrupt wavy boundary.

Cy5—53 to 60 inches; brown (7.5YR 4/4) sandy loam, dark brown (7.5YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine irregular pores; slightly

effervescent; a trace of gypsum; slightly alkaline (pH 7.8).

Range in Characteristics

Reaction: slightly alkaline or moderately alkaline
Content of clay: averages 18 to 35 percent
Content of gypsum: 0 to 4 percent

A horizon:
Hue—7.5YR, 10YR
Value—3 or 4 dry or moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, loam, silt loam, silty clay loam

C horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—silt loam, silty clay loam, silty clay; can have strata of finer or coarser textured material

Ruins Series

Depth class: very deep
Drainage class: well drained
Permeability: very slow
Landform: fan terraces
Parent material: fan alluvium derived from quartz sandstone and arkose
Slope range: 1 to 5 percent
Elevation: 4,400 to 5,000 feet

Classification: Fine, smectitic, thermic Vertic Paleargids

Typical Pedon

Ruins fine sandy loam, in an area of Naco-Ruins soils complex, 1 to 5 percent slopes, at a latitude of 31 degrees, 32 minutes, 42 seconds north and a longitude of 110 degrees, 00 minutes, 24 seconds west; about 1,000 feet north and 1,000 feet west of the southeast corner of sec. 4, T. 22 S., R. 23 E.

About 5 to 20 percent of the surface is covered with gravel and/or cobbles.

A—0 to 5 inches; reddish brown (5YR 5/4) fine sandy loam, dark reddish brown (5YR 3/4) moist; moderate thin platy structure; soft, friable, nonsticky and nonplastic; many very fine and fine roots; common fine irregular pores; noneffervescent; slightly acid (pH 6.2); abrupt wavy boundary.

Bt1—5 to 9 inches; dark reddish brown (2.5YR 3/4) gravelly clay loam, reddish brown (2.5YR 4/3) moist; moderate medium subangular blocky structure; soft, friable, moderately sticky and moderately plastic; common fine and medium roots; common fine tubular pores; common distinct clay films on faces of peds and on rock fragments; 20 percent gravel; noneffervescent; slightly acid (pH 6.4); clear wavy boundary.

Bt2—9 to 20 inches; dark reddish brown (2.5YR 3/4) clay, dark reddish brown (2.5YR 3/4) moist; strong medium angular blocky structure parting to strong fine angular blocky; hard, firm, very sticky and very plastic; many medium and few fine and very fine roots matted between faces of peds; few fine tubular pores; many distinct clay films on faces of peds; noneffervescent; neutral (pH 6.8); abrupt wavy boundary.

Bt3—20 to 28 inches; dark reddish brown (2.5YR 3/4) clay, dark reddish brown (2.5YR 3/4) moist; strong very coarse and coarse wedges; hard, firm, very sticky and very plastic; many medium and few fine and very fine roots matted between faces of peds; few fine tubular pores; many distinct clay films on faces of peds; many distinct pressure faces; noneffervescent; neutral (pH 6.8); abrupt wavy boundary.

Bt4—28 to 60 inches; dark reddish brown (2.5YR 3/3) very cobbly clay loam, dark reddish brown (2.5YR 3/4) moist; moderate fine subangular blocky structure; hard, friable, very sticky and very plastic; few fine and very fine roots; few fine tubular pores; many distinct clay films on faces of peds and on rock fragments; 30 percent cobbles and 20 percent gravel; noneffervescent; neutral (pH 7.2).

Range in Characteristics

Content of rock fragments: averages less than 35 percent in the control section
Reaction: slightly acid to slightly alkaline
Content of clay: more than 35 percent

A horizon:
Hue—7.5YR, 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Texture—sandy loam, fine sandy loam, loamy fine sand

Bt horizon:
Hue—2.5YR, 5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Texture—clay loam, clay

Sasabe Series

Depth class: very deep
Drainage class: well drained
Permeability: slow or moderately slow
Landform: fan terraces and swales
Parent material: mixed fan alluvium
Slope range: 0 to 8 percent
Elevation: 4,000 to 4,600 feet

Classification: Fine, mixed, superactive, thermic Ustic Paleargids

Typical Pedon

Sasabe sandy loam, in an area of Courtland-Sasabe-Diaspar complex, 1 to 8 percent slopes, at latitude of 31 degrees, 35 minutes, 33 seconds north and a longitude of 110 degrees, 16 minutes, 00 seconds west; about 1,000 feet south and 2,400 feet west of the northeast corner of sec. 23, T. 21 S., R. 20 E.

A—0 to 3 inches; yellowish red (5YR 4/6) sandy loam, reddish brown (5YR 4/4) moist; moderate thin platy structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; 10 percent gravel; noneffervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt1—3 to 11 inches; red (2.5YR 4/6) sandy clay loam, dark red (2.5YR 3/6) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine tubular pores; few faint clay films between sand grains; 10 percent gravel; noneffervescent; slightly alkaline (pH 7.6); abrupt smooth boundary.

Bt2—11 to 16 inches; dark reddish brown (2.5YR 3/4) clay loam, dark red (2.5YR 3/6) moist; moderate medium prismatic structure parting to strong medium subangular blocky; slightly hard, friable, moderately sticky and moderately plastic; few very fine and fine roots; few fine tubular pores; common distinct clay films on sand grains and pebbles, on faces of peds, and in pores; 10 percent gravel; noneffervescent; slightly alkaline (pH 7.8); clear smooth boundary.

Bt3—16 to 36 inches; dark reddish brown (2.5YR 3/4) clay loam, red (2.5YR 4/6) moist; moderate medium prismatic structure parting to strong medium angular blocky; slightly hard, firm, moderately sticky and moderately plastic; few fine and medium roots; few fine tubular pores; many distinct dark red (2.5YR 3/6) clay films on faces of peds, in pores, and on sand grains and pebbles; 10 percent gravel; noneffervescent; slightly alkaline (pH 7.8); gradual smooth boundary.

Bt4—36 to 60 inches; red (2.5YR 4/6) sandy clay loam, red (2.5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; few fine roots; few fine tubular pores; many distinct clay films on faces of peds, in pores, and on sand grains and pebbles; 12 percent gravel; noneffervescent; slightly alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: 5 to 25 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: averages more than 35 percent in the control section
Content of organic matter: less than 1 percent
Calcium carbonate equivalent: less than 15 percent
Depth to an abrupt textural change: 7 to 15 inches

A horizon:
Hue—7.5YR, 5YR
Value—3 to 5 dry or moist
Chroma—4 to 8 dry or moist
Texture—sandy loam, sandy clay loam, silt loam, fine sandy loam

Bt horizon:
Hue—2.5YR, 5YR
Value—3 to 5 dry or moist
Chroma—3, 4, or 6 dry or moist
Texture—clay loam, sandy clay, sandy clay loam, clay

Schiefflin Series

Depth class: very shallow or shallow
Drainage class: somewhat excessively drained
Permeability: rapid
Landform: hills
Parent material: slope alluvium and residuum derived from granodiorite
Slope range: 3 to 15 percent
Elevation: 4,000 to 4,800 feet

Classification: Mixed, thermic Lithic Torripsamments

Typical Pedon

Schiefflin very stony loamy sand, 3 to 15 percent slopes, at a latitude of 31 degrees, 43 minutes, 50 seconds north and a longitude of 110 degrees, 06 minutes, 25 seconds west; about 1,925 feet east and 490 feet north of the southwest corner of sec. 33, T. 19 S., R. 22 E.

About 40 to 60 percent of the surface is covered with gravel, stones, and boulders.

A—0 to 6 inches; brown (7.5YR 4/3) very stony loamy sand, dark brown (7.5YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; few fine irregular pores; 30 percent stones, 10 percent boulders, and 7 percent gravel; noneffervescent; neutral (pH 6.8); abrupt smooth boundary.

C—6 to 18 inches; brown (7.5YR 4/3) gravelly sand, dark brown (7.5YR 3/2) moist; massive; hard, very friable, nonsticky and nonplastic; common very fine roots; common fine irregular pores; 20 percent gravel; noneffervescent; moderately acid (pH 5.6); abrupt smooth boundary.

R—18 inches; unweathered granodiorite.

Range in Characteristics

Content of rock fragments: 10 to 25 percent gravel
Reaction: moderately acid to neutral
Content of clay: 3 to 10 percent
Content of organic matter: 1 to 3 percent
Depth to unweathered bedrock: 5 to 20 inches
Other features: stone class 2 (Stones or boulders cover about 0.01 to 0.1 percent of the surface. The smallest stones are no less than 8 meters apart, and the smallest boulders are no less than 20 meters apart.)

A and C horizons:
Hue—7.5YR, 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—loamy sand, sand

Sierravista Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: fan terraces and stream terraces
Parent material: mixed fan alluvium
Slope range: 0 to 8 percent
Elevation: 4,200 to 4,600 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Petronodic Calciargids

Typical Pedon

Sierravista fine sandy loam, in an area of Graveyard-Sierravista complex, 0 to 8 percent slopes, at a latitude of 31 degrees, 37 minutes, 30 seconds north and a longitude of 110 degrees, 18 minutes, 30 seconds west; about 800 feet south and 1,200 feet east of the northwest corner of sec. 10, T. 21 S., R. 20 E.

A—0 to 3 inches; yellowish red (5YR 4/6) fine sandy loam, dark reddish brown (5YR 3/4) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores; noneffervescent; slightly alkaline (pH 7.4); abrupt smooth boundary.

Bt—3 to 21 inches; dark red (2.5YR 3/6) very gravelly sandy clay loam, dark reddish brown (2.5YR 3/4) moist; weak fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; many distinct clay films on pebbles and between sand grains; 40 percent gravel, 10 percent petronodes, and 5 percent cobbles; noneffervescent; slightly alkaline (pH 7.6); clear smooth boundary.

Btc—21 to 42 inches; red (2.5YR 4/6) very gravelly sandy clay loam, dark red (2.5YR 3/6) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; few fine tubular pores; many distinct clay films on pebbles and between sand grains; 30 percent gravel and 20 percent petronodes; noneffervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.

Bkc—42 to 60 inches; 80 percent pink (5YR 8/3) and 20 percent weak red (2.5YR 4/2) extremely gravelly sandy loam, yellowish red (5YR 5/6) moist; massive; extremely hard, friable, nonsticky and nonplastic; weakly cemented by calcium carbonate; few fine roots in cracks; many distinct calcium carbonate coatings on rock fragments; 40 percent gravel, 40 percent petronodes, and 5 percent cobbles; violently effervescent; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: averages more than 35 percent, but can range from 0 to 80 percent in any horizon
Petronodic feature: 20 to 50 percent petronodes
Reaction: slightly alkaline or moderately alkaline
Content of clay: 18 to 35 percent in the control section
Depth to a calcic horizon: 30 to 50 inches

A horizon:
Hue—7.5YR, 5YR
Value—3 or 4 dry or moist
Chroma—4 or 6 dry or moist
Texture—fine sandy loam, sandy loam

Calcium carbonate equivalent—0 to 5 percent

Bt and Btc horizons:
Hue—2.5YR, 5YR
Value—3 to 5 dry or moist
Chroma—4 or 6 dry or moist
Texture—sandy clay loam, sandy loam
Calcium carbonate equivalent—0 to 5 percent

Bkc horizon:
Hue—5YR, 2.5YR
Value—4, 7, or 8 dry, 3 to 5 moist
Chroma—2 to 6 dry or moist
Calcium carbonate equivalent—more than 15 percent with some weak to strong cementation

Stanford Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately slow
Landform: inset fans and alluvial fans
Parent material: mixed alluvium
Slope range: 0 to 10 percent
Elevation: 4,600 to 6,200 feet

Classification: Fine-loamy, mixed, superactive, thermic Cumulic Haplustolls

Typical Pedon

Stanford fine sandy loam, in an area of Lanque-Stanford complex, 0 to 5 percent slopes, at a latitude of 31 degrees, 42 minutes, 20 seconds north and a longitude of 109 degrees, 28 minutes, 10 seconds west; about 2,400 feet north and 1,400 feet west of the southeast corner of sec. 10, T. 20 S., R. 28 E.

About 10 to 20 percent of the surface is covered with gravel.

A1—0 to 2 inches; brown (7.5YR 4/3) fine sandy loam, very dark brown (7.5YR 2.5/2) moist; moderate very thick and moderately thick platy structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 2 percent gravel; noneffervescent; slightly acid (pH 6.2); abrupt smooth boundary.

A2—2 to 10 inches; dark brown (7.5YR 3/2) sandy loam, very dark brown (7.5YR 2.5/2) moist; moderate fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; 5 percent gravel; noneffervescent; slightly acid (pH 6.2); abrupt smooth boundary.

A3—10 to 16 inches; dark brown (7.5YR 3/2) sandy loam, very dark gray (7.5YR 3/1) moist; massive; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; many very fine and fine tubular pores; 5 percent gravel; noneffervescent; slightly acid (pH 6.4); clear smooth boundary.

C1—16 to 30 inches; dark gray (7.5YR 4/1) loam, black (7.5YR 2.5/1) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine and few medium roots; many very fine and fine and common medium tubular pores; 3 percent gravel; noneffervescent; slightly acid (pH 6.2); clear smooth boundary.

C2—30 to 60 inches; dark gray (7.5YR 4/1) clay loam, black (7.5YR 2.5/1) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine and fine and few medium roots; many very fine and fine and common medium tubular pores; 3 percent gravel; noneffervescent; neutral (pH 6.6).

Range in Characteristics

Content of rock fragments: less than 20 percent gravel
Reaction: slightly acid or neutral
Content of clay: 18 to 35 percent in the control section
Content of organic matter: 1 to 3 percent

A horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—fine sandy loam, sandy loam, sandy clay loam

C horizon:
Hue—7.5YR, 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—loam, clay loam, sandy clay loam

Stronghold Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid
Landform: fan terraces
Parent material: mixed calcareous fan alluvium
Slope range: 1 to 30 percent
Elevation: 4,000 to 5,200 feet

Classification: Coarse-loamy, mixed, superactive, thermic Ustic Haplocalcids

Typical Pedon

Stronghold very gravelly loamy sand, in an area of McAllister-Stronghold complex, 3 to 20 percent slopes, at a latitude of 31 degrees, 44 minutes, 36 seconds north and a longitude of 110 degrees, 01 minute, 00 seconds west; about 2,230 feet west and 390 feet south of the northeast corner of sec. 32, T. 19 S., R. 23 E.

About 35 to 55 percent of the surface is covered with gravel.

A—0 to 1 inch; brown (7.5YR 4/2) very gravelly loamy sand, dark brown (7.5YR 3/2) moist; weak thick platy structure; loose, nonsticky and nonplastic; few very fine roots; common fine irregular pores; 37 percent gravel; strongly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

A/Bk—1 to 8 inches; brown (7.5YR 4/2) gravelly sandy loam, dark brown (7.5YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; few patchy calcium carbonate coatings on rock fragments; common distinct organic coatings on rock fragments; 34 percent gravel; violently effervescent; 14 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk1—8 to 25 inches; light brown (7.5YR 6/3) gravelly sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; many distinct calcium carbonate coatings on rock fragments; common fine and medium calcium carbonate filaments; 23 percent gravel; violently effervescent; 20 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk2—25 to 60 inches; light brown (7.5YR 6/3) and pink (7.5YR 7/3) gravelly sandy loam, brown (7.5YR 4/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few fine tubular pores; many distinct calcium carbonate coatings on rock fragments; common fine calcium carbonate filaments; horizontal seams of calcium carbonate 0.5 to 1 inch thick and 12 to 18 inches long; 18 percent gravel; violently effervescent; 18 percent calcium carbonate equivalent; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: 5 to 35 percent
Reaction: slightly alkaline or moderately alkaline
Content of clay: 5 to 15 percent
Content of organic matter: 1 to 2 percent in the surface layer
Depth to a calcic horizon: 2 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2 to 4 moist
Chroma—1 to 3 dry or moist
Texture—fine sandy loam, loam, loamy sand, sandy loam
Calcium carbonate equivalent—5 to 15 percent

Bk horizon:
Hue—10YR, 7.5YR
Value—4 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam, sandy loam, loamy sand, loam
Calcium carbonate equivalent—14 to 40 percent

Surge Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately slow or moderate
Landform: volcanic surge conglomerate rings
Parent material: slope alluvium and residuum derived from basalt surge conglomerate
Slope range: 3 to 45 percent
Elevation: 3,800 to 5,200 feet

Classification: Loamy, mixed, superactive, calcareous, thermic Lithic Ustic Torriorthents

Typical Pedon

Surge sandy loam, in an area of Surge-Rock outcrop complex, 3 to 45 percent slopes, at a latitude of 31 degrees, 31 minutes, 37 seconds north and a longitude of 109 degrees, 13 minutes, 54 seconds west; about 500 feet east and 1,100 feet north of the southwest corner of sec. 7, T. 22 S., R. 31 E.

About 15 to 40 percent of the surface is covered with gravel and cobbles.

A—0 to 0.5 inch; brown (7.5YR 4/3) sandy loam, dark brown (7.5YR 3/2) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine irregular pores; noneffervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

AB—0.5 inch to 2 inches; brown (7.5YR 4/3) sandy loam, very dark brown (7.5YR 2.5/2) moist; weak

thin and moderately thick platy structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine irregular pores; noneffervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bw—2 to 7 inches; brown (7.5YR 4/3) sandy clay loam, very dark brown (7.5YR 2.5/2) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; few very fine roots; many very fine irregular and tubular pores; noneffervescent to slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

R—7 inches; hard, unweathered basalt surge conglomerate; violently effervescent.

Range in Characteristics

Content of rock fragments: 0 to 20 percent gravel and cobbles
Reaction: slightly alkaline or moderately alkaline
Content of clay: 10 to 25 percent
Content of organic matter: 0.5 to 2 percent
Calcium carbonate equivalent: 1 to 10 percent
Depth to unweathered bedrock: 5 to 15 inches

A horizon:
Hue—10YR, 7.5YR
Value—2 to 4 dry, 2 to 3 moist
Chroma—2 or 3 dry or moist
Texture—loam, sandy loam

Bw horizon:
Hue—10YR, 7.5YR
Value—3 or 4 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—loam, sandy loam, sandy clay loam

Sutherland Series

Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately rapid
Landform: fan terraces
Parent material: mixed calcareous fan alluvium
Slope range: 3 to 15 percent
Elevation: 4,000 to 4,800 feet

Classification: Loamy-skeletal, carbonatic, thermic, shallow Calcic Petrocalcids

Typical Pedon

Sutherland gravelly fine sandy loam, in an area of Sutherland-Mule complex, 3 to 15 percent slopes, at a latitude of 31 degrees, 41 minutes, 33 seconds north and a longitude of 110 degrees, 02 minutes, 25 seconds west; about 1,250 feet west and 2,380 feet north of the southeast corner of sec. 18, T. 20 S., R. 22 E.

About 35 to 55 percent of the surface is covered with gravel, cobbles, and hardpan fragments.

A—0 to 1 inch; brown (7.5YR 5/3) gravelly fine sandy loam, brown (7.5YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common fine vesicular pores; 28 percent gravel; violently effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bk1—1 to 8 inches; brown (7.5YR 5/3) very gravelly fine sandy loam, brown (7.5YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium roots; common fine irregular and tubular pores; many distinct calcium carbonate coatings on rock fragments; 37 percent gravel; violently effervescent; 41 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk2—8 to 18 inches; light brown (7.5YR 6/3) very gravelly fine sandy loam, brown (7.5YR 5/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine tubular pores; many distinct calcium carbonate coatings on rock fragments; 42 percent gravel; violently effervescent; 60 percent calcium carbonate equivalent; moderately alkaline (pH 8.4); abrupt smooth boundary.

2Bkm—18 to 42 inches; a fractured hardpan; extremely hard; strongly cemented by calcium carbonate; weakly cemented to strongly cemented below a laminar cap 1/4 to 1/2 inch thick; violently effervescent; clear smooth boundary.

3Ck—42 to 60 inches; pink (7.5YR 7/3) very gravelly sandy loam, light brown (7.5YR 6/3) moist; massive; hard and very hard, firm, nonsticky and nonplastic; few fine roots; weakly cemented by calcium carbonate; violently effervescent; moderately alkaline (pH 8.4).

Range in Characteristics

Content of rock fragments: more than 35 percent
Reaction: slightly alkaline or moderately alkaline
Depth to a calcic horizon: 1 to 18 inches
Depth to a petrocalcic horizon: 5 to 20 inches
Content of clay: 5 to 18 percent
Content of organic matter: 1 to 3 percent

A horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam, sandy loam
Calcium carbonate equivalent—30 to 45 percent

Bk horizon:
Hue—10YR, 7.5YR
Value—5 or 6 dry, 3 to 6 moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam, loam, sandy loam
Calcium carbonate equivalent—40 to 60 percent

2Bkm horizon:
Thickness—4 to 42 inches

3Ck horizon:
Value—6 or 7 dry or moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, fine sandy loam
Calcium carbonate equivalent—45 to 55 percent

Swisshelm Series

Depth class: very deep
Drainage class: well drained
Permeability: moderate
Landform: stream terraces and alluvial fans
Parent material: mixed, stratified alluvium derived from rhyolite, andesite, granite, limestone, tuff, and quartzite
Slope range: 1 to 3 percent
Elevation: 4,000 to 4,600 feet

Classification: Coarse-loamy, mixed, superactive, thermic Ustifluventic Haplocambids

Typical Pedon

Swisshelm sandy loam, 1 to 3 percent slopes, at a latitude of 31 degrees, 39 minutes, 05 seconds north and a longitude of 109 degrees, 39 minutes, 30 seconds west; about 900 feet south and 900 feet west of the northeast corner of sec. 35, T. 20 S., R. 26 E.

A1—0 to 5 inches; brown (7.5YR 5/3) sandy loam, brown (7.5YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many fine irregular pores; noneffervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

A2—5 to 12 inches; brown (7.5YR 5/4) sandy loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many fine and very fine irregular and common very fine tubular pores; noneffervescent; moderately alkaline (pH 8.0); clear wavy boundary.

Bk—12 to 22 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 5/4) moist; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine tubular pores; common soft calcium carbonate masses; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

C—22 to 42 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; strongly effervescent; moderately alkaline (pH 8.4); clear wavy boundary.

Ck—42 to 60 inches; light brownish gray (10YR 6/2) clay loam, grayish brown (10YR 5/2) moist; massive; hard, friable, sticky and slightly plastic; common very fine roots; common very fine and fine tubular pores; few fine calcium carbonate filaments; strongly effervescent; moderately alkaline (pH 8.4).

Range in Characteristics

Content of rock fragments: less than 15 percent gravel
Depth to carbonates: less than 20 inches

A horizon:
Hue—7.5YR, 10YR
Value—4 to 7 dry, 3 to 6 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, loam
Reaction—neutral to moderately alkaline

B horizon:
Hue—7.5YR, 10YR
Value—4 to 7 dry, 3 to 6 moist
Chroma—3 to 6 dry or moist
Texture—loam, sandy loam, fine sandy loam, very fine sandy loam
Reaction—slightly alkaline to strongly alkaline
Calcium carbonate equivalent—less than 5 percent (disseminated or occurring as soft masses)

C horizon:
Hue—7.5YR, 10YR
Value—4 to 7 dry, 3 to 6 moist
Chroma—2 to 6 dry or moist
Texture—loam, very fine sandy loam, fine sandy loam, sandy loam, clay loam

Reaction—slightly alkaline to strongly alkaline
Calcium carbonate equivalent—less than 5 percent
Stratification—thin strata of contrasting textures are common below a depth of 20 inches.

Tenneco Series

Depth class: very deep
Drainage class: well drained
Permeability: moderate or moderately slow
Landform: flood plains and alluvial fans
Parent material: mixed fan alluvium
Slope range: 0 to 2 percent
Elevation: 3,800 to 4,700 feet

Classification: Fine-loamy, mixed, superactive, thermic Ustic Haplocambids

Typical Pedon

Tenneco fine sandy loam, 0 to 2 percent slopes, at a latitude of 31 degrees, 23 minutes, 30 seconds north and a longitude of 110 degrees, 08 minutes, 01 second west; about 400 feet north and 500 feet east of the southwest corner of sec. 29, T. 23 S., R. 22 E.

Ap—0 to 2 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 3/4) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few fine irregular pores; noneffervescent; slightly alkaline (pH 7.8); abrupt smooth boundary.

Bw—2 to 11 inches; dark yellowish brown (10YR 4/4) loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; many very fine and fine roots; few fine irregular and tubular pores; common distinct organic coatings on faces of peds; noneffervescent; slightly alkaline (pH 7.8); abrupt wavy boundary.

Bk1—11 to 26 inches; dark yellowish brown (10YR 4/4) loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, moderately sticky and moderately plastic; many very fine and fine roots; few fine irregular and tubular pores; many fine calcium carbonate filaments; strongly effervescent; 6 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.

Bk2—26 to 41 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and moderately plastic; few very fine and fine roots; few fine irregular and tubular pores; many fine calcium carbonate filaments; violently effervescent; 5 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear smooth boundary.

C—41 to 60 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine irregular pores; disseminated calcium carbonate; violently effervescent; 7 percent calcium carbonate equivalent; moderately alkaline (pH 8.0).

Range in Characteristics

Reaction: slightly alkaline or moderately alkaline
Content of clay: 18 to 35 percent in the control section
Calcium carbonate equivalent: 3 to 15 percent

A horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, sandy loam, loam

Bw horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, loam, sandy clay loam

Bk and C horizons:
Hue—10YR, 7.5YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, loam, sandy clay loam

Terrarossa Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 0 to 45 percent
Elevation: 4,600 to 6,200 feet

Classification: Fine, mixed, superactive, thermic Aridic Paleustalfs

Typical Pedon

Terrarossa sandy loam, in an unsectioned area of Terrarossa complex, 0 to 45 percent slopes, at a latitude of 31 degrees, 31 minutes, 30 seconds north and a longitude of 110 degrees, 18 minutes, 30 seconds west.

A—0 to 2 inches; reddish brown (5YR 4/4) sandy

loam, dark reddish brown (5YR 3/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; common fine roots; common fine irregular pores; noneffervescent; moderately acid (pH 6.0); abrupt smooth boundary.

Bt1—2 to 9 inches; reddish brown (5YR 4/4) sandy loam, dark reddish brown (5YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and few medium roots; few fine irregular and tubular pores; common distinct clay films on faces of peds; noneffervescent; slightly acid (pH 6.2); abrupt wavy boundary.

Bt2—9 to 17 inches; yellowish red (5YR 5/6) clay, reddish brown (5YR 4/4) moist; moderate medium prismatic structure parting to strong medium angular blocky; hard, firm, very sticky and very plastic; few fine and few coarse roots; few fine tubular pores; many distinct clay films on faces of peds; noneffervescent; slightly acid (pH 6.2); abrupt smooth boundary.

Bt3—17 to 27 inches; 70 percent yellowish red (5YR 5/6) and 30 percent red (2.5YR 4/6) clay, reddish brown (5YR 4/4) moist; moderate medium prismatic structure parting to strong medium angular blocky; very hard, very firm, very sticky and very plastic; few fine roots; few fine tubular pores; many distinct clay films on faces of peds and on rock fragments; common dark reddish brown (5YR 3/3) organic coatings and iron-manganese stains on faces of peds; 5 percent gravel; noneffervescent; neutral (pH 6.8); clear smooth boundary.

Bt4—27 to 42 inches; 70 percent dark red (2.5YR 3/6) and 30 percent yellowish red (5YR 4/6) clay, 70 percent dark red (2.5YR 3/6) and 30 percent yellowish red (5YR 4/6) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, very firm, very sticky and very plastic; few fine roots; few fine tubular pores; many distinct clay films on faces of peds; many dark reddish brown (5YR 3/3) organic coatings and dark reddish brown (5YR 3/2) iron-manganese stains on faces of peds; noneffervescent; neutral (pH 7.2); clear smooth boundary.

Bt5—42 to 60 inches; 70 percent dark red (2.5YR 3/6) and 30 percent yellowish red (5YR 4/6) clay, 70 percent red (2.5YR 4/6) and 30 percent dark reddish brown (2.5YR 3/4) moist; moderate medium prismatic structure parting to strong medium angular blocky; hard, firm, moderately sticky and moderately plastic; few fine tubular pores; many distinct clay films and common organic coatings on faces of peds; noneffervescent; neutral (pH 7.2).

Range in Characteristics

Content of rock fragments: averages less than 35 percent, but can range to 50 percent in any one horizon
Content of clay: more than 35 percent
Depth to an abrupt textural change: 5 to 15 inches

A horizon:
Hue—7.5YR, 5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 or 4 dry, 2 to 4 moist
Texture—sandy loam, loam
Reaction—moderately acid to neutral

Bt horizon:
Hue—5YR, 2.5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 to 6 dry, 2 to 6 moist
Texture—sandy clay loam, clay, sandy clay
Reaction—slightly acid or neutral

Tombstone Series

Depth class: very deep
Drainage class: somewhat excessively drained
Permeability: moderately rapid
Landform: fan terraces
Parent material: mixed calcareous fan alluvium
Slope range: 3 to 20 percent
Elevation: 4,000 to 5,000 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Ustic Haplocalcids

Typical Pedon

Tombstone very gravelly fine sandy loam, 8 to 15 percent slopes, at a latitude of 32 degrees, 44 minutes, 13 seconds north and a longitude of 109 degrees, 59 minutes, 50 seconds west; about 1,310 feet west and 2,275 feet north of the southeast corner of sec. 33, T. 19 S., R. 23 E.

About 50 to 65 percent of the surface is covered with gravel and cobbles.

A—0 to 1 inch; grayish brown (10YR 5/2) very gravelly fine sandy loam, dark grayish brown (10YR 4/2) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few fine roots; few fine tubular pores; 52 percent gravel; strongly effervescent; 13 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bk1—1 to 5 inches; dark grayish brown (10YR 4/2) gravelly fine sandy loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine tubular pores; many distinct calcium carbonate coatings on rock fragments; 21 percent gravel; violently effervescent; 17 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bk2—5 to 13 inches; pinkish white (7.5YR 8/2) gravelly sandy loam, pinkish gray (7.5YR 6/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; many distinct calcium carbonate coatings on rock fragments; 21 percent gravel; violently effervescent; 22 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk3—13 to 27 inches; pinkish gray (7.5YR 7/2) very gravelly sandy loam, pinkish gray (7.5YR 6/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few very fine and fine tubular pores; many distinct calcium carbonate coatings on rock fragments; 47 percent gravel; violently effervescent; 19 percent calcium carbonate equivalent; moderately alkaline (pH 8.2); gradual smooth boundary.

Bk4—27 to 60 inches; pinkish gray (7.5YR 6/2) very gravelly loamy sand, brown or dark brown (7.5YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; common very fine and fine irregular and tubular pores; few prominent calcium carbonate coatings on rock fragments; 38 percent gravel; strongly effervescent; 6 percent calcium carbonate equivalent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: averages more than 35 percent
Reaction: moderately alkaline
Content of clay: 8 to 15 percent
Content of organic matter: 1 to 2 percent
Depth to a calcic horizon: 1 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry or moist
Chroma—2 to 4 dry or moist
Texture—sandy loam, fine sandy loam
Calcium carbonate equivalent—5 to 15 percent

Bk horizon:
Hue—10YR, 7.5YR
Value—3 to 8 dry or moist
Chroma—2 to 4 dry, 1 to 4 moist
Texture—sandy loam, coarse sandy loam, fine sandy loam, loamy sand
Calcium carbonate equivalent—5 to 30 percent

Turquoise Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Landform: hills and mountains
Parent material: slope alluvium derived from granodiorite and quartzite
Slope range: 3 to 45 percent
Elevation: 4,800 to 6,200 feet

Classification: Loamy, mixed, superactive, nonacid, thermic, shallow Aridic Ustorthents

Typical Pedon

Turquoise loamy coarse sand, in an area of Turquoise-Nugget complex, 3 to 45 percent slopes, at a latitude of 31 degrees, 46 minutes, 02 seconds north and a longitude of 109 degrees, 51 minutes, 11 seconds west; about 1,100 feet south and 10 feet east of the northwest corner of sec. 19, T. 19 S., R. 25 E.

About 100 percent of the surface is covered with fine gravel.

A1—0 to 1 inch; brown (7.5YR 5/4) loamy coarse sand, dark brown (7.5YR 3/4) moist; weak moderately thick platy structure parting to single grain; loose, nonsticky and nonplastic; many very fine and fine roots; common fine irregular pores; 10 percent gravel; noneffervescent; slightly acid (pH 6.4); abrupt smooth boundary.

A2—1 to 5 inches; brown (7.5YR 4/3) sandy loam, dark brown (7.5YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and few medium roots; common fine tubular pores; 10 percent gravel; noneffervescent; neutral (pH 6.6); abrupt wavy boundary.

Crt—5 to 22 inches; weathered granodiorite; extremely hard; many distinct manganese coatings on rock fragments; few distinct organic coatings on rock fragments; few distinct clay films on rock fragments; many very fine roots along fractures; clear wavy boundary.

R—22 inches; unweathered granodiorite.

Range in Characteristics

Content of rock fragments: 0 to 20 percent gravel
Reaction: slightly acid or neutral
Content of clay: 3 to 18 percent in the control section
Content of organic matter: 0.5 to 2 percent
Depth to weathered bedrock: 5 to 20 inches
Depth to unweathered bedrock: 20 to 40 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry or moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, loamy coarse sand, loamy sand

Ubik Series

Depth class: very deep
Drainage class: well drained
Permeability: moderate or moderately rapid
Landform: alluvial fans and flood plains
Parent material: mixed alluvium
Slope range: 0 to 5 percent
Elevation: 3,900 to 4,600 feet

Classification: Coarse-loamy, mixed, superactive, calcareous, thermic Ustic Torrifluvents

Typical Pedon

Ubik loam, 1 to 3 percent slopes, at a latitude of 31 degrees, 41 minutes, 20 seconds north and a longitude of 109 degrees, 44 minutes, 05 seconds west; about 2,400 feet east and 1,900 feet north of the southwest corner of sec. 34, T. 19 S., R. 26 E.

Ap—0 to 7 inches; brown (7.5YR 5/2) loam, dark brown (7.5YR 3/2) moist; moderate coarse subangular blocky structure parting to moderate fine subangular blocky; soft, very friable, slightly sticky and nonplastic; common fine and very fine roots; common very fine and fine irregular pores; slightly alkaline (pH 7.5); clear smooth boundary.

A—7 to 16 inches; brown (7.5YR 5/2) loam, dark brown (7.5YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common fine and very fine roots; many very fine and fine tubular pores; slightly alkaline (pH 7.5); clear wavy boundary.

C1—16 to 36 inches; pinkish gray (7.5YR 6/2) very fine sandy loam, brown (7.5YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine tubular pores; moderately alkaline (pH 8.2); clear wavy boundary.

C2—36 to 55 inches; pinkish gray (7.5YR 6/2) loam, brown (7.5YR 4/2) moist; massive; soft, very friable, slightly sticky and nonplastic; few very fine and fine roots; many very fine and fine tubular pores; few very fine lime filaments; slightly effervescent; moderately alkaline (pH 8.2); clear wavy boundary.

C3—55 to 63 inches; light brown (7.5YR 5/3), stratified sandy loam, silt loam, and loam, brown (7.5YR 4/3) moist; massive; soft, very friable, slightly sticky and nonplastic; few very fine and fine roots; many very fine and common fine tubular pores; slightly effervescent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: less than 15 percent
Stratification: generally, thin strata of finer or coarser textured material are throughout the profile; contrasting textures are common below a depth of 40 inches.
Reaction: neutral to moderately alkaline
Content of clay: 5 to 15 percent
Content of organic matter: more than 1 percent in the surface layer; decreasing irregularly with increasing depth
Salinity: none or slight
Sodicity: none or slight

A horizon:
Hue—10YR, 7.5YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—dominantly silt loam or loam; in some pedons, fine sandy loam or sandy loam

C horizon:
Hue—10YR, 7.5YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—dominantly silt loam, loam, or very fine sandy loam; in some pedons, fine sandy loam or sandy loam in the lower part of the horizon
Calcium carbonate—disseminated or occurring as filaments
Content of gypsum—0 to 4 percent in the lower part

Ugyp Series

Depth class: very deep
Drainage class: well drained
Permeability: moderately rapid

Landform: stream terraces and alluvial fans
Parent material: mixed alluvium derived from sedimentary formations
Slope range: 0 to 5 percent
Elevation: 3,800 to 4,100 feet

Classification: Coarse-loamy, mixed, superactive thermic Typic Calcigypsids

Typical Pedon

Ugyp fine sandy loam, in an area of Contention-Ugyp soils complex, 0 to 5 percent slopes, at a latitude of 31 degrees, 50 minutes, 13 seconds north and a longitude of 110 degrees, 14 minutes, 40 seconds west; about 1,000 feet east and 1,700 feet south of the northwest corner of sec. 30, T. 18 S., R. 21 E.

A—0 to 3 inches; light brown (7.5YR 6/3) fine sandy loam, brown (7.5YR 5/4) moist; weak thin platy and very fine granular structure; loose, slightly sticky and moderately plastic; common very fine roots; common very fine irregular pores; disseminated calcium carbonate and gypsum; 3 percent gravel; violently effervescent; 11 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bky1—3 to 13 inches; brown (7.5YR 5/4) silt loam, brown (7.5YR 4/3) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and moderately plastic; common very fine and fine roots; few fine tubular pores; common very fine and fine calcium carbonate and gypsum filaments; few very fine gypsum crystals throughout; violently effervescent; 11 percent calcium carbonate equivalent and 10 percent gypsum; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bky2—13 to 30 inches; brown (7.5YR 5/4) fine sandy loam, brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and moderately plastic; common very fine and fine roots; few very fine and fine tubular pores; common very fine and fine calcium carbonate and gypsum filaments; few very fine gypsum crystals throughout; few very fine soft calcium carbonate and gypsum masses; few organic coatings on faces of peds; violently effervescent; 7 percent calcium carbonate equivalent and 10 percent gypsum; moderately alkaline (pH 8.0); clear smooth boundary

Bky3—30 to 52 inches; light brown (7.5YR 6/3 and 6/4), stratified sandy loam to loamy coarse sand, brown (7.5YR 5/4) moist; massive; loose, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine irregular and tubular pores; common very fine and fine calcium carbonate and gypsum filaments; common very fine gypsum crystals throughout; 10 percent gravel; violently effervescent; 12 percent calcium carbonate equivalent and 10 percent gypsum; slightly alkaline (pH 7.6); clear smooth boundary.

Bky4—52 to 60 inches; light brown (7.5YR 6/4) loamy fine sand and fine sand, brown (7.5YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine tubular pores; common very fine and fine calcium carbonate and gypsum filaments; few very fine gypsum crystals throughout; violently effervescent; 6 percent calcium carbonate equivalent and 10 percent gypsum; slightly alkaline (pH 7.8).

Range in Characteristics

Content of rock fragments: averages less than 15 percent, but can be as much as 25 percent in any one horizon
Reaction: slightly alkaline or moderately alkaline
Content of clay: 3 to 18 percent
Depth to a calcic horizon: 1 to 20 inches
Depth to a gypsic horizon: 1 to 20 inches

A horizon:
Hue—7.5YR, 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, sandy loam
Calcium carbonate equivalent—1 to 15 percent

Bky horizon:
Hue—7.5YR, 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—silt loam, fine sandy loam, loam, loamy fine sand; also, stratified sandy loam to loamy coarse sand
Calcium carbonate equivalent—5 to 30 percent
Content of gypsum—5 to 15 percent

Vana Series

Depth class: very shallow or shallow to a hardpan
Drainage class: well drained
Permeability: moderately slow
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 1 to 10 percent
Elevation: 4,200 to 4,800 feet

Classification: Loamy, mixed, superactive, thermic, shallow Ustalfic Petrocalcids

Typical Pedon

Vana fine sandy loam, 1 to 10 percent slopes, at a latitude of 31 degrees, 33 minutes, 10 seconds north and a longitude of 110 degrees, 12 minutes, 25 seconds west; about 700 feet south of the northwest corner of sec. 3, T. 22 S., R. 21 E.

About 15 to 35 percent of the surface is covered with gravel and/or cobbles.

A—0 to 1 inch; reddish brown (5YR 5/4) fine sandy loam, reddish brown (5YR 4/3) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few fine irregular pores; noneffervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bt—1 to 8 inches; reddish brown (5YR 4/4) sandy loam, dark reddish brown (5YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; few fine irregular and tubular pores; common distinct clay films on faces of peds and bridging sand grains; noneffervescent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Btky—8 to 14 inches; yellowish red (5YR 4/6) sandy clay loam, dark reddish brown (5YR 3/4) moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; few fine irregular and tubular pores; common distinct clay films on faces of peds; common distinct calcium carbonate coatings on faces of peds and on rock fragments; many fine calcium carbonate filaments; 10 percent gravel; strongly effervescent; 7 percent calcium carbonate equivalent and 5 percent gypsum; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bkym—14 to 24 inches; an indurated hardpan cemented with calcium carbonate and gypsum; abrupt smooth boundary.

Bky—24 to 60 inches; reddish brown (5YR 5/4) sandy loam, dark reddish brown (5YR 3/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine irregular pores; common distinct calcium carbonate coatings on faces of peds and on rock fragments; many fine calcium carbonate filaments; 10 percent gravel; strongly effervescent; 63 percent calcium carbonate equivalent and 10 percent gypsum; moderately alkaline (pH 8.2).

Range in Characteristics

Content of rock fragments: 0 to 20 percent gravel and/or cobbles

Reaction: slightly alkaline or moderately alkaline

Depth to a petrocalcic horizon: 8 to 20 inches

A horizon:
- Hue—5YR, 7.5YR
- Value—3 to 5 dry, 3 or 4 moist
- Chroma—2 to 4 dry or moist
- Texture—fine sandy loam, sandy loam, loam

Bt horizon:
- Hue—5YR, 7.5YR
- Value—4 or 5 dry, 3 or 4 moist
- Chroma—3 or 4 dry or moist
- Texture—sandy loam, sandy clay loam, clay loam (10 to 30 percent clay)

Btky horizon:
- Hue—5YR, 7.5YR
- Value—4 or 5 dry, 3 to 5 moist
- Chroma—3 to 6 dry or moist
- Texture—sandy clay loam, clay loam (20 to 30 percent clay)
- Calcium carbonate equivalent—0 to 10 percent
- Content of gypsum—0 to 5 percent

Bky horizon:
- Hue—5YR, 7.5YR
- Value—5 or 6 dry, 3 or 4 moist
- Chroma—4 or 6 dry or moist
- Texture—sandy loam, loam; can have more than 35 percent gravel and/or cobbles
- Calcium carbonate equivalent—40 to 70 percent
- Content of gypsum—5 to 15 percent

White House Series

Depth class: very deep
Drainage class: well drained
Permeability: slow
Landform: fan terraces
Parent material: mixed fan alluvium
Slope range: 1 to 30 percent
Elevation: 4,200 to 4,800 feet

Classification: Fine, mixed, superactive, thermic Ustic Haplargids

Typical Pedon

White House gravelly loam, in an unsectioned area of White House complex, 1 to 30 percent slopes, at a latitude of 31 degrees, 36 minutes, 50 seconds north and a longitude of 110 degrees, 22 minutes, 20 seconds west.

About 5 to 30 percent of the surface is covered with gravel and/or cobbles.

A—0 to 2 inches; reddish brown (5YR 4/4) gravelly

loam, reddish brown (2.5YR 4/4) moist; moderate thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; common distinct organic coatings on faces of peds; 20 percent gravel; noneffervescent; moderately acid (pH 6.0); abrupt smooth boundary.

Bt1—2 to 5 inches; dark red (2.5YR 3/6) clay loam, dark reddish brown (2.5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, moderately sticky and moderately plastic; common very fine and fine and few medium roots; common fine tubular pores; common distinct clay films on faces of peds and in pores; common distinct organic coatings on faces of peds; noneffervescent; moderately acid (pH 6.0); clear smooth boundary.

Bt2—5 to 18 inches; dark red (2.5YR 3/6) clay, dark reddish brown (2.5YR 3/4) moist; weak coarse prismatic structure parting to moderate medium angular blocky; slightly hard, friable, moderately sticky and moderately plastic; common fine roots; common fine tubular pores; common distinct clay films on faces of peds and in pores; common distinct organic coatings on faces of peds; noneffervescent; slightly acid (pH 6.4); abrupt smooth boundary.

Bt3—18 to 29 inches; dark red (2.5YR 3/6) gravelly clay loam, red (2.5YR 4/6) moist; moderate medium subangular blocky structure; hard, firm, moderately sticky and moderately plastic; common very fine roots; few fine tubular pores; many distinct clay films on faces of peds, in pores, and on sand grains and pebbles; common distinct clay films between sand grains; 25 percent gravel; noneffervescent; neutral (pH 7.0); abrupt smooth boundary.

2Bb—29 to 33 inches; yellowish red (5YR 5/6) loamy sand, red (2.5YR 5/8) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; disseminated calcium carbonate; slightly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

3Btkb—33 to 60 inches; yellowish red (5YR 5/6) and red (2.5YR 4/6) clay loam, 80 percent red (2.5YR 4/8) and 20 percent dark red (2.5YR 3/6) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine roots; few fine tubular pores; many distinct clay films on faces of peds and in pores; common organic coatings on faces of peds; few fine calcium carbonate filaments; 5 percent gravel; slightly effervescent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: less than 35 percent
Content of clay: more than 35 percent
Content of organic matter: averages more than 1 percent in the surface layer
Calcium carbonate equivalent: less than 15 percent in the lower horizons

A horizon:
Hue—2.5YR, 5YR, 7.5YR
Value—3 or 4 dry or moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, loam
Reaction—moderately acid or slightly acid

Bt horizon:
Hue—2.5YR, 5YR
Value—3 or 4 dry or moist
Chroma—4 or 6 dry or moist
Texture—clay loam, clay, sandy clay loam
Reaction—moderately acid to neutral

2Bb and 3Btkb horizons:
Hue—2.5YR, 5YR
Value—3 to 5 dry or moist
Chroma—4, 6, or 8 dry or moist
Texture—loamy sand, clay loam
Reaction—neutral to moderately alkaline

Woodcutter Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately slow
Landform: hills and mountains
Parent material: slope alluvium derived from granite, quartzite, and monzonite
Slope range: 15 to 60 percent
Elevation: 4,500 to 6,600 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Aridic Lithic Argiustolls

Typical Pedon

Woodcutter very gravelly fine sandy loam, in an unsectioned area of Budlamp-Woodcutter complex, 15 to 60 percent slopes, at a latitude of 31 degrees, 32 minutes, 30 seconds north and a longitude of 110 degrees, 22 minutes, 30 seconds west.

A—0 to 2 inches; brown (10YR 4/3) very gravelly fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common fine irregular pores;

noneffervescent; 45 percent gravel and 10 percent cobbles; moderately acid (pH 6.0); clear smooth boundary.

Bt1—2 to 6 inches; dark brown (7.5YR 3/3) very gravelly loam, very dark brown (7.5YR 2/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine irregular pores; common distinct clay films on faces of peds, in pores, and on rock fragments; 45 percent gravel; noneffervescent; slightly acid (pH 6.4); abrupt smooth boundary.

Bt2—6 to 12 inches; reddish brown (5YR 4/3) very gravelly clay loam, dark reddish brown (5YR 3/3) moist; moderate fine subangular blocky structure; soft, friable, moderately sticky and moderately plastic; common very fine and fine roots; common fine irregular and tubular pores; many distinct clay films on faces of peds, in pores, and on rock fragments; many distinct organic coatings on rock fragments; 30 percent gravel and 10 percent cobbles; noneffervescent; neutral (pH 6.6); abrupt smooth boundary.

2R—12 inches; unweathered granite.

Range in Characteristics

Content of rock fragments: more than 35 percent
Reaction: moderately acid to neutral
Content of organic matter: 1 to 2 percent
Depth to unweathered bedrock: 5 to 20 inches

A horizon:
Hue—10YR, 7.5YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—fine sandy loam, sandy loam, loam

Bt horizon:
Hue—7.5YR, 5YR
Value—2 to 5 dry, 2 to 4 moist
Chroma—1 to 4 dry or moist
Texture—clay loam, loam, sandy clay loam (20 to 35 percent clay)

Yarbam Series

Depth class: very shallow or shallow
Drainage class: well drained
Permeability: moderately rapid
Landform: hills and mountains
Parent material: slope alluvium, colluvium, and residuum derived from calcareous sedimentary rock that includes limestone, marble, and calcareous sandstone
Slope range: 25 to 60 percent
Elevation: 4,700 to 6,700 feet

Classification: Loamy-skeletal, mixed, superactive, thermic Lithic Haplustolls

Typical Pedon

Yarbam very cobbly loam, in an area of Yarbam-Rock outcrop complex, 25 to 60 percent slopes, at a latitude of 31 degrees, 27 minutes, 20 seconds north and a longitude of 110 degrees, 16 minutes, 10 seconds west; about 700 feet north and 2,200 feet east of the southwest corner of sec. 1, T. 23 S., R. 20 E.

About 35 to 70 percent of the surface is covered with gravel, cobbles, and/or stones.

A—0 to 2 inches; very dark brown (10YR 2/2) very cobbly loam, black (10YR 2/1) moist; weak thin platy structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; few fine irregular pores; common distinct organic coatings on rock fragments; 20 percent gravel, 15 percent cobbles, and 5 percent stones; violently effervescent; 27 percent calcium carbonate equivalent; slightly alkaline (pH 7.4); clear smooth boundary.

C—2 to 9 inches; very dark grayish brown (10YR 3/2) very gravelly loam, black (10YR 2/1) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; few fine irregular and tubular pores; common distinct organic coatings on rock fragments; 40 percent gravel; violently effervescent; 31 percent calcium carbonate equivalent; slightly alkaline (pH 7.6); abrupt wavy boundary.

R—9 inches; unweathered limestone.

Range in Characteristics

Content of rock fragments: 35 to 70 percent gravel, cobbles, and/or stones
Reaction: slightly alkaline or moderately alkaline
Content of clay: 5 to 18 percent
Content of organic matter: 1 to 3 percent
Calcium carbonate equivalent: 20 to 40 percent
Depth to unweathered bedrock: 6 to 20 inches

A horizon:
Hue—7.5YR, 10YR
Value—2 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Texture—loam, fine sandy loam, sandy loam

C horizon:
Hue—7.5YR, 10YR
Value—2 to 5 dry, 2 to 4 moist

Chroma—1 to 3 dry or moist
Texture—loam, fine sandy loam, sandy loam, loamy sand

Zapolote Series

Depth class: very deep
Drainage class: well drained
Permeability: very slow
Landform: relict basin floors, fan terraces, and alluvial fans
Parent material: mixed alluvium
Slope range: 1 to 15 percent
Elevation: 3,700 to 4,200 feet

Classification: Fine, smectitic, thermic Ustertic Calciargids

Typical Pedon

Zapolote clay loam, in an area of Kahn-Zapolote complex, 1 to 15 percent slopes, at a latitude of 31 degrees, 23 minutes, 10 seconds north and a longitude of 109 degrees, 09 minutes, 40 seconds west; about 1,800 feet north and 2,100 feet east of the southwest corner of sec. 35, T. 23 S., R. 31 E.

About 40 to 50 percent of the surface is covered with gravel.

A1—0 to 1 inch; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 5/4) moist; weak thin platy structure; soft, very friable, very sticky and very plastic; many very fine roots; few fine vesicular pores; strongly effervescent; moderately alkaline (pH 8.0); abrupt smooth boundary.

A2—1 to 5 inches; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, very sticky and very plastic; many very fine and fine roots; common fine irregular and tubular pores; 5 percent petronodes; violently effervescent; 24 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); abrupt wavy boundary.

Btky—5 to 29 inches; reddish brown (5YR 4/3) clay, reddish brown (5YR 4/4) moist; strong medium prismatic and angular blocky structure; slightly hard, very friable, very sticky and very plastic; common fine roots; few fine tubular pores; common distinct clay films on faces of peds; many distinct pressure faces; many coarse soft calcium carbonate and gypsum masses; few faint manganese coatings on faces of peds; 10 percent petronodes; violently effervescent; 30 percent calcium carbonate equivalent; moderately alkaline (pH 8.0); clear wavy boundary.

Bky—29 to 60 inches; reddish brown (5YR 5/4) clay, light reddish brown (5YR 6/4) moist; massive; slightly hard, very friable, very sticky and very plastic; few very fine roots; few fine tubular pores; many coarse soft calcium carbonate and gypsum masses; many distinct manganese coatings on faces of peds; 10 percent petronodes; violently effervescent; 20 percent calcium carbonate equivalent; moderately alkaline (pH 8.0).

Range in Characteristics

Content of rock fragments: 0 to 10 percent petronodes
Soil cracking: many vertical cracks 0.25 to 0.50 inch wide and 7 to 29 or more inches deep
Reaction: slightly alkaline or moderately alkaline
Content of clay: 40 to 55 percent in the control section
Depth to a calcic horizon: 5 to 20 inches

A horizon:
Hue—5YR, 7.5YR
Value—4 to 6 dry or moist
Chroma—3 or 4 dry, 2 or 3 moist
Texture—clay loam, loam, sandy clay loam

Btky and Bky horizons:
Hue—5YR, 7.5YR
Value—3 to 5 dry, 4 to 6 moist
Chroma—3 to 5 dry or moist
Texture—clay, clay loam
Calcium carbonate equivalent—20 to 35 percent
Content of gypsum—1 to 5 percent

Formation of the Soils

Soil is the natural medium for the growth of plants. Most soils formed in material weathered from rocks. Of still more importance than this parent material are the changes made by plants. Thus, soil forms through the influences of both physical and biological forces. It is especially the biological forces that give those characteristics to a soil or landscape that are most important to humans. Essentially, all life depends upon the soil. There can be no life without soil and no soil without life. They have evolved together.

All features of the natural landscape, conceived of as the total environment for living organisms, are interdependent. There is a relationship between climate and vegetation, between parent rock and vegetation, between age and slope, and even between climate and slope. All express themselves in the soil, which is the final synthetic expression of the forces in the natural landscape working together. The nature of the landscape can be characterized better, more completely, and more directly by this expression than by any other factor or combination of factors.

Soil is the result of the combined and integrated effects of climate and the living organisms acting upon the parent material, as influenced by topography and local relief over time. Soils are dynamic, natural bodies on the earth's surface that are capable of supporting plants. They are composed of mineral and organic materials, including dilute solutions, gaseous mixtures, and micro-organisms.

Tremendous diversity occurs in soils as a result of unique combinations of soil-forming factors. Differences in soil morphology, expressed in a vertical cross section through soil horizons, result from the combined interaction of climate, living organisms, parent material, topography, and time. Soil horizons are continually evolving in response to these factors.

Climate

Climate, past and present, has a strong effect on soil formation. Temperature and moisture affect the weathering of parent material, the release and leaching and/or accumulation of nutrients, and the activity of micro-organisms. They also influence the native plant community growing on the soil, which in turn influences soil formation. Wind and water transport soil material over long distances, and solar radiation affects soil moisture retention and oxidation of surface organic matter. In general, the intensity of weathering processes increases with increases in both temperature and moisture.

Living Organisms

The living organisms that influence soil formation include micro-organisms as well as plants and animals. Within the soil, the life processes of bacteria, algae, fungi, and protozoa decompose organic matter and minerals and thus release oxygen, carbon dioxide, and nitrogen to plants. Insects and worms burrow into the soil, redistributing soil material and creating channels for air and water movement. Animals trample and mix soil material, add and bury organic debris, and burrow into the ground. Surface plants add organic matter to the soil, create pores and channels with rooting networks, decrease the extent of erosion and the rate of surface water runoff, and affect physical and chemical properties with their decomposed residue. This survey area has distinct native plant communities that are related to the environmental factors of soil formation.

Parent Material

Parent material is the unconsolidated mineral and organic material in which soil forms. It can be derived in place from the underlying bedrock (residuum) or transported by wind (eolian material), water (alluvium), or gravity (colluvium). A soil that formed in residuum derived from granite bedrock on a nearly level summit may be much different from a soil that formed in an alluvial stream deposit derived from limestone. The chemistry, structure, grain-size distribution, and other factors of parent material are important constituents in soil formation. The soils in this survey area formed in a combination of these and other parent materials.

Topography

Topography influences soil formation through its effect on water movement and on the stability of soil material. The rate of surface water runoff and the extent of erosion by water or gravitational forces increase on steep slopes, lessening the amount of time available for soil formation. Northern aspects of steep slopes receive less solar radiation that southern aspects and consequently lose less moisture to evapotranspiration. Runoff from adjoining uplands collects in level or concave areas, where organic matter and sediment are dropped from the alluvial waters. On steep and very steep slopes, the soils commonly are unstable and erosion occurs faster than the processes of soil formation. These soils are commonly shallow and show minimal development of genetic horizons. Soils on lesser slopes tend to be more stable and develop distinct genetic horizons over time. In areas of alluvial deposition, the surface horizons are somewhat thicker and higher in content of organic matter.

The topography of the survey area ranges from broad, nearly level to gently sloping areas to steep areas near escarpments. Some areas are broken by deeply entrenched, rugged canyons and washes with steep to nearly vertical escarpments. The washes and canyons have nearly level to gently sloping areas of alluvial deposits in drainageways.

Time

Time refers to the duration of the period that a parent material has been in place and has been influenced by the other soil-forming factors. The age of a soil is related to the age or stability of the geomorphic surface on which it formed, rather than the age of the landscape. Mountains are much older than the alluvial and colluvial deposits at the base of the slopes of those mountains, but the surface of the more stable alluvial deposits may be much older than the more unstable mountain side slopes. Certain soil characteristics require long periods to become well expressed. Other morphological features may develop in less time but perhaps develop in climatic conditions known to have occurred only in the distant past.

Young soils tend to lack expressions of soil development, whereas older soils generally have well developed genetic horizons. Soils on flood plains in canyon bottoms are subject to constant reworking and deposition of sediment during periods of flooding. Many soils on steep and very steep slopes are subject to the influence of gravity and erosion and thus do not have enough time to develop genetic horizons.

Landforms in the Survey Area

This survey area is part of the Basin and Range Physiographic Province, which is characterized by numerous mountain ranges that rise abruptly from broad, plainlike valleys or basins. Landforms are not static; they are continually being created and eroded. Some landforms are hard to distinguish; their boundaries are not always sharp but fold and blend into each other naturally. The following paragraphs describe the major landforms recognized in the survey area and some of the soils associated with these landforms.

Flood plains are being formed from Holocene and present-day stream alluvium. Floodwater in the survey area flows at low or very low slope gradients adjacent to basin floors and fan terraces. The soils on flood plains receive periodic deposits of fresh alluvium, resulting in an irregular decrease in content of organic carbon and weak or no soil profile development. The sediment load of the floodwater tends to be sandy to fine. Typical soils on the flood plains in this survey area are in the Bonita, Brookline, Guest, and Quiburi series.

Alluvial fans are formed from Holocene and present-day material originating from mountains and hills or other upslope areas. Sediment loads are deposited where slope gradients change from uplands to a lower segment on the landscape. An inherent feature of fan development is the continuously changing pattern of channels and loci of deposition (Cooke and Warren, 1973). Over a long period of time, these changes ensure the maintenance of fans formed through wide distribution of material on the surface (Cooke and Warren, 1973). The alluvial areas in this survey area generally have two forms—1) triangular alluvial fans, which formed from the high hills or the high fronts, and 2) long and narrow or elongated fans inset between fan terraces. Typical soils on the alluvial fans in this survey area are in the Combate, Hooks, Lanque, and Mallet series.

Stream terraces are the erosional remnants of late Pleistocene to middle Holocene flood plains. The slopes are in the same general direction as those of the current flood plains. The soils on the terraces are underlain by stratified sand, gravel, or loamy or clayey sediments or, in some areas, by buried paleosols. The soils on stream terraces have been stable long enough for the formation of cambic and young calcic and argillic horizons. They are not subject to flooding. Typical soils on the stream terraces in this survey area are in the Hooks, Mallet, Perilla, and Swisshelm series.

Dunes were developed from Holocene-age and present-day eolian material. This material was transported and deposited by the wind. The dunes consist of very deep, windblown sands, the origin of which is the sandy soils on nearby flood plains and the eroded surfaces of fan and stream terraces. The soils on dunes can be underlain by paleosols. Typical soils on the dunes in this survey area are in the Durazo series.

Basin floors were developed during the late to middle Pleistocene, when the amount of effective moisture was greater than that of the present time. The soils on present-day basin floors possibly formed on two active landforms during the Pleistocene. These are alluvial fans and lake plains (playas) in enclosed basins where there is no water outlet. The two alluvial processes filled in the enclosed basins through sedimentation, which increased the thickness of the soil mantle. Eventually, enough sediment was deposited to raise the base level and allow drainage. Commonly, the soils on basin floors have several buried horizons representing relict paleosols. These soils generally have varying accumulations of gypsum and salts. The accumulations of gypsum are related to a high water table, which occurred at some time in the process of soil development. Soils affected by gypsum have a high or very high hazard of erosion. High concentrations of sodium and salts affect plant growth. Typical soils on the basin floors in this survey area are in the Chorro, Doubleadobe, and Moco series.

Fan terraces developed during the middle Pleistocene and early Holocene eras. They are relict alluvial fans, which are no longer sites of active deposition. They vary greatly in their makeup. The soils on fan terraces exhibit different stages of soil development, which is characterized by well developed argillic horizons, calcic horizons, gypsic horizons, and cemented horizons. Fan terraces have

been strongly dissected or eroded to the point where they are not subject to flooding or are subject to only rare flooding. They range from nearly level to steep. Commonly, the soils on the higher, steeper fan terraces closest to the mountain fronts have more rock fragments than the soils on the lower, nearly level fan terraces, which have very few rock fragments. Typical soils on the fan terraces in this survey area are in the Courtland, Crowbar, Eloma, Nolam, and Sutherland series.

Pediments developed during the middle Pleistocene and early Holocene eras. They are broad, level or gently sloping, rock-floored erosion surfaces of low relief at the base of abrupt and receding mountains and are underlain by bedrock. They are bare in some areas but more commonly are partly mantled with a thin, discontinuous veneer of alluvium derived from upland masses and in transit across the surface. Pediments tend to have a rolling landscape. The depth to bedrock ranges form less than 20 inches to more than 60 inches. Typical soils on the pediments in this survey area are in the Castledome, Cherrycow, and Denab series.

Hills and mountains are characterized by soil development that is highly dependent on the nature of the bedrock, such as its chemical composition, grain size, and hardness. The most influential soil-forming factors on the hills and mountains are time and the slope gradient of the bedrock. The soils on these landforms vary greatly in soil development. Some show no evidence of development, and others have well developed argillic, calcic, and/or petrocalcic horizons. The soils that show little or no evidence of horizon development generally are on the steeper slopes, where erosional activity is greatest. The soils that have well developed horizons generally are on gently sloping to moderately steep slopes, where the hazard of erosion is slight or moderate. Budlamp and Mabray soils are on the steeper hills and mountains and show little evidence of profile development. Deloro and Woodcutter soils are on moderate slopes and have well developed argillic horizons.

Lava flows, cinder cones, and surge conglomerate rings are in the San Bernardino Volcanic Field. Outside of Hawaii, this is the southernmost undeformed cinder cone field in the United States. These landforms developed in the middle to late Pliocene. Lava flows and cinder cones can be hard to distinguish. For the propose of consistency, slope breaks have been used to define these landforms. Cinder cones have slopes of more than 15 percent, and lava flows have slopes of less than 15 percent. The soils on lava flows contain smectitic clays. The soils on cinder cones are more variable and contain cinders. Surge conglomerate rings formed in areas of explosive volcanism where rising magmas intersect ground water. These are evidenced by several “maars,” or tuff rings (types of explosion craters), surrounded by bedded surge conglomerate deposits. The soils on these landforms are unique within the survey area. Typical soils on the lava flows are in the Paramore series. Typical soils on the cinder cones are in the Krentz series. Typical soils in the surge conglomerate rings are in the Surge series.

Dissected relict lakebeds are unique “breaks” south of Saint David, Arizona. They formed when the base level of the valley was much higher and the San Pedro Valley was made up of wetlands and marshes. The soils in the lakebeds formed in lake and playa sediments, have little or no gravel, and can have high concentrations of gypsum and sodium. The forms of gypsum include hard, rocklike nodules; interbedded bedrock; cemented gypsum layers; and soft, powdery layers. The soils affected by gypsum have a high or very high hazard of erosion. After the base level fell and the valley began to erode, remnants of the old lakebeds were preserved. Typical soils on the dissected relict lakebeds in this survey area are in the Contention, Crystalgyp, and Monzingo series.

References

American Association of State Highway and Transportation Officials (AASHTO). 1998. Standard specifications for transportation materials and methods of sampling and testing. 19th edition, 2 volumes.

American Society for Testing and Materials (ASTM). 1998. Standard classification of soils for engineering purposes. ASTM Standard D 2487.

Bahre, C.J. 1977. Land-use history of the Research Ranch, Elgin, Arizona. Journal of the Arizona Academy of Science, Volume 12, Supplement 2.

Bahre, C.J. 1991. A legacy of change: Historic human impact on vegetation in the Arizona borderlands. University of Arizona Press, Tuscon, Arizona.

Bailey, Lynn R. 1994. We'll all wear silk hats: The Erie and Chiricahua Cattle Companies and the rise of corporate ranching in the Sulphur Springs Valley of Arizona, 1883-1909. Westernlore Press, Tuscon, Arizona..

Betancourt, Julio L., Thomas R. Van Devender, and Paul S. Martin. 1990. Packrat middens—the last 40,000 years of biotic change. University of Arizona Press, Tucson, Arizona.

Breckenfeld, Donald J. 1993. Soil survey of Walnut Gulch Experimental Watershed, Arizona, a special report. United States Department of Agriculture, Soil Conservation Service and Agricultural Research Service.

Brown, David E. 1982. Biotic communities of the American SW United States and Mexico. Desert Plants 4 (1-4): 5-316.

Cable, D.R. 1971. Lehmann lovegrass on the Santa Rita Experimental Range, 1937-1968. Journal of Range Management 24: 17-21.

Carpenter, E.J., and W.S. Bransford. 1924. Soil survey of the Benson Area, Arizona. United States Department of Agriculture, Bureau of Soils.

Cooke, Ronald U., and Andrew Warren. 1973. Geomorphology in deserts. Part 1—The desert context. University of California Press, Berkeley, California.

Cooke, Ronald U., and Richard W. Reeves. 1976. Arroyos and environmental change in the American Southwest. Clarendon Press, Oxford, England.

Danzer, Shelly. 1995. Huachuca Mountain fire history. Progress report to the Coronado National Forest.

DuBois, S.M., and A.W. Smith. 1980. The 1887 earthquake in San Bernardino Valley, Sonora: Historic accounts and intensity patterns in Arizona. Arizona Bureau of Geology and Mineral Technology, Special Paper 3, Tucson, Arizona.

Gelderman, Frederick W. 1970. Soil survey of Walnut Gulch Experimental Watershed, Arizona, a special report. United States Department of Agriculture, Soil Conservation Service and Agricultural Research Service.

Hastings, James R., and Raymond M. Turner. 1965. The changing mile. University of Arizona Press, Tucson, Arizona.

Hendrickson, D.A., and W. L. Minckley. 1984. Cienegas—vanishing climax communities of the American Southwest. Desert Plants 6: 131-175.

Hereford, Richard. 1993. Entrenchment and widening of the upper San Pedro River, Arizona. The Geological Society of America, Inc., Special Paper 282.

Humphrey, Robert R. 1987. 90 years and 535 miles—vegetative changes along the Mexican border. University of New Mexico Press, Albuquerque, New Mexico.

Law, Lloyd. 1985. Soil survey of U. S. Army, Fort Huachuca, Cochise County, Arizona—interim report. United States Department of Agriculture, Soil Conservation Service.

Mattison, R.H. 1964. Early Spanish and Mexican settlements in Arizona. New Mexico Historic Review 21: 272-327.

McGuire, C.E. 1996. Soil survey of San Pedro Valley, Arizona. An interim report from the soil survey of Cochise County, Arizona, Douglas-Tombstone part. United States Department of Agriculture, Natural Resources Conservation Service.

McGuire, C.E. 1998. Soil survey of San Bernardino Valley, Arizona. An interim report from the soil survey of Cochise County, Arizona, Douglas-Tombstone part. United States Department of Agriculture, Natural Resources Conservation Service.

Myrick, David F. 1981. The railroads of Arizona. Volume 1: The southern roads. Howell North Books, San Diego, California.

Poulson, E.N., A.T. Sweet, and J.W. Bailey. 1954. Soil survey of the Sulphur Spring Valley area, Arizona. United States Department of Agriculture, Soil Conservation Service.

Robinett, Dan. 1992. Lehmann lovegrass and drought in southern Arizona. Rangelands 14 (2): 143-148.

Robinett, Dan. 1994. Fire effects on southeastern Arizona plains grasslands. Rangelands 16 (4): 143-148.

Rodgers, William M. 1965. Historical land occupancy of the upper San Pedro River Valley since 1870. M.A. thesis, University of Arizona.

Sellers, W.D., and R.H. Hill. 1974. Arizona climate. University of Arizona Press, Tucson, Arizona.

Soil Survey Division Staff. 1993. Soil survey manual. United States Department of Agriculture, Soil Conservation Service.

Soil Survey Staff. 1998. Keys to soil taxonomy. 8th edition. United States 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. United States Department of Agriculture Handbook 436.

Sonnichsen, C.L. 1974. Colonel Greene and the copper skyrocket. University of Arizona Press, Tucson, Arizona.

Svetlik, William A. 1994. Soil survey of Fort Huachuca, Arizona, a special report. United States Department of Agriculture, Natural Resources Conservation Service.

Wilson, John P. 1995. Islands in the desert. A history of the uplands of southeastern Arizona. University of New Mexico Press, Albuquerque, New Mexico.

Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial fan. A low, outspread, relatively flat to gently sloping mass of loose rock material, shaped like an open fan or a segment of a cone and deposited by a stream at the place where it issues from a narrow mountain valley upon a plain or broad valley, where a tributary stream is near or at its junction with the main stream, or wherever a constriction in a valley abruptly ceases or the gradient of the stream suddenly decreases. The fan is steeper near the mouth of the valley, where its apex points upstream, and it slopes gently and convexly outward with gradually decreasing gradient.

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

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

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. 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 2.5
Low	2.5 to 5
Moderate	5 to 7
High	7 to 10
Very high	more than 10

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.

Basin floor. A general term for the nearly level to gently sloping, bottom surface of an intermountain basin (bolson). Component landforms include playas, broad alluvial flats having ephemeral drainageways, and relict alluvial and lacustrine surfaces that rarely, if ever, are subject to flooding. Where drainage systems are well developed, alluvial plains are dominant and lake plains do not occur are or are of limited extent. Basin floors grade toward mountains, extending to distal parts of piedmont slopes.

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

Bomb. A pyroclast that was ejected while viscous and received its rounded shape while in flight. It may be vesicular or hollow inside. The actual shape varies greatly and is used in descriptive classifications of bombs.

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

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Breccia. A coarse grained, clastic rock composed of angular, broken rock fragments held together by a mineral cement or a fine grained matrix.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management

increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

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

Calcic horizon. A horizon in which calcium carbonate or calcium and magnesium carbonate has accumulated. If the content of clay is more than 18 percent, the calcic horizon is more than 6 inches thick and has more than 15 percent calcium carbonate equivalent and at least 5 percent more carbonates than the C horizon. If the content of clay is less than 18 percent, 5 percent calcium carbonate equivalent is required.

Calcium carbonate. A term used interchangeably with “lime” or “limy.”

Caliche. A more or less cemented deposit of calcium carbonate in soils of warm-temperate, subhumid to arid areas. Caliche occurs as soft, thin layers in the soils or as hard, thick beds directly beneath the solum, or it is exposed at the surface by erosion.

Cambic horizon. A horizon characterized by the formation of calcium carbonate coatings in root channels and on the surface of pebbles. In some cases clay bridges have begun to form between sand grains and clay films in root channels.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

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 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.

Climax vegetation. 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. A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

COLE (coefficient of linear extensibility). See Linear extensibility.

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

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

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

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

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

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

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

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

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a “wire” when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

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

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

Cemented.—Hard; little affected by moistening.

Control section. The part of the soil on which

classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coppice dune. A small dune of fine grained soil material stabilized around shrubs or small trees.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cryptogam. A plant that reproduces by spores rather than by seeds. Examples of are thallophytes, bryophytes, and pteridophytes.

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

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.

Desert pavement. On a desert surface, a layer of gravel or larger fragments that was emplaced by upward movement of the underlying sediments or that remains after finer particles have been removed by running water or the wind.

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

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

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressional and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

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

Effervescence. The reaction of soil to treatments of cold, dilute hydrochloric acid. In the field, cold 10 percent hydrochloric acid is used to test for carbonates. The amount and expression of

effervescence are affected by size distribution and mineralogy as well as the amount of carbonates. Consequently, the degree of effervescence cannot be used to estimate the amount of carbonates. Four classes of effervescence are recognized in this survey area:

Noneffervescent.—Few or no bubbles are evident.

Slightly effervescent.—Bubbles are readily evident.

Strongly effervescent.—Bubbles form low foam.

Violently effervescent.—Thick foam forms quickly.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Material transported and deposited by the wind. It includes earth material, such as sand, silt, and clay, and chemical material, such as calcium carbonate.

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.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic).—Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated).—Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

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 alluvium. Unconsolidated clastic material deposited on alluvial fans and fan terraces by running water, including gravel, sand, silt, clay, and various mixtures of these.

Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

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

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

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

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

Flooding frequency classes. The frequency of flooding 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). *Common* is used when the occasional and frequent classes are grouped for certain purposes.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Forb. Any herbaceous plant not a grass or a sedge.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6

centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Ground water (geology). Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hard to reclaim (in tables). Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Head out. To form a flower head.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Holocene. An epoch of the Quaternary period from the end of the Pleistocene to the present time. Approximately 0 to 10,000-12,000 years BP.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

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

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

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

Impervious soil. A soil through which water, air, or

roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Inclusions. Soil components or miscellaneous areas that are not identified in the name of a map unit. Many areas of these components are too small to be delineated separately, cannot be identified by practical field methods, or are deliberately included in map units because of the need to avoid excessive detail on the maps or the legend. There are two types of inclusions. Similar inclusions are like the named components in characteristics and properties and have the same major interpretations. Contrasting inclusions differ appreciably from the named components in one or more properties, and the differences generally are great enough to affect major interpretations.

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.

Induration. The hardening of a soil horizon by chemical action to form a hardpan.

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 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.

Inset fan. A special flood plain along a commonly ephemeral stream that is confined between fan remnants, basin floor remnants, or fan terraces. Its transversely level cross section is evidence of alluviation of a fluve. The fan must be wide enough for raw channels to cover only a fraction of the component landform's 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.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

K_{sat}. Saturated hydraulic conductivity. (See Permeability.)

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

Landform. Any recognizable physical form or feature of the earth's surface having a characteristic shape and resulting from natural causes.

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

Lava flow. A lateral surficial outpouring of molten lava from a vent or a fissure; also, the solidified body of rock that is so formed.

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.

Lime. Chemically, lime is calcium oxide but, as the term is commonly used, it also refers to calcium carbonate ($CaCO_3$) and calcium hydroxide ($Ca(OH)_2$).

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

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

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.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

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

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 natural elevation of the land surface, rising more than 1,000 feet 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.

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Nodules or petronodes are thought to have formed from calcium and magnesium that precipitated out during periods of a fluctuating seasonal water table and under a climate much wetter than that of the present. Repeated wetting and extreme drying of the soil may have contributed to nodule development. The nodules have no internal organization and break down completely in HCL acid but not in water.

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.

Paleosol. A soil that formed on a landscape in the past and that has distinctive morphological features resulting from a soil-forming environment that no longer exists at the site. The former pedogenic process was either altered because of external environmental change or interrupted by burial.

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.

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.

Pediment. A broad, flat or gently sloping, rock-floored erosion surface or plain of low relief. It typically was developed by subaerial agents in an arid or semiarid region at the base of an abrupt and receding mountain front or plateau escarpment and is underlain by bedrock that may be bare but more often is partly mantled with a thin and discontinuous veneer of alluvium derived from the upland masses and in transit across the surface.

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:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Petrocalcic horizon. A continuous or fractured, cemented or indurated calcic horizon cemented by carbonates and some silica. This horizon is the same as a hardpan cemented by lime or calcium carbonate.

Petronodes. See Nodules.

Phase, soil. A subdivision of a soil series based on

features that affect its use and management, such as slope, stoniness, and flooding.

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

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

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

Pleistocene. An epoch of the Quaternary period, after the Pliocene of the Tertiary and before the Holocene. Approximately 10,000-12,000 to 1,640,000 years BP.

Pliocene. An epoch of the Tertiary period, after the Miocene and before the Pleistocene. Approximately 1,640,000 to 5,200,000 years BP.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

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

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

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor, on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

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

Extremely acid	less than 4.5
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 to 11.0

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rippable bedrock or hardpan. The bedrock or hardpan can be excavated by a single-tooth ripping attachment mounted on a tractor with a 200-300 draw bar horsepower rating.

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

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. Runoff of surface water from a soil is determined by the percent slope and the hydrologic group, as indicated by the following:

Hydro-logic group	*Percent slope*			
	0-3	3-15	15-30	30+
A	very low	very low	low	low
B	low	medium	high	high
C	low	medium	high	very high
D	medium	med./high	very high	very high

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Salinity. The degree to which a soil is affected by soluble salts. The amount of total salts in the soil is ascertained by measuring the conductivity of a saturated soil extract. The conductivity is measured in decisiemens per meter (dS/m), which are the same as millimhos per centimeter (mmhos/cm). Classes of salinity are *nonsaline*, 0 to 2 dS/m; *very slightly saline*, 2 to 4 dS/m; *slightly saline*, 4 to 8 dS/m; *moderately saline*, 8 to 16 dS/m; and *strongly saline*, 16 to 32 dS/m.

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

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

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

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

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

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

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.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

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. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

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

Slope alluvium. Sediments gradually transported on mountain or hill slopes primarily by alluvial processes and characterized by particle sorting. In a profile sequence, the sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. They contrast with unsorted colluvial deposits because of the sorting of rounded or subrounded gravel or cobbles and buried peds.

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 over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

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

Stream alluvium. Unconsolidated clastic material deposited on stream terraces by running water, including gravel, sand, silt, clay, and various mixtures of these.

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, and representing the dissected remnants of an abandoned flood plain, streambed, or valley floor produced during a former stage of erosion or deposition.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surge. A pyroclastic surge transports pyroclasts along the surface as an expanded, turbulent, low-particle concentration of gas-solid dispersion. Deposits of the material mantle the topography.

Swale. A slight depression in an area of generally level land.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

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."

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Urban land. Areas of soil so altered by construction or obscured by structures and pavement that identification of the soil is difficult or impossible.

Volcanic cone. A conical hill of lava and/or pyroclastics that is built up around a volcanic vent. It may be intersected by dikes.

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.

Water erosion classes. Water erosion is determined by the soil erodibility factor (K factor) of the surface layer of a soil and the percent slope. The K factor is a measure of the susceptibility of a soil to particle detachment and transport by rainfall. It is a quantitative value, experimentally determined. For soils that have less than 5 percent gypsum, the hazard of water erosion is as follows:

K factor	*Percent slope*			
	0-5	5-15	15-30	30+
0.02-0.20	slight	slight	moderate	severe
0.24-0.37	slight	moderate	severe	severe
0.43-0.69	moderate	severe	severe	v. severe

For soils in which the content of gypsum is 5 percent or more, the hazard of water erosion is as follows:

K factor	*Percent slope*			
	0-5	5-15	15-30	30+
0.02-0.20	slight	moderate	severe	v. severe
0.24-0.37	moderate	severe	v. severe	v. severe
0.43-0.69	severe	v. severe	v. severe	v. severe

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Wind erodibility group. A wind erodibility group (WEG) is a collection of soils that have similar properties affecting their resistance to wind erosion. The lower the group number, the more susceptible the soil is to wind erosion. The hazard of wind erosion for each of the various wind erodibility groups is as follows:

1 ..... very high
2 ..... high
3 ..... moderately high
4, 4L ..... moderate
5-7 ..... slight
8 ..... very slight

A brief description of each wind erodibility group is given under the heading "Physical Properties."

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1961-90 at Chiricahua National Monument, Douglas, and Tombstone, Arizona)

Month	Temperature: Average daily maximum	Temperature: Average daily minimum	Temperature: Average	Temperature: 2 years in 10 will have-- Maximum temperature higher than--	Temperature: 2 years in 10 will have-- Minimum temperature lower than--	Temperature: Average number of growing degree days*	Precipitation: Average	Precipitation: 2 years in 10 will have-- Less than--	Precipitation: 2 years in 10 will have-- More than--	Precipitation: Average number of days with 0.10 inch or more	Precipitation: Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
CHIRICAHUA:											
January----	56.2	29.8	43.0	72	10	10	1.38	0.49	2.29	3	1.8
February---	59.3	30.9	45.1	75	13	24	1.07	.26	1.85	2	1.6
March------	64.7	34.1	49.4	80	16	80	1.07	.48	1.78	2	1.9
April------	72.6	39.6	56.1	86	24	207	.49	.10	.97	1	.5
May--------	80.6	46.7	63.7	93	29	426	.36	.06	.72	1	.0
June-------	89.5	55.4	72.4	101	41	673	.62	.12	1.13	1	.0
July-------	88.6	60.1	74.4	100	52	755	4.27	2.70	5.70	8	.0
August-----	85.5	59.0	72.2	95	51	688	3.73	1.62	5.52	7	.0
September--	82.1	54.9	68.5	93	42	555	2.27	.67	3.57	4	.0
October----	74.4	45.7	60.1	87	28	319	1.48	.26	2.59	2	.0
November---	63.9	36.1	50.0	79	19	83	1.15	.38	1.86	2	.7
December---	57.0	30.2	43.6	73	11	12	1.93	.50	3.30	3	2.7
Yearly:											
Average--	72.9	43.5	58.2	---	---	---	---	---	---	---	---
Extreme--	105	-1	---	102	7	---	---	---	---	---	---
Total----	---	---	---	---	---	3,832	19.82	14.65	24.34	36	9.3
DOUGLAS:											
January----	60.8	28.8	44.8	76	12	15	.73	.28	1.25	1	.2
February---	64.9	31.4	48.1	80	15	47	.52	.15	.95	1	.2
March------	69.8	36.0	52.9	85	19	137	.40	.12	.74	1	.1
April------	77.7	42.2	60.0	91	27	307	.22	.05	.53	0	.0
May--------	85.3	50.0	67.7	98	34	548	.20	.08	.48	0	.0
June-------	94.0	59.5	76.7	104	45	801	.47	.12	.99	1	.0
July-------	92.6	65.1	78.9	103	58	894	3.41	2.29	4.44	7	.0
August-----	90.2	63.5	76.8	99	55	832	2.98	1.23	4.45	6	.0
September--	86.8	58.5	72.7	97	45	674	1.77	.54	2.88	3	.0
October----	79.3	46.9	63.1	91	29	404	1.09	.21	2.22	2	.0
November---	68.8	35.8	52.3	83	20	116	.57	.16	1.00	1	.1
December---	61.4	29.5	45.5	76	12	17	1.04	.24	1.87	3	.5
Yearly:											
Average--	77.6	45.6	61.6	---	---	---	---	---	---	---	---
Extreme--	109	-4	---	105	8	---	---	---	---	---	---
Total----	---	---	---	---	---	4,792	13.39	10.22	16.36	26	1.1

* See footnote at end of table.

Table 1.--Temperature and Precipitation--Continued

Month	Temperature: Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Precipitation: Average	2 years in 10 will have-- Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
TOMBSTONE:											
January----	59.4	35.2	47.3	77	18	42	0.88	0.31	1.53	2	0.0
February---	63.7	37.4	50.5	82	22	88	.63	.33	1.26	1	.0
March------	68.3	40.6	54.4	85	23	180	.62	.20	1.09	1	.0
April------	76.6	46.5	61.6	91	30	355	.23	.08	.56	0	.0
May--------	84.8	53.8	69.3	99	37	599	.18	.06	.38	0	.0
June-------	94.2	62.6	78.4	106	49	851	.41	.07	.92	1	.0
July-------	93.0	66.2	79.6	105	58	914	3.29	2.24	4.26	7	.0
August-----	90.4	64.8	77.6	100	57	855	2.95	1.49	4.23	6	.0
September--	86.9	61.0	74.0	99	49	718	1.60	.53	2.48	3	.0
October----	78.5	52.1	65.3	92	35	475	1.13	.35	2.28	2	.0
November---	68.0	42.6	55.3	82	27	192	.58	.17	.95	1	.0
December---	60.1	36.7	48.4	77	19	57	.98	.26	1.84	2	.0
Yearly:											
Average--	77.0	49.9	63.5	---	---	---	---	---	---	---	---
Extreme--	112	3	---	106	15	---	---	---	---	---	---
Total----	---	---	---	---	---	5,326	13.50	9.78	16.09	26	.0

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

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at Chiricahua National Monument, Douglas, and Tombstone, Arizona)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 oF or lower
CHIRICAHUA:			
Last freezing temperature in spring:			
1 year in 10 later than----	April 15	May 5	May 18
2 years in 10 later than----	April 6	April 27	May 12
5 years in 10 later than----	March 21	April 13	May 1
First freezing temperature in fall:			
1 year in 10 earlier than--	November 8	October 29	October 15
2 years in 10 earlier than--	November 15	November 3	October 20
5 years in 10 earlier than--	November 27	November 14	October 30
DOUGLAS:			
Last freezing temperature in spring:			
1 year in 10 later than----	March 29	April 2	May 3
2 years in 10 later than----	March 20	April 12	April 26
5 years in 10 later than----	March 4	March 28	April 14
First freezing temperature in fall:			
1 year in 10 earlier than--	November 8	November 3	October 22
2 years in 10 earlier than--	November 15	November 7	October 26
5 years in 10 earlier than--	November 28	November 15	November 3
TOMBSTONE:			
Last freezing temperature in spring:			
1 year in 10 later than----	March 18	April 1	April 21
2 years in 10 later than----	March 2	March 21	Apri l 12
5 years in 10 later than----	January 30	March 1	March 26
First freezing temperature in fall:			
1 year in 10 earlier than--	December 7	November 13	November 4
2 years in 10 earlier than--	December 16	November 22	November 10
5 years in 10 earlier than--	January 5	December 9	November 22

Table 3.--Growing Season

(Recorded in the period 1961-90 at Chiricahua National Monument, Douglas, and Tombstone, Arizona)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
CHIRICAHUA:			
9 years in 10	218	188	158
8 years in 10	228	197	165
5 years in 10	248	214	181
2 years in 10	268	232	196
1 year in 10	279	241	204
DOUGLAS:			
9 years in 10	236	201	179
8 years in 10	247	211	186
5 years in 10	267	230	201
2 years in 10	288	250	216
1 year in 10	298	260	224
TOMBSTONE:			
9 years in 10	274	243	206
8 years in 10	296	257	218
5 years in 10	342	283	240
2 years in 10	>365	309	263
1 year in 10	>365	322	275

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
1	Altar-Mallet complex, 0 to 8 percent slopes	34,024	2.0
2	Anthony-Maricopa complex, 0 to 5 percent slopes	3,965	0.2
3	Arizo family-Riverwash complex, 0 to 3 percent slopes	1,706	*
4	Ashcreek-Stanford complex, 0 to 10 percent slopes	256	*
5	Baboquivari-Combate complex, 0 to 3 percent slopes	15,824	0.9
6	Banshee complex, 0 to 5 percent slopes	1,813	0.1
7	Bella fine sandy loam, 1 to 10 percent slopes	13,432	0.8
8	Blakeney-Luckyhills complex, 3 to 15 percent slopes	85,209	5.0
9	Bodecker and Comoro soils, 0 to 5 percent slopes	293	*
10	Bodecker very gravelly sandy loam, 0 to 2 percent slopes	525	*
11	Bodecker very gravelly sandy loam, saline-sodic, 0 to 2 percent slopes	37	*
12	Bonita clay, 0 to 1 percent slopes	4,302	0.3
13	Bonita-Forrest complex, 1 to 8 percent slopes	39,894	2.3
14	Borderland sandy clay loam, 1 to 10 percent slopes	695	*
15	Borderline fine sandy loam, 2 to 15 percent slopes	3,415	0.2
16	Boss, Krentz, and Paramore soils, and Rock outcrop, 15 to 55 percent slopes	15,942	0.9
17	Brookline-Fluvaqents-Riverwash complex, 0 to 3 percent slopes	3,528	0.2
18	Brunkcow-Chiricahua-Andrada complex, 3 to 20 percent slopes	24,426	1.4
19	Brunkcow-Chiricahua-Lampshire complex, 15 to 60 percent slopes	37,026	2.2
20	Budlamp-Woodcutter complex, 15 to 60 percent slopes	34,348	2.0
21	Buntline clay loam, 0 to 2 percent slopes	749	*
22	Caralampi sandy loam, 1 to 5 percent slopes	9,678	0.6
23	Caralampi very gravelly sandy loam, 1 to 3 percent slopes	815	*
24	Carbine very gravelly loam, 3 to 30 percent slopes	5,990	0.3
25	Carbine-Hathaway complex, 3 to 45 percent slopes	1,516	*
26	Cazador-Lesliecreek complex, 0 to 10 percent slopes	1,084	*
27	Cherrycow-Blacktail complex, 3 to 30 percent slopes	1,504	*
28	Cherrycow-Magoffin-Rock outcrop complex, 15 to 65 percent slopes	38,283	2.2
29	Chorro-Doubleadobe-Gothard complex, 0 to 5 percent slopes	1,926	0.1
30	Chorro-Guest complex, 0 to 3 percent slopes	2,307	0.1
31	Cogswell clay, saline-sodic, 0 to 2 percent slopes	258	*
32	Combate loamy sand, 0 to 5 percent slopes	13,953	0.8
33	Comoro sandy loam, 0 to 2 percent slopes	7,020	0.4
34	Comoro sandy loam, saline-sodic, 0 to 2 percent slopes	556	*
35	Contention, Crystalgyp, Monzingo, and Redington soils, breaks, 5 to 60 percent slopes	22,513	1.3
36	Contention-Ugyp soils complex, 0 to 5 percent slopes	6,082	0.4
37	Courtland sandy loam, 0 to 2 percent slopes	4,429	0.3
38	Courtland sandy loam, saline-sodic, 0 to 2 percent slopes	62	*
39	Courtland-Diaspar complex, 0 to 3 percent slopes	9,835	0.6
40	Courtland-Sasabe-Diaspar complex, 1 to 8 percent slopes	112,090	6.5
41	Crowbar-Brunopeak association, 1 to 40 percent slopes	12,851	0.7
42	Deloro-Leyte-Lampshire complex, 3 to 55 percent slopes	16,360	1.0
43	Denab-Castledome complex, 3 to 45 percent slopes	1,367	*
44	Denied Access	22,959	1.3
45	Diaspar sandy loam, 0 to 2 percent slopes	3,238	0.2
46	Diaspar sandy loam, saline-sodic, 0 to 2 percent slopes	216	*
47	Dona Ana-Mohave complex, 1 to 5 percent slopes	1,283	*
48	Doubleadobe sandy loam, 1 to 3 percent slopes	146	*
49	Durazo loamy sand, 0 to 2 percent slopes	660	*
50	Durazo loamy sand, saline-sodic, 0 to 2 percent slopes	12	*
51	Durazo, saline-sodic-Gothard complex, 1 to 15 percent slopes	578	*
52	Durazo-Courtland complex, 1 to 5 percent slopes	8,362	0.5
53	Durazo-McAllister complex, 1 to 15 percent slopes	2,804	0.2
54	Elfrida clay loam, 0 to 2 percent slopes	689	*
55	Elfrida clay loam, saline-sodic, 0 to 2 percent slopes	2,686	0.2
56	Elgin-McAllister-Stronghold complex, 1 to 8 percent slopes	8,753	0.5
57	Elgin-Outlaw complex, 1 to 10 percent slopes	25,970	1.5
58	Elgin-Stronghold complex, 3 to 20 percent slopes	25,414	1.5
59	Eloma sandy loam, 1 to 10 percent slopes	6,350	0.4
60	Eloma-Caralampi-White House complex, 1 to 15 percent slopes	54,390	3.2

* See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
61	Epitaph very cobbly clay loam, 3 to 15 percent slopes	1,349	*
62	Far-Hogris association, 15 to 60 percent slopes	9,916	0.6
63	Far-Huachuca-Hogris association, 15 to 70 percent slopes	10,429	0.6
64	Far-Huachuca-Hogris association, moist, 15 to 70 percent slopes	2,853	0.2
65	Forrest clay loam, 1 to 3 percent slopes	26,636	1.6
66	Forrest clay loam, saline-sodic, 1 to 3 percent slopes	896	*
67	Forrest sandy loam, 1 to 3 percent slopes	1,080	*
68	Forrest silt loam, 0 to 1 percent slopes	6,860	0.4
69	Forrest silt loam, saline-sodic, 1 to 3 percent slopes	1,474	*
70	Forrest-Bonita complex, 0 to 3 percent slopes	19,219	1.1
71	Gardencan-Lanque complex, 0 to 5 percent slopes	12,558	0.7
72	Glendale very fine sandy loam, 0 to 2 percent slopes	2,136	0.1
73	Gothard loam, 1 to 3 percent slopes	1,354	*
74	Gothard sandy loam, 0 to 2 percent slopes	7,856	0.5
75	Graham-Lampshire complex, 8 to 60 percent slopes	13,475	0.8
76	Graveyard-Sierravista complex, 0 to 8 percent slopes	10,082	0.6
77	Grizzle coarse sandy loam, 3 to 8 percent slopes	225	*
78	Guest silty clay loam, 0 to 1 percent slopes	8,320	0.5
79	Guest silty clay loam, 0 to 3 percent slopes	5,549	0.3
80	Guest silty clay loam, saline-sodic, 0 to 1 percent slopes	985	*
81	Guest silty clay, 0 to 1 percent slopes	578	*
82	Guest silty clay, saline-sodic, 0 to 1 percent slopes	186	*
83	Guest-Cogswell complex, saline-sodic, 0 to 1 percent slopes	6,935	0.4
84	Guest-Riveroad association, 0 to 1 percent slopes	41,344	2.4
85	Hantz silt loam, saline-sodic, 0 to 3 percent slopes	3,731	0.2
86	Haplustolls-Fluvaquents association, mesic, 0 to 4 percent slopes	508	*
87	Haplustolls-Fluvaquents association, thermic, 0 to 4 percent slopes	2,852	0.2
88	Hayhollow-Rafter-Riverwash complex, 0 to 5 percent slopes	4,330	0.3
89	Kaboom-Reeup complex, 0 to 45 percent slopes	5,651	0.3
90	Kahn complex, 0 to 3 percent slopes	19,135	1.1
91	Kahn-Zapolote complex, 1 to 15 percent slopes	18,713	1.1
92	Karro loam, 1 to 3 percent slopes	395	*
93	Karro loam, saline-sodic, 1 to 3 percent slopes	1,112	*
94	Keysto-Riverwash complex, 1 to 5 percent slopes	5,185	0.3
95	Kuykendall-Rock outcrop complex, 3 to 45 percent slopes	265	*
96	Lanque-Stanford complex, 0 to 5 percent slopes	1,015	*
97	Libby-Gulch complex, 0 to 10 percent slopes	64,515	3.8
98	Luckyhills loamy sand, 0 to 5 percent slopes	3,007	0.2
99	Luckyhills-McNeal complex, 3 to 15 percent slopes	38,274	2.2
100	Lutzcan-Yarbam complex, 25 to 50 percent slopes	14,175	0.8
101	Mabray-Chiricahua-Rock outcrop complex, 3 to 45 percent slopes	19,853	1.2
102	Mabray-Rock outcrop complex, 3 to 45 percent slopes	37,466	2.2
103	Magoffin-Rock outcrop-Cherrycow complex, 0 to 15 percent slopes	1,944	0.1
104	Major complex, 0 to 5 percent slopes	30,243	1.8
105	Mallet-Hooks complex, 0 to 5 percent slopes	26,825	1.6
106	Marsh	20	*
107	McAllister loam, 1 to 3 percent slopes	5,742	0.3
108	McAllister-Stronghold complex, 3 to 20 percent slopes	12,103	0.7
109	McNeal gravelly sandy loam, 1 to 3 percent slopes	4,324	0.3
110	McNeal gravelly sandy loam, saline-sodic, 1 to 3 percent slopes	414	*
111	Monzingo-Ugyp complex, 1 to 20 percent slopes	4,871	0.3
112	Naco-Ruins soils complex, 1 to 5 percent slopes	7,376	0.4
113	Nolam-Libby-Buntline complex, 1 to 10 percent slopes	35,907	2.1
114	Outlaw-Epitaph-Paramore complex, 0 to 15 percent slopes	96,389	5.6
115	Oversight gravelly sandy loam, 1 to 35 percent slopes	8,832	0.5
116	Oversight sandy loam, calcareous, 1 to 20 percent slopes	204	*
117	Oversight-Lanque complex, 1 to 5 percent slopes	7,719	0.5
118	Pedregosa very gravelly fine sandy loam, 3 to 15 percent slopes	568	*
119	Pedregosa-Tombstone complex, 3 to 20 percent slopes	8,432	0.5
120	Perilla-Durazo complex, 0 to 3 percent slopes	657	*
121	Pits	3,397	0.2

* See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
122	Pits-Dumps complex	974	*
123	Quiburi-Fluvaquents-Riverwash complex, 0 to 5 percent slopes	815	*
124	Rafter-Lanque complex, 0 to 5 percent slopes	2,441	0.1
125	Riveroad and Ubik soils, 0 to 5 percent slopes	46,478	2.7
126	Riverwash, 1 to 10 percent slopes	772	*
127	Riverwash-Bodecker complex, 0 to 3 percent slopes	6,800	0.4
128	Rock outcrop-Magoffin complex, 5 to 60 percent slopes	2,320	0.1
129	Sasabe complex, 0 to 3 percent slopes	35,463	2.1
130	Sasabe gravelly sandy loam, 0 to 2 percent slopes	8,283	0.5
131	Sasabe gravelly sandy loam, saline-sodic, 0 to 2 percent slopes	12	*
132	Schiefflin very stony loamy sand, 3 to 15 percent slopes	1,096	*
133	Stronghold gravelly fine sandy loam, 1 to 3 percent slopes	399	*
134	Stronghold-Bernardino complex, 10 to 30 percent slopes	9,478	0.6
135	Surge-Rock outcrop complex, 3 to 45 percent slopes	1,036	*
136	Sutherland-Mule complex, 3 to 15 percent slopes	35,706	2.1
137	Swisshelm sandy loam, 1 to 3 percent slopes	1,610	*
138	Swisshelm sandy loam, saline-sodic, 1 to 3 percent slopes	2,470	0.1
139	Tenneco fine sandy loam, 0 to 2 percent slopes	6,034	0.4
140	Terrarossa complex, 0 to 45 percent slopes	10,536	0.6
141	Terrarossa-Blacktail-Pyeatt complex, 1 to 40 percent slopes	13,921	0.8
142	Tombstone very gravelly fine sandy loam, 8 to 15 percent slopes	7,570	0.4
143	Turquoise-Nugget complex, 3 to 45 percent slopes	2,426	0.1
144	Ubik complex, 0 to 3 percent slopes	9,397	0.5
145	Ubik loam, 1 to 3 percent slopes	8,165	0.5
146	Ubik loam, saline-sodic, 1 to 3 percent slopes	702	*
147	Ubik sandy loam, 1 to 3 percent slopes	5,732	0.3
148	Ubik sandy loam, saline-sodic, 1 to 3 percent slopes	569	*
149	Vana fine sandy loam, 1 to 10 percent slopes	5,983	0.3
150	Vana-Moco complex, 1 to 5 percent slopes	12,582	0.7
151	White House complex, 1 to 30 percent slopes	13,446	0.8
152	Yarbam-Rock outcrop complex, 25 to 60 percent slopes	16,242	0.9
	Total	1,714,300	100.0

* Less than 0.05 percent. The map units assigned an asterisk in the “Percent” column make up a total of 2.1 percent of the acreage in the survey area.

Table 5.--Land Capability and Yields per Acre of Crops

(The letter "N" means “nonirrigated,” and the letter "I" means “irrigated.” Yields are for nonirrigated areas. They are the yields 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 N	Land capability I	Alfalfa hay	Corn	Wheat
			Tons	Bu	Bu
1:					
Altar-Mallet	VIe	---	---	---	---
2:					
Anthony	VIIe	IIe	6.0	70.0	70.0
Maricopa	VIIe	IIe	6.0	60.0	60.0
3:					
Arizo family	VIIs	---	---	---	---
Riverwash	VIII	---	---	---	---
4:					
Ashcreek	VIs	---	---	---	---
Stanford	VIe	---	---	---	---
5:					
Baboquivari	VIc	IIc	7.0	80.0	70.0
Combate	VIe	IIe	7.0	80.0	70.0
6:					
Banshee	VIe	---	---	---	---
Banshee, thick surface	VIe	---	---	---	---
7:					
Bella	VIe	---	---	---	---
8:					
Blakeney-Luckyhills	VIe	---	---	---	---
9:					
Bodecker	VIs	---	---	---	---
Comoro	VIe	---	---	---	---
10:					
Bodecker	VIs	IVs	4.0	60.0	50.0
11:					
Bodecker	VIs	IVs	3.0	40.0	40.0
12:					
Bonita	VIs	IIIs	7.0	100.0	90.0
13:					
Bonita-Forrest	VIs	IIIs	7.0	100.0	90.0

Table 5.--Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability N	Land capability I	Alfalfa hay	Corn	Wheat
			Tons	Bu	Bu
14:					
Borderland	VIs	---	---	---	---
15:					
Borderline	VIIe	---	---	---	---
16:					
Boss	VIe	---	---	---	---
Krentz	VIe	---	---	---	---
Paramore	VIe	---	---	---	---
Rock outcrop	VIII	---	---	---	---
17:					
Brookline	VIw	---	---	---	---
Fluvaquents	VIw	---	---	---	---
Riverwash	VIII	---	---	---	---
18:					
Brunkcow-Chiricahua-Andrada	VIs	---	---	---	---
19:					
Brunkcow-Chiricahua-Lampshire	VIe	---	---	---	---
20:					
Budlamp-Woodcutter	VIe	---	---	---	---
21:					
Buntline	VIs	IVs	4.0	60.0	50.0
22:					
Caralampi	VIs	IIIs	6.0	70.0	60.0
23:					
Caralampi	VIs	IIIs	6.0	70.0	60.0
24:					
Carbine	VIs	---	---	---	---
25:					
Carbine-Hathaway	VIe	---	---	---	---
26:					
Cazador	VIw	IIIw	6.0	100.0	90.0
Lesliecreek	VIw	IIw	6.0	100.0	90.0
27:					
Cherrycow-Blacktail	VIs	---	---	---	---
28:					
Cherrycow	VIe	---	---	---	---
Magoffin	VIe	---	---	---	---

Table 5.--Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability N	Land capability I	Alfalfa hay	Corn	Wheat
			Tons	Bu	Bu
28:					
Rock outcrop	VIII	---	---	---	---
29:					
Chorro-Doubleadobe-Gothard	VIe	IIIe	3.0	50.0	40.0
30:					
Chorro	VIe	IIIe	4.0	75.0	50.0
Guest	VIs	IIIs	7.0	100.0	80.0
31:					
Cogswell	VIs	IIIs	3.0	50.0	40.0
32:					
Combate	VIe	---	---	---	---
33:					
Comoro	VIe	IIe	7.0	110.0	100.0
34:					
Comoro	VIe	IIIe	5.0	75.0	80.0
35:					
Contention-Crystalgyp-Monzingo-Redington	VIIe	---	---	---	---
36:					
Contention-Ugyp-Ugyp	VIIe	---	---	---	---
37:					
Courtland	VIe	IIe	7.0	100.0	90.0
38:					
Courtland	VIe	IIIe	5.0	50.0	55.0
39:					
Courtland	VIe	IIe	7.0	100.0	90.0
Diaspar	VIe	IIe	6.0	80.0	70.0
40:					
Courtland	VIe	IIe	7.0	100.0	90.0
Sasabe	VIe	IIIe	7.0	100.0	90.0
Diaspar	VIe	IIe	6.0	80.0	70.0
41:					
Crowbar	VIs	---	---	---	---
Brunopeak	VIe	---	---	---	---
42:					
Deloro-Leyte-Lampshire	VIe	---	---	---	---
43:					
Denab-Castledome	VIe	---	---	---	---

Table 5.--Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability N	Land capability I	Alfalfa hay	Corn	Wheat
			Tons	Bu	Bu
44:					
Denied Access.					
45:					
Diaspar	VIe	IIe	6.0	80.0	70.0
46:					
Diaspar	VIe	IIIe	5.0	50.0	55.0
47:					
Dona Ana-Mohave	VIIe	IIe	6.0	100.0	75.0
48:					
Doubleadobe	VIe	IIIe	3.0	50.0	40.0
49:					
Durazo	VIe	IIIe	6.0	70.0	60.0
50:					
Durazo	VIe	IIIe	4.0	50.0	45.0
51:					
Durazo	VIs	IIIs	4.0	50.0	45.0
Gothard	VIs	IIIs	3.0	50.0	40.0
52:					
Durazo	VIe	IIIe	6.0	70.0	60.0
Courtland	VIc	IIc	7.0	100.0	90.0
53:					
Durazo	VIe	IIIe	6.0	70.0	60.0
McAllister	VIs	IIs	7.0	100.0	75.0
54:					
Elfrida	VIs	IIs	8.0	125.0	100.0
55:					
Elfrida	VIs	IIIs	6.0	80.0	80.0
56:					
Elgin	VIs	IIIs	8.0	125.0	100.0
McAllister	VIs	IIs	7.0	100.0	75.0
Stronghold	VIs	IIIs	7.0	90.0	80.0
57:					
Elgin	VIs	---	---	---	---
Outlaw	VIe	---	---	---	---
58:					
Elgin-Stronghold	VIs	---	---	---	---
59:					
Eloma	VIs	---	---	---	---

Table 5.--Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability N	Land capability I	Alfalfa hay	Corn	Wheat
			Tons	Bu	Bu
60:					
Eloma	VIs	---	---	---	---
Caralampi	VIs	---	---	---	---
White House	VIe	---	---	---	---
61:					
Epitaph	VIs	---	---	---	---
62:					
Far-Hogris	VIe	---	---	---	---
63:					
Far-Huachuca-Hogris	VIe	---	---	---	---
64:					
Far-Huachuca-Hogris	VIe	---	---	---	---
65:					
Forrest	VIs	IIIs	7.0	100.0	90.0
66:					
Forrest	VIs	IIIs	5.0	70.0	70.0
67:					
Forrest	VIe	IIIe	7.0	100.0	90.0
68:					
Forrest	VIs	IIIs	7.0	100.0	90.0
69:					
Forrest	VIs	IIIs	5.0	70.0	70.0
70:					
Forrest	VIe	IIIe	7.0	100.0	90.0
Bonita	VIs	IIIs	7.0	100.0	90.0
71:					
Gardencan-Lanque	VIe	IIe	7.0	110.0	100.0
72:					
Glendale	VIIe	IIe	8.0	118.0	100.0
73:					
Gothard	VIs	IIIs	3.0	50.0	40.0
74:					
Gothard	VIe	IIIe	3.0	50.0	40.0
75:					
Graham-Lampshire	VIe	---	---	---	---
76:					
Graveyard-Sierravista	VIe	---	---	---	---
77:					
Grizzle	VIe	---	---	---	---

Table 5.--Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability N	Land capability I	Alfalfa hay	Corn	Wheat
			Tons	Bu	Bu
78:					
Guest	VIs	IIIs	7.0	100.0	80.0
79:					
Guest	VIs	IIIs	7.0	100.0	80.0
80:					
Guest	VIs	IIIs	5.0	70.0	60.0
81:					
Guest	VIs	IIIs	7.0	100.0	80.0
82:					
Guest	VIs	IIIs	5.0	70.0	60.0
83:					
Guest	VIs	IIIs	5.0	70.0	60.0
Cogswell	VIs	IIIs	3.0	50.0	40.0
84:					
Guest	VIs	IIIs	7.0	100.0	80.0
Riveroad	VIe	IIe	8.0	120.0	100.0
85:					
Hantz	VIIe	IIIe	5.0	75.0	60.0
86:					
Haplustolls-Fluvaquents	VIw	---	---	---	---
87:					
Haplustolls-Fluvaquents	VIw	---	---	---	---
88:					
Hayhollow	VIw	---	---	---	---
Rafter	VIw	---	---	---	---
Riverwash	VIII	---	---	---	---
89:					
Kaboom-Reeup	VIe	---	---	---	---
90:					
Kahn fine sandy loam	VIe	IIe	6.0	100.0	75.0
Kahn silt loam	VIs	IIs	6.0	100.0	75.0
91:					
Kahn-Zapolote	VIe	---	---	---	---
92:					
Karro	VIs	IIs	6.0	100.0	75.0
93:					
Karro	VIs	IIIs	4.0	70.0	60.0

Table 5.--Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability N	Land capability I	Alfalfa hay	Corn	Wheat
			Tons	Bu	Bu
94:					
Keysto	VIs	---	---	---	---
Riverwash	VIII	---	---	---	---
95:					
Kuykendall	VIe	---	---	---	---
Rock outcrop	VIII	---	---	---	---
96:					
Lanque	VIs	---	---	---	---
Stanford	VIe	---	---	---	---
97:					
Libby-Gulch	VIs	---	---	---	---
98:					
Luckyhills	VIe	---	---	---	---
99:					
Luckyhills	VIs	IIIs	6.0	75.0	60.0
McNeal	VIs	IIs	6.0	100.0	75.0
100:					
Lutzcan-Yarbam	VIe	---	---	---	---
101:					
Mabray	VIe	---	---	---	---
Chiricahua	VIe	---	---	---	---
Rock outcrop	VIII	---	---	---	---
102:					
Mabray	VIe	---	---	---	---
Rock outcrop	VIII	---	---	---	---
103:					
Magoffin	VIs	---	---	---	---
Rock outcrop	VIII	---	---	---	---
Cherrycow	VIs	---	---	---	---
104:					
Major fine sandy loam	VIe	---	---	---	---
Major silt loam	VIe	---	---	---	---
105:					
Mallet	VIc	IIc	7.0	100.0	100.0
Hooks	VIe	IIe	7.0	100.0	100.0
106:					
Marsh	VIII	---	---	---	---

Table 5.--Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability N	Land capability I	Alfalfa hay	Corn	Wheat
			Tons	Bu	Bu
107:					
McAllister	VIs	IIs	7.0	100.0	75.0
108:					
McAllister-Stronghold	VIs	---	---	---	---
109:					
McNeal	VIs	IIs	6.0	100.0	75.0
110:					
McNeal	VIs	IIIs	4.0	40.0	50.0
111:					
Monzingo-Ugyp-Ugyp	VIIe	---	---	---	---
112:					
Naco	VIs	---	---	---	---
Ruins, thick surface	VIe	---	---	---	---
Ruins	VIe	---	---	---	---
113:					
Nolam	VIe	---	---	---	---
Libby	VIs	---	---	---	---
Buntline	VIs	---	---	---	---
114:					
Outlaw-Epitaph-Paramore	VIs	---	---	---	---
115:					
Oversight	VIs	---	---	---	---
116:					
Oversight	VIe	---	---	---	---
117:					
Oversight	VIs	---	---	---	---
Lanque	VIe	---	---	---	---
118:					
Pedregosa	VIs	---	---	---	---
119:					
Pedregosa-Tombstone	VIs	---	---	---	---
120:					
Perilla	VIe	IIe	6.0	80.0	70.0
Durazo	VIe	IIIe	6.0	70.0	60.0
121:					
Pits	VIII	---	---	---	---
122:					
Pits-Dumps	VIII	---	---	---	---

Table 5.--Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability N	Land capability I	Alfalfa hay	Corn	Wheat
			Tons	Bu	Bu
123:					
Quiburi	VIIe	---	---	---	---
Fluvaquents	VIIw	---	---	---	---
Riverwash	VIII	---	---	---	---
124:					
Rafter	VIs	---	---	---	---
Lanque	VIe	---	---	---	---
125:					
Riveroad	VIs	IIs	8.0	120.0	100.0
Ubik	VIs	IIs	8.0	125.0	100.0
126:					
Riverwash	VIII	---	---	---	---
127:					
Riverwash	VIII	---	---	---	---
Bodecker	VIe	---	---	---	---
128:					
Rock outcrop	VIII	---	---	---	---
Magoffin	VIe	---	---	---	---
129:					
Sasabe sandy loam	VIe	IIIe	7.0	100.0	90.0
Sasabe silt loam	VIw	IIIw	8.0	125.0	100.0
130:					
Sasabe	VIs	IIIs	7.0	100.0	90.0
131:					
Sasabe	VIs	IIIs	5.0	70.0	70.0
132:					
Schiefflin	VIs	---	---	---	---
133:					
Stronghold	VIs	IIIs	7.0	90.0	80.0
134:					
Stronghold-Bernardino	VIs	---	---	---	---
135:					
Surge	VIe	---	---	---	---
Rock outcrop	VIII	---	---	---	---
136:					
Sutherland-Mule	VIs	---	---	---	---
137:					
Swisshelm	VIe	IIe	7.0	110.0	100.0

Table 5.--Land Capability and Yields per Acre of Crops--Continued

Map symbol and soil name	Land capability N	Land capability I	Alfalfa hay	Corn	Wheat
			Tons	Bu	Bu
138:					
Swisshelm	VIe	IIIe	5.0	75.0	80.0
139:					
Tenneco	VIe	IIe	7.0	100.0	100.0
140:					
Terrarossa sandy loam	VIe	---	---	---	---
Terrarossa gravelly loam	VIe	---	---	---	---
Terrarossa very gravelly sandy loam	VIe	---	---	---	---
141:					
Terrarossa-Blacktail-Pyeatt	VIe	---	---	---	---
142:					
Tombstone	VIs	---	---	---	---
143:					
Turquoise-Nugget	VIe	---	---	---	---
144:					
Ubik silt loam	VIe	IIe	8.0	125.0	100.0
Ubik fine sandy loam	VIe	IIe	8.0	125.0	100.0
145:					
Ubik	VIs	IIs	8.0	125.0	100.0
146:					
Ubik	VIs	IIIs	6.0	80.0	80.0
147:					
Ubik	VIe	IIe	8.0	125.0	100.0
148:					
Ubik	VIe	IIIe	6.0	80.0	80.0
149:					
Vana	VIs	---	---	---	---
150:					
Vana	VIe	IVe	4.0	60.0	50.0
Moco	VIe	IIIe	5.0	70.0	60.0
151:					
White House gravelly loam	VIs	---	---	---	---
White House gravelly sandy loam	VIs	---	---	---	---
152:					
Yarbam	VIe	---	---	---	---
Rock outcrop	VIII	---	---	---	---

Table 6.--Prime Farmland

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

Map symbol	Soil name
2	Anthony-Maricopa complex, 0 to 5 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)
5	Baboquivari-Combate complex, 0 to 3 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)
26	Cazador-Lesliecreek complex, 0 to 10 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)
33	Comoro sandy loam, 0 to 2 percent slopes (where irrigated)
37	Courtland sandy loam, 0 to 2 percent slopes (where irrigated)
39	Courtland-Diaspar complex, 0 to 3 percent slopes (where irrigated)
40	Courtland-Sasabe-Diaspar complex, 1 to 8 percent slopes (where irrigated)
45	Diaspar sandy loam, 0 to 2 percent slopes (where irrigated)
47	Dona Ana-Mohave complex, 1 to 5 percent slopes (where irrigated)
52	Durazo-Courtland complex, 1 to 5 percent slopes (where irrigated)
56	Elgin-McAllister-Stronghold complex, 1 to 8 percent slopes (where irrigated)
65	Forrest clay loam, 1 to 3 percent slopes (where irrigated)
67	Forrest sandy loam, 1 to 3 percent slopes (where irrigated)
68	Forrest silt loam, 0 to 1 percent slopes (where irrigated)
70	Forrest-Bonita complex, 0 to 3 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)
71	Gardencan-Lanque complex, 0 to 5 percent slopes (where irrigated)
72	Glendale very fine sandy loam, 0 to 2 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)
78	Guest silty clay loam, 0 to 1 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)
79	Guest silty clay loam, 0 to 3 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)
81	Guest silty clay, 0 to 1 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)
84	Guest-Riveroad association, 0 to 1 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)
90	Kahn complex, 0 to 3 percent slopes (where irrigated)
105	Mallet-Hooks complex, 0 to 5 percent slopes (where irrigated)
107	McAllister loam, 1 to 3 percent slopes (where irrigated)
109	McNeal gravelly sandy loam, 1 to 3 percent slopes (where irrigated)
125	Riveroad and ubik soils, 0 to 5 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)
129	Sasabe complex, 0 to 3 percent slopes (where irrigated)
130	Sasabe gravelly sandy loam, 0 to 2 percent slopes (where irrigated)
133	Stronghold gravelly fine sandy loam, 1 to 3 percent slopes (where irrigated)
137	Swisshelm sandy loam, 1 to 3 percent slopes (where irrigated)
139	Tenneco fine sandy loam, 0 to 2 percent slopes (where irrigated)
144	Ubik complex, 0 to 3 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)
145	Ubik loam, 1 to 3 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)
147	Ubik sandy loam, 1 to 3 percent slopes (where irrigated and either protected from flooding or not frequently flooded during the growing season)

Table 7.--Rangeland Productivity and Characteristic Plant Communities

(The letters "p.z." mean "precipitation zone.")

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
1:						
Altar---------	Sandy Loam, Deep, 12-16" p.z.	Favorable	1,200	Arizona cottontop		10
		Normal	900	Mesa threeawns		5
		Unfavorable	500	Black grama		20
				Blue threeawn		5
				Bush muhly		10
				Catclaw acacia		2
				Mesquite		3
				Mormon tea		10
				Miscellaneous annual forbs		10
				Plains bristlegrass		5
				Plains lovegrass		5
				Shrubby buckwheat		5
				Sideoats grama		10
Mallet--------	Sandy Loam, Deep, 12-16" p.z.	Favorable	1,200	Arizona cottontop		10
		Normal	900	Mesa threeawns		5
		Unfavorable	500	Black grama		20
				Blue threeawn		5
				Bush muhly		10
				Catclaw acacia		2
				Mesquite		3
				Mormon tea		10
				Miscellaneous annual forbs		10
				Plains bristlegrass		5
				Plains lovegrass		5
				Shrubby buckwheat		5
				Sideoats grama		10
2:						
Anthony-------	Sandy Loam Upland, 7-12" p.z	Favorable	650	Arizona cottontop		10
		Normal	550	Rothrock grama		10
		Unfavorable	450	Black grama		15
				Bush muhly		15
				Miscellaneous annual forbs		5
				Miscellaneous perennial forbs		5
				Miscellaneous shrubs		5
				Plains bristlegrass		5
				Range ratany		10
				Sideoats grama		5
				Soaptree yucca		5
				Staghorn cholla		5
				Threeawn		15
Maricopa------	Sandy Bottom, 7-12" p.z.	Favorable	2,500	Arizona cottontop		10
		Normal	1,500	Rothrock's grama		5
		Unfavorable	500	Bush muhly		10
				Catclaw acacia		5
				Desert honeysuckle		5
				Giant sacaton		15
				Mesquite		10
				Mormon tea		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Rabbitbrush		5
				Sideoats grama		10
				Singlewhorl burrobush		5
				Soaptree yucca		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
3:						
Arizo family--	Sandy Bottom, 7-12" p.z.	Favorable	2,000	Arizona cottontop		10
		Normal	1,500	Bush muhly		10
		Unfavorable	750	Catclaw acacia		10
				Desert honeysuckle		5
				Giant sacaton		15
				Mesquite		10
				Mormon tea		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial forbs		5
				Spike dropseed		10
				Threeawn		10
Riverwash.						
4:						
Ashcreek------	Clayey Bottom, 16-20" p.z.	Favorable	3,000	Blue grama		20
		Normal	2,500	Cane beardgrass		10
		Unfavorable	1,200	Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Sideoats grama		20
				Tobosa		20
				Vine mesquite		10
Stanford------	Loamy Bottom, Swales, 16-20" p.z.	Favorable	3,000	Blue grama		20
		Normal	2,500	Cane beardgrass		10
		Unfavorable	1,200	Creeping muhly		10
				Giant sacaton		10
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Sideoats grama		20
				Vine mesquite		10
5:						
Baboquivari---	Loamy Upland, 12-16" p.z.	Favorable	1,500	Arizona cottontop		5
		Normal	1,000	Rocky Mountain zinnia		5
		Unfavorable	650	Black grama		10
				Bush muhly		5
				Cane beardgrass		5
				Fluffgrass		2
				Miscellaneous annual forbs		15
				Miscellaneous perennial grasses		25
				Miscellaneous shrubs		5
				Plains bristlegrass		5
				Range ratany		5
				Shrubby buckwheat		5
				Sideoats grama		8

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
5:						
Combate-------	Sandy Loam, Deep, 12-16" p.z.	Favorable	1,000	Arizona cottontop		20
		Normal	800	Rothrock's grama		5
		Unfavorable	600	Black grama		10
				Bush muhly		5
				Mesquite		10
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Plains bristlegrass		5
				Sideoats grama		15
				Whitethorn acacia		5
6:						
Banshee-------	Clay Loam Upland, 12-16" p.z.	Favorable	1,500	Blue grama		15
		Normal	1,000	Cane beardgrass		15
		Unfavorable	600	Curly mesquite		10
				Knifeleaf condalia		1
				Mesquite		5
				Plains lovegrass		5
				Sideoats grama		15
				Soaptree yucca		4
				Tobosa		20
				Vine mesquite		10
Banshee, thick surface------	Sandy Loam Upland, 12-16" p.z.	Favorable	2,000	Arizona cottontop		20
		Normal	1,200	Black grama		15
		Unfavorable	700	Blue grama		15
				Burroweed		2
				Cane beardgrass		10
				Fourwing saltbush		3
				Mesquite		3
				Plains bristlegrass		5
				Plains lovegrass		5
				Sideoats grama		20
				Soaptree yucca		2
7:						
Bella---------	Limy Upland, 12-16" p.z.	Favorable	800	Black grama		5
		Normal	500	Blue threeawn		5
		Unfavorable	300	Bush muhly		10
				Creosotebush		15
				Desert zinnia		5
				Fluffgrass		5
				Mariola		5
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Pricklypear and cholla		5
				Tarbush		5
				Whitethorn acacia		15

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
8:						
Blakeney------	Limy Upland, 12-16" p.z.	Favorable	800	Texas dogweed		5
		Normal	500	Blue threeawn		5
		Unfavorable	350	Bush muhly		10
				Creosotebush		40
				Desert zinnia		5
				Fluffgrass		5
				Mariola		5
				Range ratany		5
				Twinberry		5
				Whitethorn acacia		15
Luckyhills----	Limy Upland, 12-16" p.z.	Favorable	900	Texas dogweed		5
		Normal	600	Black grama		5
		Unfavorable	350	Blue threeawn		10
				Bush muhly		10
				Creosotebush		30
				Desert zinnia		10
				Fluffgrass		5
				Mariola		5
				Tarbush		10
				Whitethorn acacia		10
9:						
Bodecker------	Sandy Bottom, 12-16" p.z.	Favorable	3,000	Cane beardgrass		10
		Normal	2,000	Desert willow		5
		Unfavorable	1,000	Giant sacaton		10
				Green sprangletop		10
				Mesquite		5
				Netleaf hackberry		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		15
				Miscellaneous shrubs		5
				Sideoats grama		10
				Spike dropseed		10
				Western soapberry		5
				Whitethorn acacia		5
Comoro--------	Sandy Bottom, 12-16" p.z.	Favorable	3,000	Cane beardgrass		10
		Normal	2,000	Desert willow		5
		Unfavorable	1,000	Giant sacaton		10
				Green sprangletop		10
				Mesquite		5
				Netleaf hackberry		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		15
				Miscellaneous shrubs		5
				Sideoats grama		10
				Spike dropseed		10
				Western soapberry		5
				Whitethorn acacia		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
10:						
Bodecker------	Sandy Bottom, 12-16" p.z.	Favorable	3,000	Arizona cottontop		5
		Normal	2,000	Arizona walnut		2
		Unfavorable	1,000	Cane beardgrass		3
				Catclaw acacia		8
				Desert willow		5
				Green sprangletop		2
				Mesquite		20
				Netleaf hackberry		3
				Miscellaneous annual forbs		7
				Miscellaneous perennial grasses		15
				Miscellaneous shrubs		10
				Plains bristlegrass		5
				Sideoats grama		10
				Spike dropseed		5
11:						
Bodecker------	Sandy Bottom, 12-16" p.z.	Favorable	2,500	Arizona cottontop		5
		Normal	1,500	Arizona walnut		2
		Unfavorable	800	Alkali sacaton		5
				Cane beardgrass		3
				Catclaw acacia		8
				Desert willow		5
				Fourwing saltbush		5
				Green sprangletop		2
				Inland saltgrass		5
				Mesquite		15
				Netleaf hackberry		3
				Miscellaneous annual forbs		7
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		10
				Plains bristlegrass		5
				Sideoats grama		10
				Spike dropseed		5
12:						
Bonita--------	Clayey Bottom, 12-16" p.z.	Favorable	2,500	Blue grama		10
		Normal	2,000	Broom snakeweed		1
		Unfavorable	800	Cane beardgrass		5
				Curly mesquite		2
				Mesquite		2
				Red threeawns		3
				Sideoats grama		20
				Soaptree yucca		1
				Tobosa		55
				Whitethorn acacia		1
13:						
Bonita--------	Clayey Upland, 12-16" p.z.	Favorable	1,500	Miscellaneous perennial forbs		5
		Normal	1,000	Miscellaneous perennial grasses		5
		Unfavorable	600	Miscellaneous shrubs		5
				Sideoats grama		5
				Tobosa		70
				Vine mesquite		10

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
13:						
Forrest-------	Clay Loam Upland, 12-16" p.z.	Favorable	1,500	Blue grama		10
		Normal	1,000	Cane beardgrass		15
		Unfavorable	600	Curly mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Sideoats grama		20
				Tobosa		30
				Vine mesquite		5
14:						
Borderland----	Clay Loam Upland, 16-20" p.z.	Favorable	1,800	Blue grama		5
		Normal	1,200	Burroweed		1
		Unfavorable	1,000	Cane beardgrass		5
				Curly mesquite		10
				False mesquite		3
				Miscellaneous annual grasses		3
				Plains lovegrass		7
				Shrubby buckwheat		3
				Sideoats grama		20
				Snakeweed		1
				Tobosa		30
				Velvetpod mimosa		2
				Vine mesquite		10
15:						
Borderline----	Limy Upland, 7-12" p.z.	Favorable	500	Blue threeawn		5
		Normal	300	Bush muhly		10
		Unfavorable	200	Creosotebush		25
				Desert holly		5
				Desert zinnia		5
				Fluffgrass		5
				Mariola		5
				Miscellaneous annual forbs		5
				Miscellaneous shrubs		5
				Range ratany		5
				Tarbush		10
				Whitethorn acacia		15
16:						
Boss----------	Basalt Hills, 12-16" p.z.	Favorable	1,300	Black grama		10
		Normal	750	Blue grama		5
		Unfavorable	450	Bush muhly		3
				Cane beardgrass		8
				Kidneywood		3
				Mesquite		1
				Mintbush lippia		2
				Plains bristlegrass		8
				Shrubby buckwheat		3
				Sideoats grama		25
				Slender grama		3
				Spidergrass		3
				Tobosa		25
				Yerba de pasmo		1

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
16:						
Krentz--------	Basalt Hills, 12-16" p.z.	Favorable	1,800	Palmer's century plant		2
		Normal	1,000	Black grama		10
		Unfavorable	700	Cane beardgrass		10
				Miscellaneous annual forbs		5
				Miscellaneous perennial forbs		5
				Plains lovegrass		10
				Plains pricklypear		3
				Sacahuista		2
				Sideoats grama		30
				Spidergrass		10
				Staghorn cholla		3
				Wolftail		5
				Yerba de pasmo		5
Paramore------	Basalt Hills, 12-16" p.z.	Favorable	1,300	Black grama		15
		Normal	700	Cane beardgrass		5
		Unfavorable	500	Curly mesquite		5
				Mesquite		3
				Mintbush lippia		2
				Miscellaneous annual forbs		10
				Sideoats grama		25
				Tobosa		35
Rock outcrop.						
17:						
Brookline-----	Sandy Bottom, Subirriagted (POFR, SAGO), 12-16" p.z.	Favorable	3,500	Black willow	5	
		Normal	2,500	Cottonwood	5	
		Unfavorable	1,500	Deergrass	30	
				Giant sacaton	25	
				Mesquite	5	
				Mule's fat	5	
				Netleaf hackberry	5	
				Miscellaneous perennial forbs	5	
				Miscellaneous perennial grasses	5	
				Rush	5	
				Sedge	5	
Fluvaquents---	Sandy Bottom, Subirriagted (POFR, SAGO), 12-16" p.z.	Favorable	3,000	Arizona alder	5	
		Normal	2,000	Black willow	5	
		Unfavorable	1,500	Cottonwood	5	
				Deergrass	10	
				Giant sacaton	10	
				Knotgrass	10	
				Mule's fat	5	
				Miscellaneous perennial forbs	5	
				Miscellaneous perennial grasses	5	
				Miscellaneous shrubs	5	
				Rush	10	
				Sedge	10	
				Southwestern chokecherry	5	
				Watercress	5	
				Yerba mansa	5	
Riverwash.						

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
18:						
Brunkcow------	Shallow Upland, 12-16" p.z.	Favorable	800	Arizona cottontop		15
		Normal	580	Black grama		5
		Unfavorable	300	Cane beardgrass		5
				Hairy grama		5
				Miscellaneous annual forbs		12
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		10
				Sideoats grama		20
				Slender grama		5
				Tanglehead		3
				Whitethorn acacia		10
Chiricahua----	Shallow Upland, 12-16" p.z.	Favorable	900	Cane beardgrass		5
		Normal	650	Curly mesquite		10
		Unfavorable	400	Desert zinnia		5
				False mesquite		5
				Hairy grama		10
				Mimosa		5
				Miscellaneous annual forbs		5
				Miscellaneous perennial forbs		5
				Miscellaneous shrubs		5
				Plains lovegrass		5
				Range ratany		5
				Sideoats grama		10
				Slender grama		10
				Sprucetop grama		10
				Tobosa		5
Andrada-------	Limy Upland, 12-16" p.z.	Favorable	900	Gregg dalea		5
		Normal	600	Black grama		10
		Unfavorable	350	Blue threeawn		5
				Bush muhly		10
				Creosotebush		5
				Desert zinnia		5
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Range ratany		5
				Sideoats grama		5
				Slim tridens		5
				Tarbush		10
				Whitethorn acacia		15
19:						
Brunkcow------	Granitic Hills, 12-16" p.z.	Favorable	1,600	Palmer's century plant		5
		Normal	900	Cane beardgrass		10
		Unfavorable	600	False mesquite		5
				Green sprangletop		10
				Hairy grama		5
				Kidneywood		5
				Mimosa		5
				Ocotillo		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Sage		5
				Sideoats grama		10
				Slender grama		10
				Sprucetop grama		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
19:						
Chiricahua----	Granitic Hills, 12-16" p.z.	Favorable	1,600	Palmer's century plant		5
		Normal	900	Cane beardgrass		10
		Unfavorable	600	Curly mesquite		5
				False mesquite		5
				Hairy grama		10
				Kidneywood		5
				Mimosa		5
				Ocotillo		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		15
				Sideoats grama		10
				Slender grama		10
				Sprucetop grama		5
Lampshire-----	Granitic Hills, 12-16" p.z.	Favorable	1,600	Gregg dalea		5
		Normal	900	Palmer's century plant		5
		Unfavorable	600	Black grama		5
				Cane beardgrass		5
				Cloak fern		5
				False mesquite		5
				Hairy grama		10
				Ocotillo		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Sideoats grama		15
				Slender grama		10
				Sotol		5
				Sprucetop grama		5
				Tanglehead		5
20:						
Budlamp-------	Shallow Hills, 16-20" p.z.	Favorable	1,500	California brickellbush		5
		Normal	1,000	Palmer's century plant		5
		Unfavorable	750	Texas bluestem		10
				Beggartick threeawn		5
				Bullgrass		10
				Coralbean		5
				Green sprangletop		5
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Prairie junegrass		5
				Sedge		5
				Sideoats grama		10
				Sotol		5
Woodcutter----	Shallow Hills, 16-20" p.z.	Favorable	1,500	Palmer's century plant		5
		Normal	1,200	Texas bluestem		10
		Unfavorable	900	Beggartick threeawn		5
				Bullgrass		15
				Green sprangletop		5
				Miscellaneous perennial forbs		15
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		10
				Plains lovegrass		10
				Sacahuista		5
				Sedge		5
				Sideoats grama		10

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
21:						
Buntline------	Limy Upland, 12-16" p.z.	Favorable	900	Black grama		10
		Normal	600	Blue threeawn		10
		Unfavorable	350	Bush muhly		10
				Creosotebush		15
				Desert zinnia		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Range ratany		5
				Tarbush		15
				Whitethorn acacia		15
22:						
Caralampi-----	Sandy Loam Upland, 12-16" p.z.	Favorable	2,000	Arizona cottontop		10
		Normal	1,200	Mesa threeawns		5
		Unfavorable	700	Black grama		15
				Blue grama		10
				Cane beardgrass		10
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Plains lovegrass		15
				Range ratany		5
				Sideoats grama		15
23:						
Caralampi-----	Sandy Loam Upland, 12-16" p.z.	Favorable	2,000	Arizona cottontop		10
		Normal	1,200	Mesa threeawns		5
		Unfavorable	700	Black grama		15
				Blue grama		10
				Cane beardgrass		10
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Plains lovegrass		15
				Range ratany		5
				Sideoats grama		15
24:						
Carbine-------	Limy Slopes, 16-20" p.z.	Favorable	2,000	New Mexico feathergrass		5
		Normal	1,400	Black grama		20
		Unfavorable	1,000	False mesquite		5
				Mormon tea		5
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		15
				Miscellaneous shrubs		5
				Sideoats grama		25
				Soaptree yucca		5
				Threeawn		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
25:						
Carbine-------	Limy Slopes, 16-20" p.z.	Favorable	2,000	Gregg dalea		5
		Normal	1,400	New Mexico feathergrass		5
		Unfavorable	1,000	Black grama		10
				Blue threeawn		10
				Crinkleawn		10
				False mesquite		5
				Hairy grama		5
				Miscellaneous perennial forbs		5
				Miscellaneous shrubs		5
				Sacahuista		5
				Shortleaf tridens		5
				Sideoats grama		15
				Slim tridens		5
				Wooly bunchgrass		10
Hathaway------	Limy Slopes, 16-20" p.z.	Favorable	2,000	Gregg dalea		5
		Normal	1,400	New Mexico feathergrass		5
		Unfavorable	1,000	Black grama		10
				Blue threeawn		10
				Crinkleawn		10
				False mesquite		5
				Hairy grama		5
				Miscellaneous perennial forbs		5
				Miscellaneous shrubs		5
				Sacahuista		5
				Shortleaf tridens		5
				Sideoats grama		15
				Slim tridens		5
				Wooly bunchgrass		10
26:						
Cazador-------	Clayey Bottom, 16-20" p.z.	Favorable	3,000	Blue grama		10
		Normal	2,500	Cane beardgrass		5
		Unfavorable	1,200	Creeping muhly		5
				Giant sacaton		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial forbs		5
				Sideoats grama		10
				Tobosa		40
				Vine mesquite		10
Lesliecreek---	Loamy Bottom, Subirrigated, 16-20" p.z.	Favorable	4,000	Blue grama		5
		Normal	3,000	Cane beardgrass		5
		Unfavorable	2,000	Creeping muhly		5
				Giant sacaton		50
				Miscellaneous annual forbs		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Miscellaneous trees		5
				Sideoats grama		5
				Vine mesquite		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
27:						
Cherrycow-----	Loamy Hills, 16-20" p.z.	Favorable	3,000	Palmer's century plant		5
		Normal	2,000	Texas bluestem		10
		Unfavorable	1,000	Beggartick threeawn		5
				Blue grama		10
				Cane beardgrass		10
				Oak		5
				Oneseed juniper		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Purple grama		5
				Shrubby buckwheat		5
				Sideoats grama		10
				Wooly bunchgrass		5
Blacktail-----	Loamy Hills, 16-20" p.z.	Favorable	3,000	Palmer's century plant		5
		Normal	2,000	Texas bluestem		10
		Unfavorable	1,000	Beggartick threeawn		5
				Blue grama		10
				Cane beardgrass		10
				Oak		5
				Oneseed juniper		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Purple grama		5
				Shrubby buckwheat		5
				Sideoats grama		10
				Wooly bunchgrass		5
28:						
Cherrycow-----	Volcanic Hills, 16-20" p.z	Favorable	1,400	Arizona white oak		2
		Normal	1,100	Emory oak		3
		Unfavorable	800	Texas bluestem		15
				Blue grama		5
				Curly mesquite		10
				Oneseed juniper		5
				Miscellaneous annual forbs		5
				Miscellaneous perennial forbs		5
				Plains lovegrass		10
				Range ratany		5
				Sacahuista		5
				Shrubby buckwheat		5
				Sideoats grama		20
				Tobosa		5
Magoffin------	Shallow Hills, 16-20" p.z.	Favorable	1,200	Palmer's century plant		5
		Normal	900	Texas bluestem		20
		Unfavorable	600	Blue grama		5
				Cane beardgrass		5
				False mesquite		5
				Oneseed juniper		5
				Miscellaneous annual forbs		5
				Plains lovegrass		15
				Shrubby buckwheat		5
				Sideoats grama		20
				Slender grama		5
				Yucca		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
28:						
Rock outcrop.						
29:						
Chorro--------	Saline Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		50
		Normal	1,500	Fourwing saltbush		5
		Unfavorable	800	Giant sacaton		10
				Inland saltgrass		5
				Mesquite		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial grasses		5
				Tobosa		5
				Vine mesquite		5
Doubleadobe---	Saline Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		50
		Normal	1,500	Fourwing saltbush		5
		Unfavorable	800	Giant sacaton		10
				Inland saltgrass		5
				Mesquite		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial grasses		5
				Tobosa		5
				Vine mesquite		5
Gothard-------	Saline Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		50
		Normal	1,500	Fourwing saltbush		5
		Unfavorable	800	Giant sacaton		10
				Inland saltgrass		5
				Mesquite		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial grasses		5
				Tobosa		5
				Vine mesquite		5
30:						
Chorro--------	Saline Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		20
		Normal	1,500	Blue grama		10
		Unfavorable	800	Borax weed		5
				Desert saltgrass		5
				Fourwing saltbush		5
				Giant sacaton		20
				Iodinebush		5
				Mesquite		5
				Seepweed		5
				Tobosa		20
Guest---------	Clayey Bottom, 12-16" p.z.	Favorable	5,500	Blue grama		5
		Normal	2,000	Broom snakeweed		5
		Unfavorable	800	Giant sacaton		20
				Mesquite		5
				Pale wolfberry		5
				Sideoats grama		25
				Tobosa		30
				Whitethorn acacia		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
31:						
Cogswell------	Saline Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		50
		Normal	1,500	Fourwing saltbush		5
		Unfavorable	800	Giant sacaton		10
				Inland saltgrass		5
				Mesquite		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial grasses		5
				Tobosa		5
				Vine mesquite		5
32:						
Combate-------	Sandy Loam, Deep, 12-16" p.z.	Favorable	1,000	Arizona cottontop		20
		Normal	800	Rothrock's grama		5
		Unfavorable	600	Black grama		10
				Bush muhly		5
				Mesquite		10
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Plains bristlegrass		5
				Sideoats grama		15
				Whitethorn acacia		5
33:						
Comoro--------	Sandy Bottom, 12-16" p.z.	Favorable	3,000	Cane beardgrass		10
		Normal	2,000	Desert willow		5
		Unfavorable	1,000	Giant sacaton		10
				Green sprangletop		10
				Mesquite		5
				Netleaf hackberry		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		15
				Miscellaneous shrubs		5
				Sideoats grama		10
				Spike dropseed		10
				Western soapberry		5
				Whitethorn acacia		5
34:						
Comoro--------	Sandy Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		5
		Normal	1,500	Cane beardgrass		10
		Unfavorable	800	Desert willow		5
				Fourwing saltbush		5
				Giant sacaton		10
				Green sprangletop		5
				Inland saltgrass		5
				Mesquite		5
				Netleaf hackberry		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Sideoats grama		10
				Spike dropseed		10
				Western soapberry		5
				Whitethorn acacia		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
35:						
Contention----	Clayey Hills, 7-12" p.z.	Favorable	1,200	Alkali sacaton		5
		Normal	750	Creosotebush		5
		Unfavorable	400	Fourwing saltbush		10
				Mesquite		5
				Miscellaneous annual forbs		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Tarbush		5
				Tobosa		40
				Vine mesquite		10
				Wolfberry		5
Crystalgyp----	Gypsum Upland, 7-12" p.z.	Favorable	400	Alkali sacaton		20
		Normal	300	Black grama		10
		Unfavorable	150	Bush muhly		15
				Creosotebush		10
				Cryptantha		10
				Fluffgrass		10
				Miscellaneous shrubs		5
				Pricklypear and cholla		5
				Tobosa		10
				Whitethorn acacia		5
Monzingo------	Limy Upland, 7-12" p.z.	Favorable	600	Texas dogweed		5
		Normal	350	Black grama		5
		Unfavorable	200	Blue threeawn		5
				Bush muhly		5
				Creosotebush		30
				Desert zinnia		5
				Fluffgrass		5
				Ocotillo		5
				Miscellaneous perennial forbs		5
				Range ratany		5
				Tarbush		5
				Twinberry		5
				Twistflower		5
				Whitethorn acacia		10
Redington-----	Limy Slopes, 7-12" p.z.	Favorable	800	Black grama		20
		Normal	500	Blue threeawn		10
		Unfavorable	200	Bush muhly		20
				Creosotebush		20
				Desert zinnia		10
				Miscellaneous shrubs		5
				Slim tridens		5
				Whitethorn acacia		10
36:						
Contention----	Clayey Bottom, 7-12" p.z.	Favorable	1,200	Alkali sacaton		5
		Normal	750	Creosotebush		5
		Unfavorable	400	Fourwing saltbush		10
				Mesquite		5
				Miscellaneous annual forbs		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Tarbush		5
				Tobosa		40
				Vine mesquite		10
				Wolfberry		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
36:						
Ugyp----------	Limy Fan, 7-12" p.z.	Favorable	1,500	Alkali sacaton		5
		Normal	900	Allthorn		5
		Unfavorable	600	Burrograss		5
				Bush muhly		15
				Creosotebush		10
				Fourwing saltbush		5
				Giant sacaton		5
				Mesquite		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Sand dropseed		5
				Sideoats grama		5
				Tarbush		10
				Tobosa		10
				Wolfberry		5
Ugyp----------	Loamy Bottom, 7-12" p.z.	Favorable	2,500	Alkali sacaton		20
		Normal	1,500	Bush muhly		5
		Unfavorable	900	Fourwing saltbush		5
				Giant sacaton		25
				Mesquite		10
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Sand dropseed		5
				Sideoats grama		10
				Wolfberry		5
37:						
Courtland-----	Sandy Loam Upland, 12-16" p.z.	Favorable	1,000	Arizona cottontop		13
		Normal	800	Blue grama		12
		Unfavorable	600	Blue threeawn		3
				Cane beardgrass		3
				False mesquite		7
				Fluffgrass		2
				Mesquite		2
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		20
				Plains bristlegrass		5
				Range ratany		5
				Sideoats grama		7
				Soaptree yucca		1
38:						
Courtland-----	Sandy Loam Upland, 12-16" p.z.	Favorable	800	Arizona cottontop		13
		Normal	600	Alkali sacaton		20
		Unfavorable	400	Blue grama		12
				Blue threeawn		3
				Cane beardgrass		3
				False mesquite		7
				Fluffgrass		2
				Fourwing saltbush		10
				Inland saltgrass		10
				Mesquite		2
				Plains bristlegrass		5
				Range ratany		5
				Sideoats grama		7
				Soaptree yucca		1

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
39:						
Courtland-----	Sandy Loam Upland, 12-16" p.z.	Favorable	1,000	Arizona cottontop		13
		Normal	800	Blue grama		12
		Unfavorable	600	Blue threeawn		3
				Cane beardgrass		3
				False mesquite		7
				Fluffgrass		2
				Mesquite		2
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		20
				Plains bristlegrass		5
				Range ratany		5
				Sideoats grama		7
				Soaptree yucca		1
Diaspar-------	Sandy Loam Upland, 12-16" p.z.	Favorable	1,000	Arizona cottontop		15
		Normal	800	Rothrock's grama		10
		Unfavorable	600	Black grama		10
				Cane beardgrass		5
				Fourwing saltbush		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains bristlegrass		5
				Sand dropseed		5
				Shrubby buckwheat		5
				Sideoats grama		10
				Soaptree yucca		5
				Threeawn		10
40:						
Courtland-----	Sandy Loam Upland, 12-16" p.z.	Favorable	1,000	Arizona cottontop		13
		Normal	800	Blue grama		12
		Unfavorable	600	Blue threeawn		3
				Cane beardgrass		3
				False mesquite		7
				Fluffgrass		2
				Mesquite		2
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		20
				Plains bristlegrass		5
				Range ratany		5
				Sideoats grama		7
				Yucca		1
Sasabe--------	Loamy Upland, 12-16" p.z.	Favorable	1,000	Palmer's century plant		1
		Normal	800	Black grama		3
		Unfavorable	600	Cane beardgrass		3
				False mesquite		5
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		22
				Miscellaneous shrubs		20
				Plains bristlegrass		7
				Plains lovegrass		3
				Range ratany		3
				Red threeawns		7
				Sand dropseed		3
				Sideoats grama		5
				Tobosa		5
				Vine mesquite		3

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
40:						
Diaspar--------	Sandy Loam Upland, 12-16" p.z.	Favorable	1,000	Arizona cottontop		15
		Normal	800	Rothrock's grama		10
		Unfavorable	600	Black grama		10
				Cane beardgrass		5
				Fourwing saltbush		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains bristlegrass		5
				Sand dropseed		5
				Shrubby buckwheat		5
				Sideoats grama		10
				Soaptree yucca		5
				Threeawn		10
41:						
Crowbar--------	Sandy Loam Upland, 16-20" p.z.	Favorable	2,600	Arizona cottontop		10
		Normal	2,000	Black grama		10
		Unfavorable	1,200	Blue grama		10
				Cane beardgrass		10
				Green sprangletop		10
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		15
				Sideoats grama		20
Brunopeak------	Loamy Hills, 16-20" p.z.	Favorable	3,000	Palmer's century plant		5
		Normal	2,000	Texas bluestem		15
		Unfavorable	1,000	Blue grama		5
				Cane beardgrass		5
				Hairy grama		5
				Juniper		5
				Oak		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		15
				Purple grama		5
				Sideoats grama		15
				Wooly bunchgrass		5
42:						
Deloro---------	Volcanic Hills, 12-16" p.z.	Favorable	1,800	Black grama		5
		Normal	1,000	Cane beardgrass		15
		Unfavorable	700	Curly mesquite		5
				False mesquite		5
				Green sprangletop		10
				Hairy grama		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		15
				Pricklypear and cholla		5
				Sideoats grama		15
				Tobosa		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
42:						
Leyte---------	Volcanic Hills, 12-16" p.z.	Favorable	1,800	Black grama		5
		Normal	1,000	Cane beardgrass		15
		Unfavorable	700	Curly mesquite		5
				False mesquite		5
				Green sprangletop		10
				Hairy grama		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		15
				Pricklypear and cholla		5
				Sideoats grama		15
				Tobosa		5
Lampshire-----	Volcanic Hills, 12-16" p.z.	Favorable	1,600	Black grama		10
		Normal	900	Cane beardgrass		10
		Unfavorable	600	False mesquite		5
				Hairy grama		10
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		15
				Shrubby buckwheat		5
				Sideoats grama		15
				Sotol		5
				Tanglehead		10
43:						
Denab---------	Limy Upland, 16-20" p.z.	Favorable	1,000	Pima pappusgrass		5
		Normal	700	Black grama		20
		Unfavorable	400	Blue grama		15
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Range ratany		5
				Shortleaf tridens		5
				Sideoats grama		15
				Slim tridens		5
				Threeawn		15
Castledome----	Volcanic Hills, 16-20" p.z.	Favorable	1,400	Texas bluestem		10
		Normal	1,100	Blue grama		10
		Unfavorable	800	Cane beardgrass		10
				False mesquite		5
				Oak		5
				Oneseed juniper		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Purple grama		10
				Sacahuista		5
				Shrubby buckwheat		5
				Sideoats grama		15
44:						
Denied Access.						

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
45:						
Diaspar-------	Sandy Loam Upland, 12-16" p.z.	Favorable	1,000	Arizona cottontop		15
		Normal	800	Rothrock's grama		10
		Unfavorable	600	Black grama		10
				Cane beardgrass		5
				Fourwing saltbush		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains bristlegrass		5
				Sand dropseed		5
				Shrubby buckwheat		5
				Sideoats grama		10
				Soaptree yucca		5
				Threeawn		10
46:						
Diaspar-------	Sandy Loam Upland, 12-16" p.z.	Favorable	800	Arizona cottontop		10
		Normal	600	Rothrock's grama		5
		Unfavorable	400	Alkali sacaton		5
				Black grama		10
				Cane beardgrass		5
				Fourwing saltbush		5
				Inland saltgrass		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains bristlegrass		5
				Sand dropseed		5
				Shrubby buckwheat		5
				Sideoats grama		10
				Soaptree yucca		5
				Threeawn		10
47:						
Dona Ana------	Limy Upland, 7-12" p.z.	Favorable	1,000	Bush muhly		10
		Normal	500	Creosotebush		45
		Unfavorable	300	Miscellaneous annual forbs		10
				Miscellaneous annual grasses		10
				Miscellaneous perennial forbs		5
				Miscellaneous shrubs		10
				Threeawn		10
Mohave--------	Sandy Loam Upland, 7-12" p.z.	Favorable	700	Rothrock grama		10
		Normal	550	Black grama		20
		Unfavorable	400	Bush muhly		10
				Mesquite		5
				Mormon tea		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains bristlegrass		10
				Soaptree yucca		5
				Staghorn cholla		5
				Threeawn		10

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
48:						
Doubleadobe---	Saline Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		50
		Normal	1,500	Fourwing saltbush		5
		Unfavorable	800	Giant sacaton		10
				Inland saltgrass		5
				Mesquite		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial grasses		5
				Tobosa		5
				Vine mesquite		5
49:						
Durazo--------	Sandy Upland, 12-16" p.z.	Favorable	1,600	Mormon tea		5
		Normal	1,000	Black grama		20
		Unfavorable	500	Mesa dropseed		15
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Sand dropseed		15
				Soaptree yucca		5
				Spike dropseed		15
				Threeawn		10
50:						
Durazo--------	Sandy Upland, 12-16" p.z.	Favorable	1,400	Alkali sacaton		5
		Normal	800	Black grama		20
		Unfavorable	300	Fourwing saltbush		5
				Inland saltgrass		5
				Mesa dropseed		15
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Sand dropseed		15
				Soaptree yucca		5
				Spike dropseed		10
				Threeawn		10
51:						
Durazo--------	Sandy Upland, 12-16" p.z.	Favorable	1,400	Alkali sacaton		10
		Normal	800	Black grama		20
		Unfavorable	300	Fourwing saltbush		5
				Inland saltgrass		5
				Mesa dropseed		10
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Sand dropseed		10
				Soaptree yucca		5
				Spike dropseed		10
				Threeawn		10
Gothard-------	Saline Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		50
		Normal	1,500	Fourwing saltbush		5
		Unfavorable	800	Giant sacaton		10
				Inland saltgrass		5
				Mesquite		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial grasses		5
				Tobosa		5
				Vine mesquite		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
52:						
Durazo--------	Sandy Upland, 12-16" p.z.	Favorable	1,600	Mormon tea		5
		Normal	1,000	Black grama		20
		Unfavorable	500	Mesa dropseed		15
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Sand dropseed		15
				Soaptree yucca		5
				Spike dropseed		15
				Threeawn		10
Courtland-----	Sandy Loam Upland, 12-16" p.z.	Favorable	2,000	Arizona cottontop		10
		Normal	1,200	Black grama		15
		Unfavorable	700	Blue grama		10
				Cane beardgrass		15
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Sideoats grama		20
				Threeawn		5
53:						
Durazo--------	Sandy Upland, 12-16" p.z.	Favorable	1,600	Mormon tea		5
		Normal	1,000	Black grama		20
		Unfavorable	500	Mesa dropseed		15
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Sand dropseed		15
				Soaptree yucca		5
				Spike dropseed		15
				Threeawn		10
McAllister----	Loamy Upland, 12-16" p.z.	Favorable	1,500	Rocky Mountain zinnia		2
		Normal	1,000	Black grama		7
		Unfavorable	650	Blue grama		5
				Cane beardgrass		8
				Curly mesquite		5
				False mesquite		5
				Mormon tea		3
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		15
				Miscellaneous shrubs		5
				Plains lovegrass		15
				Shrubby buckwheat		5
				Sideoats grama		15
54:						
Eflrida-------	Clayey Bottom, 12-16" p.z.	Favorable	2,500	Blue grama		25
		Normal	2,000	Cane beardgrass		5
		Unfavorable	800	Giant sacaton		5
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		12
				Pricklypear and cholla		3
				Sideoats grama		10
				Tobosa		5
				Vine mesquite		20
				Yucca		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
55:						
Eflrida-------	Saline Bottom, 12-16" p.z.	Favorable	2,300	Alkali sacaton		5
		Normal	1,500	Blue grama		10
		Unfavorable	600	Cane beardgrass		5
				Fourwing saltbush		5
				Giant sacaton		5
				Inland saltgrass		5
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		12
				Pricklypear and cholla		3
				Sideoats grama		10
				Tobosa		5
				Vine mesquite		20
				Yucca		5
56:						
Elgin---------	Loamy Upland, 12-16" p.z.	Favorable	1,500	Blue grama		15
		Normal	1,000	Cane beardgrass		15
		Unfavorable	650	Curly mesquite		5
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Sideoats grama		25
				Threeawn		10
McAllister----	Limy Slopes, 12-16" p.z.	Favorable	1,500	Black grama		15
		Normal	1,000	Blue grama		15
		Unfavorable	600	Cane beardgrass		10
				Desert zinnia		5
				Mormon tea		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Range ratany		5
				Sideoats grama		15
				Soaptree yucca		5
				Threeawn		10
Stronghold----	Limy Slopes, 12-16" p.z.	Favorable	1,400	Black grama		15
		Normal	900	Blue threeawn		10
		Unfavorable	600	Bush muhly		5
				Desert zinnia		5
				False mesquite		5
				Fluffgrass		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Range ratany		5
				Sand dropseed		5
				Sideoats grama		20
				Slim tridens		10

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
57:						
Elgin---------	Clay Loam Upland, 12-16" p.z.	Favorable	1,500	Blue grama		5
		Normal	1,000	Burroweed		1
		Unfavorable	400	Bush muhly		5
				Cane beardgrass		11
				Mesquite		1
				Plains bristlegrass		10
				Plains lovegrass		10
				Purple muhly		3
				Red threeawns		5
				Shrubby buckwheat		5
				Sideoats grama		18
				Snakeweed		1
				Tobosa		25
Outlaw--------	Clayey Upland, 12-16" p.z.	Favorable	1,500	Cane beardgrass		10
		Normal	1,000	Miscellaneous annual forbs		10
		Unfavorable	600	Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Plains bristlegrass		5
				Sideoats grama		15
				Tobosa		45
				Vine mesquite		5
58:						
Elgin---------	Loamy Upland, 12-16" p.z.	Favorable	1,500	Cane beardgrass		5
		Normal	1,000	Curly mesquite		7
		Unfavorable	700	False mesquite		5
				Green sprangletop		5
				Hairy grama		8
				Miscellaneous annual forbs		10
				Plains bristlegrass		5
				Plains lovegrass		20
				Prairie junegrass		5
				Range ratany		5
				Shrubby buckwheat		5
				Sideoats grama		15
				Vine mesquite		5
Stronghold----	Limy Slopes, 12-16" p.z.	Favorable	1,500	New Mexico feathergrass		5
		Normal	900	Black grama		20
		Unfavorable	600	Blue threeawn		5
				Cane beardgrass		5
				Curly mesquite		5
				False mesquite		15
				Hairy grama		5
				Mormon tea		8
				Miscellaneous annual forbs		10
				Red threeawns		5
				Sideoats grama		15
				Yucca		2

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
59:						
Eloma---------	Clay Loam Upland, 12-16" p.z.	Favorable	1,500	Black grama		10
		Normal	1,100	Blue grama		10
		Unfavorable	600	Bush muhly		5
				Cane beardgrass		5
				Curly mesquite		5
				Mesquite		5
				Plains bristlegrass		5
				Plains lovegrass		10
				Sideoats grama		15
				Tarbush		3
				Tobosa		20
				Vine mesquite		5
				Whitethorn acacia		2
60:						
Eloma---------	Clay Loam Upland, 12-16" p.z.	Favorable	1,500	Blue grama		5
		Normal	1,000	Cane beardgrass		15
		Unfavorable	600	Curly mesquite		5
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Sideoats grama		15
				Sprucetop grama		5
				Tobosa		20
				Vine mesquite		5
Caralampi-----	Loamy Upland, 12-16" p.z.	Favorable	1,500	Black grama		10
		Normal	1,000	Blue grama		10
		Unfavorable	600	Cane beardgrass		15
				Curly mesquite		5
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Range ratany		5
				Sideoats grama		15
				Sprucetop grama		5
White House---	Loamy Upland, 12-16" p.z.	Favorable	1,500	Blue grama		15
		Normal	1,000	Cane beardgrass		20
		Unfavorable	650	Curly mesquite		5
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Sideoats grama		20
				Sprucetop grama		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
61:						
Epitaph-------	Clayey Upland, 12-16" p.z.	Favorable	1,200	Black grama		13
		Normal	850	Blue grama		12
		Unfavorable	500	Bush muhly		5
				Cane beardgrass		10
				Curly mesquite		10
				False mesquite		5
				Plains lovegrass		10
				Pricklypear and cholla		1
				Shrubby buckwheat		5
				Sideoats grama		15
				Soaptree yucca		1
				Staghorn cholla		1
				Tobosa		5
				Vine mesquite		5
				Winterfat		2
62:						
Far----------	Shallow Hills (QUEM, QUAR, JUDE), 20-23" p.z.	Favorable	600	Schott yucca	5	
		Normal	450	Texas bluestem	5	
		Unfavorable	300	Wright's silktassel	5	
				Beggartick threeawn	5	
				Bullgrass	25	
				Crinkleawn	5	
				Mountain mahogany	5	
				Miscellaneous perennial forbs	5	
				Miscellaneous shrubs	5	
				Plains lovegrass	5	
				Pointleaf manzanita	5	
				Prairie junegrass	5	
				Sacahuista	5	
				Sideoats grama	10	
				Wooly bunchgrass	5	
Hogris--------	Loamy Hills (QUAR, QUEM), 20-23" p.z.	Favorable	1,200	Arizona white oak	5	
		Normal	1,000	Emory oak	5	
		Unfavorable	800	Schott yucca	5	
				Texas bluestem	10	
				Beggartick threeawn	5	
				Bullgrass	15	
				Hairy grama	5	
				Miscellaneous perennial forbs	5	
				Miscellaneous shrubs	5	
				Plains lovegrass	15	
				Sacahuista	5	
				Sedge	5	
				Sideoats grama	5	
				Sotol	5	
				Wooly bunchgrass	5	

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
63:						
Far----------	Shallow Hills (QUEM, QUAR, JUDE), 20-23" p.z.	Favorable	700	California brickellbush	5	
		Normal	600	Texas bluestem	10	
		Unfavorable	500	Wright's silktassel	5	
				Beggartick threeawn	5	
				Bullgrass	10	
				Crinkleawn	5	
				Manzanita	5	
				Miscellaneous perennial forbs	10	
				Miscellaneous perennial grasses	5	
				Miscellaneous shrubs	10	
				Plains lovegrass	10	
				Prairie junegrass	5	
				Sacahuista	5	
				Sideoats grama	10	
Huachuca------	Limestone Hills (CERCO, PICE, JUDE2, QUAR), 20-23" p.z.	Favorable	1,000	Palmer's century plant	5	
		Normal	850	Wright's silktassel	5	
		Unfavorable	650	Blue muhly	10	
				Bullgrass	5	
				Heartleaf goldeneye	5	
				Longtube four o'clock	5	
				Mountain mahogany	10	
				Miscellaneous perennial forbs	5	
				Miscellaneous perennial grasses	5	
				Miscellaneous shrubs	5	
				Miscellaneous trees	5	
				Pinyon ricegrass	30	
				Sideoats grama	5	
Hogris--------	Loamy Hills (QUAR, QUEM), 20-23" p.z.	Favorable	1,200	Arizona white oak	5	
		Normal	1,000	Emory oak	5	
		Unfavorable	800	Schott yucca	5	
				Texas bluestem	10	
				Beggartick threeawn	5	
				Bullgrass	15	
				Hairy grama	5	
				Miscellaneous perennial forbs	5	
				Miscellaneous shrubs	5	
				Plains lovegrass	15	
				Sacahuista	5	
				Sedge	5	
				Sideoats grama	5	
				Sotol	5	
				Wooly bunchgrass	5	
64:						
Far----------	Mountains (PIPO), 25+" p.z.	Favorable	700	Texas bluestem	5	
		Normal	600	Wright's silktassel	5	
		Unfavorable	500	Bullgrass	30	
				Crinkleawn	5	
				Manzanita	5	
				Mountain mahogany	5	
				Miscellaneous perennial forbs	5	
				Miscellaneous shrubs	20	
				Plains lovegrass	5	
				Prairie junegrass	5	
				Sideoats grama	10	

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
64:						
Huachuca------	Mountains (PIPO), 25+" p.z.	Favorable	1,000	Palmer's century plant	10	
		Normal	850	Wright's silktassel	5	
		Unfavorable	650	Blue muhly	10	
				Bullgrass	15	
				Mountain mahogany	15	
				Miscellaneous perennial forbs	10	
				Miscellaneous perennial grasses	5	
				Miscellaneous shrubs	5	
				Miscellaneous trees	5	
				Pinyon ricegrass	10	
				Sideoats grama	10	
Hogris--------	Loamy Hills (QUAR, QUEM), 20-23" p.z.	Favorable	1,200	Arizona white oak	5	
		Normal	1,000	Emory oak	5	
		Unfavorable	800	Schott yucca	5	
				Texas bluestem	10	
				Beggartick threeawn	5	
				Bullgrass	15	
				Hairy grama	5	
				Miscellaneous perennial forbs	5	
				Miscellaneous shrubs	5	
				Plains lovegrass	15	
				Sacahuista	5	
				Sedge	5	
				Sideoats grama	5	
				Sotol	5	
				Wooly bunchgrass	5	
65:						
Forrest-------	Loamy Bottom, Swales, 12-16" p.z.	Favorable	3,000	Blue grama		25
		Normal	2,000	Cane beardgrass		5
		Unfavorable	1,000	Giant sacaton		5
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		12
				Pricklypear and cholla		3
				Sideoats grama		10
				Tobosa		5
				Vine mesquite		20
				Yucca		5
66:						
Forrest-------	Saline Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		5
		Normal	1,500	Blue grama		15
		Unfavorable	800	Cane beardgrass		5
				Fourwing saltbush		5
				Giant sacaton		5
				Inland saltgrass		5
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		12
				Pricklypear and cholla		3
				Sideoats grama		10
				Tobosa		5
				Vine mesquite		15
				Yucca		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
67:						
Forrest-------	Loamy Bottom, Swales, 12-16" p.z.	Favorable	3,000	Blue grama		25
		Normal	2,000	Cane beardgrass		5
		Unfavorable	1,000	Giant sacaton		5
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		12
				Pricklypear and cholla		3
				Sideoats grama		10
				Tobosa		5
				Vine mesquite		20
				Yucca		5
68:						
Forrest-------	Loamy Bottom, Swales, 12-16" p.z.	Favorable	3,000	Blue grama		25
		Normal	2,000	Cane beardgrass		5
		Unfavorable	1,000	Giant sacaton		5
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		12
				Pricklypear and cholla		3
				Sideoats grama		10
				Tobosa		5
				Vine mesquite		20
				Yucca		5
69:						
Forrest-------	Saline Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		5
		Normal	1,500	Blue grama		15
		Unfavorable	800	Cane beardgrass		5
				Fourwing saltbush		5
				Giant sacaton		5
				Inland saltgrass		5
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		12
				Pricklypear and cholla		3
				Sideoats grama		10
				Tobosa		5
				Vine mesquite		15
				Yucca		5
70:						
Forrest-------	Loamy Bottom, Swales, 12-16" p.z.	Favorable	3,000	Blue grama		25
		Normal	2,000	Cane beardgrass		5
		Unfavorable	1,000	Giant sacaton		5
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		12
				Pricklypear and cholla		3
				Sideoats grama		10
				Tobosa		5
				Vine mesquite		20
				Yucca		5
Bonita--------	Clayey Bottom, 12-16" p.z.	Favorable	2,500	Blue grama		10
		Normal	2,000	Broom snakeweed		1
		Unfavorable	800	Cane beardgrass		5
				Curly mesquite		2
				Mesquite		2
				Red threeawns		3
				Sideoats grama		20
				Soaptree yucca		1
				Tobosa		55
				Whitethorn acacia		1

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
71:						
Gardencan-----	Sandy Loam Upland, 16-20" p.z.	Favorable	2,600	Blue grama		10
		Normal	2,000	Cane beardgrass		10
		Unfavorable	1,200	Green sprangletop		10
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		15
				Miscellaneous shrubs		5
				Miscellaneous trees		5
				Plains lovegrass		10
				Shrubby buckwheat		5
				Sideoats grama		15
				Wooly bunchgrass		5
Lanque--------	Sandy Loam Upland, 16-20" p.z.	Favorable	2,600	Beggartick threeawn		5
		Normal	2,000	Blue grama		5
		Unfavorable	1,200	Cane beardgrass		10
				Crinkleawn		5
				Green sprangletop		15
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Miscellaneous trees		5
				Plains lovegrass		10
				Shrubby buckwheat		5
				Sideoats grama		15
72:						
Glendale------	Loamy Bottom (PRVE) 7-12" p.z.	Favorable	3,000	Bottlebrush squirreltail	5	
		Normal	2,000	Fourwing saltbush	5	
		Unfavorable	1,000	Giant sacaton	20	
				Graythorn	10	
				Mesquite	10	
				Netleaf hackberry	5	
				Miscellaneous annual forbs	10	
				Miscellaneous annual grasses	5	
				Miscellaneous perennial grasses	5	
				Miscellaneous shrubs	5	
				Plains bristlegrass	5	
				Sideoats grama	5	
				Threeawn	5	
				Tobosa	5	
				Vine mesquite	5	
73:						
Gothard-------	Saline Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		50
		Normal	1,500	Fourwing saltbush		5
		Unfavorable	800	Giant sacaton		10
				Inland saltgrass		5
				Mesquite		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial grasses		5
				Tobosa		5
				Vine mesquite		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
74:						
Gothard-------	Saline Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		50
		Normal	1,500	Fourwing saltbush		5
		Unfavorable	800	Giant sacaton		10
				Inland saltgrass		5
				Mesquite		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial grasses		5
				Tobosa		5
				Vine mesquite		5
75:						
Graham--------	Basalt Hills, 12-16" p.z.	Favorable	900	Black grama		15
		Normal	750	Cane beardgrass		10
		Unfavorable	500	Curly mesquite		5
				False mesquite		5
				Fourwing saltbush		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Plains lovegrass		5
				Sideoats grama		25
				Threeawn		5
				Tobosa		10
				Yerba de pasmo		5
Lampshire-----	Basalt Hills, 12-16" p.z.	Favorable	1,600	Gregg dalea		5
		Normal	900	Palmer's century plant		5
		Unfavorable	600	Black grama		5
				Cane beardgrass		5
				Cloak fern		5
				False mesquite		5
				Hairy grama		10
				Ocotillo		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Sideoats grama		15
				Slender grama		10
				Sotol		5
				Sprucetop grama		5
				Tanglehead		5
76:						
Graveyard-----	Limy Slopes, 12-16" p.z.	Favorable	1,200	Black grama		20
		Normal	800	Blue threeawn		5
		Unfavorable	550	Bush muhly		10
				Desert zinnia		5
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		10
				Range ratany		5
				Sideoats grama		20
				Slim tridens		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
76:						
Sierravista---	Loamy Upland, 12-16" p.z.	Favorable	1,400	Black grama		10
		Normal	1,000	Blue grama		5
		Unfavorable	600	Cane beardgrass		15
				Curly mesquite		5
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Range ratany		5
				Sideoats grama		20
				Tanglehead		5
				Threeawn		5
77:						
Grizzle-------	Limy Upland, 12-16" p.z.	Favorable	900	Texas dogweed		10
		Normal	600	Black grama		10
		Unfavorable	350	Bush muhly		15
				Creosotebush		10
				Desert zinnia		15
				Fluffgrass		2
				Knifeleaf condalia		5
				Miscellaneous annual forbs		10
				Miscellaneous shrubs		5
				Plains bristlegrass		5
				Spike dropseed		3
				Tarbush		7
				Whitethorn acacia		3
78:						
Guest---------	Clayey Bottom, 12-16" p.z.	Favorable	2,000	Miscellaneous perennial forbs		15
		Normal	1,000	Miscellaneous perennial grasses		10
		Unfavorable	400	Pricklypear and cholla		5
				Tobosa		60
				Vine mesquite		10
79:						
Guest---------	Clayey Bottom, 12-16" p.z.	Favorable	2,000	Miscellaneous perennial forbs		15
		Normal	1,000	Miscellaneous perennial grasses		10
		Unfavorable	400	Pricklypear and cholla		5
				Tobosa		60
				Vine mesquite		10
80:						
Guest---------	Saline Bottom, 12-16" p.z.	Favorable	1,800	Alkali sacaton		5
		Normal	800	Fourwing saltbush		5
		Unfavorable	200	Inland saltgrass		5
				Miscellaneous perennial forbs		15
				Miscellaneous perennial grasses		10
				Pricklypear and cholla		5
				Tobosa		45
				Vine mesquite		10
81:						
Guest---------	Clayey Bottom, 12-16" p.z.	Favorable	2,000	Miscellaneous perennial forbs		15
		Normal	1,000	Miscellaneous perennial grasses		10
		Unfavorable	400	Pricklypear and cholla		5
				Tobosa		60
				Vine mesquite		10

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
82:						
Guest---------	Saline Bottom, 12-16" p.z.	Favorable	1,800	Alkali sacaton		5
		Normal	800	Fourwing saltbush		5
		Unfavorable	200	Inland saltgrass		5
				Miscellaneous perennial forbs		15
				Miscellaneous perennial grasses		10
				Pricklypear and cholla		5
				Tobosa		45
				Vine mesquite		10
83:						
Guest---------	Saline Bottom, 12-16" p.z.	Favorable	1,800	Alkali sacaton		5
		Normal	800	Fourwing saltbush		5
		Unfavorable	200	Inland saltgrass		5
				Miscellaneous perennial forbs		15
				Miscellaneous perennial grasses		10
				Pricklypear and cholla		5
				Tobosa		45
				Vine mesquite		10
Cogswell------	Saline Bottom, 12-16" p.z.	Favorable	2,500	Alkali sacaton		50
		Normal	1,500	Fourwing saltbush		5
		Unfavorable	800	Giant sacaton		10
				Inland saltgrass		5
				Mesquite		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial grasses		5
				Tobosa		5
				Vine mesquite		5
84:						
Guest---------	Clayey Bottom, 12-16" p.z.	Favorable	2,500	Burrograss		5
		Normal	2,000	Miscellaneous annual forbs		5
		Unfavorable	800	Miscellaneous annual grasses		5
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Pale wolfberry		5
				Tobosa		40
				Vine mesquite		15
Riveroad------	Loamy Bottom, Subirrigated, 12-16" p.z.	Favorable	4,000	Blue grama		5
		Normal	3,000	Desert willow		5
		Unfavorable	2,000	Giant sacaton		55
				Mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Sideoats grama		5
				Tobosa		5
				Vine mesquite		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
85:						
Hantz---------	Saline Bottom, 7-12" p.z.	Favorable	2,000	Alkali sacaton	15	
		Normal	1,000	Fourwing saltbush	5	
		Unfavorable	500	Giant sacaton	15	
				Graythorn	5	
				Mesquite	10	
				Miscellaneous annual forbs	10	
				Miscellaneous annual grasses	10	
				Seepweed	15	
				Twoflower trichloris	10	
				Wolfberry	5	
86:						
Haplustolls---	Sandy Bottom, Subirriagted (PLWR, JUMA, QUERC), 20-23" p.z.	Favorable	600	Indian goosegrass	5	
		Normal	450	New Mexico raspberry	5	
		Unfavorable	250	Bulb panicgrass	5	
				Canyon grape	10	
				Deergrass	5	
				Eastern poison ivy	5	
				Giant wildrye	5	
				Meadowrue	5	
				Miscellaneous perennial forbs	30	
				Miscellaneous shrubs	10	
				Redosier dogwood	15	
Fluvaquents---	Sandy Bottom, Subirriagted (PLWR, JUMA, QUERC), 20-23" p.z.	Favorable	800	Virginia creeper	5	
		Normal	650	Arroyo willow	10	
		Unfavorable	300	Canyon grape	5	
				Creeping bentgrass	5	
				Horsetail	5	
				Miscellaneous perennial forbs	10	
				Miscellaneous perennial grasses	5	
				Miscellaneous shrubs	5	
				Redosier dogwood	10	
				Rush	10	
				Sedge	15	
				Water speedwell	5	
				Watercress	10	
87:						
Haplustolls---	Sandy Bottom, Subirriagted (PLWR, JUMA, FRVE2), 16-20" p.z.	Favorable	2,500	Bulb panicgrass	5	
		Normal	2,000	Canyon grape	10	
		Unfavorable	1,500	Deergrass	10	
				Giant sacaton	15	
				Giant wildrye	5	
				Green sprangletop	10	
				Miscellaneous perennial forbs	10	
				Miscellaneous shrubs	10	
				Rabbitbrush	10	
				Spike dropseed	15	
Fluvaquents---	Sandy Bottom, Subirriagted (PLWR, JUMA, FRVE2), 16-20" p.z.	Favorable	2,200	Canyon grape	10	
		Normal	1,800	Deergrass	20	
		Unfavorable	1,500	Knotgrass	20	
				Miscellaneous perennial forbs	5	
				Miscellaneous perennial grasses	10	
				Miscellaneous shrubs	10	
				Rush	5	
				Sedge	10	
				Water speedwell	5	
				Watercress	5	

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
88:						
Hayhollow-----	Sandy Bottom, Subirrigated (PLWR, JUMA, FRVE2), 16-20" p.z.	Favorable	2,500	Apacheplume	5	
		Normal	2,000	Virgins bower	5	
		Unfavorable	1,500	Beggartick threeawn	5	
				Blue grama	5	
				Cane beardgrass	10	
				Canyon grape	5	
				Deergrass	5	
				Desert honeysuckle	5	
				Giant sacaton	5	
				Green sprangletop	10	
				Miscellaneous annual forbs	5	
				Miscellaneous perennial forbs	5	
				Miscellaneous perennial grasses	5	
				Miscellaneous shrubs	5	
				Miscellaneous trees	5	
				Sideoats grama	10	
				Unknown	5	
Rafter--------	Sandy Bottom, Subirrigated (PLWR, JUMA, FRVE2), 16-20" p.z.	Favorable	2,500	Apacheplume	5	
		Normal	2,000	Virgins bower	5	
		Unfavorable	1,500	Beggartick threeawn	5	
				Blue grama	5	
				Cane beardgrass	10	
				Canyon grape	5	
				Deergrass	5	
				Desert honeysuckle	5	
				Giant sacaton	5	
				Green sprangletop	10	
				Miscellaneous annual forbs	5	
				Miscellaneous perennial forbs	5	
				Miscellaneous perennial grasses	5	
				Miscellaneous shrubs	5	
				Miscellaneous trees	5	
				Sideoats grama	10	
Riverwash.						
89:						
Kaboom--------	Limy Upland, 12-16" p.z.	Favorable	300	Black grama		10
		Normal	150	Blue threeawn		5
		Unfavorable	100	Bush muhly		5
				Creosotebush		15
				Miscellaneous annual forbs		5
				Miscellaneous half shrubs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Sideoats grama		10
				Slim tridens		5
				Tarbush		15
				Whitethorn acacia		15

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
89:						
Reeup---------	Limy Upland, 12-16" p.z.	Favorable	400	Black grama		10
		Normal	300	Blue threeawn		5
		Unfavorable	200	Bush muhly		5
				Cane beardgrass		5
				Creosotebush		10
				Fourwing saltbush		5
				Miscellaneous annual forbs		10
				Miscellaneous half shrubs		5
				Miscellaneous shrubs		5
				Sideoats grama		10
				Slim tridens		5
				Tarbush		10
				Tobosa		5
				Whitethorn acacia		10
90:						
Kahn fine sandy loam--	Limy Fan, 12-16" p.z.	Favorable	1,600	Burrograss		15
		Normal	900	Bush muhly		5
		Unfavorable	600	Fourwing saltbush		5
				Giant sacaton		5
				Littleleaf sumac		5
				Mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Plains bristlegrass		5
				Pricklypear and cholla		5
				Tarbush		10
				Tobosa		20
				Whitethorn acacia		10
Kahn silt loam	Limy Fan, 12-16" p.z.	Favorable	1,600	Burrograss		15
		Normal	900	Bush muhly		5
		Unfavorable	600	Catclaw acacia		10
				Fourwing saltbush		5
				Giant sacaton		5
				Littleleaf sumac		5
				Mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Plains bristlegrass		5
				Pricklypear and cholla		5
				Tarbush		10
				Tobosa		20
91:						
Kahn----------	Limy Fan, 12-16" p.z.	Favorable	500	Texas dogweed		5
		Normal	300	Black grama		5
		Unfavorable	150	Blue threeawn		5
				Bush muhly		10
				Creosotebush		25
				Fluffgrass		5
				Tarbush		15
				Whitethorn acacia		30

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
91:						
Kahn----------	Limy Upland, 12-16" p.z.	Favorable	500	Texas dogweed		5
		Normal	300	Black grama		5
		Unfavorable	150	Blue threeawn		5
				Bush muhly		10
				Creosotebush		25
				Fluffgrass		5
				Tarbush		15
				Whitethorn acacia		30
Zapolote------	Limy Upland, 12-16" p.z.	Favorable	900	Creosotebush		10
		Normal	500	Giant sacaton		5
		Unfavorable	350	Sandpaper plant		5
				Sideoats grama		10
				Snakeweed		15
				Tarbush		20
				Tobosa		30
				Whitethorn acacia		5
92:						
Karro---------	Limy Fan, 12-16" p.z.	Favorable	1,600	Burrograss		15
		Normal	900	Bush muhly		5
		Unfavorable	600	Fourwing saltbush		5
				Giant sacaton		5
				Littleleaf sumac		5
				Mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Plains bristlegrass		5
				Pricklypear and cholla		5
				Tarbush		10
				Tobosa		20
				Whitethorn acacia		10
93:						
Karro---------	Limy Fan, 12-16" p.z.	Favorable	1,400	Alkali sacaton		5
		Normal	700	Burrograss		15
		Unfavorable	400	Bush muhly		5
				Fourwing saltbush		5
				Giant sacaton		5
				Inland saltgrass		5
				Littleleaf sumac		5
				Mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Plains bristlegrass		5
				Pricklypear and cholla		5
				Tarbush		10
				Tobosa		10
				Whitethorn acacia		10

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
94:						
Keysto--------	Sandy Bottom, 12-16" p.z.	Favorable	3,000	Arizona cottontop		10
		Normal	2,000	Cane beardgrass		5
		Unfavorable	1,000	Catclaw acacia		5
				Desert willow		5
				Giant sacaton		5
				Green sprangletop		10
				Mesquite		5
				Netleaf hackberry		5
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		10
				Miscellaneous trees		5
				Sideoats grama		10
				Spike dropseed		10
Riverwash.						
95:						
Kuykendall----	Volcanic Hills, 16-20" p.z.	Favorable	1,400	Texas bluestem		10
		Normal	1,100	Blue grama		5
		Unfavorable	800	Cane beardgrass		10
				Hairy grama		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Miscellaneous trees		5
				Plains lovegrass		10
				Purple grama		5
				Sacahuista		5
				Shrubby buckwheat		5
				Sideoats grama		15
				Tobosa		5
Rock outcrop.						
96:						
Lanque--------	Sandy Loam Upland, 16-20" p.z.	Favorable	2,600	Arizona cottontop		5
		Normal	2,000	Blue grama		15
		Unfavorable	1,200	Cane beardgrass		15
				Green sprangletop		15
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		15
				Shrubby buckwheat		5
				Sideoats grama		15
Stanford------	Loamy Bottom, Swales, 16-20" p.z.	Favorable	2,600	Blue grama		15
		Normal	2,000	Cane beardgrass		15
		Unfavorable	1,200	Creeping muhly		15
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Sideoats grama		20
				Vine mesquite		15

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
97:						
Libby---------	Loamy Upland, 12-16" p.z.	Favorable	900	Black grama		10
		Normal	700	Burroweed		5
		Unfavorable	500	Cane beardgrass		5
				Desert zinnia		5
				Desertbroom		5
				False mesquite		5
				Honey mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		15
				Miscellaneous shrubs		5
				Plains bristlegrass		5
				Sideoats grama		10
				Tarbush		8
				Tobosa		5
				Whitethorn acacia		7
Gulch---------	Limy Upland, 12-16" p.z.	Favorable	900	Black grama		5
		Normal	600	Bush muhly		10
		Unfavorable	350	Cane beardgrass		5
				Creosotebush		10
				Desert zinnia		5
				Mariola		5
				Miscellaneous perennial forbs		15
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		10
				Plains bristlegrass		5
				Slim tridens		5
				Tarbush		5
				Whitethorn acacia		10
98:						
Luckyhills----	Limy Upland, 12-16" p.z.	Favorable	800	Black grama		5
		Normal	500	Bush muhly		10
		Unfavorable	300	Creosotebush		15
				Desert zinnia		15
				Fluffgrass		5
				Javelina brush		3
				Mariola		5
				Miscellaneous annual forbs		5
				Ratear coldenia		5
				Sand dropseed		2
				Slim tridens		5
				Tarbush		10
				Whitethorn acacia		15
99:						
Luckyhills----	Limy Upland, 12-16" p.z.	Favorable	800	Black grama		5
		Normal	500	Bush muhly		10
		Unfavorable	300	Creosotebush		15
				Desert zinnia		15
				Fluffgrass		5
				Javelina brush		3
				Mariola		5
				Miscellaneous annual forbs		5
				Ratear coldenia		5
				Sand dropseed		2
				Slim tridens		5
				Tarbush		10
				Whitethorn acacia		15

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
99:						
McNeal--------	Limy Upland, 12-16" p.z.	Favorable	900	Black grama		7
		Normal	600	Blue threeawn		5
		Unfavorable	350	Bush muhly		8
				Creosotebush		15
				Desert zinnia		20
				Mariola		3
				Miscellaneous annual forbs		5
				Miscellaneous shrubs		10
				Plains bristlegrass		2
				Range ratany		7
				Sideoats grama		3
				Tarbush		5
				Whitethorn acacia		10
100:						
Lutzcan-------	Shallow Hills, 16-20" p.z.	Favorable	1,300	Texas bluestem		5
		Normal	1,000	Bullgrass		10
		Unfavorable	700	Cane beardgrass		10
				Common wolfstail		5
				Coralbean		5
				Green sprangletop		10
				Ocotillo		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Sideoats grama		10
				Sotol		5
Yarbam--------	Limestone Hills, 16-20" p.z.	Favorable	1,500	Schott yucca		5
		Normal	1,100	Black grama		10
		Unfavorable	700	Bullgrass		10
				Cane beardgrass		5
				False mesquite		5
				Mountain mahogany		5
				Needlegrass		15
				Miscellaneous shrubs		5
				Rough tridens		5
				Sacahuista		5
				Sideoats grama		10
				Sotol		5
				Tanglehead		5
				Threeawn		5
101:						
Mabray--------	Limestone Hills, 12-16" p.z.	Favorable	1,600	Arizona cottontop		5
		Normal	900	Black grama		10
		Unfavorable	300	Bush muhly		5
				Cane beardgrass		10
				Green sprangletop		5
				Mariola		5
				Ocotillo		5
				Plains bristlegrass		10
				Range ratany		5
				Sacahuista		5
				Sideoats grama		20
				Slim tridens		10
				Threeawn		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
101:						
Chiricahua----	Shallow Upland, 12-16" p.z.	Favorable	750	Arizona cottontop		5
		Normal	600	Black grama		10
		Unfavorable	450	Cane beardgrass		5
				Curly mesquite		10
				False mesquite		10
				Hairy grama		10
				Miscellaneous shrubs		10
				Plains bristlegrass		5
				Plains lovegrass		5
				Shrubby buckwheat		5
				Sideoats grama		15
				Slender grama		5
				Threeawn		5
Rock outcrop.						
102:						
Mabray--------	Limestone Hills, 12-16" p.z.	Favorable	1,600	Arizona cottontop		5
		Normal	900	Black grama		10
		Unfavorable	300	Bush muhly		5
				Cane beardgrass		10
				Green sprangletop		5
				Mariola		5
				Ocotillo		5
				Plains bristlegrass		10
				Range ratany		5
				Sacahuista		5
				Sideoats grama		20
				Slim tridens		10
				Threeawn		5
Rock outcrop.						
103:						
Magoffin------	Shallow Upland, 16-20" p.z.	Favorable	1,000	Blue grama		15
		Normal	800	False mesquite		5
		Unfavorable	650	Hairy grama		10
				Miscellaneous perennial forbs		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Purple grama		10
				Shrubby buckwheat		5
				Sideoats grama		20
				Sprucetop grama		10
				Wolftail		5
Rock outcrop.						

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
103:						
Cherrycow-----	Loamy Upland, 16-20" p.z.	Favorable	3,000	Palmer's century plant		5
		Normal	2,000	Texas bluestem		10
		Unfavorable	1,000	Beggartick threeawn		5
				Blue grama		10
				Cane beardgrass		10
				Oak		5
				Oneseed juniper		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Purple grama		5
				Shrubby buckwheat		5
				Sideoats grama		10
				Wooly bunchgrass		5
104:						
Major fine sandy loam---	Limy Upland, 12-16" p.z.	Favorable	550	Allthorn		5
		Normal	400	Black grama		15
		Unfavorable	250	Bush muhly		10
				Creosotebush		15
				Desert zinnia		10
				Fourwing saltbush		5
				Miscellaneous annual forbs		5
				Miscellaneous annual grasses		5
				Miscellaneous half shrubs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Tarbush		5
				Whitethorn acacia		10
Major silt loam---------	Saline Bottom, 12-16" p.z.	Favorable	2,500	Pima pappusgrass		5
		Normal	1,500	Alkali sacaton		25
		Unfavorable	800	Burrograss		5
				Bush muhly		5
				Desert holly		5
				Fourwing saltbush		5
				Mesquite		10
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Tarbush		5
				Tobosa		5
				Twoflower trichloris		10
				Whitethorn acacia		5
105:						
Mallet--------	Sandy Loam, Deep, 12-16" p.z.	Favorable	2,000	Arizona cottontop		15
		Normal	1,000	Black grama		20
		Unfavorable	500	Blue grama		10
				Bush muhly		5
				Fourwing saltbush		5
				Mormon tea		5
				Plains lovegrass		5
				Shrubby buckwheat		10
				Sideoats grama		10
				Soaptree yucca		5
				Spike dropseed		10

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
105:						
Hooks---------	Loamy Upland, 12-16" p.z.	Favorable	2,000	Mesa threeawns		5
		Normal	1,200	Blue grama		15
		Unfavorable	600	Cane beardgrass		10
				Mesquite		2
				Mormon tea		5
				Plains bristlegrass		5
				Plains lovegrass		20
				Shrubby buckwheat		15
				Sideoats grama		20
				Soaptree yucca		3
106:						
Marsh.						
107:						
McAllister----	Loamy Upland, 12-16" p.z.	Favorable	1,500	Rocky Mountain zinnia		2
		Normal	1,000	Black grama		7
		Unfavorable	650	Blue grama		5
				Cane beardgrass		8
				Curly mesquite		5
				False mesquite		5
				Mormon tea		3
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		15
				Miscellaneous shrubs		5
				Plains lovegrass		15
				Shrubby buckwheat		5
				Sideoats grama		15
108:						
McAllister----	Loamy Upland, 12-16" p.z.	Favorable	1,500	Rocky Mountain zinnia		2
		Normal	1,000	Black grama		7
		Unfavorable	650	Blue grama		5
				Cane beardgrass		8
				Curly mesquite		5
				False mesquite		5
				Mormon tea		3
				Miscellaneous annual forbs		10
				Miscellaneous perennial grasses		15
				Miscellaneous shrubs		5
				Plains lovegrass		15
				Shrubby buckwheat		5
				Sideoats grama		15
Stronghold----	Limy Slopes, 12-16" p.z.	Favorable	1,500	New Mexico feathergrass		5
		Normal	900	Black grama		20
		Unfavorable	600	Blue threeawn		5
				Cane beardgrass		5
				Curly mesquite		5
				False mesquite		15
				Hairy grama		5
				Mormon tea		8
				Miscellaneous annual forbs		10
				Red threeawns		5
				Sideoats grama		15
				Yucca		2

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
109:						
McNeal--------	Limy Upland, 12-16" p.z.	Favorable	900	Black grama		7
		Normal	600	Blue threeawn		5
		Unfavorable	350	Bush muhly		8
				Creosotebush		15
				Desert zinnia		20
				Mariola		3
				Miscellaneous annual forbs		5
				Miscellaneous shrubs		10
				Plains bristlegrass		2
				Range ratany		7
				Sideoats grama		3
				Tarbush		5
				Whitethorn acacia		10
110:						
McNeal--------	Limy Upland, 12-16" p.z.	Favorable	700	Alkali sacaton		5
		Normal	400	Black grama		7
		Unfavorable	250	Blue threeawn		5
				Bush muhly		8
				Creosotebush		15
				Desert zinnia		10
				Fourwing saltbush		5
				Inland saltgrass		5
				Mariola		3
				Miscellaneous annual forbs		5
				Miscellaneous shrubs		10
				Plains bristlegrass		2
				Range ratany		7
				Sideoats grama		3
				Tarbush		5
				Whitethorn acacia		5
111:						
Monzingo------	Limy Upland, 7-12" p.z.	Favorable	600	Texas dogweed		5
		Normal	350	Black grama		5
		Unfavorable	200	Blue threeawn		5
				Bush muhly		5
				Creosotebush		30
				Desert zinnia		5
				Fluffgrass		5
				Ocotillo		5
				Miscellaneous perennial forbs		5
				Range ratany		5
				Tarbush		5
				Twinberry		5
				Twistflower		5
				Whitethorn acacia		10
Ugyp----------	Limy Fan, 7-12" p.z.	Favorable	1,500	Alkali sacaton		15
		Normal	900	Creosotebush		10
		Unfavorable	600	Giant sacaton		10
				Littleleaf sumac		5
				Mesquite		10
				Miscellaneous annual forbs		10
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		10
				Tarbush		5
				Whitethorn acacia		10

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
111:						
Ugyp----------	Loamy Bottom, 7-12" p.z.	Favorable	2,500	Alkali sacaton		20
		Normal	1,500	Creosotebush		5
		Unfavorable	900	Giant sacaton		15
				Littleleaf sumac		5
				Mesquite		15
				Miscellaneous annual forbs		10
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		10
				Tarbush		5
112:						
Naco----------	Sandy Loam Upland, 12-16" p.z.	Favorable	2,000	Arizona cottontop		10
		Normal	1,200	Black grama		10
		Unfavorable	700	Blue grama		10
				Cane beardgrass		10
				Desert zinnia		5
				False mesquite		10
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Range ratany		5
				Sideoats grama		10
Ruins, thick surface------	Sandy Loam, Deep, 12-16" p.z.	Favorable	1,800	Arizona cottontop		15
		Normal	1,100	Annual grasses		5
		Unfavorable	600	Black grama		15
				Blue grama		10
				Cane beardgrass		10
				Mesa dropseed		5
				Miscellaneous annual forbs		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains bristlegrass		5
				Sand dropseed		5
				Sideoats grama		10
Ruins---------	Sandy Loam Upland, 12-16" p.z.	Favorable	2,000	Arizona cottontop		10
		Normal	1,200	Black grama		10
		Unfavorable	700	Blue grama		10
				Cane beardgrass		15
				Desert zinnia		5
				False mesquite		10
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Range ratany		5
				Sideoats grama		15

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
113:						
Nolam---------	Loamy Upland, 12-16" p.z.	Favorable	1,400	Black grama		10
		Normal	1,000	Blue grama		10
		Unfavorable	600	Cane beardgrass		10
				Desert zinnia		5
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Range ratany		5
				Sideoats grama		15
				Sprucetop grama		10
				Threeawn		5
Libby---------	Loamy Upland, 12-16" p.z.	Favorable	1,500	Blue grama		10
		Normal	1,000	Cane beardgrass		15
		Unfavorable	600	Curly mesquite		5
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Range ratany		5
				Sideoats grama		20
				Sprucetop grama		10
				Threeawn		5
Buntline------	Limy Upland, 12-16" p.z.	Favorable	900	Black grama		10
		Normal	600	Blue threeawn		10
		Unfavorable	350	Bush muhly		10
				Creosotebush		15
				Desert zinnia		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Range ratany		5
				Tarbush		15
				Whitethorn acacia		15
114:						
Outlaw--------	Clayey Upland, 12-16" p.z.	Favorable	1,500	Cane beardgrass		10
		Normal	1,000	Miscellaneous annual forbs		10
		Unfavorable	600	Miscellaneous annual grasses		10
				Miscellaneous perennial forbs		5
				Plains bristlegrass		5
				Sideoats grama		15
				Tobosa		40
				Vine mesquite		5
Epitaph-------	Clayey Upland, 12-16" p.z.	Favorable	1,800	Cane beardgrass		5
		Normal	1,000	Miscellaneous annual forbs		10
		Unfavorable	600	Miscellaneous annual grasses		10
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		5
				Sideoats grama		15
				Tobosa		40
				Vine mesquite		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
114:						
Paramore------	Clayey Upland, 12-16" p.z.	Favorable	1,500	Cane beardgrass		10
		Normal	1,000	Miscellaneous annual forbs		5
		Unfavorable	600	Miscellaneous annual grasses		5
				Sideoats grama		20
				Threeawn		5
				Tobosa		50
				Vine mesquite		5
115:						
Oversight-----	Sandy Loam Upland, 16-20" p.z.	Favorable	2,600	Beggartick threeawn		5
		Normal	2,000	Blue grama		10
		Unfavorable	1,200	Cane beardgrass		20
				Crinkleawn		5
				Desertbroom		2
				False mesquite		5
				Plains lovegrass		20
				Shrubby buckwheat		5
				Sideoats grama		25
				Yerba de pasmo		3
116:						
Oversight-----	Sandy Loam Upland, 16-20" p.z.	Favorable	2,600	Texas bluestem		5
		Normal	2,000	Black grama		5
		Unfavorable	1,200	Blue grama		15
				Cane beardgrass		10
				Green sprangletop		5
				Oak		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		15
				Shrubby buckwheat		5
				Sideoats grama		15
				Threeawn		5
117:						
Oversight-----	Sandy Loam Upland, 16-20" p.z.	Favorable	2,500	Arizona cottontop		5
		Normal	1,800	Blue grama		10
		Unfavorable	1,000	Cane beardgrass		5
				Green sprangletop		10
				Hairy grama		5
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Plains lovegrass		15
				Shrubby buckwheat		5
				Sideoats grama		15
Lanque--------	Sandy Loam Upland, 16-20" p.z.	Favorable	2,600	Beggartick threeawn		5
		Normal	2,000	Blue grama		5
		Unfavorable	1,200	Cane beardgrass		10
				Crinkleawn		5
				Green sprangletop		15
				Miscellaneous annual forbs		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Shrubby buckwheat		5
				Sideoats grama		15

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
118:						
Pedregosa-----	Limy Upland, 12-16" p.z.	Favorable	900	Desert needlegrass		3
		Normal	600	Black grama		10
		Unfavorable	300	Blue threeawn		5
				Bush muhly		10
				Cane beardgrass		5
				Creosotebush		10
				Desert zinnia		10
				Fluffgrass		2
				Javelina brush		5
				Littleleaf sumac		5
				Mariola		10
				Range ratany		5
				Sideoats grama		5
				Tarbush		5
				Whitethorn acacia		10
119:						
Pedregosa-----	Limy Upland, 12-16" p.z.	Favorable	900	Black grama		10
		Normal	600	Blue threeawn		10
		Unfavorable	350	Bush muhly		10
				Creosotebush		5
				Desert zinnia		5
				False mesquite		5
				Mormon tea		5
				Ocotillo		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Range ratany		5
				Sideoats grama		10
				Slim tridens		10
				Whitethorn acacia		5
Tombstone-----	Limy Upland, 12-16" p.z.	Favorable	900	Black grama		10
		Normal	600	Blue threeawn		10
		Unfavorable	350	Bush muhly		10
				Creosotebush		5
				Desert zinnia		5
				False mesquite		5
				Mormon tea		5
				Ocotillo		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Range ratany		5
				Sideoats grama		10
				Slim tridens		10
				Whitethorn acacia		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
120:						
Perilla-------	Sandy Loam Upland, 12-16" p.z.	Favorable	2,000	Arizona cottontop		15
		Normal	1,000	Black grama		20
		Unfavorable	500	Blue grama		10
				Bush muhly		5
				Fourwing saltbush		5
				Mormon tea		5
				Plains lovegrass		5
				Shrubby buckwheat		10
				Sideoats grama		10
				Soaptree yucca		5
				Spike dropseed		10
Durazo--------	Sandy Upland, 12-16" p.z.	Favorable	1,600	Mormon tea		5
		Normal	1,000	Black grama		20
		Unfavorable	500	Mesa dropseed		15
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Sand dropseed		15
				Soaptree yucca		5
				Spike dropseed		15
				Threeawn		10
121:						
Pits.						
122:						
Pits-Dumps.						
123:						
Quiburi-------	Sandy Bottom, Subirrigated (SAGO, POFR), 7-12" p.z.	Favorable	2,500	Black willow		10
		Normal	2,000	Cottonwood		10
		Unfavorable	1,500	Giant sacaton		20
				Horsetail		5
				Knotgrass		10
				Mule's fat		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Rush		5
				Sedge		10
				Watercress		5
				Yerba mansa		5
Fluvaquents---	Sandy Bottom, Subirrigated (SAGO, POFR), 7-12" p.z.	Favorable	2,500	Canada wildrye		5
		Normal	2,000	Black willow		10
		Unfavorable	1,500	Broadleaf cattail		5
				Cottonwood		10
				Giant sacaton		20
				Horsetail		5
				Knotgrass		10
				Mule's fat		10
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Rush		5
				Sedge		5
				Watercress		5
Riverwash.						

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
124:						
Rafter--------	Sandy Loam Upland, 16-20" p.z.	Favorable	2,600	Apacheplume		5
		Normal	2,000	Arizona cottontop		5
		Unfavorable	1,200	Blue grama		20
				Cane beardgrass		10
				Green sprangletop		10
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Shrubby buckwheat		5
				Sideoats grama		20
Lanque--------	Sandy Loam Upland, 16-20" p.z.	Favorable	2,600	Apacheplume		5
		Normal	2,000	Arizona cottontop		5
		Unfavorable	1,200	Blue grama		20
				Cane beardgrass		10
				Green sprangletop		10
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Shrubby buckwheat		5
				Sideoats grama		20
125:						
Riveroad------	Loamy Bottom, Subirrigated, 12-16" p.z.	Favorable	4,000	Blue grama		5
		Normal	3,000	Desert willow		5
		Unfavorable	2,000	Giant sacaton		55
				Mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Sideoats grama		5
				Tobosa		5
				Vine mesquite		5
Ubik----------	Loamy Bottom, Swales, 12-16" p.z.	Favorable	2,500	Blue grama		20
		Normal	2,000	Cane beardgrass		5
		Unfavorable	1,000	Creeping muhly		5
				Hog potato		5
				Mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Sideoats grama		10
				Tobosa		5
				Vine mesquite		25
126:						
Riverwash.						
127:						
Riverwash.						

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
127:						
Bodecker------	Sandy Bottom, 12-16" p.z.	Favorable	3,000	Arizona cottontop		5
		Normal	2,000	Arizona walnut		2
		Unfavorable	1,000	Cane beardgrass		3
				Catclaw acacia		8
				Desert willow		5
				Green sprangletop		2
				Mesquite		20
				Netleaf hackberry		3
				Miscellaneous annual forbs		7
				Miscellaneous perennial grasses		15
				Miscellaneous shrubs		10
				Plains bristlegrass		5
				Sideoats grama		10
				Spike dropseed		5
128:						
Rock outcrop.						
Magoffin------	Shallow Hills, 16-20" p.z.	Favorable	1,200	Palmer's century plant		5
		Normal	900	Texas bluestem		10
		Unfavorable	600	Beggartick threeawn		5
				Bullgrass		5
				Cane beardgrass		10
				Hairy grama		5
				Oak		5
				Oneseed juniper		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Shrubby buckwheat		5
				Sideoats grama		20
129:						
Sasabe sandy loam---------	Sandy Loam Upland, 12-16" p.z.	Favorable	1,500	Arizona cottontop		15
		Normal	1,200	Black grama		15
		Unfavorable	700	Cane beardgrass		15
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Shrubby buckwheat		5
				Sideoats grama		15
Sasabe silt loam---------	Loamy Bottom, Swales, 12-16" p.z.	Favorable	2,500	Blue grama		10
		Normal	2,000	Cane beardgrass		5
		Unfavorable	1,000	Giant sacaton		5
				Mesquite		5
				Miscellaneous perennial grasses		15
				Miscellaneous shrubs		5
				Plains lovegrass		5
				Sideoats grama		10
				Tobosa		15
				Vine mesquite		25

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
130:						
Sasabe--------	Sandy Loam Upland, 12-16" p.z.	Favorable	1,500	Arizona cottontop		15
		Normal	1,200	Black grama		15
		Unfavorable	700	Cane beardgrass		15
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Shrubby buckwheat		5
				Sideoats grama		15
131:						
Sasabe--------	Sandy Loam Upland, 12-16" p.z.	Favorable	1,300	Arizona cottontop		10
		Normal	1,000	Alkali sacaton		5
		Unfavorable	500	Black grama		15
				Cane beardgrass		10
				False mesquite		5
				Fourwing saltbush		5
				Inland saltgrass		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		10
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Shrubby buckwheat		5
				Sideoats grama		10
132:						
Schiefflin----	Sandy Loam, Deep, 12-16" p.z.	Favorable	1,600	Arizona cottontop		5
		Normal	900	Palmer's century plant		1
		Unfavorable	600	Black grama		10
				Bullgrass		2
				Bush muhly		5
				Cane beardgrass		5
				False mesquite		5
				Littleleaf sumac		5
				Mintbush lippia		5
				Plains lovegrass		10
				Range ratany		5
				Shrubby buckwheat		5
				Sideoats grama		27
				Whitethorn acacia		5
133:						
Stronghold----	Limy Slopes, 12-16" p.z.	Favorable	1,500	New Mexico feathergrass		5
		Normal	900	Black grama		20
		Unfavorable	600	Blue threeawn		5
				Cane beardgrass		5
				Curly mesquite		5
				False mesquite		15
				Hairy grama		5
				Mormon tea		8
				Miscellaneous annual forbs		10
				Red threeawns		5
				Sideoats grama		15
				Yucca		2

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
134:						
Stronghold----	Limy Slopes, 12-16" p.z.	Favorable	1,500	New Mexico feathergrass		5
		Normal	900	Black grama		20
		Unfavorable	600	Blue threeawn		5
				Cane beardgrass		5
				Curly mesquite		5
				False mesquite		15
				Hairy grama		5
				Mormon tea		8
				Miscellaneous annual forbs		10
				Red threeawns		5
				Sideoats grama		15
				Yucca		2
Bernardino----	Loamy Hills, 12-16" p.z.	Favorable	1,200	Black grama		10
		Normal	850	Cane beardgrass		5
		Unfavorable	500	Curly mesquite		10
				False mesquite		5
				Hairy grama		10
				Mormon tea		5
				Miscellaneous perennial grasses		20
				Plains lovegrass		10
				Shrubby buckwheat		5
				Sideoats grama		20
135:						
Surge---------	Limy Upland, 12-16" p.z.	Favorable	900	Arizona cottontop		10
		Normal	400	Black grama		15
		Unfavorable	250	Blue threeawn		5
				Burroweed		3
				Bush muhly		15
				Cane beardgrass		5
				Desert zinnia		5
				Fluffgrass		5
				Mariola		5
				Mesquite		3
				Mintbush lippia		2
				Mormon tea		5
				Plains bristlegrass		5
				Sideoats grama		15
				Soaptree yucca		2
Rock outcrop.						
136:						
Sutherland----	Limy Upland, 12-16" p.z.	Favorable	600	Desert needlegrass		3
		Normal	400	Black grama		10
		Unfavorable	200	Bush muhly		10
				Creosotebush		5
				Desert zinnia		10
				Javelina brush		2
				Littleleaf sumac		3
				Mariola		10
				Miscellaneous perennial grasses		12
				Plains bristlegrass		5
				Ratear coldenia		5
				Sandpaper plant		10
				Tarbush		5
				Whitethorn acacia		10

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
136:						
Mule----------	Limy Upland, 12-16" p.z.	Favorable	600	Desert needlegrass		3
		Normal	400	Allthorn		5
		Unfavorable	200	Black grama		10
				Bush muhly		10
				Creosotebush		10
				Desert zinnia		10
				Mariola		5
				Miscellaneous shrubs		15
				Sandpaper plant		10
				Sideoats grama		5
				Slim tridens		5
				Tarbush		5
				Whitethorn acacia		7
137:						
Swisshelm-----	Sandy Loam, Deep, 12-16" p.z.	Favorable	2,000	Arizona cottontop		15
		Normal	1,000	Black grama		20
		Unfavorable	500	Blue grama		10
				Bush muhly		5
				Fourwing saltbush		5
				Mormon tea		5
				Plains lovegrass		5
				Shrubby buckwheat		10
				Sideoats grama		10
				Soaptree yucca		5
				Spike dropseed		10
138:						
Swisshelm-----	Sandy Loam, Deep, 12-16" p.z.	Favorable	1,800	Arizona cottontop		15
		Normal	800	Alkali sacaton		10
		Unfavorable	300	Black grama		20
				Blue grama		10
				Bush muhly		5
				Fourwing saltbush		5
				Inland saltgrass		5
				Plains lovegrass		5
				Sideoats grama		10
				Soaptree yucca		5
				Spike dropseed		10
139:						
Tenneco-------	Loamy Bottom, Swales, 12-16" p.z.	Favorable	2,500	Blue grama		20
		Normal	2,000	Cane beardgrass		5
		Unfavorable	1,000	Creeping muhly		5
				Mesquite		5
				Miscellaneous perennial forbs		10
				Miscellaneous shrubs		5
				Sideoats grama		10
				Soaptree yucca		5
				Staghorn cholla		5
				Threeawn		5
				Tobosa		5
				Vine mesquite		20

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
140:						
Terrarossa sandy loam---	Sandy Loam Upland, 16-20" p.z.	Favorable	2,600	Arizona cottontop		5
		Normal	2,000	Texas bluestem		10
		Unfavorable	1,200	Beggartick threeawn		5
				Blue grama		10
				Cane beardgrass		10
				Crinkleawn		10
				Fall witchgrass		5
				False mesquite		5
				Green sprangletop		5
				Plains lovegrass		15
				Sideoats grama		20
Terrarossa gravelly loam	Loamy Hills, 16-20" p.z.	Favorable	3,000	Arizona cottontop		5
		Normal	2,000	Palmer's century plant		10
		Unfavorable	1,000	Texas bluestem		10
				Beggartick threeawn		5
				Cane beardgrass		10
				Crinkleawn		10
				Fall witchgrass		5
				False mesquite		5
				Green sprangletop		5
				Miscellaneous shrubs		5
				Miscellaneous trees		5
				Plains lovegrass		10
				Sideoats grama		10
				Velvetpod mimosa		5
Terrarossa very gravelly sandy loam--	Loamy Upland, 16-20" p.z.	Favorable	1,600	Palmer's century plant		5
		Normal	1,350	Texas bluestem		5
		Unfavorable	1,000	Beggartick threeawn		5
				Blue grama		20
				Cane beardgrass		15
				Crinkleawn		5
				False mesquite		10
				Plains lovegrass		20
				Sideoats grama		10
				Velvetpod mimosa		5
141:						
Terrarossa----	Loamy Upland, 16-20" p.z.	Favorable	1,600	Palmer's century plant		5
		Normal	1,350	Texas bluestem		5
		Unfavorable	1,000	Beggartick threeawn		5
				Blue grama		20
				Cane beardgrass		15
				Crinkleawn		5
				False mesquite		10
				Plains lovegrass		20
				Sideoats grama		10
				Velvetpod mimosa		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
141:						
Blacktail-----	Loamy Hills, 16-20" p.z.	Favorable	2,500	Palmer's century plant		5
		Normal	1,800	Texas bluestem		10
		Unfavorable	1,000	Beggartick threeawn		5
				Cane beardgrass		5
				Crinkleawn		10
				False mesquite		5
				Green sprangletop		5
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Sideoats grama		10
				Sotol		5
				Velvetpod mimosa		5
				Yerba de pasmo		5
Pyeatt--------	Limy Slopes, 16-20" p.z.	Favorable	2,000	Santa Rita threeawn		5
		Normal	1,400	Black grama		10
		Unfavorable	1,000	Crinkleawn		10
				False mesquite		5
				Needlegrass		10
				Oneseed juniper		5
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Range ratany		5
				Rough tridens		10
				Sacahuista		5
				Sideoats grama		15
142:						
Tombstone-----	Limy Upland, 12-16" p.z.	Favorable	800	Desert needlegrass		5
		Normal	600	Texas dogweed		5
		Unfavorable	400	Black grama		10
				Bush muhly		10
				Desert zinnia		15
				Littleleaf sumac		15
				Mariola		10
				Sacahuista		10
				Sideoats grama		5
				Slim tridens		5
				Whitethorn acacia		10
143:						
Turquoise-----	Shallow Hills, 16-20" p.z.	Favorable	1,200	Emory oak		5
		Normal	900	Texas bluestem		15
		Unfavorable	600	Beggartick threeawn		10
				Bullgrass		10
				Hairy grama		10
				Manzanita		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Sacahuista		5
				Sideoats grama		15

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
143:						
Nugget--------	Shallow Hills, 16-20" p.z.	Favorable	1,200	Emory oak		5
		Normal	900	Texas bluestem		15
		Unfavorable	600	Beggartick threeawn		10
				Bullgrass		10
				Hairy grama		10
				Manzanita		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		10
				Sacahuista		5
				Sideoats grama		15
144:						
Ubik silt loam	Loamy Bottom, Subirrigated, 12-16" p.z.	Favorable	6,500	Blue grama		5
		Normal	5,500	Desert willow		2
		Unfavorable	3,500	Giant sacaton		80
				Mesquite		3
				Miscellaneous annual forbs		5
				Sideoats grama		5
Ubik fine sandy loam---	Loamy Bottom, Swales, 12-16" p.z.	Favorable	2,500	Blue grama		30
		Normal	2,000	Cane beardgrass		5
		Unfavorable	1,000	Desert willow		5
				Giant sacaton		5
				Mesquite		10
				Miscellaneous annual forbs		5
				Miscellaneous shrubs		5
				Miscellaneous trees		5
				Sideoats grama		10
				Vine mesquite		20
145:						
Ubik----------	Loamy Bottom, Subirrigated, 12-16" p.z.	Favorable	6,500	Blue grama		5
		Normal	5,500	Desert willow		2
		Unfavorable	3,500	Giant sacaton		80
				Mesquite		3
				Miscellaneous annual forbs		5
				Sideoats grama		5
146:						
Ubik----------	Loamy Bottom, Subirrigated, 12-16" p.z.	Favorable	2,500	Alkali sacaton		15
		Normal	1,500	Blue grama		5
		Unfavorable	800	Desert willow		2
				Fourwing saltbush		5
				Giant sacaton		55
				Inland saltgrass		5
				Mesquite		3
				Miscellaneous annual forbs		5
				Sideoats grama		5

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
147:						
Ubik----------	Loamy Bottom, Swales, 12-16" p.z.	Favorable	2,500	Blue grama		30
		Normal	2,000	Cane beardgrass		5
		Unfavorable	1,000	Desert willow		5
				Giant sacaton		5
				Mesquite		10
				Miscellaneous annual forbs		5
				Miscellaneous shrubs		5
				Miscellaneous trees		5
				Sideoats grama		10
				Vine mesquite		20
148:						
Ubik----------	Loamy Bottom, Swales, 12-16" p.z.	Favorable	2,300	Alkali sacaton		5
		Normal	1,500	Blue grama		15
		Unfavorable	800	Cane beardgrass		5
				Desert willow		5
				Fourwing saltbush		5
				Giant sacaton		5
				Inland saltgrass		5
				Mesquite		10
				Miscellaneous annual forbs		5
				Miscellaneous shrubs		5
				Miscellaneous trees		5
				Sideoats grama		10
				Vine mesquite		20
149:						
Vana----------	Shallow Upland, 12-16" p.z.	Favorable	1,400	Bush muhly		5
		Normal	800	Cane beardgrass		5
		Unfavorable	500	Catclaw acacia		5
				False mesquite		10
				Hairy grama		15
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		5
				Pricklypear and cholla		5
				Shrubby buckwheat		5
				Sideoats grama		10
				Sprucetop grama		15
150:						
Vana----------	Shallow Upland, 12-16" p.z.	Favorable	1,400	Bush muhly		5
		Normal	800	Cane beardgrass		5
		Unfavorable	500	Catclaw acacia		5
				False mesquite		10
				Hairy grama		15
				Miscellaneous perennial forbs		10
				Miscellaneous perennial grasses		5
				Miscellaneous shrubs		5
				Plains lovegrass		5
				Pricklypear and cholla		5
				Shrubby buckwheat		5
				Sideoats grama		10
				Sprucetop grama		15

Table 7.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition: Forest understory	Composition: Range
			Lb/acre		Pct	Pct
150:						
Moco----------	Limy Fan, 12-16" p.z.	Favorable	1,500	Blue grama		15
		Normal	900	Blue threeawn		5
		Unfavorable	600	Burrograss		15
				Desert holly		5
				Giant sacaton		10
				Mesquite		5
				Mormon tea		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Plains bristlegrass		5
				Soaptree yucca		5
				Tobosa		15
				Whitethorn acacia		5
151:						
White House gravelly loam	Loamy Upland, 12-16" p.z.	Favorable	1,500	Black grama		5
		Normal	1,000	Blue grama		15
		Unfavorable	650	Cane beardgrass		15
				Curly mesquite		5
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Plains lovegrass		15
				Range ratany		5
				Sideoats grama		10
				Sprucetop grama		5
				Threeawn		5
				Yerba de pasmo		5
White House gravelly sandy loam--	Sandy Loam Upland, 12-16" p.z.	Favorable	2,000	Arizona cottontop		10
		Normal	1,500	Black grama		15
		Unfavorable	750	Blue grama		10
				Cane beardgrass		10
				False mesquite		5
				Miscellaneous perennial forbs		5
				Miscellaneous perennial grasses		5
				Plains lovegrass		10
				Sand dropseed		5
				Sideoats grama		20
				Threeawn		5
152:						
Yarbam--------	Limestone Hills, 16-20" p.z.	Favorable	1,500	Schott yucca		5
		Normal	1,100	Black grama		10
		Unfavorable	700	Bullgrass		10
				Cane beardgrass		5
				False mesquite		5
				Needlegrass		15
				Miscellaneous shrubs		10
				Rough tridens		5
				Sacahuista		5
				Sideoats grama		10
				Silktassel		5
				Sotol		5
				Tanglehead		5
				Threeawn		5
Rock outcrop.						

Table 8.--Forest Productivity

(Only the map units that support trees are listed.)

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
17:				
Brookline	Cottonwood	70	43	Western soapberry, cottonwood, black willow, Arizona alder, Arizona walnut, netleaf hackberry, velvet ash, velvet mesquite, white mulberry
	Black willow	35	43	
	Arizona alder	---	---	
	Arizona walnut	---	---	
	Velvet ash	---	---	
Fluvaquents	Cottonwood	70	43	Cottonwood, black willow, Arizona alder, Arizona walnut, netleaf hackberry, velvet ash, velvet mesquite, white mulberry
	Black willow	35	43	
	Arizona alder	---	---	
	Arizona walnut	---	---	
	Velvet ash	---	---	
	White mulberry	---	---	
Riverwash.				
62:				
Far	Arizona white oak	45	14	Arizona white oak, Emory oak, Mexican pinyon, alligator juniper, silverleaf oak
	Emory oak	---	---	
	Mexican pinyon	---	---	
	Alligator juniper	---	---	
	Silverleaf oak	---	---	
Hogris	Arizona white oak	45	14	Arizona white oak, Emory oak, Mexican pinyon, alligator juniper
	Emory oak	---	---	
	Mexican pinyon	---	---	
	Alligator juniper	---	---	
63:				
Far	Mexican pinyon	45	14	Mexican pinyon, alligator juniper, Arizona white oak, Emory oak
	Alligator juniper	---	---	
Huachuca	Mountain mahogany	45	14	Mountain mahogany, alligator juniper, Arizona white oak, Mexican pinyon
	Alligator juniper	---	---	
	Arizona white oak	---	---	
	Mexican pinyon	---	---	
Hogris	Arizona white oak	45	14	Arizona white oak, Emory oak, Mexican pinyon, alligator juniper
	Emory oak	---	---	
	Mexican pinyon	---	---	
	Alligator juniper	---	---	
64:				
Far	Silverleaf oak	65	43	Silverleaf oak, Apache pine, Arizona white oak, Chihuahua pine, Mexican pinyon, ponderosa pine
	Apache pine	---	---	
	Arizona white oak	---	---	
	Chihuahua pine	---	---	
	Mexican pinyon	---	---	
	Ponderosa pine	---	---	

Table 8.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
64:				
Huachuca	Mountain mahogany	65	29	Mountain mahogany,
	Alligator juniper	---	---	alligator juniper,
	Apache pine	---	---	Apache pine,
	Arizona white oak	---	---	Arizona white oak,
	Mexican pinyon	---	---	Mexican pinyon,
	Ponderosa pine	---	---	ponderosa pine,
	Silverleaf oak	---	---	silverleaf oak
Hogris	Arizona white oak	45	14	Arizona white oak,
	Emory oak	---	---	Emory oak, Mexican
	Mexican pinyon	---	---	pinyon, alligator
	Alligator juniper	---	---	juniper
72:				
Glendale	Screwbean mesquite	40	14	Screwbean mesquite,
	Velvet mesquite	40	14	velvet mesquite,
	Honey mesquite	---	---	catclaw acacia,
	Netleaf hackberry	---	---	desert willow,
	Mexican elderberry	---	---	honey mesquite,
				netleaf hackberry,
				Mexican elderberry
85:				
Hantz	Screwbean mesquite	40	14	Screwbean mesquite,
	Velvet mesquite	40	14	velvet mesquite,
	Honey mesquite	---	---	honey mesquite
86:				
Haplustolls	Arizona sycamore	70	57	Arizona sycamore,
	Alligator juniper	---	---	alligator juniper,
	Arizona madrone	---	---	Arizona madrone,
	Arizona walnut	---	---	Arizona walnut,
	Arizona white oak	---	---	Arizona white oak,
	Chihuahua pine	---	---	Chihuahua pine,
	Ponderosa pine	---	---	ponderosa pine,
	Silverleaf oak	---	---	silverleaf oak
Fluvaquents	Arizona sycamore	80	57	Arizona sycamore,
	Arizona walnut	---	---	Arizona walnut,
	Bigtooth maple	---	---	bigtooth maple,
	Redosier dogwood	---	---	redosier dogwood,
	Southwestern chokecherry	---	---	southwestern chokecherry
87:				
Haplustolls	Fremont cottonwood	60	43	Fremont
	Arizona sycamore	---	---	cottonwood,
	Arizona walnut	---	---	Arizona sycamore,
	Arizona white oak	---	---	Arizona white oak,
	Desert willow	---	---	Arizona walnut,
	Mesquite	---	---	desert willow,
	Velvet ash	---	---	mesquite, velvet
				ash
Fluvaquents	Fremont cottonwood	70	43	Fremont
	Arizona sycamore	---	---	cottonwood,
	Goodding's willow	---	---	Arizona sycamore,
	Velvet ash	---	---	Goodding's willow,
				velvet ash

Table 8.--Forest Productivity--Continued

Map symbol and soil name	Potential productivity: Common trees	Site index	Volume of wood fiber (cu ft/ac)	Trees to manage
88:				
Hayhollow	Arizona sycamore	70	57	Arizona sycamore, velvet ash, alligator juniper, Arizona walnut, Arizona white oak, Emory oak
	Alligator juniper	---	---	
	Arizona walnut	---	---	
	Arizona white oak	---	---	
	Emory oak	---	---	
	Velvet ash	---	---	
Rafter	Arizona sycamore	70	57	Arizona sycamore, alligator juniper, Arizona walnut, Arizona white oak, Emory oak, velvet ash
	Alligator juniper	---	---	
	Arizona walnut	---	---	
	Arizona white oak	---	---	
	Emory oak	---	---	
	Velvet ash	---	---	
Riverwash.				
123:				
Quiburi	Cottonwood	70	43	Cottonwood, black willow
	Black willow	35	43	
Fluvaquents	Cottonwood	70	43	Cottonwood, black willow, netleaf hackberry
	Black willow	35	43	
	Netleaf hackberry	---	---	
Riverwash.				

Table 9A.--Recreation

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential 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
1:							
Altar	55	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Slope	1.00
						Dusty	0.50
						Gravel content	0.22
Mallet	30	Not limited		Not limited		Very limited:	
						Slope	1.00
2:							
Anthony	45	Not limited		Not limited		Somewhat limited:	
						Slope	0.21
Maricopa	40	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Slope	0.21
3:							
Arizo family	65	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Gravel content	0.10	Content of large stones	1.00
		Gravel content	0.10	Content of large stones	0.04	Gravel content	1.00
		Content of large stones	0.04			Flooding	0.60
						Slope	0.05
Riverwash	20	Not rated		Not rated		Not rated	
4:							
Ashcreek	40	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Too clayey	0.50	Slope	1.00
		Too clayey	0.50	Restricted permeability	0.45	Too clayey	0.50
		Restricted permeability	0.45	Slope	0.16	Restricted permeability	0.45
		Slope	0.16				
Stanford	40	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Slope	0.16	Slope	1.00
		Slope	0.16			Gravel content	0.78
5:							
Baboquivari	50	Not limited		Not limited		Somewhat limited:	
						Slope	0.05
Combate	40	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Too sandy	0.03	Gravel content	0.78
		Too sandy	0.03			Too sandy	0.03
6:							
Banshee	50	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Restricted permeability	0.91	Restricted permeability	0.91	Restricted permeability	0.91
						Gravel content	0.78
						Slope	0.77

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
6:							
Babshee, thick surface	30	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Restricted permeability	0.91	Restricted permeability	0.91	Restricted permeability	0.91
		Dusty	0.50	Dusty	0.50	Slope	0.77
						Dusty	0.50
7:							
Bella	80	Very limited:		Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
						Slope	0.94
8:							
Blakeney	65	Very limited:		Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
						Gravel content	0.06
Luckyhills	25	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Slope	0.04	Slope	1.00
						Gravel content	0.06
9:							
Bodecker		Somewhat limited:		Somewhat limited:		Very limited:	
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
						Slope	0.77
Comoro		Not limited		Not limited		Somewhat limited:	
						Slope	0.77
10:							
Bodecker	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Gravel content	1.00	Gravel content	1.00
		Gravel content	1.00			Flooding	0.60
11:							
Bodecker	90	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Gravel content	1.00	Gravel content	1.00
		Flooding	1.00	Sodium content	1.00	Sodium content	1.00
		Gravel content	1.00	Salinity	0.01	Flooding	0.60
		Salinity	0.01			Salinity	0.01
12:							
Bonita	85	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Too clayey	0.50	Flooding	0.60
		Too clayey	0.50	Restricted permeability	0.43	Too clayey	0.50
		Restricted permeability	0.43			Restricted permeability	0.43
13:							
Bonita	50	Somewhat limited:		Somewhat limited:		Very limited:	
		Restricted permeability	0.45	Restricted permeability	0.45	Slope	1.00
						Restricted permeability	0.45

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
13:							
Forrest	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Slope	1.00
		Restricted permeability	0.36	Restricted permeability	0.36	Dusty	0.50
						Restricted permeability	0.36
14:							
Borderland	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Restricted permeability	0.45	Restricted permeability	0.45	Slope	1.00
		Slope	0.16	Slope	0.16	Restricted permeability	0.45
15:							
Borderline	70	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Slope	0.04	Slope	1.00
16:							
Boss		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Restricted permeability	0.91	Restricted permeability	0.91	Restricted permeability	0.91
						Gravel content	0.78
Krentz		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Paramore		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
		Restricted permeability	0.45	Restricted permeability	0.45	Depth to bedrock	1.00
						Restricted permeability	0.45
Rock outcrop		Not rated		Not rated		Not rated	
17:							
Brookline	40	Not limited		Not limited		Somewhat limited:	
						Slope	0.05
Fluvaquents	30	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Too sandy	0.94	Flooding	1.00
		Too sandy	0.94	Flooding	0.40	Too sandy	0.94
						Slope	0.05
Riverwash	25	Not rated		Not rated		Not rated	
18:							
Brunkcow	35	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to bedrock	1.00
Chiricahua	25	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Slope	1.00
						Depth to bedrock	1.00
						Gravel content	0.50

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
18:							
Andrada	20	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Gravel content	1.00
		Slope	0.63	Slope	0.63	Slope	1.00
		Gravel content	0.41	Gravel content	0.41	Depth to bedrock	1.00
19:							
Brunkcow	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Content of large stones	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Content of large stones	0.71	Content of large stones	0.71	Depth to bedrock	1.00
						Gravel content	0.09
Chiricahua	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Content of large stones	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Content of large stones	0.68	Content of large stones	0.68	Depth to bedrock	1.00
						Gravel content	0.01
Lampshire	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Content of large stones	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Content of large stones	0.26	Content of large stones	0.26	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Depth to bedrock	1.00
20:							
Budlamp	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Woodcutter	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
21:							
Buntline	90	Very limited:		Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
22:							
Caralampi	80	Not limited		Not limited		Somewhat limited:	
						Slope	0.77
						Gravel content	0.22
23:							
Caralampi	85	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
						Slope	0.21

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
24:							
Carbine	70	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	1.00	Slope	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Slope	1.00
						Content of large stones	0.01
25:							
Carbine	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Slope	1.00
						Gravel content	0.78
Hathaway	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.68	Gravel content	0.68	Slope	1.00
26:							
Cazador	60	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Restricted permeability	0.45	Flooding	1.00
		Restricted permeability	0.45	Flooding	0.40	Slope	1.00
		Slope	0.16	Slope	0.16	Restricted permeability	0.45
Lesliecreek	30	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Dusty	0.50	Flooding	1.00
		Dusty	0.50	Flooding	0.40	Slope	1.00
		Slope	0.16	Slope	0.16	Dusty	0.50
27:							
Cherrycow	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Restricted permeability	0.45	Restricted permeability	0.45	Depth to bedrock	1.00
		Gravel content	0.32	Gravel content	0.32	Restricted permeability	0.45
Blacktail	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.36	Restricted permeability	0.36	Gravel content	0.78
						Restricted permeability	0.36
28:							
Cherrycow	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Restricted permeability	0.45	Restricted permeability	0.45	Restricted permeability	0.45
						Gravel content	0.22
Magoffin	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
29:							
Chorro	30	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Flooding	0.40	Flooding	1.00
		Restricted permeability	0.18	Restricted permeability	0.18	Slope	0.77
						Restricted permeability	0.18
Doubleadobe	30	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Salinity	1.00	Flooding	1.00
		Salinity	1.00	Restricted permeability	0.91	Salinity	1.00
		Restricted permeability	0.91	Flooding	0.40	Restricted permeability	0.91
						Slope	0.77
Gothard	30	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Flooding	0.40	Flooding	1.00
		Restricted permeability	0.36	Restricted permeability	0.36	Slope	0.77
						Restricted permeability	0.36
30:							
Chorro	40	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Restricted permeability	0.91	Restricted permeability	0.91
		Restricted permeability	0.91	Dusty	0.50	Dusty	0.50
		Dusty	0.50			Gravel content	0.22
						Slope	0.21
Guest	40	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Restricted permeability	0.36	Restricted permeability	0.36
		Restricted permeability	0.36			Slope	0.21
31:							
Cogswell	85	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Too clayey	0.50	Flooding	1.00
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Restricted permeability	0.36	Restricted permeability	0.36	Restricted permeability	0.36
		Salinity	0.01	Salinity	0.01	Salinity	0.01
32:							
Combate	70	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Too sandy	0.03	Too sandy	0.03	Gravel content	0.78
						Slope	0.21
						Too sandy	0.03
33:							
Comoro	85	Not limited		Not limited		Not limited	
34:							
Comoro	85	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Salinity	0.01	Salinity	0.01	Salinity	0.01

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
35:							
Contention----------		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.45	Restricted permeability	0.45	Restricted permeability	0.45
Crystalgyp----------		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.46
Monzingo----------		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.06
Redington----------		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.22
36:							
Contention----------	45	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Restricted permeability	0.45	Restricted permeability	0.45	Restricted permeability	0.45
						Slope	0.21
Ugyp----------	20	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Flooding	0.60
						Slope	0.21
Ugyp----------	15	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Flooding	0.60
						Slope	0.21
37:							
Courtland----------	85	Not limited		Not limited		Not limited	
38:							
Courtland----------	85	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Salinity	0.01	Salinity	0.01	Salinity	0.01
39:							
Courtland----------	55	Not limited		Not limited		Not limited	
Diaspar----------	30	Not limited		Not limited		Somewhat limited:	
						Gravel content	0.50
40:							
Courtland----------	35	Not limited		Not limited		Somewhat limited:	
						Gravel content	0.50
						Slope	0.05
Sasabe----------	35	Not limited		Not limited		Somewhat limited:	
						Slope	0.77
						Gravel content	0.50
Diaspar----------	20	Not limited		Not limited		Somewhat limited:	
						Gravel content	0.50
						Slope	0.21

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
41:							
Crowbar	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
Brunopeak	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
		Restricted permeability	0.36	Restricted permeability	0.36	Restricted permeability	0.36
42:							
Deloro	40	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Restricted permeability	0.36	Restricted permeability	0.36	Restricted permeability	0.36
Leyte	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Restricted permeability	0.91	Restricted permeability	0.91	Slope	1.00
		Gravel content	0.68	Gravel content	0.68	Restricted permeability	0.91
Lampshire	20	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	1.00	Content of large stones	1.00	Depth to bedrock	1.00
		Content of large stones	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Content of large stones	1.00
43:							
Denab	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Gravel content	0.32	Gravel content	0.32	Slope	1.00
Castledome	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Restricted permeability	0.36	Restricted permeability	0.36	Restricted permeability	0.36
44:							
Denied Access		Not rated		Not rated		Not rated	
45:							
Diaspar	85	Not limited		Not limited		Not limited	
46:							
Diaspar	85	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Salinity	0.01	Salinity	0.01	Salinity	0.01
47:							
Dona Ana	45	Not limited		Not limited		Somewhat limited:	
						Slope	0.21
Mohave	30	Not limited		Not limited		Somewhat limited:	
						Slope	0.21

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
48:							
Doubleadobe	85	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Salinity	1.00	Flooding	1.00
		Salinity	1.00	Restricted permeability	0.91	Salinity	1.00
		Restricted permeability	0.91	Flooding	0.40	Restricted permeability	0.91
						Slope	0.21
49:							
Durazo	90	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Too sandy	0.24	Too sandy	0.24	Too sandy	0.24
						Slope	0.01
50:							
Durazo	90	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Too sandy	0.24	Too sandy	0.24	Too sandy	0.24
		Salinity	0.01	Salinity	0.01	Slope	0.01
						Salinity	0.01
51:							
Durazo	55	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Too sandy	0.24	Too sandy	0.24	Slope	1.00
		Salinity	0.01	Salinity	0.01	Too sandy	0.24
						Salinity	0.01
Gothard	30	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Dusty	0.50	Flooding	0.60
		Dusty	0.50	Restricted permeability	0.36	Dusty	0.50
		Restricted permeability	0.36			Restricted permeability	0.36
52:							
Durazo	50	Not limited		Not limited		Somewhat limited:	
						Slope	0.77
Courtland	40	Not limited		Not limited		Somewhat limited:	
						Slope	0.77
53:							
Durazo	55	Somewhat limited:		Somewhat limited:		Very limited:	
		Too sandy	0.24	Too sandy	0.24	Slope	1.00
						Too sandy	0.24
McAllister	30	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Slope	1.00
						Dusty	0.50
54:							
Elfrida	90	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00			Flooding	0.60

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
55:							
Elfrida	90	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Salinity	0.01	Flooding	0.60
		Salinity	0.01			Salinity	0.01
56:							
Elgin	35	Somewhat limited:		Somewhat limited:		Very limited:	
		Restricted permeability	0.91	Restricted permeability	0.91	Slope	1.00
						Restricted permeability	0.91
McAllister	30	Not limited		Not limited		Very limited:	
						Slope	1.00
Stronghold	20	Not limited		Not limited		Very limited:	
						Slope	1.00
57:							
Elgin	50	Somewhat limited:		Somewhat limited:		Very limited:	
		Restricted permeability	0.91	Restricted permeability	0.91	Slope	1.00
		Slope	0.16	Slope	0.16	Restricted permeability	0.91
Outlaw	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Restricted permeability	0.45	Restricted permeability	0.45	Slope	1.00
		Slope	0.16	Slope	0.16	Restricted permeability	0.45
58:							
Elgin	50	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	0.63	Slope	0.63	Slope	1.00
		Restricted permeability	0.50	Restricted permeability	0.50	Restricted permeability	0.50
Stronghold	40	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	0.63	Slope	0.63	Slope	1.00
59:							
Eloma	80	Somewhat limited:		Somewhat limited:		Very limited:	
		Gravel content	0.68	Gravel content	0.68	Gravel content	1.00
		Dusty	0.50	Dusty	0.50	Slope	1.00
		Restricted permeability	0.36	Restricted permeability	0.36	Dusty	0.50
		Slope	0.16	Slope	0.16	Restricted permeability	0.36
60:							
Eloma	40	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
						Slope	1.00
						Content of large stones	0.01
Caralampi	30	Not limited		Not limited		Very limited:	
						Slope	1.00
						Gravel content	0.06
White House	20	Not limited		Not limited		Very limited:	
						Slope	1.00

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
61:							
Epitaph	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Restricted permeability	0.45	Restricted permeability	0.45	Content of large stones	1.00
		Content of large stones	0.32	Content of large stones	0.32	Slope	1.00
		Slope	0.04	Slope	0.04	Depth to cemented pan	1.00
						Depth to bedrock	0.84
						Gravel content	0.71
62:							
Far	55	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Hogris	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
63:							
Far	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Huachuca	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too stony	0.53	Too stony	0.53	Too stony	0.53
Hogris	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
64:							
Far	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Huachuca	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Too stony	0.53	Too stony	0.53	Too stony	0.53
Hogris	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
65:							
Forrest	85	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Restricted permeability	0.04	Restricted permeability	0.04	Slope	0.05
						Restricted permeability	0.04
66:							
Forrest	85	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Restricted permeability	0.04	Restricted permeability	0.04	Slope	0.05
		Salinity	0.01	Salinity	0.01	Restricted permeability	0.04
						Salinity	0.01

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
67:							
Forrest	85	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Restricted permeability	0.04	Restricted permeability	0.04	Slope	0.05
						Restricted permeability	0.04
68:							
Forrest	85	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Restricted permeability	0.04	Restricted permeability	0.04	Restricted permeability	0.04
69:							
Forrest	85	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Restricted permeability	0.04	Restricted permeability	0.04	Restricted permeability	0.04
		Salinity	0.01	Salinity	0.01	Salinity	0.01
70:							
Forrest	55	Not limited		Not limited		Somewhat limited:	
						Slope	0.05
Bonita	40	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Restricted permeability	0.45	Flooding	0.60
		Restricted permeability	0.45			Restricted permeability	0.45
						Slope	0.05
71:							
Gardencan	45	Not limited		Not limited		Somewhat limited:	
						Gravel content	0.50
						Slope	0.21
Lanque	35	Not limited		Not limited		Somewhat limited:	
						Gravel content	0.50
						Slope	0.21
72:							
Glendale	85	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50				
73:							
Gothard	90	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Dusty	0.50	Flooding	1.00
		Dusty	0.50	Flooding	0.40	Dusty	0.50
		Restricted permeability	0.36	Restricted permeability	0.36	Restricted permeability	0.36
						Slope	0.21
74:							
Gothard	85	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Flooding	0.40	Flooding	1.00
		Restricted permeability	0.36	Restricted permeability	0.36	Restricted permeability	0.36
						Slope	0.05

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
75:							
Graham	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Content of large stones	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Restricted permeability	1.00	Restricted permeability	1.00	Depth to bedrock	1.00
		Content of large stones	0.82	Content of large stones	0.82	Restricted permeability	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Lampshire	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Content of large stones	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Content of large stones	0.88	Content of large stones	0.88	Depth to bedrock	1.00
		Too stony	0.53	Too stony	0.53	Too stony	0.53
		Dusty	0.50	Dusty	0.50	Gravel content	0.51
76:							
Graveyard	45	Not limited		Not limited		Somewhat limited:	
						Slope	0.48
						Gravel content	0.06
Sierravista	35	Not limited		Not limited		Somewhat limited:	
						Slope	0.48
77:							
Grizzle	80	Not limited		Not limited		Very limited:	
						Depth to bedrock	1.00
						Slope	0.94
78:							
Guest	90	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Restricted permeability	0.04	Flooding	0.60
		Restricted permeability	0.04			Restricted permeability	0.04
79:							
Guest	80	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Restricted permeability	0.36	Flooding	0.60
		Restricted permeability	0.36			Restricted permeability	0.36
						Slope	0.05
80:							
Guest	90	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Restricted permeability	0.04	Flooding	0.60
		Restricted permeability	0.04	Salinity	0.01	Restricted permeability	0.04
		Salinity	0.01			Salinity	0.01
81:							
Guest	90	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Too clayey	0.50	Flooding	0.60
		Too clayey	0.50	Restricted permeability	0.04	Too clayey	0.50
		Restricted permeability	0.04			Restricted permeability	0.04

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
82:							
Guest	90	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Too clayey	0.50	Flooding	0.60
		Too clayey	0.50	Restricted permeability	0.04	Too clayey	0.50
		Restricted permeability	0.04	Salinity	0.01	Restricted permeability	0.04
		Salinity	0.01			Salinity	0.01
83:							
Guest	60	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Too clayey	0.50	Flooding	1.00
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Restricted permeability	0.04	Restricted permeability	0.04	Restricted permeability	0.04
		Salinity	0.01	Salinity	0.01	Salinity	0.01
Cogswell	30	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Flooding	0.40	Flooding	1.00
		Restricted permeability	0.36	Restricted permeability	0.36	Restricted permeability	0.36
		Salinity	0.01	Salinity	0.01	Salinity	0.01
84:							
Guest	40	Very limited:		Not limited		Not limited	
		Flooding	1.00				
Riveroad	40	Very limited:		Not limited		Not limited	
		Flooding	1.00				
85:							
Hantz	85	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Salinity	0.50	Flooding	0.60
		Salinity	0.50	Dusty	0.50	Salinity	0.50
		Dusty	0.50			Dusty	0.50
						Slope	0.05
86:							
Haplustolls	70	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Flooding	0.60
						Slope	0.05
Fluvaquents	20	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Content of large stones	0.77	Content of large stones	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	0.75	Flooding	1.00
		Content of large stones	0.77	Flooding	0.40	Depth to saturated zone	1.00
						Gravel content	0.77
						Slope	0.05
87:							
Haplustolls	70	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Flooding	0.60
						Slope	0.05

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
87:							
Fluvaquents	20	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Content of large stones	0.77	Content of large stones	1.00
		Content of large stones	0.77	Flooding	0.40	Flooding	1.00
		Depth to saturated zone	0.44	Depth to saturated zone	0.19	Gravel content	0.77
						Depth to saturated zone	0.44
						Slope	0.05
88:							
Hayhollow	30	Not limited		Not limited		Somewhat limited:	
						Slope	0.77
Rafter	30	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
						Slope	0.77
Riverwash	30	Not rated		Not rated		Not rated	
89:							
Kaboom	45	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Slope	0.21
Reeup	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.50	Restricted permeability	0.50	Depth to bedrock	0.84
		Dusty	0.50	Dusty	0.50	Restricted permeability	0.50
						Dusty	0.50
90:							
Kahn fine sandy loam	45	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Slope	0.05
Kahn silt loam	40	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50			Slope	0.05
91:							
Kahn	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50	Restricted permeability	0.44	Restricted permeability	0.44
		Restricted permeability	0.44			Gravel content	0.22
Zapolote	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Restricted permeability	0.45	Restricted permeability	0.45
		Restricted permeability	0.45				

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
92:							
Karro	90	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50			Slope	0.05
93:							
Karro	90	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50	Salinity	0.01	Slope	0.05
		Salinity	0.01			Salinity	0.01
94:							
Keysto	60	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Content of large stones	0.71	Content of large stones	1.00
		Content of large stones	0.71			Gravel content	0.38
						Slope	0.21
Riverwash	30	Not rated		Not rated		Not rated	
95:							
Kuykendall	70	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Too clayey	0.50	Too clayey	0.50	Too clayey	0.50
		Restricted permeability	0.45	Restricted permeability	0.45	Restricted permeability	0.45
Rock outcrop	20	Not rated		Not rated		Not rated	
96:							
Lanque	60	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Slope	0.77
						Gravel content	0.22
Stanford	30	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Slope	0.77
97:							
Libby	45	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Restricted permeability	0.50	Restricted permeability	0.50	Slope	0.77
						Restricted permeability	0.50
Gulch	35	Somewhat limited:		Somewhat limited:		Very limited:	
		Gravel content	0.50	Gravel content	0.50	Gravel content	1.00
						Slope	0.77
98:							
Luckyhills	90	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Too sandy	0.12	Too sandy	0.12	Slope	0.21
						Too sandy	0.12
99:							
Luckyhills	50	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	0.04	Slope	0.04	Slope	1.00

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
99:							
McNeal	40	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
100:							
Lutzcan	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Content of large stones	1.00
		Content of large stones	0.20	Content of large stones	0.20	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Depth to bedrock	1.00
Yarbam	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
						Content of large stones	0.20
101:							
Mabray	45	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Content of large stones	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Gravel content	1.00
		Dusty	0.50	Dusty	0.50	Slope	1.00
		Content of large stones	0.05	Content of large stones	0.05	Depth to bedrock	1.00
		Gravel content	0.04	Gravel content	0.04	Dusty	0.50
Chiricahua	30	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	
102:							
Mabray	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Content of large stones	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Gravel content	1.00
		Gravel content	0.83	Gravel content	0.83	Depth to bedrock	1.00
		Dusty	0.50	Dusty	0.50	Slope	1.00
		Content of large stones	0.26	Content of large stones	0.26	Dusty	0.50
Rock outcrop	30	Not rated		Not rated		Not rated	
103:							
Magoffin	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
Cherrycow	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.45	Restricted permeability	0.45	Depth to bedrock	1.00
						Restricted permeability	0.45

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
104:							
Major fine sandy loam	40	Not limited		Not limited		Somewhat limited:	
						Slope	0.21
Major silt loam	40	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Dusty	0.50	Flooding	0.60
		Dusty	0.50			Dusty	0.50
						Slope	0.21
105:							
Mallet	45	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Slope	0.77
						Gravel content	0.22
Hooks	35	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Slope	0.77
						Gravel content	0.22
106:							
Marsh	100	Not rated		Not rated		Not rated	
107:							
McAllister	90	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Slope	0.05
108:							
McAllister	50	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Gravel content	1.00
		Gravel content	0.50	Gravel content	0.50	Slope	1.00
Stronghold	30	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	0.63	Slope	0.63	Slope	1.00
109:							
McNeal	85	Somewhat limited:		Somewhat limited:		Very limited:	
		Gravel content	0.32	Gravel content	0.32	Gravel content	1.00
						Slope	0.05
110:							
McNeal	85	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Gravel content	1.00
		Gravel content	0.32	Gravel content	0.32	Sodium content	1.00
		Salinity	0.01	Salinity	0.01	Slope	0.05
						Salinity	0.01
111:							
Monzingo	55	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.84	Slope	0.84	Slope	1.00
						Gravel content	0.06
Ugyp	15	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Slope	0.21
Ugyp	10	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Flooding	0.60
						Slope	0.21

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
112:							
Naco	35	Very limited:		Very limited:		Very limited:	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
						Slope	0.21
Ruins, thick surface	35	Very limited:		Very limited:		Very limited:	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
						Slope	0.21
Ruins	20	Very limited:		Very limited:		Very limited:	
		Restricted permeability	1.00	Restricted permeability	1.00	Restricted permeability	1.00
						Slope	0.21
						Gravel content	0.06
113:							
Nolam	40	Not limited		Not limited		Somewhat limited:	
						Slope	0.94
Libby	25	Somewhat limited:		Somewhat limited:		Very limited:	
		Restricted permeability	0.50	Restricted permeability	0.50	Gravel content	1.00
		Gravel content	0.50	Gravel content	0.50	Slope	0.94
						Restricted permeability	0.50
Buntline	20	Very limited:		Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Gravel content	1.00
		Gravel content	0.50	Gravel content	0.50	Depth to cemented pan	1.00
						Slope	0.94
114:							
Outlaw		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.45	Restricted permeability	0.45	Restricted permeability	0.45
Epitaph		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.45	Restricted permeability	0.45	Depth to cemented pan	1.00
						Depth to bedrock	0.84
						Restricted permeability	0.45
Paramore		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Restricted permeability	0.45	Restricted permeability	0.45	Depth to bedrock	1.00
						Restricted permeability	0.45
115:							
Oversight	90	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	1.00	Gravel content	1.00	Slope	1.00

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
116:							
Oversight	80	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
117:							
Oversight	60	Not limited		Not limited		Somewhat limited:	
						Slope	0.21
Lanque	30	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Too sandy	0.28	Too sandy	0.28	Too sandy	0.28
						Slope	0.21
118:							
Pedregosa	85	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Slope	1.00
		Slope	0.04	Slope	0.04	Depth to cemented pan	1.00
119:							
Pedregosa	70	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Gravel content	0.92	Gravel content	0.92	Slope	1.00
Tombstone	20	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
120:							
Perilla	50	Not limited		Not limited		Somewhat limited:	
						Slope	0.05
Durazo	40	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Too sandy	0.24	Too sandy	0.24	Too sandy	0.24
						Slope	0.05
121:							
Pits	80	Not rated		Not rated		Not rated	
122:							
Pits	50	Not rated		Not rated		Not rated	
Dumps	50	Not rated		Not rated		Not rated	
123:							
Quiburi	40	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Flooding	0.60
						Slope	0.21
Fluvaquents	30	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Too sandy	0.88	Flooding	1.00
		Too sandy	0.88	Flooding	0.40	Too sandy	0.88
Riverwash	20	Not rated		Not rated		Not rated	

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
124:							
Rafter	50	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Gravel content	1.00	Gravel content	1.00
		Gravel content	1.00			Slope	0.77
Lanque	40	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Gravel content	0.78
						Slope	0.77
125:							
Riveroad		Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50			Slope	0.21
Ubik		Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50			Slope	0.21
126:							
Riverwash	90	Not rated		Not rated		Not rated	
127:							
Riverwash	65	Not rated		Not rated		Not rated	
Bodecker	30	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Flooding	0.60
						Slope	0.05
128:							
Rock outcrop	50	Not rated		Not rated		Not rated	
Magoffin	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Content of large stones	1.00	Depth to bedrock	1.00
		Content of large stones	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Content of large stones	1.00
						Gravel content	0.01
129:							
Sasabe sandy loam	55	Not limited		Not limited		Somewhat limited:	
						Slope	0.05
Sasabe silt loam	35	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Dusty	0.50	Flooding	1.00
		Dusty	0.50	Flooding	0.40	Dusty	0.50
						Slope	0.05
130:							
Sasabe	85	Somewhat limited:		Somewhat limited:		Very limited:	
		Gravel content	0.32	Gravel content	0.32	Gravel content	1.00
131:							
Sasabe	85	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Gravel content	1.00
		Gravel content	0.32	Gravel content	0.32	Sodium content	1.00
		Salinity	0.01	Salinity	0.01	Salinity	0.01

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas: Rating class and limiting features	Value	Picnic areas: Rating class and limiting features	Value	Playgrounds: Rating class and limiting features	Value
132:							
Schiefflin	80	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Content of large stones	1.00
		Too stony	0.53	Too stony	0.53	Depth to bedrock	1.00
		Content of large stones	0.35	Content of large stones	0.35	Slope	1.00
		Slope	0.04	Slope	0.04	Too stony	0.53
		Too sandy	0.03	Too sandy	0.03	Too sandy	0.03
133:							
Stronghold	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Gravel content	0.25	Gravel content	0.25	Gravel content	1.00
						Slope	0.05
134:							
Stronghold	50	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Bernardino	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Gravel content	0.41	Gravel content	0.41	Gravel content	1.00
135:							
Surge	60	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
136:							
Sutherland	55	Very limited:		Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Gravel content	1.00
		Gravel content	0.92	Gravel content	0.92	Slope	1.00
		Slope	0.04	Slope	0.04	Depth to cemented pan	1.00
Mule	35	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
137:							
Swisshelm	85	Not limited		Not limited		Somewhat limited:	
						Slope	0.05
138:							
Swisshelm	85	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Salinity	0.01	Salinity	0.01	Slope	0.05
						Salinity	0.01
139:							
Tenneco	80	Very limited:		Not limited		Not limited	
		Flooding	1.00				
140:							
Terrarossa sandy loam	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
140:							
Terrarossa gravelly loam	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Dusty	0.50	Dusty	0.50	Slope	1.00
		Gravel content	0.41	Gravel content	0.41	Dusty	0.50
Terrarossa very gravelly loam	20	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
						Content of large stones	0.01
141:							
Terrarossa	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Dusty	0.50	Dusty	0.50	Slope	1.00
		Gravel content	0.41	Gravel content	0.41	Dusty	0.50
Blacktail	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.50	Gravel content	0.50	Slope	1.00
Pyeatt	15	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Dusty	0.50	Dusty	0.50	Slope	1.00
		Gravel content	0.41	Gravel content	0.41	Dusty	0.50
142:							
Tombstone	90	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
		Slope	0.63	Slope	0.63	Slope	1.00
143:							
Turquoise	55	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
						Gravel content	0.22
Nugget	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Content of large stones	1.00	Slope	1.00
		Content of large stones	1.00	Slope	1.00	Content of large stones	1.00
		Restricted permeability	0.36	Restricted permeability	0.36	Depth to bedrock	1.00
						Restricted permeability	0.36
						Gravel content	0.07
144:							
Ubik silt loam	50	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Dusty	0.50	Flooding	0.60
		Dusty	0.50			Dusty	0.50
						Slope	0.05

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
144:							
Ubik fine sandy loam	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Sodium content	1.00	Sodium content	1.00
		Sodium content	1.00			Gravel content	0.78
						Flooding	0.60
						Slope	0.05
145:							
Ubik	90	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Dusty	0.50	Flooding	0.60
		Dusty	0.50			Dusty	0.50
						Slope	0.05
146:							
Ubik	90	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Dusty	0.50	Flooding	0.60
		Dusty	0.50	Salinity	0.01	Dusty	0.50
		Salinity	0.01			Slope	0.05
						Salinity	0.01
147:							
Ubik	90	Very limited:		Not limited		Somewhat limited:	
		Flooding	1.00			Flooding	0.60
						Slope	0.05
148:							
Ubik	90	Very limited:		Very limited:		Very limited:	
		Sodium content	1.00	Sodium content	1.00	Sodium content	1.00
		Flooding	1.00	Salinity	0.01	Flooding	0.60
		Salinity	0.01			Slope	0.05
						Salinity	0.01
149:							
Vana	80	Very limited:		Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
						Slope	0.94
150:							
Vana	50	Very limited:		Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
						Slope	0.21
Moco	40	Not limited		Not limited		Somewhat limited:	
						Slope	0.21
151:							
White House gravelly loam	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Dusty	0.50	Dusty	0.50	Slope	1.00
		Gravel content	0.41	Gravel content	0.41	Dusty	0.50
White House gravelly sandy loam	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Gravel content	0.41	Gravel content	0.41	Slope	1.00

Table 9A.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Camp areas		Picnic areas		Playgrounds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
152:							
Yarbam	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Content of large stones	0.03	Content of large stones	0.03	Gravel content	1.00
		Gravel content	0.01	Gravel content	0.01	Content of large stones	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	

Table 9B.--Recreation

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
1:							
Altar	55	Somewhat limited: Dusty	0.50	Somewhat limited: Dusty	0.50	Very limited: Too sandy	1.00
						Droughty	0.34
Mallet	30	Not limited		Not limited		Not limited	
2:							
Anthony	45	Not limited		Not limited		Not limited	
Maricopa	40	Not limited		Not limited		Somewhat limited: Droughty	0.16
3:							
Arizo family	65	Somewhat limited: Content of large stones	0.04	Somewhat limited: Content of large stones	0.04	Very limited: Droughty	1.00
						Content of large stones	1.00
						Flooding	0.60
						Too sandy	0.50
						Gravel content	0.10
Riverwash	20	Not rated		Not rated		Not rated	
4:							
Ashcreek	40	Somewhat limited: Too clayey	0.50	Somewhat limited: Too clayey	0.50	Very limited: Too clayey	1.00
						Slope	0.16
Stanford	40	Not limited		Not limited		Somewhat limited: Slope	0.16
5:							
Baboquivari	50	Not limited		Not limited		Not limited	
Combate	40	Somewhat limited: Too sandy	0.03	Somewhat limited: Too sandy	0.03	Not limited	
6:							
Banshee	50	Not limited		Not limited		Very limited: Sodium content	1.00
Banshee, thick surface	30	Somewhat limited: Dusty	0.50	Somewhat limited: Dusty	0.50	Very limited: Sodium content	1.00
7:							
Bella	80	Not limited		Not limited		Very limited: Depth to cemented pan	1.00
						Droughty	1.00
						Carbonate content	1.00

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
8:							
Blakeney	65	Not limited		Not limited		Very limited:	
						Droughty	1.00
						Depth to cemented pan	1.00
						Slope	0.04
Luckyhills	25	Not limited		Not limited		Somewhat limited:	
						Slope	0.04
9:							
Bodecker		Not limited		Not limited		Very limited:	
						Too sandy	1.00
						Droughty	1.00
						Gravel content	0.68
Comoro		Not limited		Not limited		Not limited	
10:							
Bodecker	90	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Droughty	1.00
						Flooding	0.60
11:							
Bodecker	90	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Sodium content	1.00
						Droughty	1.00
						Flooding	0.60
						Salinity	0.01
12:							
Bonita	85	Somewhat limited:		Somewhat limited:		Very limited:	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
						Flooding	0.60
13:							
Bonita	50	Not limited		Not limited		Not limited	
Forrest	40	Somewhat limited:		Somewhat limited:		Not limited	
		Dusty	0.50	Dusty	0.50		
14:							
Borderland	90	Not limited		Not limited		Somewhat limited:	
						Slope	0.16
15:							
Borderline	70	Not limited		Not limited		Somewhat limited:	
						Slope	0.04
16:							
Boss		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	1.00
						Droughty	0.97
Krentz		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Dusty	0.50	Dusty	0.50	Gravel content	1.00
						Droughty	0.80

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
16:							
Paramore		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	1.00
						Gravel content	0.68
Rock outcrop		Not rated		Not rated		Not rated	
17:							
Brookline	40	Not limited		Not limited		Somewhat limited:	
						Droughty	0.44
Fluvaquents	30	Somewhat limited:		Somewhat limited:		Very limited:	
		Too sandy	0.94	Too sandy	0.94	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Too sandy	1.00
						Droughty	0.43
Riverwash	25	Not rated		Not rated		Not rated	
18:							
Brunkcow	35	Not limited		Not limited		Very limited:	
						Droughty	1.00
						Depth to bedrock	1.00
						Slope	0.63
Chiricahua	25	Not limited		Not limited		Very limited:	
						Depth to bedrock	1.00
						Droughty	0.64
						Slope	0.63
Andrada	20	Not limited		Not limited		Very limited:	
						Droughty	1.00
						Depth to bedrock	1.00
						Slope	0.63
						Gravel content	0.41
19:							
Brunkcow	30	Very limited:		Somewhat limited:		Very limited:	
		Slope	1.00	Slope	0.96	Slope	1.00
		Content of large stones	0.71	Content of large stones	0.71	Content of large stones	1.00
						Depth to bedrock	1.00
						Droughty	0.89
Chiricahua	25	Very limited:		Somewhat limited:		Very limited:	
		Slope	1.00	Slope	0.96	Slope	1.00
		Content of large stones	0.68	Content of large stones	0.68	Content of large stones	1.00
						Depth to bedrock	1.00
						Droughty	0.76
Lampshire	20	Very limited:		Somewhat limited:		Very limited:	
		Slope	1.00	Slope	0.96	Slope	1.00
		Content of large stones	0.26	Content of large stones	0.26	Content of large stones	1.00
						Droughty	1.00
						Depth to bedrock	1.00
						Gravel content	0.01

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
20:							
Budlamp	60	Very limited:		Somewhat limited:		Very limited:	
		Slope	1.00	Slope	0.96	Slope	1.00
						Droughty	1.00
						Depth to bedrock	1.00
						Gravel content	1.00
Woodcutter	25	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Slope	1.00
		Slope	1.00	Slope	0.96	Gravel content	1.00
						Droughty	1.00
						Depth to bedrock	1.00
21:							
Buntline	90	Not limited		Not limited		Very limited:	
						Depth to cemented pan	1.00
						Droughty	1.00
22:							
Caralampi	80	Not limited		Not limited		Somewhat limited:	
						Droughty	0.20
23:							
Caralampi	85	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Droughty	0.44
24:							
Carbine	70	Somewhat limited:		Not limited		Very limited:	
		Slope	0.08			Droughty	1.00
						Depth to cemented pan	1.00
						Gravel content	1.00
						Slope	1.00
						Content of large stones	0.01
25:							
Carbine	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to cemented pan	1.00
						Slope	1.00
						Droughty	0.59
Hathaway	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.68
						Droughty	0.61
26:							
Cazador	60	Somewhat limited:		Somewhat limited:		Very limited:	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
						Slope	0.16
Lesliecreek	30	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Slope	0.16

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
27:							
Cherrycow	50	Very limited:		Somewhat limited:		Very limited:	
		Slope	1.00	Slope	0.22	Depth to bedrock	1.00
						Slope	1.00
						Droughty	0.59
						Gravel content	0.32
Blacktail	35	Very limited:		Somewhat limited:		Very limited:	
		Slope	1.00	Slope	0.22	Slope	1.00
						Droughty	0.04
28:							
Cherrycow	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	1.00
Magoffin	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	1.00
						Depth to bedrock	1.00
						Gravel content	0.68
Rock outcrop	20	Not rated		Not rated		Not rated	
29:							
Chorro	30	Somewhat limited:		Somewhat limited:		Very limited:	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
						Sodium content	1.00
Doubleadobe	30	Somewhat limited:		Somewhat limited:		Very limited:	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
						Sodium content	1.00
						Salinity	1.00
						Carbonate content	1.00
Gothard	30	Somewhat limited:		Somewhat limited:		Very limited:	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
						Sodium content	1.00
						Droughty	0.30
30:							
Chorro	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Sodium content	1.00
						Droughty	0.11
Guest	40	Not limited		Not limited		Not limited	
31:							
Cogswell	85	Somewhat limited:		Somewhat limited:		Very limited:	
		Too clayey	0.50	Too clayey	0.50	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Sodium content	1.00
						Too clayey	1.00
						Salinity	0.01
32:							
Combate	70	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Too sandy	0.03	Too sandy	0.03	Droughty	0.38

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
33:							
Comoro	85	Not limited		Not limited		Not limited	
34:							
Comoro	85	Not limited		Not limited		Very limited:	
						Sodium content	1.00
						Droughty	0.63
						Salinity	0.01
35:							
Contention		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Water erosion	1.00	Water erosion	1.00		
Crystalgyp		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Depth to bedrock	0.46
						Droughty	0.10
Monzingo		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
Redington		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Droughty	0.52
36:							
Contention	45	Not limited		Not limited		Not limited	
Ugyp	20	Not limited		Not limited		Somewhat limited:	
						Flooding	0.60
Ugyp	15	Not limited		Not limited		Somewhat limited:	
						Flooding	0.60
37:							
Courtland	85	Not limited		Not limited		Not limited	
38:							
Courtland	85	Not limited		Not limited		Very limited:	
						Sodium content	1.00
						Droughty	0.07
						Salinity	0.01
39:							
Courtland	55	Not limited		Not limited		Not limited	
Diaspar	30	Not limited		Not limited		Not limited	
40:							
Courtland	35	Not limited		Not limited		Not limited	
Sasabe	35	Not limited		Not limited		Not limited	
Diaspar	20	Not limited		Not limited		Not limited	
41:							
Crowbar	60	Not limited		Not limited		Very limited:	
						Slope	1.00
						Droughty	0.74

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
41:							
Brunopeak	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	1.00
						Droughty	0.85
42:							
Deloro	40	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Gravel content	1.00
						Slope	1.00
Leyte	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Droughty	1.00
						Depth to bedrock	1.00
						Slope	1.00
						Gravel content	0.68
Lampshire	20	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Gravel content	1.00
						Slope	1.00
						Content of large stones	1.00
43:							
Denab	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Droughty	1.00
						Depth to bedrock	1.00
						Slope	1.00
						Gravel content	0.32
Castledome	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Droughty	1.00
						Depth to bedrock	1.00
						Slope	1.00
44:							
Denied Access		Not rated		Not rated		Not rated	
45:							
Diaspar	85	Not limited		Not limited		Not limited	
46:							
Diaspar	85	Not limited		Not limited		Very limited:	
						Sodium content	1.00
						Droughty	0.64
						Salinity	0.01
47:							
Dona Ana	45	Not limited		Not limited		Not limited	
Mohave	30	Not limited		Not limited		Not limited	

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
48:							
Doubleadobe---------	85	Somewhat limited:		Somewhat limited:		Very limited:	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
						Sodium content	1.00
						Salinity	1.00
						Carbonate content	1.00
49:							
Durazo----------	90	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Too sandy	0.24	Too sandy	0.24	Droughty	0.92
50:							
Durazo----------	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Too sandy	0.24	Too sandy	0.24	Sodium content	1.00
						Droughty	1.00
						Salinity	0.01
51:							
Durazo----------	55	Somewhat limited:		Somewhat limited:		Very limited:	
		Too sandy	0.24	Too sandy	0.24	Sodium content	1.00
						Droughty	1.00
						Salinity	0.01
Gothard----------	30	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Sodium content	1.00
						Slope	1.00
						Flooding	0.60
						Droughty	0.19
52:							
Durazo----------	50	Not limited		Not limited		Somewhat limited:	
						Droughty	0.01
Courtland----------	40	Not limited		Not limited		Not limited	
53:							
Durazo----------	55	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Too sandy	0.24	Too sandy	0.24	Droughty	0.92
McAllister----------	30	Somewhat limited:		Somewhat limited:		Not limited	
		Dusty	0.50	Dusty	0.50		
54:							
Elfrida----------	90	Not limited		Not limited		Very limited:	
						Sodium content	1.00
						Flooding	0.60
55:							
Elfrida----------	90	Not limited		Not limited		Very limited:	
						Sodium content	1.00
						Flooding	0.60
						Salinity	0.01
56:							
Elgin----------	35	Not limited		Not limited		Not limited	
McAllister----------	30	Not limited		Not limited		Not limited	
Stronghold----------	20	Not limited		Not limited		Not limited	

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
57:							
Elgin	50	Not limited		Not limited		Somewhat limited:	
						Slope	0.16
Outlaw	40	Not limited		Not limited		Very limited:	
						Carbonate content	1.00
						Slope	0.16
58:							
Elgin	50	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Slope	0.63
Stronghold	40	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Droughty	0.81
						Slope	0.63
59:							
Eloma	80	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Dusty	0.50	Dusty	0.50	Gravel content	0.68
						Slope	0.16
						Droughty	0.09
60:							
Eloma	40	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Droughty	0.44
						Content of large stones	0.01
Caralampi	30	Not limited		Not limited		Not limited	
White House	20	Not limited		Not limited		Not limited	
61:							
Epitaph	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Content of large stones	0.32	Content of large stones	0.32	Content of large stones	1.00
						Depth to cemented pan	1.00
						Depth to bedrock	0.84
						Slope	0.04
62:							
Far	55	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00	Content of organic matter	1.00
						Droughty	1.00
						Depth to bedrock	1.00
Hogris	25	Very limited:		Very limited:		Very limited:	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	1.00	Slope	0.56	Content of organic matter	1.00
						Droughty	1.00

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
63:							
Far	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00	Content of organic matter	1.00
						Droughty	1.00
						Depth to bedrock	1.00
Huachuca	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00	Content of organic matter	1.00
		Too stony	0.53	Too stony	0.53	Droughty	1.00
						Depth to bedrock	1.00
Hogris	20	Very limited:		Very limited:		Very limited:	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	1.00	Slope	0.56	Content of organic matter	1.00
						Droughty	1.00
64:							
Far	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00	Content of organic matter	1.00
						Droughty	1.00
						Depth to bedrock	1.00
Huachuca	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Water erosion	1.00	Slope	1.00
		Water erosion	1.00	Slope	1.00	Content of organic matter	1.00
		Too stony	0.53	Too stony	0.53	Droughty	1.00
						Depth to bedrock	1.00
Hogris	20	Very limited:		Very limited:		Very limited:	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
		Slope	1.00	Slope	0.56	Content of organic matter	1.00
						Droughty	1.00
65:							
Forrest	85	Not limited		Not limited		Not limited	
66:							
Forrest	85	Not limited		Not limited		Very limited:	
						Sodium content	1.00
						Salinity	0.01
67:							
Forrest	85	Not limited		Not limited		Not limited	
68:							
Forrest	85	Somewhat limited:		Somewhat limited:		Not limited	
		Dusty	0.50	Dusty	0.50		
69:							
Forrest	85	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Sodium content	1.00
						Salinity	0.01

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
70:							
Forrest	55	Not limited		Not limited		Not limited	
Bonita	40	Not limited		Not limited		Somewhat limited:	
						Flooding	0.60
71:							
Gardencan	45	Not limited		Not limited		Not limited	
Lanque	35	Not limited		Not limited		Not limited	
72:							
Glendale	85	Somewhat limited:		Somewhat limited:		Not limited	
		Dusty	0.50	Dusty	0.50		
73:							
Gothard	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Sodium content	1.00
						Droughty	0.19
74:							
Gothard	85	Somewhat limited:		Somewhat limited:		Very limited:	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
						Sodium content	1.00
						Droughty	0.30
75:							
Graham	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Content of large stones	1.00
		Content of large stones	0.82	Content of large stones	0.82	Droughty	1.00
		Dusty	0.50	Dusty	0.50	Depth to bedrock	1.00
						Slope	1.00
Lampshire	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	0.88	Content of large stones	0.88	Content of large stones	1.00
		Too stony	0.53	Too stony	0.53	Droughty	1.00
		Dusty	0.50	Dusty	0.50	Depth to bedrock	1.00
76:							
Graveyard	45	Not limited		Not limited		Somewhat limited:	
						Droughty	0.79
Sierravista	35	Not limited		Not limited		Somewhat limited:	
						Droughty	0.24
77:							
Grizzle	80	Not limited		Not limited		Very limited:	
						Depth to bedrock	1.00
78:							
Guest	90	Not limited		Not limited		Somewhat limited:	
						Flooding	0.60
79:							
Guest	80	Not limited		Not limited		Somewhat limited:	
						Flooding	0.60

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails		Off-road motorcycle trails		Golf fairways	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
80:							
Guest	90	Not limited		Not limited		Very limited:	
						Sodium content	1.00
						Flooding	0.60
						Salinity	0.01
81:							
Guest	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
						Flooding	0.60
82:							
Guest	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Too clayey	0.50	Too clayey	0.50	Sodium content	1.00
						Too clayey	1.00
						Flooding	0.60
						Salinity	0.01
83:							
Guest	60	Somewhat limited:		Somewhat limited:		Very limited:	
		Too clayey	0.50	Too clayey	0.50	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Sodium content	1.00
						Too clayey	1.00
						Salinity	0.01
Cogswell	30	Somewhat limited:		Somewhat limited:		Very limited:	
		Flooding	0.40	Flooding	0.40	Flooding	1.00
						Sodium content	1.00
						Salinity	0.01
84:							
Guest	40	Not limited		Not limited		Not limited	
Riveroad	40	Not limited		Not limited		Not limited	
85:							
Hantz	85	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Sodium content	1.00
						Flooding	0.60
						Salinity	0.50
86:							
Haplustolls	70	Not limited		Not limited		Very limited:	
						Content of organic matter	1.00
						Droughty	1.00
						Flooding	0.60
Fluvaquents	20	Somewhat limited:		Somewhat limited:		Very limited:	
		Content of large stones	0.77	Content of large stones	0.77	Flooding	1.00
						Content of large stones	1.00
		Depth to saturated zone	0.44	Depth to saturated zone	0.44	Droughty	1.00
		Flooding	0.40	Flooding	0.40	Depth to saturated zone	0.75

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
87:							
Haplustolls	70	Not limited		Not limited		Very limited:	
						Content of organic matter	1.00
						Droughty	1.00
						Flooding	0.60
Fluvaquents	20	Somewhat limited:		Somewhat limited:		Very limited:	
		Content of large stones	0.77	Content of large stones	0.77	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Too sandy	1.00
						Content of large stones	1.00
						Droughty	1.00
						Depth to saturated zone	0.19
88:							
Hayhollow	30	Not limited		Not limited		Very limited:	
						Content of organic matter	1.00
						Droughty	0.19
Rafter	30	Not limited		Not limited		Very limited:	
						Droughty	1.00
						Gravel content	1.00
Riverwash	30	Not rated		Not rated		Not rated	
89:							
Kaboom	45	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Depth to bedrock	1.00
						Droughty	0.93
Reeup	35	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.98	Dusty	0.50	Slope	1.00
		Dusty	0.50			Depth to bedrock	0.84
90:							
Kahn fine sandy loam	45	Not limited		Not limited		Not limited	
Kahn silt loam	40	Somewhat limited:		Somewhat limited:		Not limited	
		Dusty	0.50	Dusty	0.50		
91:							
Kahn	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Slope	1.00
						Carbonate content	1.00
Zapolote	40	Not limited		Not limited		Very limited:	
						Slope	1.00
92:							
Karro	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Carbonate content	1.00
93:							
Karro	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Sodium content	1.00
						Carbonate content	1.00
						Salinity	0.01

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
94:							
Keysto	60	Somewhat limited:		Somewhat limited:		Very limited:	
		Content of large stones	0.71	Content of large stones	0.71	Content of large stones	1.00
						Droughty	1.00
Riverwash	30	Not rated		Not rated		Not rated	
95:							
Kuykendall	70	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Too clayey	0.50	Too clayey	0.50	Too clayey	1.00
						Slope	1.00
						Droughty	0.72
Rock outcrop	20	Not rated		Not rated		Not rated	
96:							
Lanque	60	Not limited		Not limited		Not limited	
Stanford	30	Not limited		Not limited		Not limited	
97:							
Libby	45	Very limited:		Very limited:		Very limited:	
		Gravel content	1.00	Gravel content	1.00	Gravel content	1.00
Gulch	35	Not limited		Not limited		Somewhat limited:	
						Gravel content	0.50
98:							
Luckyhills	90	Somewhat limited:		Somewhat limited:		Not limited	
		Too sandy	0.12	Too sandy	0.12		
99:							
Luckyhills	50	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Slope	0.04
						Droughty	0.01
McNeal	40	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Slope	0.04
100:							
Lutzcan	50	Very limited:		Somewhat limited:		Very limited:	
		Slope	1.00	Slope	0.96	Slope	1.00
		Content of large stones	0.20	Content of large stones	0.20	Content of large stones	1.00
						Droughty	1.00
						Depth to bedrock	1.00
						Gravel content	0.01
Yarbam	35	Very limited:		Somewhat limited:		Very limited:	
		Slope	1.00	Slope	0.96	Slope	1.00
						Droughty	1.00
						Gravel content	1.00
						Depth to bedrock	1.00
						Content of large stones	0.20

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
101:							
Mabray	45	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.98	Dusty	0.50	Droughty	1.00
		Dusty	0.50	Content of large stones	0.05	Content of large stones	1.00
		Content of large stones	0.05			Slope	1.00
						Carbonate content	1.00
						Depth to bedrock	1.00
Chiricahua	30	Somewhat limited:		Not limited		Very limited:	
		Slope	0.98			Gravel content	1.00
						Slope	1.00
						Depth to bedrock	1.00
						Droughty	0.81
Rock outcrop	15	Not rated		Not rated		Not rated	
102:							
Mabray	60	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.98	Dusty	0.50	Content of large stones	1.00
		Dusty	0.50	Content of large stones	0.26	Droughty	1.00
		Content of large stones	0.26			Depth to bedrock	1.00
						Slope	1.00
						Carbonate content	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
103:							
Magoffin	40	Not limited		Not limited		Very limited:	
						Droughty	1.00
						Depth to bedrock	1.00
						Slope	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
Cherrycow	20	Not limited		Not limited		Very limited:	
						Slope	1.00
						Depth to bedrock	1.00
104:							
Major fine sandy loam	40	Not limited		Not limited		Not limited	
Major silt loam	40	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Dusty	0.50	Dusty	0.50	Flooding	0.60
105:							
Mallet	45	Not limited		Not limited		Not limited	
Hooks	35	Not limited		Not limited		Not limited	
106:							
Marsh	100	Not rated		Not rated		Not rated	
107:							
McAllister	90	Somewhat limited:		Somewhat limited:		Not limited	
		Dusty	0.50	Dusty	0.50		

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
108:							
McAllister----------	50	Not limited		Not limited		Somewhat limited:	
						Slope	0.63
						Gravel content	0.50
Stronghold----------	30	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Droughty	0.81
						Slope	0.63
109:							
McNeal----------	85	Not limited		Not limited		Somewhat limited:	
						Gravel content	0.32
110:							
McNeal----------	85	Not limited		Not limited		Very limited:	
						Sodium content	1.00
						Gravel content	0.32
						Salinity	0.01
111:							
Monzingo----------	55	Not limited		Not limited		Somewhat limited:	
						Slope	0.84
Ugyp----------	15	Not limited		Not limited		Not limited	
Ugyp----------	10	Not limited		Not limited		Somewhat limited:	
						Flooding	0.60
112:							
Naco----------	35	Not limited		Not limited		Somewhat limited:	
						Droughty	0.16
Ruins, thick surface	35	Not limited		Not limited		Not limited	
Ruins----------	20	Not limited		Not limited		Not limited	
113:							
Nolam----------	40	Not limited		Not limited		Somewhat limited:	
						Droughty	0.92
Libby----------	25	Not limited		Not limited		Somewhat limited:	
						Gravel content	0.50
Buntline----------	20	Not limited		Not limited		Very limited:	
						Depth to cemented pan	1.00
						Droughty	1.00
						Gravel content	0.50
114:							
Outlaw----------		Very limited:		Very limited:		Very limited:	
		Water erosion	1.00	Water erosion	1.00	Slope	1.00
						Carbonate content	1.00
Epitaph----------		Not limited		Not limited		Very limited:	
						Slope	1.00
						Depth to cemented pan	1.00
						Depth to bedrock	0.84
						Droughty	0.05

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
114:							
Paramore		Not limited		Not limited		Very limited:	
						Slope	1.00
						Depth to bedrock	1.00
						Droughty	0.19
115:							
Oversight	90	Somewhat limited:		Not limited		Very limited:	
		Slope	0.50			Slope	1.00
						Gravel content	1.00
						Droughty	0.28
116:							
Oversight	80	Somewhat limited:		Not limited		Very limited:	
		Slope	0.50			Slope	1.00
						Droughty	0.88
117:							
Oversight	60	Not limited		Not limited		Somewhat limited:	
						Droughty	0.27
Lanque	30	Somewhat limited:		Somewhat limited:		Not limited	
		Too sandy	0.28	Too sandy	0.28		
118:							
Pedregosa	85	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Depth to cemented pan	1.00
						Droughty	0.90
						Slope	0.04
119:							
Pedregosa	70	Somewhat limited:		Not limited		Very limited:	
		Slope	0.50			Droughty	1.00
						Depth to cemented pan	1.00
						Slope	1.00
						Gravel content	0.92
Tombstone	20	Somewhat limited:		Not limited		Very limited:	
		Slope	0.50			Gravel content	1.00
						Slope	1.00
						Droughty	1.00
120:							
Perilla	50	Not limited		Not limited		Somewhat limited:	
						Droughty	0.01
Durazo	40	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Too sandy	0.24	Too sandy	0.24	Droughty	0.89
121:							
Pits	80	Not rated		Not rated		Not rated	
122:							
Pits	50	Not rated		Not rated		Not rated	
Dumps	50	Not rated		Not rated		Not rated	

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
123:							
Quiburi	40	Not limited		Not limited		Very limited:	
						Content of organic matter	1.00
						Flooding	0.60
Fluvaquents	30	Somewhat limited:		Somewhat limited:		Very limited:	
		Too sandy	0.88	Too sandy	0.88	Flooding	1.00
		Flooding	0.40	Flooding	0.40	Too sandy	1.00
						Droughty	1.00
Riverwash	20	Not rated		Not rated		Not rated	
124:							
Rafter	50	Not limited		Not limited		Very limited:	
						Droughty	1.00
						Gravel content	1.00
Lanque	40	Not limited		Not limited		Not limited	
125:							
Riveroad		Somewhat limited:		Somewhat limited:		Not limited	
		Dusty	0.50	Dusty	0.50		
Ubik		Somewhat limited:		Somewhat limited:		Not limited	
		Dusty	0.50	Dusty	0.50		
126:							
Riverwash	90	Not rated		Not rated		Not rated	
127:							
Riverwash	65	Not rated		Not rated		Not rated	
Bodecker	30	Not limited		Not limited		Very limited:	
						Droughty	1.00
						Flooding	0.60
128:							
Rock outcrop	50	Not rated		Not rated		Not rated	
Magoffin	40	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Slope	1.00
						Content of large stones	1.00
129:							
Sasabe sansy loam	55	Not limited		Not limited		Not limited	
Sasabe silt loam	35	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Flooding	1.00
		Flooding	0.40	Flooding	0.40		
130:							
Sasabe	85	Not limited		Not limited		Somewhat limited:	
						Gravel content	0.32

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
131:							
Sasabe	85	Not limited		Not limited		Very limited:	
						Sodium content	1.00
						Gravel content	0.32
						Droughty	0.01
						Salinity	0.01
132:							
Schiefflin	80	Somewhat limited:		Somewhat limited:		Very limited:	
		Too stony	0.53	Too stony	0.53	Content of large stones	1.00
		Content of large stones	0.35	Content of large stones	0.35	Droughty	1.00
		Too sandy	0.03	Too sandy	0.03	Depth to bedrock	1.00
						Slope	0.04
133:							
Stronghold	90	Not limited		Not limited		Somewhat limited:	
						Gravel content	0.25
134:							
Stronghold	50	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.50	Dusty	0.50	Gravel content	1.00
		Dusty	0.50			Slope	1.00
						Droughty	0.72
Bernardino	40	Somewhat limited:		Not limited		Very limited:	
		Slope	0.50			Slope	1.00
						Gravel content	0.41
135:							
Surge	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
						Droughty	1.00
						Slope	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
136:							
Sutherland	55	Not limited		Not limited		Very limited:	
						Droughty	1.00
						Carbonate content	1.00
						Depth to cemented pan	1.00
						Gravel content	0.92
						Slope	0.04
Mule	35	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Carbonate content	1.00
						Droughty	0.14
						Slope	0.04
137:							
Swisshelm	85	Not limited		Not limited		Not limited	
138:							
Swisshelm	85	Not limited		Not limited		Very limited:	
						Sodium content	1.00
						Droughty	0.24
						Salinity	0.01

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
139:							
Tenneco	80	Not limited		Not limited		Not limited	
140:							
Terrarossa sandy loam	30	Somewhat limited:		Not limited		Very limited:	
		Slope	0.92			Slope	1.00
Terrarossa gravelly loam	25	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.92	Dusty	0.50	Slope	1.00
		Dusty	0.50			Gravel content	0.41
Terrarossa very gravelly sandy loam	20	Somewhat limited:		Not limited		Very limited:	
		Slope	0.92			Gravel content	1.00
						Slope	1.00
						Content of large stones	0.01
141:							
Terrarossa	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.68	Dusty	0.50	Slope	1.00
		Dusty	0.50			Gravel content	0.41
Blacktail	35	Somewhat limited:		Not limited		Very limited:	
		Slope	0.68			Slope	1.00
						Carbonate content	1.00
						Gravel content	0.50
Pyeatt	15	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.68	Dusty	0.50	Slope	1.00
		Dusty	0.50			Gravel content	0.41
142:							
Tombstone	90	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Droughty	0.90
						Slope	0.63
143:							
Turquoise	55	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Droughty	1.00
						Depth to bedrock	1.00
						Slope	1.00
						Too sandy	0.50
Nugget	25	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
						Content of large stones	1.00
						Depth to bedrock	1.00
144:							
Ubik silt loam	50	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Dusty	0.50	Dusty	0.50	Flooding	0.60
Ubik fine sandy loam	40	Not limited		Not limited		Very limited:	
						Sodium content	1.00
						Flooding	0.60

Table 9B.--Recreation--Continued

Map symbol and soil name	Pct. of map unit	Paths and trails: Rating class and limiting features	Value	Off-road motorcycle trails: Rating class and limiting features	Value	Golf fairways: Rating class and limiting features	Value
145:							
Ubik	90	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Dusty	0.50	Dusty	0.50	Flooding	0.60
146:							
Ubik	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Sodium content	1.00
						Flooding	0.60
						Salinity	0.01
147:							
Ubik	90	Not limited		Not limited		Somewhat limited:	
						Flooding	0.60
148:							
Ubik	90	Not limited		Not limited		Very limited:	
						Sodium content	1.00
						Flooding	0.60
						Droughty	0.01
						Salinity	0.01
149:							
Vana	80	Not limited		Not limited		Very limited:	
						Depth to cemented pan	1.00
						Droughty	1.00
						Carbonate content	1.00
150:							
Vana	50	Not limited		Not limited		Very limited:	
						Depth to cemented pan	1.00
						Carbonate content	1.00
						Droughty	0.97
Moco	40	Not limited		Not limited		Very limited:	
						Carbonate content	1.00
151:							
White House gravelly loam	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Dusty	0.50	Dusty	0.50	Slope	1.00
		Slope	0.02			Gravel content	0.41
White House gravelly sandy loam	35	Somewhat limited:		Not limited		Very limited:	
		Slope	0.02			Slope	1.00
						Gravel content	0.41
152:							
Yarbam	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	0.03	Content of large stones	0.03	Droughty	1.00
						Depth to bedrock	1.00
						Content of large stones	1.00
						Gravel content	0.01
Rock outcrop	30	Not rated		Not rated		Not rated	

Table 10A.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
1:							
Altar	55	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
						Slope	1.00
Mallet	30	Not limited		Not limited		Very limited:	
						Slope	1.00
2:							
Anthony	45	Not limited		Not limited		Not limited	
Maricopa	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
3:							
Arizo family	65	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Content of large stones	0.01	Content of large stones	0.01	Content of large stones	0.01
Riverwash	20	Not rated		Not rated		Not rated	
4:							
Ashcreek	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Content of large stones	1.00	Content of large stones	1.00	Slope	1.00
		Slope	0.16	Slope	0.16	Content of large stones	1.00
Stanford	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Slope	1.00
		Slope	0.16	Slope	0.16	Shrink-swell	1.00
5:							
Baboquivari	50	Somewhat limited:		Not limited		Somewhat limited:	
		Shrink-swell	0.50			Shrink-swell	0.50
Combate	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
6:							
Banshee	50	Very limited:		Not limited		Very limited:	
		Shrink-swell	1.00			Shrink-swell	1.00
						Slope	0.12
Banshee, thick surface	30	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
						Slope	0.12

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
7:							
Bella	80	Not limited		Not limited		Somewhat limited:	
						Slope	0.47
8:							
Blakeney	65	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Slope	0.04	Slope	1.00
Luckyhills	25	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Slope	0.04	Slope	1.00
9:							
Bodecker		Not limited		Not limited		Somewhat limited:	
						Slope	0.12
Comoro		Not limited		Not limited		Somewhat limited:	
						Slope	0.12
10:							
Bodecker	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
11:							
Bodecker	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
12:							
Bonita	85	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
13:							
Bonita	50	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
						Slope	1.00
Forrest	40	Somewhat limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Slope	1.00
						Shrink-swell	1.00
14:							
Borderland	90	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Slope	1.00
		Slope	0.16	Slope	0.16	Content of large stones	1.00
15:							
Borderline	70	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Slope	0.04	Slope	1.00
16:							
Boss		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Krentz		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
16:							
Paramore		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Depth to hard bedrock	1.00	Shrink-swell	1.00
		Depth to hard bedrock	1.00			Depth to hard bedrock	1.00
Rock outcrop		Not rated		Not rated		Not rated	
17:							
Brookline	40	Not limited		Somewhat limited:		Not limited	
				Depth to saturated zone	0.82		
Fluvaquents	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Depth to saturated zone	0.99		
Riverwash	25	Not rated		Not rated		Not rated	
18:							
Brunkcow	35	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	1.00
Chiricahua	25	Very limited:		Very limited:		Very limited:	
		Depth to soft bedrock	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.63	Slope	0.63	Depth to hard bedrock	1.00
Andrada	20	Somewhat limited:		Very limited:		Very limited:	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Slope	1.00
		Slope	0.63	Slope	0.63	Depth to soft bedrock	1.00
19:							
Brunkcow	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Chiricahua	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Depth to hard bedrock	1.00	Shrink-swell	1.00
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Depth to hard bedrock	1.00			Depth to hard bedrock	1.00
Lampshire	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
20:							
Budlamp	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Woodcutter	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
21:							
Buntline	90	Not limited		Not limited		Not limited	
22:							
Caralampi	80	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
						Slope	0.12
23:							
Caralampi	85	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
24:							
Carbine	70	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
25:							
Carbine	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
Hathaway	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
26:							
Cazador	60	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	0.16	Slope	0.16	Slope	1.00
Lesliecreek	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Slope	0.16	Slope	0.16	Slope	1.00
27:							
Cherrycow	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Depth to hard bedrock	1.00
Blacktail	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
28:							
Cherrycow	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Depth to hard bedrock	1.00	Shrink-swell	1.00
		Depth to hard bedrock	1.00			Depth to hard bedrock	1.00
Magoffin	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
29:							
Chorro	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
						Slope	0.12
Doubleadobe	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
						Slope	0.12
Gothard	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
						Slope	0.12
30:							
Chorro	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Guest	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
31:							
Cogswell	85	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
32:							
Combate	70	Not limited		Not limited		Not limited	
33:							
Comoro	85	Not limited		Not limited		Not limited	
34:							
Comoro	85	Not limited		Not limited		Not limited	
35:							
Contention		Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
Crystalgyp		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.46		

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
35:							
Monzingo		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
Redington		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
36:							
Contention	45	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
Ugyp	20	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Ugyp	15	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
37:							
Courtland	85	Somewhat limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
38:							
Courtland	85	Somewhat limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
39:							
Courtland	55	Somewhat limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
Diaspar	30	Not limited		Somewhat limited:		Not limited	
				Shrink-swell	0.50		
40:							
Courtland	35	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Sasabe	35	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
						Slope	0.12
Diaspar	20	Not limited		Somewhat limited:		Not limited	
				Shrink-swell	0.50		
41:							
Crowbar	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
Brunopeak	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
42:							
Deloro	40	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
Leyte	30	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
Lampshire	20	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
43:							
Denab	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Depth to hard bedrock	1.00
Castledome	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to soft bedrock	1.00	Slope	1.00
		Depth to soft bedrock	1.00	Depth to hard bedrock	1.00	Depth to soft bedrock	1.00
		Depth to hard bedrock	0.84	Slope	1.00	Depth to hard bedrock	0.84
44:							
Denied Access		Not rated		Not rated		Not rated	
45:							
Diaspar	85	Not limited		Not limited		Not limited	
46:							
Diaspar	85	Not limited		Not limited		Not limited	
47:							
Dona Ana	45	Somewhat limited:		Not limited		Somewhat limited:	
		Shrink-swell	0.50			Shrink-swell	0.50
Mohave	30	Not limited		Not limited		Not limited	
48:							
Doubleadobe	85	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
49:							
Durazo	90	Not limited		Not limited		Not limited	

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
50:							
Durazo	90	Not limited		Not limited		Not limited	
51:							
Durazo	55	Not limited		Not limited		Somewhat limited:	
						Slope	0.86
Gothard	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Slope	1.00	Shrink-swell	1.00	Slope	1.00
		Shrink-swell	1.00	Slope	1.00	Shrink-swell	1.00
52:							
Durazo	50	Not limited		Not limited		Somewhat limited:	
						Slope	0.12
Courtland	40	Somewhat limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
						Slope	0.12
53:							
Durazo	55	Not limited		Not limited		Somewhat limited:	
						Slope	0.86
McAllister	30	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	0.86
						Shrink-swell	0.50
54:							
Elfrida	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
55:							
Elfrida	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
56:							
Elgin	35	Somewhat limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Slope	1.00
						Shrink-swell	1.00
McAllister	30	Somewhat limited:		Not limited		Very limited:	
		Shrink-swell	1.00			Slope	1.00
						Shrink-swell	1.00
Stronghold	20	Not limited		Not limited		Very limited:	
						Slope	1.00
57:							
Elgin	50	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Slope	1.00
						Content of large stones	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	0.16	Slope	0.16		
Outlaw	40	Very limited:		Somewhat limited:		Very limited:	
		Shrink-swell	1.00	Slope	0.16	Shrink-swell	1.00
		Slope	0.16			Slope	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
58:							
Elgin	50	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Slope	1.00
		Shrink-swell	0.50			Shrink-swell	0.50
Stronghold	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Slope	1.00
59:							
Eloma	80	Somewhat limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Slope	1.00
		Slope	0.16	Slope	0.16	Shrink-swell	1.00
60:							
Eloma	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
						Shrink-swell	0.50
Caralampi	30	Not limited		Not limited		Very limited:	
						Slope	1.00
White House	20	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
						Slope	1.00
61:							
Epitaph	90	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Depth to hard bedrock	0.84	Depth to hard bedrock	1.00	Slope	1.00
		Slope	0.04	Slope	0.04	Depth to hard bedrock	0.84
62:							
Far	55	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Hogris	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
63:							
Far	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Huachuca	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Hogris	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
64:							
Far	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Huachuca	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Hogris	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
65:							
Forrest	85	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
66:							
Forrest	85	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
67:							
Forrest	85	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
68:							
Forrest	85	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
69:							
Forrest	85	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
70:							
Forrest	55	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
Bonita	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
71:							
Gardencan	45	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Lanque	35	Not limited		Not limited		Not limited	
72:							
Glendale	85	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
73:							
Gothard	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
74:							
Gothard	85	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
75:							
Graham	60	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
Lampshire	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Content of large stones	0.01	Content of large stones	0.01	Content of large stones	0.01
76:							
Graveyard	45	Not limited		Not limited		Not limited	
Sierravista	35	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
77:							
Grizzle	80	Not limited		Very limited:		Somewhat limited:	
				Depth to soft bedrock	1.00	Slope	0.47
				Depth to hard bedrock	0.95		
78:							
Guest	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
79:							
Guest	80	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
80:							
Guest	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
81:							
Guest	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
82:							
Guest	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
83:							
Guest	60	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
83:							
Cogswell	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
84:							
Guest	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
Riveroad	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Shrink-swell	0.50		
85:							
Hantz	85	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
86:							
Haplustolls	70	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
Fluvaquents	20	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Content of large stones	1.00	Depth to saturated zone	1.00	Content of large stones	1.00
		Depth to saturated zone	1.00	Content of large stones	1.00	Depth to saturated zone	1.00
87:							
Haplustolls	70	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
Fluvaquents	20	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
		Depth to saturated zone	0.44	Depth to saturated zone	1.00	Depth to saturated zone	0.44
88:							
Hayhollow	30	Not limited		Not limited		Somewhat limited:	
						Slope	0.12
Rafter	30	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
						Slope	0.12
Riverwash	30	Not rated		Not rated		Not rated	
89:							
Kaboom	45	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
89:							
Reeup	35	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Slope	1.00	Shrink-swell	1.00
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	0.84			Depth to hard bedrock	0.84
90:							
Kahn fine sandy loam	45	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Kahn silt loam	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
91:							
Kahn	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
Zapolote	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
92:							
Karro	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
93:							
Karro	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
94:							
Keysto	60	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
Riverwash	30	Not rated		Not rated		Not rated	
95:							
Kuykendall	70	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
96:							
Lanque	60	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
						Slope	0.12
Stanford	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Shrink-swell	1.00	Slope	0.12

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
97:							
Libby	45	Very limited:		Very limited:		Very limited:	
		Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
						Slope	0.12
Gulch	35	Very limited:		Very limited:		Very limited:	
		Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
						Slope	0.12
98:							
Luckyhills	90	Not limited		Not limited		Not limited	
99:							
Luckyhills	50	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Slope	0.04	Slope	1.00
McNeal	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Shrink-swell	0.50	Shrink-swell	0.50	Slope	1.00
		Slope	0.04	Slope	0.04	Shrink-swell	0.50
100:							
Lutzcan	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
Yarbam	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
101:							
Mabray	45	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Depth to hard bedrock	1.00
Chiricahua	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to soft bedrock	1.00	Slope	1.00	Depth to soft bedrock	1.00
		Depth to hard bedrock	1.00	Depth to soft bedrock	1.00	Depth to hard bedrock	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	
102:							
Mabray	60	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	0.50	Content of large stones	0.50	Content of large stones	0.50
Rock outcrop	30	Not rated		Not rated		Not rated	

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
103:							
Magoffin	40	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
Cherrycow	20	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Depth to hard bedrock	1.00	Shrink-swell	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00			Depth to hard bedrock	1.00
104:							
Major fine sandy loam	40	Very limited:		Very limited:		Very limited:	
		Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
				Shrink-swell	0.50		
Major silt loam	40	Very limited:		Very limited:		Very limited:	
		Subsidence	1.00	Subsidence	1.00	Subsidence	1.00
		Flooding	1.00	Flooding	1.00	Flooding	1.00
105:							
Mallet	45	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
						Slope	0.12
Hooks	35	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
						Slope	0.12
106:							
Marsh	100	Not rated		Not rated		Not rated	
107:							
McAllister	90	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
108:							
McAllister	50	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Slope	1.00
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
Stronghold	30	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Slope	1.00
109:							
McNeal	85	Somewhat limited:		Not limited		Somewhat limited:	
		Shrink-swell	0.50			Shrink-swell	0.50
110:							
McNeal	85	Somewhat limited:		Not limited		Somewhat limited:	
		Shrink-swell	0.50			Shrink-swell	0.50

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
111:							
Monzingo	55	Somewhat limited: Slope	0.84	Somewhat limited: Slope	0.84	Very limited: Slope	1.00
Ugyp	15	Very limited: Flooding	1.00	Very limited: Flooding	1.00	Very limited: Flooding	1.00
Ugyp	10	Very limited: Flooding	1.00	Very limited: Flooding	1.00	Very limited: Flooding	1.00
112:							
Naco	35	Very limited: Shrink-swell	1.00	Very limited: Shrink-swell	1.00	Very limited: Shrink-swell	1.00
		Content of large stones	0.11	Content of large stones	0.11	Content of large stones	0.11
Ruins, thick surface	35	Not limited		Not limited		Not limited	
Ruins	20	Very limited: Shrink-swell	1.00	Very limited: Shrink-swell	1.00	Very limited: Shrink-swell	1.00
113:							
Nolam	40	Somewhat limited: Content of large stones	0.95	Somewhat limited: Content of large stones	0.95	Somewhat limited: Content of large stones	0.95
						Slope	0.47
Libby	25	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50	Somewhat limited: Shrink-swell	0.50
						Slope	0.47
Buntline	20	Not limited		Not limited		Somewhat limited: Slope	0.47
114:							
Outlaw		Very limited: Shrink-swell	1.00	Very limited: Shrink-swell	1.00	Very limited: Shrink-swell	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
Epitaph		Very limited: Shrink-swell	1.00	Very limited: Depth to hard bedrock	1.00	Very limited: Shrink-swell	1.00
		Slope	1.00			Slope	
		Depth to hard bedrock	0.84	Slope	1.00	Depth to hard bedrock	0.84
Paramore		Very limited: Slope	1.00	Very limited: Depth to hard bedrock	1.00	Very limited: Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Depth to hard bedrock	1.00
115:							
Oversight	90	Very limited: Slope	1.00	Very limited: Slope	1.00	Very limited: Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
116:							
Oversight	80	Very limited: Slope	1.00	Very limited: Slope	1.00	Very limited: Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
117:							
Oversight	60	Somewhat limited: Content of large stones	0.05	Somewhat limited: Content of large stones	0.05	Somewhat limited: Content of large stones	0.05
Lanque	30	Not limited		Not limited		Not limited	
118:							
Pedregosa	85	Somewhat limited: Slope	0.04	Somewhat limited: Slope	0.04	Very limited: Slope	1.00
119:							
Pedregosa	70	Very limited: Slope	1.00	Very limited: Slope	1.00	Very limited: Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
Tombstone	20	Very limited: Slope	1.00	Very limited: Slope	1.00	Very limited: Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
120:							
Perilla	50	Not limited		Not limited		Not limited	
Durazo	40	Not limited		Not limited		Not limited	
121:							
Pits	80	Not rated		Not rated		Not rated	
122:							
Pits	50	Not rated		Not rated		Not rated	
Dumps	50	Not rated		Not rated		Not rated	
123:							
Quiburi	40	Very limited: Flooding	1.00	Very limited: Flooding	1.00	Very limited: Flooding	1.00
				Depth to saturated zone	0.35		
Fluvaquents	30	Very limited: Flooding	1.00	Very limited: Flooding	1.00	Very limited: Flooding	1.00
				Depth to saturated zone	0.99		
Riverwash	20	Not rated		Not rated		Not rated	
124:							
Rafter	50	Very limited: Flooding	1.00	Very limited: Flooding	1.00	Very limited: Flooding	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
						Slope	0.12
Lanque	40	Very limited: Flooding	1.00	Very limited: Flooding	1.00	Very limited: Flooding	1.00
						Slope	0.12

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
125:							
Riveroad		Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
				Shrink-swell	0.50		
Ubik		Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
126:							
Riverwash	90	Not rated		Not rated		Not rated	
127:							
Riverwash	65	Not rated		Not rated		Not rated	
Bodecker	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
128:							
Rock outcrop	50	Not rated		Not rated		Not rated	
Magoffin	40	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
129:							
Sasabe sandy loam	55	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
Sasabe silt loam	35	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
130:							
Sasabe	85	Very limited:		Somewhat limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	0.50	Shrink-swell	1.00
131:							
Sasabe	85	Very limited:		Somewhat limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	0.50	Shrink-swell	1.00
132:							
Schiefflin	80	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.04	Slope	0.04	Slope	1.00
133:							
Stronghold	90	Not limited		Not limited		Not limited	
134:							
Stronghold	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
Bernardino	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
135:							
Surge	60	Very limited: Depth to hard bedrock; Slope	1.00; 1.00	Very limited: Depth to hard bedrock; Slope	1.00; 1.00	Very limited: Depth to hard bedrock; Slope	1.00; 1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
136:							
Sutherland	55	Somewhat limited: Slope	0.04	Somewhat limited: Slope	0.04	Very limited: Slope	1.00
Mule	35	Somewhat limited: Slope	0.04	Somewhat limited: Slope	0.04	Very limited: Slope	1.00
137:							
Swisshelm	85	Not limited		Not limited		Not limited	
138:							
Swisshelm	85	Not limited		Not limited		Not limited	
139:							
Tenneco	80	Very limited: Flooding	1.00	Very limited: Flooding	1.00	Very limited: Flooding	1.00
140:							
Terrarossa sandy loam	30	Very limited: Shrink-swell; Slope	1.00; 1.00	Very limited: Shrink-swell; Slope	1.00; 1.00	Very limited: Shrink-swell; Slope	1.00; 1.00
Terrarossa gravelly loam	25	Very limited: Shrink-swell; Slope	1.00; 1.00	Very limited: Shrink-swell; Slope	1.00; 1.00	Very limited: Shrink-swell; Slope	1.00; 1.00
Terrarossa very gravelly sandy loam	20	Very limited: Shrink-swell; Slope	1.00; 1.00	Very limited: Shrink-swell; Slope	1.00; 1.00	Very limited: Shrink-swell; Slope	1.00; 1.00
141:							
Terrarossa	40	Very limited: Shrink-swell; Slope	1.00; 1.00	Very limited: Shrink-swell; Slope	1.00; 1.00	Very limited: Shrink-swell; Slope	1.00; 1.00
Blacktail	35	Very limited: Shrink-swell; Slope	1.00; 1.00	Very limited: Slope	1.00	Very limited: Shrink-swell; Slope	1.00; 1.00
Pyeatt	15	Very limited: Slope	1.00	Very limited: Slope	1.00	Very limited: Slope	1.00
142:							
Tombstone	90	Somewhat limited: Slope	0.63	Somewhat limited: Slope	0.63	Very limited: Slope	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements: Rating class and limiting features	Value	Dwellings with basements: Rating class and limiting features	Value	Small commercial buildings: Rating class and limiting features	Value
143:							
Turquoise	55	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to soft bedrock	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Depth to hard bedrock	1.00
Nugget	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Content of large stones	1.00	Depth to soft bedrock	1.00	Content of large stones	1.00
		Depth to soft bedrock	1.00	Slope	1.00	Depth to soft bedrock	1.00
		Depth to hard bedrock	1.00	Content of large stones	1.00	Depth to hard bedrock	1.00
144:							
Ubik silt loam	50	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
Ubik fine sandy loam	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
145:							
Ubik	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
146:							
Ubik	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
147:							
Ubik	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
148:							
Ubik	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Flooding	1.00
149:							
Vana	80	Not limited		Not limited		Somewhat limited:	
						Slope	0.47
150:							
Vana	50	Not limited		Not limited		Not limited	
Moco	40	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Shrink-swell	0.50	Shrink-swell	0.50	Shrink-swell	0.50
151:							
White House gravelly loam	40	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Slope	1.00	Shrink-swell	1.00
		Slope	1.00	Shrink-swell	0.50	Slope	1.00
White House gravelly sandy loam	35	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Shrink-swell	1.00	Shrink-swell	1.00
		Slope	1.00	Slope	1.00	Slope	1.00

Table 10A.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
152:							
Yarbam	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to hard bedrock	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	

Table 10B.--Building Site Development

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
1:							
Altar	55	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Too sandy	1.00
				Cutbanks cave	0.10	Droughty	0.34
Mallet	30	Not limited		Somewhat limited:		Not limited	
				Cutbanks cave	0.10		
2:							
Anthony	45	Not limited		Somewhat limited:		Not limited	
				Cutbanks cave	0.10		
Maricopa	40	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Flooding	0.40	Cutbanks cave	0.10	Droughty	0.16
3:							
Arizo family	65	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Droughty	1.00
		Content of large stones	0.01	Cutbanks cave	0.10	Content of large stones	1.00
				Content of large stones	0.01	Flooding	0.60
						Too sandy	0.50
						Gravel content	0.10
Riverwash	20	Not rated		Not rated		Not rated	
4:							
Ashcreek	40	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Content of large stones	1.00	Too clayey	1.00
		Content of large stones	1.00	Too clayey	1.00	Slope	0.16
		Low strength	1.00	Slope	0.16		
		Flooding	0.40	Cutbanks cave	0.10		
		Slope	0.16				
Stanford	40	Very limited:		Somewhat limited:		Somewhat limited:	
		Low strength	1.00	Slope	0.16	Slope	0.16
		Shrink-swell	1.00	Cutbanks cave	0.10		
		Flooding	0.40				
		Slope	0.16				
5:							
Baboquivari	50	Somewhat limited:		Somewhat limited:		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
Combate	40	Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Cutbanks cave	0.10		
6:							
Banshee	50	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Too clayey	1.00	Sodium content	1.00
		Low strength	1.00	Cutbanks cave	0.10		

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
6:							
Banshee, thick surface	30	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Too clayey	1.00	Sodium content	1.00
		Low strength	1.00	Cutbanks cave	0.10		
7:							
Bella	80	Not limited		Somewhat limited:		Very limited:	
				Cutbanks cave	0.10	Depth to cemented pan	1.00
						Droughty	1.00
						Carbonate content	1.00
8:							
Blakeney	65	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Cutbanks cave	0.10	Droughty	1.00
				Slope	0.04	Depth to cemented pan	1.00
						Slope	0.04
Luckyhills	25	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Slope	0.04	Cutbanks cave	0.10	Slope	0.04
				Slope	0.04		
9:							
Bodecker		Not limited		Somewhat limited:		Very limited:	
				Cutbanks cave	0.10	Too sandy	1.00
						Droughty	1.00
						Gravel content	0.68
Comoro		Not limited		Very limited:		Not limited	
				Cutbanks cave	1.00		
10:							
Bodecker	90	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Gravel content	1.00
				Cutbanks cave	0.10	Droughty	1.00
						Flooding	0.60
11:							
Bodecker	90	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Gravel content	1.00
				Cutbanks cave	0.10	Sodium content	1.00
						Droughty	1.00
						Flooding	0.60
						Salinity	0.01
12:							
Bonita	85	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Cutbanks cave	1.00	Too clayey	1.00
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Low strength	1.00	Too clayey	0.50		
13:							
Bonita	50	Very limited:		Very limited:		Not limited	
		Shrink-swell	1.00	Cutbanks cave	1.00		
		Low strength	1.00	Too clayey	1.00		
Forrest	40	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Too clayey	0.88		
		Shrink-swell	1.00	Cutbanks cave	0.10		

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
14:							
Borderland	90	Very limited:		Very limited:		Somewhat limited:	
		Content of large stones	1.00	Cutbanks cave	1.00	Slope	0.16
		Slope	0.16	Content of large stones	1.00		
				Too clayey	1.00		
				Slope	0.16		
15:							
Borderline	70	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Slope	0.04	Cutbanks cave	0.10	Slope	0.04
				Slope	0.04		
16:							
Boss		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
				Too clayey	1.00	Droughty	0.97
				Cutbanks cave	0.10		
Krentz		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Gravel content	1.00
				Depth to dense layer	0.50	Droughty	0.80
				Cutbanks cave	0.10		
Paramore		Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Cutbanks cave	1.00	Depth to bedrock	1.00
		Low strength	1.00	Depth to hard bedrock	1.00	Gravel content	0.68
		Depth to hard bedrock	1.00	Too clayey	1.00		
Rock outcrop		Not rated		Not rated		Not rated	
17:							
Brookline	40	Not limited		Very limited:		Somewhat limited:	
				Cutbanks cave	1.00	Droughty	0.44
				Depth to saturated zone	0.82		
Fluvaquents	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
				Depth to saturated zone	0.99	Too sandy	1.00
				Flooding	0.80	Droughty	0.43
Riverwash	25	Not rated		Not rated		Not rated	
18:							
Brunkcow	35	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Droughty	1.00
		Slope	0.63	Slope	0.63	Depth to bedrock	1.00
				Cutbanks cave	0.10	Slope	0.63

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
18:							
Chiricahua	25	Very limited:		Very limited:		Very limited:	
		Depth to soft bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Depth to hard bedrock	1.00	Depth to soft bedrock	1.00	Droughty	0.64
		Slope	0.63	Slope	0.63	Slope	0.63
				Cutbanks cave	0.10		
Andrada	20	Somewhat limited:		Very limited:		Very limited:	
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Droughty	1.00
		Slope	0.63	Slope	0.63	Depth to bedrock	1.00
				Cutbanks cave	0.10	Slope	0.63
						Gravel content	0.41
19:							
Brunkcow	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Content of large stones	1.00
				Cutbanks cave	0.10	Depth to bedrock	1.00
						Droughty	0.89
Chiricahua	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Shrink-swell	1.00	Slope	1.00	Content of large stones	1.00
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Depth to hard bedrock	1.00	Too clayey	0.12	Droughty	0.76
				Cutbanks cave	0.10		
Lampshire	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Content of large stones	1.00
				Cutbanks cave	0.10	Droughty	1.00
						Depth to bedrock	1.00
						Gravel content	0.01
20:							
Budlamp	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Droughty	1.00
				Cutbanks cave	0.10	Depth to bedrock	1.00
						Gravel content	1.00
Woodcutter	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Gravel content	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Droughty	1.00
						Depth to bedrock	1.00
21:							
Buntline	90	Not limited		Somewhat limited:		Very limited:	
				Cutbanks cave	0.10	Depth to cemented pan	1.00
						Droughty	1.00

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
22:							
Caralampi	80	Very limited:		Very limited:		Somewhat limited:	
		Content of large stones	1.00	Content of large stones	1.00	Droughty	0.20
				Cutbanks cave	0.10		
23:							
Caralampi	85	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Gravel content	1.00
				Cutbanks cave	0.10	Droughty	0.44
24:							
Carbine	70	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Droughty	1.00
				Cutbanks cave	0.10	Depth to cemented pan	1.00
						Gravel content	1.00
						Slope	1.00
						Content of large stones	0.01
25:							
Carbine	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to cemented pan	1.00
				Cutbanks cave	0.10	Slope	1.00
						Droughty	0.59
Hathaway	35	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Gravel content	0.68
				Cutbanks cave	0.10	Droughty	0.61
26:							
Cazador	60	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Too clayey	1.00	Flooding	1.00
		Flooding	1.00	Flooding	0.80	Slope	0.16
		Low strength	1.00	Slope	0.16		
		Slope	0.16	Cutbanks cave	0.10		
Lesliecreek	30	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
		Slope	0.16	Slope	0.16	Slope	0.16
				Cutbanks cave	0.10		
27:							
Cherrycow	50	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Too clayey	1.00	Droughty	0.59
				Cutbanks cave	0.10	Gravel content	0.32
Blacktail	35	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	0.04
				Too clayey	1.00		
				Cutbanks cave	0.10		

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
28:							
Cherrycow	35	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Depth to hard bedrock	1.00	Too clayey	1.00		
				Cutbanks cave	0.10		
Magoffin	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Droughty	1.00
				Cutbanks cave	0.10	Depth to bedrock	1.00
						Gravel content	0.68
Rock outcrop	20	Not rated		Not rated		Not rated	
29:							
Chorro	30	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
		Low strength	1.00	Too clayey	0.50	Sodium content	1.00
		Shrink-swell	1.00	Cutbanks cave	0.10		
Doubleadobe	30	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Too clayey	0.88	Flooding	1.00
		Shrink-swell	1.00	Flooding	0.80	Sodium content	1.00
		Low strength	1.00	Cutbanks cave	0.10	Salinity	1.00
						Carbonate content	1.00
Gothard	30	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Too clayey	0.88	Flooding	1.00
		Shrink-swell	1.00	Flooding	0.80	Sodium content	1.00
				Cutbanks cave	0.10	Droughty	0.30
30:							
Chorro	40	Somewhat limited:		Very limited:		Very limited:	
		Flooding	0.40	Too clayey	1.00	Sodium content	1.00
				Cutbanks cave	0.10	Droughty	0.11
Guest	40	Very limited:		Very limited:		Not limited	
		Shrink-swell	1.00	Too clayey	1.00		
		Low strength	1.00	Cutbanks cave	0.10		
		Flooding	0.40				
31:							
Cogswell	85	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Too clayey	0.88	Flooding	1.00
		Shrink-swell	1.00	Flooding	0.80	Sodium content	1.00
				Cutbanks cave	0.10	Too clayey	1.00
						Salinity	0.01
32:							
Combate	70	Not limited		Very limited:		Somewhat limited:	
				Cutbanks cave	1.00	Droughty	0.38
33:							
Comoro	85	Not limited		Somewhat limited:		Not limited	
				Cutbanks cave	0.10		

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
34:							
Comoro	85	Not limited		Somewhat limited:		Very limited:	
				Cutbanks cave	0.10	Sodium content	1.00
						Droughty	0.63
						Salinity	0.01
35:							
Contention		Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Cutbanks cave	1.00	Slope	1.00
		Low strength	1.00	Slope	1.00		
		Slope	1.00	Too clayey	0.28		
Crystalgyp		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to soft bedrock	0.46	Depth to bedrock	0.46
						Droughty	0.10
				Cutbanks cave	0.10		
Monzingo		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
				Depth to dense layer	0.50		
				Cutbanks cave	0.10		
Redington		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Cutbanks cave	1.00	Slope	1.00
				Slope	1.00	Droughty	0.52
				Depth to dense layer	0.50		
36:							
Contention	45	Very limited:		Very limited:		Not limited	
		Shrink-swell	1.00	Cutbanks cave	1.00		
		Low strength	1.00	Too clayey	0.28		
Ugyp	20	Very limited:		Very limited:		Somewhat limited:	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
				Flooding	0.60		
Ugyp	15	Very limited:		Very limited:		Somewhat limited:	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	0.60
				Flooding	0.60		
37:							
Courtland	85	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
38:							
Courtland	85	Very limited:		Somewhat limited:		Very limited:	
		Low strength	1.00	Cutbanks cave	0.10	Sodium content	1.00
		Shrink-swell	1.00			Droughty	0.07
						Salinity	0.01
39:							
Courtland	55	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
Diaspar	30	Not limited		Somewhat limited:		Not limited	
				Cutbanks cave	0.10		

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
40:							
Courtland	35	Somewhat limited:		Somewhat limited:		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
		Low strength	0.22				
Sasabe	35	Very limited:		Somewhat limited:		Not limited	
		Shrink-swell	1.00	Cutbanks cave	0.10		
		Low strength	1.00				
Diaspar	20	Not limited		Somewhat limited:		Not limited	
				Cutbanks cave	0.10		
41:							
Crowbar	60	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	0.74
		Shrink-swell	1.00	Cutbanks cave	0.10		
Brunopeak	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Content of large stones	1.00	Gravel content	1.00
		Content of large stones	1.00	Too clayey	0.50	Droughty	0.85
				Cutbanks cave	0.10		
42:							
Deloro	40	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Droughty	1.00
		Content of large stones	1.00	Content of large stones	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Gravel content	1.00
				Too clayey	0.88	Slope	1.00
				Cutbanks cave	0.10		
Leyte	30	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Droughty	1.00
		Content of large stones	1.00	Content of large stones	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Too clayey	0.88	Gravel content	0.68
				Cutbanks cave	0.10		
Lampshire	20	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Droughty	1.00
		Content of large stones	1.00	Content of large stones	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Gravel content	1.00
				Cutbanks cave	0.10	Slope	1.00
						Content of large stones	1.00
43:							
Denab	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Droughty	1.00
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Gravel content	0.32

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
43:							
Castledome	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to soft bedrock	1.00	Droughty	1.00
		Depth to soft bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Depth to hard bedrock	0.84	Slope	1.00	Slope	1.00
				Too clayey	0.50		
				Cutbanks cave	0.10		
44:							
Denied Access		Not rated		Not rated		Not rated	
45:							
Diaspar	85	Not limited		Somewhat limited:		Not limited	
				Cutbanks cave	0.10		
46:							
Diaspar	85	Not limited		Somewhat limited:		Very limited:	
				Cutbanks cave	0.10	Sodium content	1.00
						Droughty	0.64
						Salinity	0.01
47:							
Dona Ana	45	Somewhat limited:		Somewhat limited:		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
Mohave	30	Not limited		Very limited:		Not limited	
				Cutbanks cave	1.00		
48:							
Doubleadobe	85	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Too clayey	0.88	Flooding	1.00
		Shrink-swell	1.00	Flooding	0.80	Sodium content	1.00
		Low strength	1.00	Cutbanks cave	0.10	Salinity	1.00
						Carbonate content	1.00
49:							
Durazo	90	Not limited		Very limited:		Somewhat limited:	
				Cutbanks cave	1.00	Droughty	0.92
50:							
Durazo	90	Not limited		Very limited:		Very limited:	
				Cutbanks cave	1.00	Sodium content	1.00
						Droughty	1.00
						Salinity	0.01
51:							
Durazo	55	Not limited		Very limited:		Very limited:	
				Cutbanks cave	1.00	Sodium content	1.00
						Droughty	1.00
						Salinity	0.01
Gothard	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Slope	1.00	Sodium content	1.00
		Slope	1.00	Too clayey	0.88	Slope	1.00
		Shrink-swell	1.00	Flooding	0.60	Flooding	0.60
				Cutbanks cave	0.10	Droughty	0.19

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
52:							
Durazo	50	Not limited		Very limited:		Somewhat limited:	
				Cutbanks cave	1.00	Droughty	0.01
Courtland	40	Very limited:		Somewhat limited:		Not limited	
		Shrink-swell	1.00	Cutbanks cave	0.10		
53:							
Durazo	55	Not limited		Very limited:		Somewhat limited:	
				Cutbanks cave	1.00	Droughty	0.92
McAllister	30	Somewhat limited:		Somewhat limited:		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
54:							
Elfrida	90	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Sodium content	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Flooding	0.60
				Too clayey	0.03		
55:							
Elfrida	90	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Sodium content	1.00
		Shrink-swell	0.50	Cutbanks cave	0.10	Flooding	0.60
				Too clayey	0.03	Salinity	0.01
56:							
Elgin	35	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Too clayey	0.88		
		Shrink-swell	1.00	Cutbanks cave	0.10		
McAllister	30	Very limited:		Somewhat limited:		Not limited	
		Shrink-swell	1.00	Cutbanks cave	0.10		
Stronghold	20	Not limited		Somewhat limited:		Not limited	
				Cutbanks cave	0.10		
57:							
Elgin	50	Very limited:		Very limited:		Somewhat limited:	
		Content of large stones	1.00	Content of large stones	1.00	Slope	0.16
		Shrink-swell	1.00	Too clayey	1.00		
		Slope	0.16	Slope	0.16		
				Cutbanks cave	0.10		
Outlaw	40	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Cutbanks cave	1.00	Carbonate content	1.00
		Slope	0.16	Too clayey	1.00	Slope	0.16
				Slope	0.16		
58:							
Elgin	50	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Gravel content	1.00
		Shrink-swell	0.50	Too clayey	0.28	Slope	0.63
				Cutbanks cave	0.10		
Stronghold	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Gravel content	1.00
				Cutbanks cave	0.10	Droughty	0.81
						Slope	0.63

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
59:							
Eloma	80	Very limited:		Very limited:		Somewhat limited:	
		Shrink-swell	1.00	Too clayey	1.00	Gravel content	0.68
		Slope	0.16	Slope	0.16	Slope	0.16
				Cutbanks cave	0.10	Droughty	0.09
60:							
Eloma	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Shrink-swell	0.50	Too clayey	0.50	Gravel content	1.00
				Cutbanks cave	0.10	Droughty	0.44
						Content of large stones	0.01
Caralampi	30	Not limited		Somewhat limited:		Not limited	
				Cutbanks cave	0.10		
White House	20	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Too clayey	0.28		
		Shrink-swell	1.00	Cutbanks cave	0.10		
61:							
Epitaph	90	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Cutbanks cave	1.00	Content of large stones	1.00
		Low strength	1.00	Depth to hard bedrock	1.00	Depth to cemented pan	1.00
		Depth to hard bedrock	0.84	Too clayey	0.28	Depth to bedrock	0.84
		Slope	0.04	Slope	0.04	Slope	0.04
62:							
Far	55	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Content of organic matter	1.00
				Cutbanks cave	0.10	Droughty	1.00
						Depth to bedrock	1.00
Hogris	25	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Content of organic matter	1.00
				Cutbanks cave	0.10	Droughty	1.00
63:							
Far	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Content of organic matter	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
						Depth to bedrock	1.00
Huachuca	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Content of organic matter	1.00
				Cutbanks cave	0.10	Droughty	1.00
						Depth to bedrock	1.00

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
63:							
Hogris	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of organic matter	1.00
				Cutbanks cave	0.10	Droughty	1.00
64:							
Far	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Content of organic matter	1.00
		Frost action	0.50	Cutbanks cave	0.10	Droughty	1.00
						Depth to bedrock	1.00
Huachuca	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Content of organic matter	1.00
				Cutbanks cave	0.10	Droughty	1.00
						Depth to bedrock	1.00
Hogris	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00	Content of organic matter	1.00
				Cutbanks cave	0.10	Droughty	1.00
65:							
Forrest	85	Very limited:		Somewhat limited:		Not limited	
		Shrink-swell	1.00	Too clayey	0.28		
				Cutbanks cave	0.10		
66:							
Forrest	85	Very limited:		Somewhat limited:		Very limited:	
		Shrink-swell	1.00	Too clayey	0.28	Sodium content	1.00
				Cutbanks cave	0.10	Salinity	0.01
67:							
Forrest	85	Very limited:		Somewhat limited:		Not limited	
		Shrink-swell	1.00	Too clayey	0.28		
				Cutbanks cave	0.10		
68:							
Forrest	85	Very limited:		Somewhat limited:		Not limited	
		Shrink-swell	1.00	Too clayey	0.28		
				Cutbanks cave	0.10		
69:							
Forrest	85	Very limited:		Somewhat limited:		Very limited:	
		Shrink-swell	1.00	Too clayey	0.28	Sodium content	1.00
				Cutbanks cave	0.10	Salinity	0.01
70:							
Forrest	55	Very limited:		Somewhat limited:		Not limited	
		Shrink-swell	1.00	Cutbanks cave	0.10		
		Low strength	1.00				

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
70:							
Bonita	40	Very limited:		Very limited:		Somewhat limited:	
		Shrink-swell	1.00	Cutbanks cave	1.00	Flooding	0.60
		Flooding	1.00	Flooding	0.60		
		Low strength	1.00	Too clayey	0.50		
71:							
Gardencan	45	Somewhat limited:		Somewhat limited:		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
Lanque	35	Not limited		Somewhat limited:		Not limited	
				Cutbanks cave	0.10		
72:							
Glendale	85	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Flooding	0.40				
73:							
Gothard	90	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Too clayey	0.88	Flooding	1.00
		Shrink-swell	1.00	Flooding	0.80	Sodium content	1.00
				Cutbanks cave	0.10	Droughty	0.19
74:							
Gothard	85	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Too clayey	0.88	Flooding	1.00
		Shrink-swell	1.00	Flooding	0.80	Sodium content	1.00
				Cutbanks cave	0.10	Droughty	0.30
75:							
Graham	60	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Content of large stones	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
				Too clayey	0.28	Depth to bedrock	1.00
				Cutbanks cave	0.10	Slope	1.00
Lampshire	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Content of large stones	1.00
		Content of large stones	0.01	Cutbanks cave	0.10	Droughty	1.00
				Content of large stones	0.01	Depth to bedrock	1.00
76:							
Graveyard	45	Not limited		Somewhat limited:		Somewhat limited:	
				Cutbanks cave	0.10	Droughty	0.79
Sierravista	35	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Shrink-swell	0.50	Cutbanks cave	0.10	Droughty	0.24
77:							
Grizzle	80	Not limited		Very limited:		Very limited:	
				Depth to soft bedrock	1.00	Depth to bedrock	1.00
				Depth to hard bedrock	0.95		
				Cutbanks cave	0.10		

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
78:							
Guest	90	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Low strength	1.00	Too clayey	0.12		
		Shrink-swell	1.00	Cutbanks cave	0.10		
79:							
Guest	80	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
		Low strength	1.00	Too clayey	0.50		
		Shrink-swell	1.00	Cutbanks cave	0.10		
80:							
Guest	90	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Sodium content	1.00
		Low strength	1.00	Too clayey	0.12	Flooding	0.60
		Shrink-swell	1.00	Cutbanks cave	0.10	Salinity	0.01
81:							
Guest	90	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Too clayey	1.00
		Low strength	1.00	Too clayey	0.50	Flooding	0.60
		Shrink-swell	1.00	Cutbanks cave	0.10		
82:							
Guest	90	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Sodium content	1.00
		Low strength	1.00	Too clayey	0.50	Too clayey	1.00
		Shrink-swell	1.00	Cutbanks cave	0.10	Flooding	0.60
						Salinity	0.01
83:							
Guest	60	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
		Low strength	1.00	Too clayey	0.50	Sodium content	1.00
		Shrink-swell	1.00	Cutbanks cave	0.10	Too clayey	1.00
						Salinity	0.01
Cogswell	30	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Too clayey	0.88	Flooding	1.00
		Shrink-swell	1.00	Flooding	0.80	Sodium content	1.00
				Cutbanks cave	0.10	Salinity	0.01
84:							
Guest	40	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00	Too clayey	0.03		
		Flooding	0.40				
Riveroad	40	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Too clayey	0.12		
		Flooding	0.40	Cutbanks cave	0.10		
85:							
Hantz	85	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Sodium content	1.00
		Low strength	1.00	Too clayey	0.12	Flooding	0.60
		Shrink-swell	1.00	Cutbanks cave	0.10	Salinity	0.50

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
86:							
Haplustolls	70	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Content of large stones	1.00	Content of organic matter	1.00
		Content of large stones	1.00	Flooding	0.60	Droughty	1.00
				Cutbanks cave	0.10	Flooding	0.60
Fluvaquents	20	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Flooding	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Content of large stones	1.00
		Depth to saturated zone	0.75	Flooding	0.80	Droughty	1.00
				Cutbanks cave	0.10	Depth to saturated zone	0.75
87:							
Haplustolls	70	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Content of organic matter	1.00
		Flooding	1.00	Flooding	0.60	Droughty	1.00
				Cutbanks cave	0.10	Flooding	0.60
Fluvaquents	20	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Flooding	1.00
		Flooding	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Depth to saturated zone	0.19	Flooding	0.80	Content of large stones	1.00
				Cutbanks cave	0.10	Droughty	1.00
						Depth to saturated zone	0.19
88:							
Hayhollow	30	Not limited		Very limited:		Very limited:	
				Cutbanks cave	1.00	Content of organic matter	1.00
						Droughty	0.19
Rafter	30	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Droughty	1.00
				Cutbanks cave	0.10	Gravel content	1.00
Riverwash	30	Not rated		Not rated		Not rated	
89:							
Kaboom	45	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Gravel content	1.00
				Cutbanks cave	0.10	Depth to bedrock	1.00
						Droughty	0.93
Reeup	35	Very limited:		Very limited:		Very limited:	
		Low strength	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Depth to hard bedrock	1.00	Depth to bedrock	0.84
		Slope	1.00	Cutbanks cave	0.10		
		Depth to hard bedrock	0.84				

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
90:							
Kahn fine sandy loam	45	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Flooding	0.40				
Kahn silt loam------	40	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	0.50				
		Flooding	0.40				
91:							
Kahn----------	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Cutbanks cave	0.10	Carbonate content	1.00
		Shrink-swell	1.00				
		Flooding	0.40				
Zapolote----------	40	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Slope	1.00	Slope	1.00
		Slope	1.00	Too clayey	0.88		
		Low strength	1.00	Cutbanks cave	0.10		
		Flooding	0.40				
92:							
Karro----------	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Shrink-swell	0.50	Cutbanks cave	0.10	Carbonate content	1.00
		Flooding	0.40				
93:							
Karro----------	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Shrink-swell	0.50	Cutbanks cave	0.10	Sodium content	1.00
		Flooding	0.40			Carbonate content	1.00
						Salinity	0.01
94:							
Keysto----------	60	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Content of large stones	1.00
		Flooding	0.40	Cutbanks cave	0.10	Droughty	1.00
Riverwash----------	30	Not rated		Not rated		Not rated	
95:							
Kuykendall----------	70	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Too clayey	1.00	Too clayey	1.00
				Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Droughty	0.72
Rock outcrop--------	20	Not rated		Not rated		Not rated	
96:							
Lanque----------	60	Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Cutbanks cave	0.10		
Stanford----------	30	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Flooding	0.40				

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
97:							
Libby	45	Very limited:		Somewhat limited:		Very limited:	
		Subsidence	1.00	Too clayey	0.12	Gravel content	1.00
		Shrink-swell	1.00	Cutbanks cave	0.10		
Gulch	35	Very limited:		Somewhat limited:		Somewhat limited:	
		Subsidence	1.00	Cutbanks cave	0.10	Gravel content	0.50
		Shrink-swell	0.50				
98:							
Luckyhills	90	Not limited		Somewhat limited:		Not limited	
				Cutbanks cave	0.10		
99:							
Luckyhills	50	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Cutbanks cave	0.10	Gravel content	1.00
				Slope	0.04	Slope	0.04
						Droughty	0.01
McNeal	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Shrink-swell	0.50	Cutbanks cave	0.10	Gravel content	1.00
		Slope	0.04	Slope	0.04	Slope	0.04
100:							
Lutzcan	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Content of large stones	1.00
				Cutbanks cave	0.10	Droughty	1.00
						Depth to bedrock	1.00
						Gravel content	0.01
Yarbam	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Droughty	1.00
				Cutbanks cave	0.10	Gravel content	1.00
						Depth to bedrock	1.00
						Content of large stones	0.20
101:							
Mabray	45	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Droughty	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Content of large stones	1.00
				Cutbanks cave	0.10	Slope	1.00
						Carbonate content	1.00
						Depth to bedrock	1.00
Chiricahua	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Gravel content	1.00
		Depth to soft bedrock	1.00	Slope	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
				Cutbanks cave	0.10	Droughty	0.81
Rock outcrop	15	Not rated		Not rated		Not rated	

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
102:							
Mabray	60	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Content of large stones	1.00
		Slope	1.00	Slope	1.00	Droughty	1.00
		Content of large stones	0.50	Content of large stones	0.50	Depth to bedrock	1.00
				Cutbanks cave	0.10	Slope	1.00
						Carbonate content	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
103:							
Magoffin	40	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Droughty	1.00
		Content of large stones	1.00	Content of large stones	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
Rock outcrop	30	Not rated		Not rated		Not rated	
Cherrycow	20	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Low strength	1.00	Too clayey	1.00		
		Depth to hard bedrock	1.00	Cutbanks cave	0.10		
104:							
Major fine sandy loam	40	Very limited:		Somewhat limited:		Not limited	
		Subsidence	1.00	Cutbanks cave	0.10		
Major silt loam	40	Very limited:		Somewhat limited:		Somewhat limited:	
		Subsidence	1.00	Flooding	0.60	Flooding	0.60
		Flooding	1.00	Too clayey	0.12		
				Cutbanks cave	0.10		
105:							
Mallet	45	Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Cutbanks cave	0.10		
Hooks	35	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Shrink-swell	1.00				
		Flooding	0.40				
106:							
Marsh	100	Not rated		Not rated		Not rated	
107:							
McAllister	90	Somewhat limited:		Somewhat limited:		Not limited	
		Shrink-swell	0.50	Cutbanks cave	0.10		
108:							
McAllister	50	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Slope	0.63	Slope	0.63	Slope	0.63
		Shrink-swell	0.50	Cutbanks cave	0.10	Gravel content	0.50

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
108:							
Stronghold	30	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Gravel content	1.00
				Cutbanks cave	0.10	Droughty	0.81
						Slope	0.63
109:							
McNeal	85	Somewhat limited:		Very limited:		Somewhat limited:	
		Shrink-swell	0.50	Cutbanks cave	1.00	Gravel content	0.32
110:							
McNeal	85	Somewhat limited:		Very limited:		Very limited:	
		Shrink-swell	0.50	Cutbanks cave	1.00	Sodium content	1.00
						Gravel content	0.32
						Salinity	0.01
111:							
Monzingo	55	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Slope	0.84	Slope	0.84	Slope	0.84
				Depth to dense layer	0.50		
				Cutbanks cave	0.10		
Ugyp	15	Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Cutbanks cave	0.10		
Ugyp	10	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
				Cutbanks cave	0.10		
112:							
Naco	35	Very limited:		Somewhat limited:		Somewhat limited:	
		Shrink-swell	1.00	Too clayey	0.50	Droughty	0.16
		Content of large stones	0.11	Content of large stones	0.11		
				Cutbanks cave	0.10		
Ruins, thick surface	35	Very limited:		Very limited:		Not limited	
		Low strength	1.00	Cutbanks cave	1.00		
				Too clayey	0.50		
Ruins	20	Very limited:		Somewhat limited:		Not limited	
		Shrink-swell	1.00	Too clayey	0.50		
		Low strength	1.00	Cutbanks cave	0.10		
113:							
Nolam	40	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Content of large stones	0.95	Content of large stones	0.95	Droughty	0.92
				Cutbanks cave	0.10		
Libby	25	Very limited:		Somewhat limited:		Somewhat limited:	
		Low strength	1.00	Too clayey	0.12	Gravel content	0.50
		Shrink-swell	0.50	Cutbanks cave	0.10		
Buntline	20	Not limited		Somewhat limited:		Very limited:	
				Cutbanks cave	0.10	Depth to cemented pan	1.00
						Droughty	1.00
						Gravel content	0.50

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
114:							
Outlaw		Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Too clayey	1.00	Slope	1.00
		Slope	1.00	Cutbanks cave	1.00	Carbonate content	1.00
		Low strength	1.00	Slope	1.00		
Epitaph		Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Cutbanks cave	1.00	Slope	1.00
		Slope	1.00	Depth to hard bedrock	1.00	Depth to cemented pan	1.00
		Low strength	1.00	Slope	1.00	Depth to bedrock	0.84
		Depth to hard bedrock	0.84	Too clayey	1.00	Droughty	0.05
Paramore		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Cutbanks cave	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
				Slope	1.00	Droughty	0.19
				Too clayey	1.00		
115:							
Oversight	90	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Gravel content	1.00
				Cutbanks cave	0.10	Droughty	0.28
116:							
Oversight	80	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Droughty	0.88
				Cutbanks cave	0.10		
117:							
Oversight	60	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Content of large stones	0.05	Cutbanks cave	0.10	Droughty	0.27
				Content of large stones	0.05		
Lanque	30	Not limited		Somewhat limited:		Not limited	
				Cutbanks cave	0.10		
118:							
Pedregosa	85	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Cutbanks cave	0.10	Gravel content	1.00
				Slope	0.04	Depth to cemented pan	1.00
						Droughty	0.90
						Slope	0.04
119:							
Pedregosa	70	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Droughty	1.00
		Slope	1.00	Slope	1.00	Depth to cemented pan	1.00
				Cutbanks cave	0.10	Slope	1.00
						Gravel content	0.92

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
119:							
Tombstone	20	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Gravel content	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Droughty	1.00
120:							
Perilla	50	Not limited		Somewhat limited:		Somewhat limited:	
				Cutbanks cave	0.10	Droughty	0.01
Durazo	40	Not limited		Very limited:		Somewhat limited:	
				Cutbanks cave	1.00	Droughty	0.89
121:							
Pits	80	Not rated		Not rated		Not rated	
122:							
Pits	50	Not rated		Not rated		Not rated	
Dumps	50	Not rated		Not rated		Not rated	
123:							
Quiburi	40	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Content of organic matter	1.00
				Depth to saturated zone	0.35	Flooding	0.60
				Cutbanks cave	0.10		
Fluvaquents	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Cutbanks cave	1.00	Flooding	1.00
				Depth to saturated zone	0.99	Too sandy	1.00
				Flooding	0.80	Droughty	1.00
Riverwash	20	Not rated		Not rated		Not rated	
124:							
Rafter	50	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00	Droughty	1.00
		Flooding	0.40	Cutbanks cave	0.10	Gravel content	1.00
Lanque	40	Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Cutbanks cave	0.10		
125:							
Riveroad		Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Cutbanks cave	0.10		
		Flooding	0.40				
Ubik		Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Cutbanks cave	0.10		
126:							
Riverwash	90	Not rated		Not rated		Not rated	
127:							
Riverwash	65	Not rated		Not rated		Not rated	

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
127:							
Bodecker	30	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Droughty	1.00
				Cutbanks cave	0.10	Flooding	0.60
128:							
Rock outcrop	50	Not rated		Not rated		Not rated	
Magoffin	40	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Droughty	1.00
		Content of large stones	1.00	Content of large stones	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Content of large stones	1.00
129:							
Sasabe sandy loam	55	Very limited:		Somewhat limited:		Not limited	
		Low strength	1.00	Too clayey	0.50		
		Shrink-swell	1.00	Cutbanks cave	0.10		
Sasabe silt loam	35	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.80	Flooding	1.00
		Low strength	1.00	Too clayey	0.50		
		Shrink-swell	1.00	Cutbanks cave	0.10		
130:							
Sasabe	85	Very limited:		Somewhat limited:		Somewhat limited:	
		Low strength	1.00	Too clayey	0.50	Gravel content	0.32
		Shrink-swell	1.00	Cutbanks cave	0.10		
131:							
Sasabe	85	Very limited:		Somewhat limited:		Very limited:	
		Low strength	1.00	Too clayey	0.50	Sodium content	1.00
		Shrink-swell	1.00	Cutbanks cave	0.10	Gravel content	0.32
						Droughty	0.01
						Salinity	0.01
132:							
Schiefflin	80	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Content of large stones	1.00
		Slope	0.04	Cutbanks cave	0.10	Droughty	1.00
				Slope	0.04	Depth to bedrock	1.00
						Slope	0.04
133:							
Stronghold	90	Not limited		Somewhat limited:		Somewhat limited:	
				Cutbanks cave	0.10	Gravel content	0.25
134:							
Stronghold	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
				Cutbanks cave	0.10	Slope	1.00
						Droughty	0.72
Bernardino	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Gravel content	0.41
				Too clayey	0.03		

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
135:							
Surge	60	Very limited:		Very limited:		Very limited:	
		Depth to hard bedrock	1.00	Depth to hard bedrock	1.00	Depth to bedrock	1.00
						Droughty	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10		
Rock outcrop	30	Not rated		Not rated		Not rated	
136:							
Sutherland	55	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Cutbanks cave	0.10	Droughty	1.00
				Slope	0.04	Carbonate content	1.00
						Depth to cemented pan	1.00
						Gravel content	0.92
						Slope	0.04
Mule	35	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Cutbanks cave	0.10	Gravel content	1.00
				Slope	0.04	Carbonate content	1.00
						Droughty	0.14
						Slope	0.04
137:							
Swisshelm	85	Not limited		Somewhat limited:		Not limited	
				Cutbanks cave	0.10		
138:							
Swisshelm	85	Not limited		Somewhat limited:		Very limited:	
				Cutbanks cave	0.10	Sodium content	1.00
						Droughty	0.24
						Salinity	0.01
139:							
Tenneco	80	Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Cutbanks cave	0.10		
140:							
Terrarossa sandy loam	30	Very limited:		Very limited:		Very limited:	
		Low strength	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Too clayey	0.12		
		Slope	1.00	Cutbanks cave	0.10		
Terrarossa gravelly loam	25	Very limited:		Very limited:		Very limited:	
		Low strength	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Too clayey	0.12	Gravel content	0.41
		Slope	1.00	Cutbanks cave	0.10		
Terrarossa very gravelly sandy loam	20	Very limited:		Very limited:		Very limited:	
		Low strength	1.00	Slope	1.00	Gravel content	1.00
		Shrink-swell	1.00	Too clayey	0.12	Slope	1.00
		Slope	1.00	Cutbanks cave	0.10	Content of large stones	0.01

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
141:							
Terrarossa	40	Very limited:		Very limited:		Very limited:	
		Low strength	1.00	Slope	1.00	Slope	1.00
		Shrink-swell	1.00	Too clayey	0.12	Gravel content	0.41
		Slope	1.00	Cutbanks cave	0.10		
Blacktail	35	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Cutbanks cave	0.10	Carbonate content	1.00
		Slope	1.00			Gravel content	0.50
Pyeatt	15	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Gravel content	0.41
142:							
Tombstone	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Gravel content	1.00
				Cutbanks cave	0.10	Droughty	0.90
						Slope	0.63
143:							
Turquoise	55	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Droughty	1.00
		Depth to soft bedrock	1.00	Depth to soft bedrock	1.00	Depth to bedrock	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Slope	1.00
				Cutbanks cave	0.10	Too sandy	0.50
Nugget	25	Very limited:		Very limited:		Very limited:	
		Content of large stones	1.00	Depth to hard bedrock	1.00	Droughty	1.00
		Slope	1.00	Depth to soft bedrock	1.00	Slope	1.00
		Depth to soft bedrock	1.00	Content of large stones	1.00	Content of large stones	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
				Cutbanks cave	0.10		
144:							
Ubik silt loam	50	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
				Cutbanks cave	0.10		
Ubik fine sandy loam	40	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Sodium content	1.00
				Cutbanks cave	0.10	Flooding	0.60
145:							
Ubik	90	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
				Cutbanks cave	0.10		
146:							
Ubik	90	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Sodium content	1.00
				Cutbanks cave	0.10	Flooding	0.60
						Salinity	0.01

Table 10B.--Building Site Development--Continued

Map symbol and soil name	Pct. of map unit	Local roads and streets: Rating class and limiting features	Value	Shallow excavations: Rating class and limiting features	Value	Lawns and landscaping: Rating class and limiting features	Value
147:							
Ubik	90	Very limited:		Somewhat limited:		Somewhat limited:	
		Flooding	1.00	Flooding	0.60	Flooding	0.60
				Cutbanks cave	0.10		
148:							
Ubik	90	Very limited:		Somewhat limited:		Very limited:	
		Flooding	1.00	Flooding	0.60	Sodium content	1.00
				Cutbanks cave	0.10	Flooding	0.60
						Droughty	0.01
						Salinity	0.01
149:							
Vana	80	Not limited		Somewhat limited:		Very limited:	
				Cutbanks cave	0.10	Depth to cemented pan	1.00
						Droughty	1.00
						Carbonate content	1.00
150:							
Vana	50	Somewhat limited:		Somewhat limited:		Very limited:	
		Low strength	0.22	Cutbanks cave	0.10	Depth to cemented pan	1.00
						Carbonate content	1.00
						Droughty	0.97
Moco	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Shrink-swell	0.50	Cutbanks cave	0.10	Carbonate content	1.00
151:							
White House gravelly loam	40	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Cutbanks cave	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Gravel content	0.41
White House gravelly sandy loam	35	Very limited:		Very limited:		Very limited:	
		Shrink-swell	1.00	Slope	1.00	Slope	1.00
		Low strength	1.00	Cutbanks cave	0.10	Gravel content	0.41
		Slope	1.00				
152:							
Yarbam	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to hard bedrock	1.00	Slope	1.00
		Depth to hard bedrock	1.00	Slope	1.00	Droughty	1.00
				Cutbanks cave	0.10	Depth to bedrock	1.00
						Content of large stones	1.00
						Gravel content	0.01
Rock outcrop	30	Not rated		Not rated		Not rated	

Table 11A.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
1:					
Altar	55	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
		Content of large stones	1.00	Slope	1.00
Mallet	30	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
				Slope	1.00
2:					
Anthony	45	Not limited		Very limited:	
				Seepage	1.00
				Slope	0.09
Maricopa	40	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
		Flooding	0.40	Flooding	0.40
				Slope	0.09
3:					
Arizo family	65	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Content of large stones	0.01	Content of large stones	0.84
				Slope	0.01
Riverwash	20	Not rated		Not rated	
4:					
Ashcreek	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
				Flooding	0.40
		Content of large stones	1.00		
		Flooding	0.40		
		Slope	0.16		
Stanford	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
				Seepage	1.00
		Filtering capacity	1.00	Flooding	0.40
		Flooding	0.40		
		Slope	0.16		
5:					
Baboquivari	50	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.01
		Restricted permeability	0.68		

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
5:					
Combate	40	Somewhat limited:		Very limited:	
		Flooding	0.40	Seepage	1.00
				Flooding	0.40
6:					
Banshee	50	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.67
Banshee, thick surface	30	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.67
7:					
Bella	80	Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	1.00
				Slope	0.91
8:					
Blakeney	65	Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slope	0.04	Seepage	1.00
				Slope	1.00
Luckyhills	25	Somewhat limited:		Very limited:	
		Slope	0.04	Seepage	1.00
				Slope	1.00
9:					
Bodecker		Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.67
		Restricted permeability	1.00		
Comoro		Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.67
10:					
Bodecker	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Restricted permeability	1.00		
11:					
Bodecker	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Restricted permeability	1.00		

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
12:					
Bonita	85	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00		
13:					
Bonita	50	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
Forrest	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
				Seepage	0.01
14:					
Borderland	90	Very limited:		Very limited:	
		Content of large stones	1.00	Slope	1.00
				Seepage	1.00
		Restricted permeability	1.00		
		Slope	0.16		
15:					
Borderline	70	Somewhat limited:		Very limited:	
		Slope	0.04	Seepage	1.00
				Slope	1.00
16:					
Boss		Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00		
				Slope	1.00
Krentz		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
		Content of large stones	1.00		
Paramore		Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00		
Rock outcrop		Not rated		Not rated	
17:					
Brookline	40	Very limited:		Very limited:	
		Depth to saturated zone	1.00	Seepage	1.00
				Depth to saturated zone	1.00
		Filtering capacity	1.00	Slope	0.01

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
17:					
Fluvaquents	30	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to saturated zone	1.00
				Slope	0.01
Riverwash	25	Not rated		Not rated	
18:					
Brunkcow	35	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Slope	1.00
Chiricahua	25	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.63	Depth to soft bedrock	1.00
				Slope	1.00
Andrada	20	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	0.63	Slope	1.00
				Seepage	0.50
19:					
Brunkcow	30	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Chiricahua	25	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
				Slope	1.00
Lampshire	20	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
20:					
Budlamp	60	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Woodcutter	25	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
21:					
Buntline	90	Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	0.50
22:					
Caralampi	80	Very limited:		Very limited:	
		Restricted permeability	1.00	Content of large stones	1.00
		Content of large stones	1.00	Slope	0.67
23:					
Caralampi	85	Very limited:		Very limited:	
		Restricted permeability	1.00	Content of large stones	1.00
		Content of large stones	1.00	Slope	0.09
24:					
Carbine	70	Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slope	1.00	Seepage	1.00
				Slope	1.00
25:					
Carbine	50	Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slope	1.00	Seepage	1.00
				Slope	1.00
Hathaway	35	Very limited:		Very limited:	
		Slope	1.00	Seepage	1.00
		Content of large stones	1.00	Slope	1.00
				Content of large stones	1.00
26:					
Cazador	60	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Slope	1.00
		Slope	0.16		
Lesliecreek	30	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Slope	1.00
		Slope	0.16	Seepage	1.00
27:					
Cherrycow	50	Very limited:		Very limited:	
		Depth to bedrock	1.00	Seepage	1.00
		Filtering capacity	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
27:					
Blacktail	35	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Filtering capacity	1.00	Slope	1.00
		Slope	1.00	Content of large stones	1.00
		Content of large stones	1.00		
28:					
Cherrycow	35	Very limited:		Very limited:	
		Slope	1.00	Slope	1.00
		Restricted permeability	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Seepage	0.01
Magoffin	30	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Rock outcrop	20	Not rated		Not rated	
29:					
Chorro	30	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.67
Doubleadobe	30	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Slope	0.67
				Seepage	0.01
Gothard	30	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Slope	0.67
				Seepage	0.01
30:					
Chorro	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Flooding	0.40	Flooding	0.40
				Slope	0.09
Guest	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Flooding	0.40	Flooding	0.40
				Slope	0.09
31:					
Cogswell	85	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Seepage	1.00
32:					
Combate	70	Not limited		Very limited:	
				Seepage	1.00
				Slope	0.09

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
33:					
Comoro	85	Not limited		Very limited:	
				Seepage	1.00
34:					
Comoro	85	Not limited		Very limited:	
				Seepage	1.00
35:					
Contention		Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00		
Crystalgyp		Very limited:		Very limited:	
		Depth to bedrock	1.00	Seepage	1.00
		Slope	1.00	Depth to soft bedrock	1.00
				Slope	1.00
Monzingo		Very limited:		Very limited:	
		Slope	1.00	Seepage	1.00
		Restricted permeability	0.50	Slope	1.00
Redington		Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
		Slope	1.00	Slope	1.00
36:					
Contention	45	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.09
Ugyp	20	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.09
Ugyp	15	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.09
37:					
Courtland	85	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
38:					
Courtland	85	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
39:					
Courtland	55	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
39:					
Diaspar	30	Somewhat limited: Restricted permeability	0.50	Very limited: Seepage	1.00
40:					
Courtland	35	Very limited: Restricted permeability	1.00	Somewhat limited: Slope	0.01
Sasabe	35	Very limited: Restricted permeability	1.00	Somewhat limited: Slope	0.67
Diaspar	20	Somewhat limited: Restricted permeability	0.50	Very limited: Seepage	1.00
				Slope	0.09
41:					
Crowbar	60	Very limited: Restricted permeability	1.00	Very limited: Slope	1.00
		Slope	1.00	Content of large stones	1.00
		Content of large stones	1.00	Seepage	0.01
Brunopeak	30	Very limited: Restricted permeability	1.00	Very limited: Slope	1.00
		Slope	1.00	Content of large stones	1.00
		Content of large stones	1.00	Seepage	0.01
42:					
Deloro	40	Very limited: Depth to bedrock	1.00	Very limited: Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00
Leyte	30	Very limited: Depth to bedrock	1.00	Very limited: Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00
Lampshire	20	Very limited: Depth to bedrock	1.00	Very limited: Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
43:					
Denab	50	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Depth to hard bedrock	1.00
				Slope	1.00
Castledome	30	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Depth to hard bedrock	1.00
				Slope	1.00
44:					
Denied Access		Not rated		Not rated	
45:					
Diaspar	85	Not limited		Very limited:	
				Seepage	1.00
46:					
Diaspar	85	Not limited		Very limited:	
				Seepage	1.00
47:					
Dona Ana	45	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Filtering capacity	1.00	Slope	0.09
Mohave	30	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Filtering capacity	1.00	Slope	0.09
48:					
Doubleadobe	85	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Slope	0.09
				Seepage	0.01
49:					
Durazo	90	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Filtering capacity	1.00		
50:					
Durazo	90	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Filtering capacity	1.00		

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
51:					
Durazo	55	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
				Slope	1.00
Gothard	30	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Slope	1.00
				Seepage	0.01
		Slope	1.00		
52:					
Durazo	50	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.67
Courtland	40	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.67
				Seepage	0.01
53:					
Durazo	55	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
				Slope	1.00
McAllister	30	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
54:					
Elfrida	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00		
55:					
Elfrida	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00		
56:					
Elgin	35	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
				Seepage	0.01
McAllister	30	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
				Slope	1.00
Stronghold	20	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
				Slope	1.00
57:					
Elgin	50	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
				Slope	1.00
		Content of large stones	1.00		
		Slope	0.16		

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
57:					
Outlaw	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	0.16	Seepage	1.00
58:					
Elgin	50	Somewhat limited:		Very limited:	
		Slope	0.63	Seepage	1.00
				Slope	1.00
Stronghold	40	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.63	Slope	1.00
59:					
Eloma	80	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	0.16	Seepage	0.01
60:					
Eloma	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
Caralampi	30	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
				Slope	1.00
White House	20	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
61:					
Epitaph	90	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Depth to bedrock	1.00	Depth to cemented pan	1.00
		Depth to cemented pan	1.00	Depth to hard bedrock	1.00
		Slope	0.04		
62:					
Far	55	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	1.00
				Content of large stones	0.98
Hogris	25	Very limited:		Very limited:	
		Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00
				Seepage	1.00

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
63:					
Far	35	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	1.00
Huachuca	35	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Hogris	20	Very limited:		Very limited:	
		Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00
				Seepage	1.00
64:					
Far	35	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
				Seepage	1.00
Huachuca	35	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Hogris	20	Very limited:		Very limited:	
		Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00
				Seepage	1.00
65:					
Forrest	85	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.01
66:					
Forrest	85	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.01
67:					
Forrest	85	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.01
68:					
Forrest	85	Very limited:		Not limited	
		Restricted permeability	1.00		
69:					
Forrest	85	Very limited:		Not limited	
		Restricted permeability	1.00		

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
70:					
Forrest	55	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.01
Bonita	40	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Slope	0.01
				Seepage	0.01
71:					
Gardencan	45	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.09
Lanque	35	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.09
72:					
Glendale	85	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Seepage	0.50
		Flooding	0.40	Flooding	0.40
73:					
Gothard	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Slope	0.09
				Seepage	0.01
74:					
Gothard	85	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Slope	0.01
				Seepage	0.01
75:					
Graham	60	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Lampshire	25	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Content of large stones	0.01		
76:					
Graveyard	45	Not limited		Very limited:	
				Seepage	1.00
				Slope	0.33
Sierravista	35	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.33

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
77:					
Grizzle	80	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Restricted permeability	0.50	Depth to hard bedrock	0.95
				Slope	0.91
				Seepage	0.50
78:					
Guest	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Seepage	1.00
79:					
Guest	80	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Slope	0.01
80:					
Guest	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Seepage	1.00
81:					
Guest	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00		
82:					
Guest	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00		
83:					
Guest	60	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00		
Cogswell	30	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Seepage	1.00
84:					
Guest	40	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Flooding	0.40
		Flooding	0.40		
Riveroad	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Flooding	0.40	Flooding	0.40

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
85:					
Hantz	85	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Slope	0.01
86:					
Haplustolls	70	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Content of large stones	1.00
		Content of large stones	1.00	Seepage	1.00
				Slope	0.01
Fluvaquents	20	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Content of large stones	1.00
		Filtering capacity	1.00	Seepage	1.00
		Content of large stones	1.00	Depth to saturated zone	1.00
				Slope	0.01
87:					
Haplustolls	70	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Content of large stones	1.00	Content of large stones	0.99
				Slope	0.01
Fluvaquents	20	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	1.00	Content of large stones	1.00
		Filtering capacity	1.00	Seepage	1.00
		Content of large stones	1.00	Depth to saturated zone	1.00
				Slope	0.01
88:					
Hayhollow	30	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.67
Rafter	30	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
		Content of large stones	1.00	Content of large stones	1.00
				Slope	0.67
Riverwash	30	Not rated		Not rated	
89:					
Kaboom	45	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
				Slope	0.09

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
89:					
Reeup	35	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00		
90:					
Kahn fine sandy loam	45	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Seepage	0.50
		Flooding	0.40	Flooding	0.40
				Slope	0.01
Kahn silt loam	40	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Seepage	0.50
		Flooding	0.40	Flooding	0.40
				Slope	0.01
91:					
Kahn	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00	Flooding	0.40
		Flooding	0.40	Seepage	0.01
Zapolote	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00	Flooding	0.40
		Flooding	0.40		
92:					
Karro	90	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Seepage	0.50
		Flooding	0.40	Flooding	0.40
				Slope	0.01
93:					
Karro	90	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Seepage	0.50
		Flooding	0.40	Flooding	0.40
				Slope	0.01
94:					
Keysto	60	Very limited:		Very limited:	
		Content of large stones	1.00	Content of large stones	1.00
		Filtering capacity	1.00	Seepage	1.00
				Flooding	0.40
		Flooding	0.40	Slope	0.09
Riverwash	30	Not rated		Not rated	
95:					
Kuykendall	70	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Rock outcrop	20	Not rated		Not rated	

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
96:					
Lanque	60	Somewhat limited:		Very limited:	
		Flooding	0.40	Seepage	1.00
				Slope	0.67
				Flooding	0.40
Stanford	30	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.67
		Flooding	0.40	Flooding	0.40
97:					
Libby	45	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.67
Gulch	35	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.67
98:					
Luckyhills	90	Somewhat limited:		Very limited:	
		Restricted permeability	0.50	Seepage	1.00
				Slope	0.09
99:					
Luckyhills	50	Somewhat limited:		Very limited:	
		Restricted permeability	0.50	Seepage	1.00
		Slope	0.04	Slope	1.00
McNeal	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Slope	0.04	Slope	1.00
100:					
Lutzcan	50	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Slope	1.00
				Content of large stones	1.00
Yarbam	35	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
101:					
Mabray	45	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Chiricahua	30	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Depth to soft bedrock	1.00
				Slope	1.00

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
101:					
Rock outcrop--------	15	Not rated		Not rated	
102:					
Mabray----------	60	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
		Content of large stones	0.50	Content of large stones	0.10
Rock outcrop--------	30	Not rated		Not rated	
103:					
Magoffin----------	40	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Seepage	1.00
		Content of large stones	1.00	Slope	1.00
				Content of large stones	1.00
Rock outcrop--------	30	Not rated		Not rated	
Cherrycow----------	20	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
104:					
Major fine sandy loam----------	40	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Seepage	0.50
				Slope	0.09
Major silt loam-----	40	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.09
105:					
Mallet----------	45	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.67
		Flooding	0.40	Flooding	0.40
Hooks----------	35	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.67
				Flooding	0.40
		Flooding	0.40	Seepage	0.01
106:					
Marsh----------	100	Not rated		Not rated	
107:					
McAllister----------	90	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.01

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
108:					
McAllister	50	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Slope	0.63	Slope	1.00
Stronghold	30	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
		Slope	0.63	Slope	1.00
109:					
McNeal	85	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Filtering capacity	1.00	Slope	0.01
110:					
McNeal	85	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Filtering capacity	1.00	Slope	0.01
111:					
Monzingo	55	Somewhat limited:		Very limited:	
		Slope	0.84	Seepage	1.00
		Restricted permeability	0.50	Slope	1.00
Ugyp	15	Somewhat limited:		Very limited:	
		Flooding	0.40	Seepage	1.00
				Flooding	0.40
				Slope	0.09
Ugyp	10	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
				Seepage	1.00
				Slope	0.09
112:					
Naco	35	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.09
		Content of large stones	0.11	Content of large stones	0.02
Ruins, thick surface	35	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Filtering capacity	1.00	Slope	0.09
Ruins	20	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.09
				Seepage	0.01

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
113:					
Nolam	40	Somewhat limited:		Very limited:	
		Content of large stones	0.95	Seepage	1.00
				Content of large stones	0.99
				Slope	0.91
Libby	25	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.91
Buntline	20	Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	1.00
				Slope	0.91
114:					
Outlaw		Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00	Seepage	1.00
Epitaph		Very limited:		Very limited:	
		Restricted permeability	1.00	Depth to cemented pan	1.00
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Depth to cemented pan	1.00	Slope	1.00
		Slope	1.00		
Paramore		Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
115:					
Oversight	90	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00
116:					
Oversight	80	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
		Slope	1.00	Slope	1.00
		Content of large stones	1.00	Content of large stones	1.00
117:					
Oversight	60	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
		Content of large stones	0.05	Slope	0.09

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
117:					
Lanque	30	Not limited		Very limited:	
				Seepage	1.00
				Slope	0.09
118:					
Pedregosa	85	Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slope	0.04	Seepage	1.00
				Slope	1.00
119:					
Pedregosa	70	Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slope	1.00	Seepage	1.00
		Content of large stones	1.00	Slope	1.00
				Content of large stones	1.00
Tombstone	20	Very limited:		Very limited:	
		Slope	1.00	Seepage	1.00
		Content of large stones	1.00	Slope	1.00
				Content of large stones	1.00
120:					
Perilla	50	Not limited		Very limited:	
				Seepage	1.00
				Slope	0.01
Durazo	40	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.01
121:					
Pits	80	Not rated		Not rated	
122:					
Pits	50	Not rated		Not rated	
Dumps	50	Not rated		Not rated	
123:					
Quiburi	40	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Depth to saturated zone	0.84	Seepage	1.00
				Depth to saturated zone	0.17
				Slope	0.09
Fluvaquents	30	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
Riverwash	20	Not rated		Not rated	

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
124:					
Rafter	50	Very limited:		Very limited:	
		Filtering capacity	1.00	Seepage	1.00
		Content of large stones	1.00	Content of large stones	1.00
		Flooding	0.40	Slope	0.67
				Flooding	0.40
Lanque	40	Somewhat limited:		Very limited:	
		Flooding	0.40	Seepage	1.00
				Slope	0.67
				Flooding	0.40
125:					
Riveroad		Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Seepage	0.50
		Flooding	0.40	Flooding	0.40
				Slope	0.09
Ubik		Somewhat limited:		Very limited:	
		Flooding	0.40	Seepage	1.00
				Flooding	0.40
				Slope	0.09
126:					
Riverwash	90	Not rated		Not rated	
127:					
Riverwash	65	Not rated		Not rated	
Bodecker	30	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Filtering capacity	1.00	Seepage	1.00
				Slope	0.01
128:					
Rock outcrop	50	Not rated		Not rated	
Magoffin	40	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Seepage	1.00
		Content of large stones	1.00	Slope	1.00
				Content of large stones	1.00
129:					
Sasabe sandy loam	55	Very limited:		Somewhat limited:	
		Restricted permeability	1.00	Slope	0.01
Sasabe silt loam	35	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.01
130:					
Sasabe	85	Very limited:		Not limited	
		Restricted permeability	1.00		

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
131:					
Sasabe	85	Very limited:		Not limited	
		Restricted permeability	1.00		
132:					
Schiefflin	80	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	0.04	Seepage	1.00
				Slope	1.00
133:					
Stronghold	90	Not limited		Very limited:	
				Seepage	1.00
				Slope	0.01
134:					
Stronghold	50	Very limited:		Very limited:	
		Slope	1.00	Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
Bernardino	40	Very limited:		Very limited:	
		Slope	1.00	Slope	1.00
		Filtering capacity	1.00	Seepage	1.00
135:					
Surge	60	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Rock outcrop	30	Not rated		Not rated	
136:					
Sutherland	55	Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Slope	0.04	Seepage	1.00
				Slope	1.00
Mule	35	Somewhat limited:		Very limited:	
		Restricted permeability	0.50	Slope	1.00
		Slope	0.04	Seepage	0.50
137:					
Swisshelm	85	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.01
138:					
Swisshelm	85	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
				Slope	0.01

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
139:					
Tenneco	80	Somewhat limited:		Very limited:	
		Restricted permeability	0.50	Seepage	1.00
		Flooding	0.40	Flooding	0.40
140:					
Terrarossa sandy loam	30	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00		
Terrarossa gravelly loam	25	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00		
Terrarossa very gravelly sandy loam	20	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00		
141:					
Terrarossa	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00		
Blacktail	35	Very limited:		Very limited:	
		Slope	1.00	Seepage	1.00
				Slope	1.00
Pyeatt	15	Very limited:		Very limited:	
		Slope	1.00	Seepage	1.00
				Slope	1.00
142:					
Tombstone	90	Very limited:		Very limited:	
		Filtering capacity	1.00	Slope	1.00
		Slope	0.63	Seepage	1.00
143:					
Turquoise	55	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Depth to hard bedrock	1.00
				Slope	1.00
Nugget	25	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to soft bedrock	1.00
		Slope	1.00	Depth to hard bedrock	1.00
		Content of large stones	1.00	Slope	1.00
				Content of large stones	1.00

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
144:					
Ubik silt loam------	50	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
		Restricted permeability	0.50	Seepage	1.00
				Slope	0.01
Ubik fine sandy loam	40	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
				Seepage	1.00
				Slope	0.01
145:					
Ubik----------	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
				Seepage	1.00
				Slope	0.01
146:					
Ubik----------	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
				Seepage	1.00
				Slope	0.01
147:					
Ubik----------	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
				Seepage	1.00
				Slope	0.01
148:					
Ubik----------	90	Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00
				Seepage	1.00
				Slope	0.01
149:					
Vana----------	80	Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	1.00
				Slope	0.91
150:					
Vana----------	50	Very limited:		Very limited:	
		Depth to cemented pan	1.00	Depth to cemented pan	1.00
				Seepage	0.50
				Slope	0.09
Moco----------	40	Somewhat limited:		Somewhat limited:	
		Restricted permeability	0.68	Seepage	0.32
				Slope	0.09
151:					
White House gravelly loam----------	40	Very limited:		Very limited:	
		Restricted permeability	1.00	Seepage	1.00
				Slope	1.00
		Filtering capacity	1.00		
		Slope	1.00		

Table 11A.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Septic tank absorption fields: Rating class and limiting features	Value	Sewage lagoons: Rating class and limiting features	Value
151:					
White House gravelly sandy loam	35	Very limited:		Very limited:	
		Restricted permeability	1.00	Slope	1.00
		Slope	1.00		
152:					
Yarbam	60	Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Slope	1.00	Slope	1.00
Rock outcrop	30	Not rated		Not rated	

Table 11B.--Sanitary Facilities

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
1:							
Altar	55	Very limited:		Not limited		Very limited:	
		Too sandy	1.00			Too sandy	1.00
		Content of large stones	1.00			Seepage	1.00
						Content of large stones	1.00
						Gravel content	0.99
Mallet	30	Not limited		Not limited		Very limited:	
						Seepage	1.00
2:							
Anthony	45	Not limited		Not limited		Somewhat limited:	
						Seepage	0.50
Maricopa	40	Very limited:		Somewhat limited:		Very limited:	
		Too sandy	1.00	Flooding	0.40	Too sandy	1.00
		Flooding	0.40			Seepage	1.00
3:							
Arizo family	65	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Seepage	1.00
		Too sandy	1.00			Too sandy	0.50
						Gravel content	0.17
Riverwash	20	Not rated		Not rated		Not rated	
4:							
Ashcreek	40	Very limited:		Somewhat limited:		Very limited:	
		Too clayey	1.00	Flooding	0.40	Too clayey	1.00
		Content of large stones	1.00	Slope	0.16	Content of large stones	1.00
		Flooding	0.40			Slope	0.16
		Slope	0.16				
Stanford	40	Somewhat limited:		Very limited:		Somewhat limited:	
		Flooding	0.40	Seepage	1.00	Slope	0.16
		Slope	0.16	Flooding	0.40		
				Slope	0.16		
5:							
Baboquivari	50	Not limited		Not limited		Very limited:	
						Seepage	1.00
Combate	40	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Flooding	0.40	Flooding	0.40	Seepage	0.50
6:							
Banshee	50	Very limited:		Not limited		Very limited:	
		Content of large stones	1.00			Seepage	1.00
						Content of large stones	1.00

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
6:							
Banshee, thick surface	30	Not limited		Not limited		Very limited:	
						Hard to compact	1.00
7:							
Bella	80	Not limited		Not limited		Very limited:	
						Depth to cemented pan	1.00
						Seepage	1.00
						Carbonate content	1.00
						Gravel content	0.05
8:							
Blakeney	65	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Slope	0.04	Depth to cemented pan	1.00
						Slope	0.04
Luckyhills	25	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Slope	0.04	Slope	0.04	Seepage	0.50
						Slope	0.04
9:							
Bodecker		Very limited:		Not limited		Very limited:	
		Too sandy	1.00			Too sandy	1.00
						Seepage	1.00
						Gravel content	1.00
Comoro		Not limited		Not limited		Very limited:	
						Seepage	1.00
						Carbonate content	1.00
10:							
Bodecker	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
						Gravel content	1.00
11:							
Bodecker	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
		Salinity	1.00			Gravel content	1.00
12:							
Bonita	85	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Hard to compact	1.00
13:							
Bonita	50	Not limited		Not limited		Very limited:	
						Carbonate content	1.00
						Hard to compact	1.00
Forrest	40	Not limited		Not limited		Very limited:	
						Carbonate content	1.00

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
14:							
Borderland	90	Very limited:		Somewhat limited:		Very limited:	
		Content of large stones	1.00	Slope	0.16	Carbonate content	1.00
		Slope	0.16			Content of large stones	1.00
						Slope	0.16
15:							
Borderline	70	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Slope	0.04	Slope	0.04	Seepage	0.50
						Slope	0.04
16:							
Boss		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00			Slope	1.00
						Hard to compact	1.00
Krentz		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Too sandy	1.00			Too sandy	1.00
		Content of large stones	1.00			Seepage	1.00
						Gravel content	1.00
						Content of large stones	1.00
Paramore		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00			Depth to bedrock	1.00
						Hard to compact	1.00
Rock outcrop		Not rated		Not rated		Not rated	
17:							
Brookline	40	Very limited:		Somewhat limited:		Very limited:	
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
Fluvaquents	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Too sandy	1.00
		Depth to saturated zone	1.00	Seepage	1.00	Seepage	1.00
		Seepage	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.25
		Too sandy	1.00				
Riverwash	25	Not rated		Not rated		Not rated	
18:							
Brunkcow	35	Very limited:		Somewhat limited:		Very limited:	
		Depth to bedrock	1.00	Slope	0.63	Depth to bedrock	1.00
		Slope	0.63			Slope	0.63
Chiricahua	25	Very limited:		Somewhat limited:		Very limited:	
		Depth to bedrock	1.00	Slope	0.63	Depth to bedrock	1.00
		Slope	0.63			Slope	0.63
Andrada	20	Very limited:		Somewhat limited:		Very limited:	
		Depth to bedrock	1.00	Slope	0.63	Depth to bedrock	1.00
		Slope	0.63			Slope	0.63

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
19:							
Brunkcow	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00			Slope	1.00
Chiricahua	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00			Slope	1.00
Lampshire	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00			Slope	1.00
20:							
Budlamp	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00			Gravel content	0.97
Woodcutter	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00			Slope	1.00
						Gravel content	1.00
21:							
Buntline	90	Not limited		Not limited		Very limited:	
						Depth to cemented pan	1.00
22:							
Caralampi	80	Very limited:		Not limited		Very limited:	
		Content of large stones	1.00			Gravel content	1.00
						Content of large stones	1.00
23:							
Caralampi	85	Very limited:		Not limited		Very limited:	
		Content of large stones	1.00			Content of large stones	1.00
						Gravel content	1.00
24:							
Carbine	70	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Seepage	1.00	Slope	1.00	Slope	1.00
						Seepage	0.50
						Gravel content	0.13
25:							
Carbine	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Depth to cemented pan	1.00	Depth to cemented pan	1.00
		Seepage	1.00	Slope	1.00	Slope	1.00
				Seepage	1.00	Seepage	1.00
						Carbonate content	1.00
						Gravel content	0.99

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
25:							
Hathaway	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Content of large stones	1.00			Slope	1.00
						Seepage	1.00
						Carbonate content	1.00
						Content of large stones	1.00
26:							
Cazador	60	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Too clayey	1.00
		Too clayey	1.00	Slope	0.16	Carbonate content	1.00
		Slope	0.16			Hard to compact	1.00
						Slope	0.16
Lesliecreek	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Carbonate content	1.00
		Slope	0.16	Slope	0.16	Slope	0.16
27:							
Cherrycow	50	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
		Slope	1.00			Depth to bedrock	1.00
						Slope	1.00
						Gravel content	0.03
Blacktail	35	Very limited:		Very limited:		Very limited:	
		Seepage	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00	Slope	1.00	Seepage	1.00
		Slope	1.00			Slope	1.00
		Content of large stones	1.00			Carbonate content	1.00
						Content of large stones	1.00
28:							
Cherrycow	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Depth to bedrock	1.00			Depth to bedrock	1.00
Magoffin	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00				
Rock outcrop	20	Not rated		Not rated		Not rated	
29:							
Chorro	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Carbonate content	1.00
		Salinity	1.00				
Doubleadobe	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Carbonate content	1.00
		Salinity	1.00			Gravel content	0.01
Gothard	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Carbonate content	1.00
		Salinity	1.00			Hard to compact	1.00

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
30:							
Chorro	40	Very limited:		Somewhat limited:		Very limited:	
		Salinity	1.00	Flooding	0.40	Seepage	1.00
		Flooding	0.40			Carbonate content	1.00
Guest	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Flooding	0.40	Flooding	0.40	Carbonate content	1.00
31:							
Cogswell	85	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Carbonate content	1.00
		Salinity	1.00			Hard to compact	1.00
32:							
Combate	70	Not limited		Not limited		Somewhat limited:	
						Seepage	0.50
33:							
Comoro	85	Not limited		Not limited		Somewhat limited:	
						Seepage	0.50
34:							
Comoro	85	Very limited:		Not limited		Somewhat limited:	
		Salinity	1.00			Seepage	0.50
35:							
Contention		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Hard to compact	1.00
Crystalgyp		Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
Monzingo		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
Redington		Very limited:		Very limited:		Very limited:	
		Too sandy	1.00	Slope	1.00	Too sandy	1.00
		Slope	1.00			Seepage	1.00
						Slope	1.00
36:							
Contention	45	Not limited		Not limited		Very limited:	
						Hard to compact	1.00
Ugyp	20	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Seepage	1.00
Ugyp	15	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Seepage	1.00
37:							
Courtland	85	Not limited		Not limited		Very limited:	
						Carbonate content	1.00
38:							
Courtland	85	Very limited:		Not limited		Very limited:	
		Salinity	1.00			Carbonate content	1.00

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
39:							
Courtland	55	Not limited		Not limited		Very limited:	
						Carbonate content	1.00
Diaspar	30	Not limited		Not limited		Not limited	
40:							
Courtland	35	Not limited		Not limited		Not limited	
Sasabe	35	Not limited		Not limited		Not limited	
Diaspar	20	Not limited		Not limited		Not limited	
41:							
Crowbar	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Content of large stones	1.00			Slope	1.00
						Content of large stones	1.00
Brunopeak	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00			Content of large stones	1.00
						Gravel content	0.97
42:							
Deloro	40	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
		Content of large stones	1.00			Content of large stones	1.00
Leyte	30	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
		Content of large stones	1.00			Hard to compact	1.00
						Content of large stones	1.00
Lampshire	20	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
		Content of large stones	1.00			Content of large stones	1.00
43:							
Denab	50	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
Castledome	30	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
44:							
Denied Access		Not rated		Not rated		Not rated	
45:							
Diaspar	85	Not limited		Not limited		Somewhat limited:	
						Seepage	0.50

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
46:							
Diaspar	85	Very limited:		Not limited		Somewhat limited:	
		Salinity	1.00			Seepage	0.50
47:							
Dona Ana	45	Very limited:		Not limited		Very limited:	
		Too sandy	1.00			Too sandy	1.00
						Seepage	1.00
						Gravel content	0.01
Mohave	30	Very limited:		Not limited		Very limited:	
		Too sandy	1.00			Seepage	1.00
						Too sandy	0.50
48:							
Doubleadobe	85	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Carbonate content	1.00
		Salinity	1.00			Gravel content	0.01
49:							
Durazo	90	Very limited:		Not limited		Very limited:	
		Too sandy	1.00			Seepage	1.00
						Too sandy	0.50
50:							
Durazo	90	Very limited:		Not limited		Very limited:	
		Too sandy	1.00			Seepage	1.00
		Salinity	1.00			Too sandy	0.50
51:							
Durazo	55	Very limited:		Not limited		Very limited:	
		Too sandy	1.00			Seepage	1.00
		Salinity	1.00			Too sandy	0.50
Gothard	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Slope	1.00
		Slope	1.00	Slope	1.00	Carbonate content	1.00
		Salinity	1.00			Hard to compact	1.00
52:							
Durazo	50	Very limited:		Not limited		Very limited:	
		Too sandy	1.00			Seepage	1.00
						Too sandy	0.50
Courtland	40	Not limited		Not limited		Not limited	
53:							
Durazo	55	Very limited:		Not limited		Very limited:	
		Too sandy	1.00			Seepage	1.00
						Too sandy	0.50
McAllister	30	Not limited		Not limited		Not limited	
54:							
Elfrida	90	Very limited:		Very limited:		Not limited	
		Flooding	1.00	Flooding	1.00		
55:							
Elfrida	90	Very limited:		Very limited:		Not limited	
		Flooding	1.00	Flooding	1.00		
		Salinity	1.00				

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
56:							
Elgin	35	Not limited		Not limited		Very limited:	
						Carbonate content	1.00
McAllister	30	Not limited		Not limited		Very limited:	
						Seepage	1.00
						Carbonate content	1.00
Stronghold	20	Very limited:		Not limited		Very limited:	
		Content of large stones	1.00			Seepage	1.00
						Carbonate content	1.00
						Content of large stones	1.00
						Gravel content	0.11
57:							
Elgin	50	Very limited:		Somewhat limited:		Very limited:	
		Content of large stones	1.00	Slope	0.16	Seepage	1.00
		Slope	0.16			Carbonate content	1.00
						Content of large stones	1.00
						Slope	0.16
						Gravel content	0.04
Outlaw	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.16	Slope	0.16	Carbonate content	1.00
						Slope	0.16
58:							
Elgin	50	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Slope	0.63	Slope	0.63	Gravel content	0.78
						Slope	0.63
						Seepage	0.50
Stronghold	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Seepage	1.00
						Slope	0.63
						Gravel content	0.48
59:							
Eloma	80	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.16	Slope	0.16	Gravel content	1.00
						Slope	0.16
60:							
Eloma	40	Somewhat limited:		Not limited		Somewhat limited:	
		Content of large stones	0.24			Gravel content	0.86
						Content of large stones	0.24
Caralampi	30	Not limited		Not limited		Somewhat limited:	
						Gravel content	0.29
White House	20	Not limited		Not limited		Very limited:	
						Hard to compact	1.00
						Gravel content	0.13

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
61:							
Epitaph	90	Very limited:		Somewhat limited:		Very limited:	
		Depth to bedrock	1.00	Slope	0.04	Depth to cemented pan	1.00
		Slope	0.04			Depth to bedrock	1.00
						Hard to compact	1.00
						Slope	0.04
62:							
Far	55	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00				
Hogris	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Seepage	1.00	Content of large stones	1.00
		Seepage	1.00			Seepage	0.50
63:							
Far	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00				
Huachuca	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00				
Hogris	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Seepage	1.00	Content of large stones	1.00
		Seepage	1.00			Seepage	0.50
64:							
Far	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00				
Huachuca	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00				
Hogris	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Content of large stones	1.00	Seepage	1.00	Content of large stones	1.00
		Seepage	1.00			Seepage	0.50
65:							
Forrest	85	Not limited		Not limited		Not limited	
66:							
Forrest	85	Very limited:		Not limited		Not limited	
		Salinity	1.00				

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
67:							
Forrest	85	Not limited		Not limited		Not limited	
68:							
Forrest	85	Not limited		Not limited		Not limited	
69:							
Forrest	85	Very limited:		Not limited		Not limited	
		Salinity	1.00				
70:							
Forrest	55	Not limited		Not limited		Not limited	
Bonita	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Hard to compact	1.00
71:							
Gardencan	45	Not limited		Not limited		Not limited	
Lanque	35	Not limited		Very limited:		Somewhat limited:	
				Seepage	1.00	Seepage	0.50
72:							
Glendale	85	Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Flooding	0.40		
73:							
Gothard	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Carbonate content	1.00
		Salinity	1.00			Hard to compact	1.00
74:							
Gothard	85	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Carbonate content	1.00
		Salinity	1.00			Hard to compact	1.00
75:							
Graham	60	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
Lampshire	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00			Slope	1.00
		Content of large stones	0.01			Content of large stones	0.01
76:							
Graveyard	45	Not limited		Not limited		Very limited:	
						Gravel content	1.00
						Seepage	0.50
Sierravista	35	Not limited		Not limited		Very limited:	
						Gravel content	1.00
77:							
Grizzle	80	Very limited:		Not limited		Very limited:	
		Depth to bedrock	1.00			Depth to bedrock	1.00

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
78:							
Guest	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Hard to compact	1.00
79:							
Guest	80	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Hard to compact	1.00
80:							
Guest	90	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Hard to compact	1.00
		Salinity	1.00				
81:							
Guest	90	Very limited:		Very limited:		Not limited	
		Flooding	1.00	Flooding	1.00		
82:							
Guest	90	Very limited:		Very limited:		Not limited	
		Flooding	1.00	Flooding	1.00		
		Salinity	1.00				
83:							
Guest	60	Very limited:		Very limited:		Not limited	
		Flooding	1.00	Flooding	1.00		
		Salinity	1.00				
Cogswell	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Carbonate content	1.00
		Salinity	1.00			Hard to compact	1.00
84:							
Guest	40	Somewhat limited:		Somewhat limited:		Very limited:	
		Flooding	0.40	Flooding	0.40	Hard to compact	1.00
Riveroad	40	Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Flooding	0.40		
85:							
Hantz	85	Very limited:		Very limited:		Not limited	
		Flooding	1.00	Flooding	1.00		
86:							
Haplustolls	70	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00	Content of large stones	0.64
		Content of large stones	0.64			Gravel content	0.06
Fluvaquents	20	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Too sandy	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00	Content of large stones	1.00
		Too sandy	1.00			Depth to saturated zone	1.00
		Content of large stones	1.00				

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
87:							
Haplustolls	70	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Too sandy	1.00
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Too sandy	1.00			Content of large stones	1.00
		Content of large stones	1.00				
Fluvaquents	20	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Too sandy	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	1.00
		Seepage	1.00	Seepage	1.00	Content of large stones	1.00
		Too sandy	1.00			Depth to saturated zone	0.86
		Content of large stones	1.00				
88:							
Hayhollow	30	Not limited		Not limited		Very limited:	
						Seepage	1.00
Rafter	30	Very limited:		Very limited:		Very limited:	
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Content of large stones	1.00			Gravel content	1.00
						Too sandy	1.00
						Too clayey	1.00
						Content of large stones	1.00
Riverwash	30	Not rated		Not rated		Not rated	
89:							
Kaboom	45	Very limited:		Not limited		Very limited:	
		Depth to bedrock	1.00			Depth to bedrock	1.00
Reeup	35	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Slope	1.00
		Slope	1.00			Depth to bedrock	1.00
90:							
Kahn fine sandy loam	45	Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Flooding	0.40		
Kahn silt loam	40	Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Flooding	0.40		
91:							
Kahn	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Flooding	0.40	Flooding	0.40	Carbonate content	1.00
Zapolote	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Flooding	0.40	Flooding	0.40	Carbonate content	1.00
92:							
Karro	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Flooding	0.40	Flooding	0.40	Carbonate content	1.00

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
93:							
Karro	90	Very limited:		Somewhat limited:		Very limited:	
		Salinity	1.00	Flooding	0.40	Carbonate content	1.00
		Flooding	0.40				
94:							
Keysto	60	Very limited:		Somewhat limited:		Very limited:	
		Too sandy	1.00	Flooding	0.40	Too sandy	1.00
		Content of large stones	1.00			Seepage	1.00
		Flooding	0.40			Content of large stones	1.00
Riverwash	30	Not rated		Not rated		Not rated	
95:							
Kuykendall	70	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Hard to compact	1.00
						Slope	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
96:							
Lanque	60	Very limited:		Very limited:		Very limited:	
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Flooding	0.40	Flooding	0.40		
Stanford	30	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Too clayey	0.50	Flooding	0.40	Too clayey	0.50
		Flooding	0.40				
97:							
Libby	45	Not limited		Not limited		Somewhat limited:	
						Gravel content	0.98
Gulch	35	Not limited		Not limited		Not limited	
98:							
Luckyhills	90	Not limited		Not limited		Not limited	
99:							
Luckyhills	50	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Slope	0.04	Slope	0.04	Gravel content	0.09
						Slope	0.04
McNeal	40	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Slope	0.04	Slope	0.04	Slope	0.04
100:							
Lutzcan	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00			Slope	1.00
Yarbam	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00				

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
101:							
Mabray	45	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
Chiricahua	30	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	
102:							
Mabray	60	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
		Content of large stones	0.50			Too acid	1.00
						Seepage	1.00
						Carbonate content	1.00
Rock outcrop	30	Not rated		Not rated		Not rated	
103:							
Magoffin	40	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00			Content of large stones	1.00
		Content of large stones	1.00				
Rock outcrop	30	Not rated		Not rated		Not rated	
Cherrycow	20	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
						Hard to compact	1.00
104:							
Major fine sandy loam	40	Not limited		Not limited		Not limited	
Major silt loam	40	Very limited:		Very limited:		Not limited	
		Flooding	1.00	Flooding	1.00		
105:							
Mallet	45	Somewhat limited:		Somewhat limited:		Very limited:	
		Flooding	0.40	Flooding	0.40	Seepage	1.00
						Gravel content	0.01
Hooks	35	Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Flooding	0.40		
106:							
Marsh	100	Not rated		Not rated		Not rated	
107:							
McAllister	90	Not limited		Not limited		Not limited	
108:							
McAllister	50	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Slope	0.63	Slope	0.63	Slope	0.63
						Gravel content	0.06

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
108:							
Stronghold	30	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Seepage	1.00
						Slope	0.63
						Gravel content	0.45
109:							
McNeal	85	Not limited		Not limited		Not limited	
110:							
McNeal	85	Very limited:		Not limited		Not limited	
		Salinity	1.00				
111:							
Monzingo	55	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Slope	0.84	Slope	0.84	Slope	0.84
Ugyp	15	Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Flooding	0.40	Flooding	0.40	Seepage	0.50
Ugyp	10	Very limited:		Very limited:		Somewhat limited:	
		Flooding	1.00	Flooding	1.00	Seepage	0.50
112:							
Naco	35	Not limited		Not limited		Not limited	
Ruins, thick surface	35	Not limited		Not limited		Very limited:	
						Hard to compact	1.00
Ruins	20	Not limited		Not limited		Not limited	
113:							
Nolam	40	Very limited:		Not limited		Very limited:	
		Content of large stones	1.00			Content of large stones	1.00
						Seepage	0.50
						Gravel content	0.16
Libby	25	Not limited		Not limited		Not limited	
Buntline	20	Not limited		Not limited		Very limited:	
						Depth to cemented pan	1.00
114:							
Outlaw		Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Hard to compact	1.00
						Slope	1.00
Epitaph		Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to cemented pan	1.00
		Slope	1.00			Depth to bedrock	1.00
						Slope	1.00
						Hard to compact	1.00
Paramore		Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
						Hard to compact	1.00

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
115:							
Oversight	90	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Content of large stones	1.00			Slope	1.00
						Content of large stones	1.00
116:							
Oversight	80	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Content of large stones	1.00			Slope	1.00
						Seepage	1.00
						Carbonate content	1.00
						Content of large stones	1.00
117:							
Oversight	60	Somewhat limited:		Not limited		Somewhat limited:	
		Content of large stones	0.18			Seepage	0.50
						Content of large stones	0.18
Lanque	30	Very limited:		Very limited:		Somewhat limited:	
		Seepage	1.00	Seepage	1.00	Seepage	0.50
118:							
Pedregosa	85	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Slope	0.04	Depth to cemented pan	1.00
						Gravel content	1.00
						Seepage	0.50
						Slope	0.04
119:							
Pedregosa	70	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to cemented pan	1.00
		Content of large stones	1.00			Slope	1.00
						Content of large stones	1.00
Tombstone	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Gravel content	1.00
		Content of large stones	1.00			Slope	1.00
						Seepage	1.00
						Carbonate content	1.00
						Content of large stones	1.00
120:							
Perilla	50	Not limited		Not limited		Very limited:	
						Seepage	1.00
Durazo	40	Very limited:		Not limited		Very limited:	
		Too sandy	1.00			Too sandy	1.00
						Seepage	1.00
121:							
Pits	80	Not rated		Not rated		Not rated	

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
122:							
Pits	50	Not rated		Not rated		Not rated	
Dumps	50	Not rated		Not rated		Not rated	
123:							
Quiburi	40	Very limited:		Very limited:		Somewhat limited:	
		Flooding	1.00	Flooding	1.00	Seepage	0.50
		Depth to saturated zone	1.00	Depth to saturated zone	0.17		
Fluvaquents	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Too sandy	1.00
		Depth to saturated zone	1.00	Seepage	1.00	Seepage	1.00
		Seepage	1.00	Depth to saturated zone	1.00	Depth to saturated zone	0.25
		Too sandy	1.00				
Riverwash	20	Not rated		Not rated		Not rated	
124:							
Rafter	50	Very limited:		Very limited:		Very limited:	
		Seepage	1.00	Seepage	1.00	Too sandy	1.00
		Too sandy	1.00	Flooding	0.40	Seepage	1.00
		Content of large stones	1.00			Gravel content	1.00
		Flooding	0.40			Content of large stones	1.00
Lanque	40	Very limited:		Very limited:		Very limited:	
		Seepage	1.00	Seepage	1.00	Seepage	1.00
		Flooding	0.40	Flooding	0.40	Gravel content	0.05
125:							
Riveroad		Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Flooding	0.40		
Ubik		Somewhat limited:		Somewhat limited:		Somewhat limited:	
		Flooding	0.40	Flooding	0.40	Seepage	0.50
126:							
Riverwash	90	Not rated		Not rated		Not rated	
127:							
Riverwash	65	Not rated		Not rated		Not rated	
Bodecker	30	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Too sandy	1.00
		Too sandy	1.00			Seepage	1.00
						Gravel content	0.98
128:							
Rock outcrop	50	Not rated		Not rated		Not rated	
Magoffin	40	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to bedrock	1.00
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00			Content of large stones	1.00
		Content of large stones	1.00				

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
129:							
Sasabe sandy loam---	55	Not limited		Not limited		Very limited:	
						Hard to compact	1.00
Sasabe silt loam----	35	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Hard to compact	1.00
130:							
Sasabe----------	85	Not limited		Not limited		Not limited	
131:							
Sasabe----------	85	Very limited:		Not limited		Not limited	
		Salinity	1.00				
132:							
Schiefflin----------	80	Very limited:		Somewhat limited:		Very limited:	
		Depth to bedrock	1.00	Slope	0.04	Depth to bedrock	1.00
		Too sandy	1.00			Too sandy	1.00
		Slope	0.04			Seepage	1.00
						Slope	0.04
133:							
Stronghold----------	90	Not limited		Not limited		Somewhat limited:	
						Seepage	0.50
						Gravel content	0.05
134:							
Stronghold----------	50	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Seepage	1.00
						Gravel content	0.68
Bernardino----------	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Seepage	1.00
						Gravel content	0.10
135:							
Surge----------	60	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
Rock outcrop--------	30	Not rated		Not rated		Not rated	
136:							
Sutherland----------	55	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Slope	0.04	Depth to cemented pan	1.00
						Gravel content	0.74
						Slope	0.04
Mule----------	35	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.04	Slope	0.04	Gravel content	1.00
						Carbonate content	1.00
						Slope	0.04
137:							
Swisshelm----------	85	Not limited		Not limited		Somewhat limited:	
						Seepage	0.50

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
138:							
Swisshelm	85	Very limited:		Not limited		Somewhat limited:	
		Salinity	1.00			Seepage	0.50
139:							
Tenneco	80	Somewhat limited:		Somewhat limited:		Not limited	
		Flooding	0.40	Flooding	0.40		
140:							
Terrarossa sandy loam	30	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
Terrarossa gravelly loam	25	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
Terrarossa very gravelly sandy loam	20	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Gravel content	0.74
141:							
Terrarossa	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
Blacktail	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
		Seepage	1.00	Seepage	1.00	Seepage	0.50
Pyeatt	15	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
						Seepage	0.50
142:							
Tombstone	90	Somewhat limited:		Somewhat limited:		Very limited:	
		Slope	0.63	Slope	0.63	Gravel content	1.00
						Seepage	1.00
						Slope	0.63
143:							
Turquoise	55	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
Nugget	25	Very limited:		Very limited:		Very limited:	
		Depth to bedrock	1.00	Slope	1.00	Depth to bedrock	1.00
		Slope	1.00			Slope	1.00
		Content of large stones	1.00			Content of large stones	1.00
144:							
Ubik silt loam	50	Very limited:		Very limited:		Somewhat limited:	
		Flooding	1.00	Flooding	1.00	Seepage	0.50
Ubik fine sandy loam	40	Very limited:		Very limited:		Very limited:	
		Flooding	1.00	Flooding	1.00	Seepage	1.00
145:							
Ubik	90	Very limited:		Very limited:		Somewhat limited:	
		Flooding	1.00	Flooding	1.00	Seepage	0.50

Table 11B.--Sanitary Facilities--Continued

Map symbol and soil name	Pct. of map unit	Trench sanitary landfill: Rating class and limiting features	Value	Area sanitary landfill: Rating class and limiting features	Value	Daily cover for landfill: Rating class and limiting features	Value
146:							
Ubik	90	Very limited:		Very limited:		Somewhat limited:	
		Flooding	1.00	Flooding	1.00	Seepage	0.50
		Salinity	1.00				
147:							
Ubik	90	Very limited:		Very limited:		Somewhat limited:	
		Flooding	1.00	Flooding	1.00	Seepage	0.50
148:							
Ubik	90	Very limited:		Very limited:		Somewhat limited:	
		Flooding	1.00	Flooding	1.00	Seepage	0.50
		Salinity	1.00				
149:							
Vana	80	Not limited		Not limited		Very limited:	
						Depth to cemented pan	1.00
150:							
Vana	50	Not limited		Not limited		Very limited:	
						Depth to cemented pan	1.00
Moco	40	Not limited		Not limited		Very limited:	
						Carbonate content	1.00
151:							
White House gravelly loam	40	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
White House gravelly sandy loam	35	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Slope	1.00
152:							
Yarbam	60	Very limited:		Very limited:		Very limited:	
		Slope	1.00	Slope	1.00	Depth to bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	1.00
		Seepage	1.00			Gravel content	0.18
Rock outcrop	30	Not rated		Not rated		Not rated	

Table 12A.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 1.00 in the ratings for sand and gravel and from 0.00 to 0.99 in the ratings for topsoil. The smaller the value, the the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
1:							
Altar	55	Good:		Poor:		Good	
		Thickest layer	0.29	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
Mallet	30	Good:		Poor:		Good	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
2:							
Anthony	45	Poor:		Fair:		Good	
		Bottom layer not a source	0.00	Bottom layer	0.07		
		Thickest layer not a source	0.00	Thickest layer	0.07		
Maricopa	40	Poor:		Fair:		Fair:	
		Bottom layer not a source	0.00	Thickest layer	0.08	Hard to reclaim	0.82
		Thickest layer not a source	0.00	Bottom layer	0.08		
3:							
Arizo family	65	Fair:		Fair:		Poor:	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Rock fragment content	0.00
		Thickest layer	0.31	Bottom layer	0.04	Hard to reclaim	0.68
Riverwash	20	Not rated		Not rated		Not rated	
4:							
Ashcreek	40	Good:		Poor:		Good	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
Stanford	40	Good:		Poor:		Good	
		Thickest layer	0.40	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
5:							
Baboquivari	50	Poor:		Fair:		Good	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00		
		Thickest layer not a source	0.00	Bottom layer	0.06		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
5:							
Combate	40	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Bottom layer; Thickest layer	0.06; 0.08	Good	
6:							
Banshee	50	Good: Thickest layer not a source; Bottom layer	0.00; 1.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
Banshee, thick surface	30	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
7:							
Bella	80	Good: Thickest layer not a source; Bottom layer	0.00; 1.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Depth to cemented pan	0.00
8:							
Blakeney	65	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Depth to cemented pan; Slope; Rock fragment content	0.00; 0.96; 0.97
Luckyhills	25	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Slope	0.96
9:							
Bodecker		Fair: Bottom layer not a source; Thickest layer	0.00; 0.66	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
Comoro		Good: Thickest layer not a source; Bottom layer	0.00; 1.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
10:							
Bodecker	90	Fair: Bottom layer not a source; Thickest layer	0.00; 0.62	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Hard to reclaim; Rock fragment content	0.00; 0.00

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
11:							
Bodecker	90	Fair:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Hard to reclaim	0.00
		Thickest layer	0.62	Thickest layer not a source	0.00	Rock fragment content	0.00
12:							
Bonita	85	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too clayey	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
13:							
Bonita	50	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
Forrest	40	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
14:							
Borderland	90	Good:		Poor:		Good	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
15:							
Borderline	70	Poor:		Fair:		Fair:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Hard to reclaim	0.50
		Thickest layer not a source	0.00	Thickest layer	0.06	Rock fragment content	0.72
						Carbonate content	0.92
						Slope	0.96
16:							
Boss		Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
						Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Depth to bedrock	0.00
Krentz		Good:		Poor:		Poor:	
		Thickest layer	0.40	Bottom layer not a source	0.00	Slope	0.00
		Bottom layer	1.00			Hard to reclaim	0.97
				Thickest layer not a source	0.00		
Paramore		Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
16:							
Rock outcrop		Not rated		Not rated		Not rated	
17:							
Brookline	40	Poor:		Fair:		Fair:	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Hard to reclaim	0.02
		Thickest layer not a source	0.00	Bottom layer	0.10		
Fluvaquents	30	Poor:		Fair:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Hard to reclaim	0.00
		Thickest layer not a source	0.00	Thickest layer	0.29	Depth to saturated zone	0.98
Riverwash	25	Not rated		Not rated		Not rated	
18:							
Brunkcow	35	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Depth to bedrock	0.00
						Slope	0.37
Chiricahua	25	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.37
						Depth to bedrock	0.54
Andrada	20	Fair:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer	0.19	Thickest layer not a source	0.00	Depth to bedrock	0.00
						Slope	0.37
19:							
Brunkcow	30	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.00
						Depth to bedrock	0.00
Chiricahua	25	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Too clayey	0.00
						Depth to bedrock	0.00
Lampshire	20	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.00
						Depth to bedrock	0.00

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
20:							
Budlamp	60	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Depth to bedrock	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.00
						Rock fragment content	0.00
Woodcutter	25	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Depth to bedrock	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.00
						Rock fragment content	0.00
21:							
Buntline	90	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Depth to cemented pan	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
22:							
Caralampi	80	Good:		Poor:		Good	
		Thickest layer	0.33	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
23:							
Caralampi	85	Good:		Poor:		Good	
		Thickest layer	0.73	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
24:							
Carbine	70	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Depth to cemented pan	0.00
						Rock fragment content	0.00
						Carbonate content	0.46
25:							
Carbine	50	Good:		Poor:		Fair:	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00	Depth to cemented pan	0.00
		Bottom layer	1.00	Thickest layer not a source	0.00		
Hathaway	35	Good:		Poor:		Good	
		Thickest layer	0.83	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
26:							
Cazador	60	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
Lesliecreek	30	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
27:							
Cherrycow	50	Fair: Bottom layer not a source; Thickest layer	0.00; 0.37	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
Blacktail	35	Good: Thickest layer; Bottom layer	0.87; 1.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
28:							
Cherrycow	35	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Slope	0.00
Magoffin	30	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too sandy; Slope; Depth to bedrock	0.00; 0.00; 0.00
Rock outcrop	20	Not rated		Not rated		Not rated	
29:							
Chorro	30	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
Doubleadobe	30	Good: Thickest layer not a source; Bottom layer	0.00; 1.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
Gothard	30	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
30:							
Chorro	40	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
Guest	40	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
31:							
Cogswell	85	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
32:							
Combate	70	Poor:		Fair:		Good	
		Bottom layer not a source	0.00	Bottom layer	0.06		
		Thickest layer not a source	0.00	Thickest layer	0.08		
33:							
Comoro	85	Poor:		Fair:		Good	
		Bottom layer not a source	0.00	Thickest layer	0.00		
		Thickest layer not a source	0.00	Bottom layer	0.07		
34:							
Comoro	85	Poor:		Fair:		Good	
		Bottom layer not a source	0.00	Thickest layer	0.00		
		Thickest layer not a source	0.00	Bottom layer	0.07		
35:							
Contention		Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too clayey	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
Crystalgyp		Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
Monzingo		Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Hard to reclaim	0.00
						Carbonate content	0.92
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
35:							
Redington		Fair: Bottom layer not a source; Thickest layer	0.00; 0.29	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Hard to reclaim	0.94
36:							
Contention	45	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too clayey	0.00
Ugyp	20	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Thickest layer; Bottom layer	0.10; 0.11	Fair: Carbonate content	0.97
Ugyp	15	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Thickest layer; Bottom layer	0.10; 0.11	Fair: Carbonate content	0.97
37:							
Courtland	85	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
38:							
Courtland	85	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
39:							
Courtland	55	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
Diaspar	30	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Hard to reclaim; Rock fragment content	0.50; 0.72
40:							
Courtland	35	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Rock fragment content	0.72

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
40:							
Sasabe	35	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Too clayey; Rock fragment content	0.51; 0.72
Diaspar	20	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Hard to reclaim; Rock fragment content	0.50; 0.72
41:							
Crowbar	60	Good: Thickest layer; Bottom layer	0.80; 1.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
Brunopeak	30	Good: Thickest layer; Bottom layer	0.51; 1.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Slope	0.00
42:							
Deloro	40	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too sandy; Depth to bedrock	0.00; 0.00
Leyte	30	Good: Bottom layer not a source; Thickest layer	0.00; 1.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too sandy; Depth to bedrock	0.00; 0.00
Lampshire	20	Good: Bottom layer not a source; Thickest layer	0.00; 1.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too sandy; Depth to bedrock	0.00; 0.00
43:							
Denab	50	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too sandy; Depth to bedrock	0.00; 0.54
Castledome	30	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too sandy; Depth to bedrock	0.00; 0.00
44:							
Denied Access		Not rated		Not rated		Not rated	

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
45:							
Diaspar	85	Poor:		Fair:		Good	
		Bottom layer not a source	0.00	Bottom layer	0.08		
				Thickest layer	0.08		
		Thickest layer not a source	0.00				
46:							
Diaspar	85	Poor:		Fair:		Good	
		Bottom layer not a source	0.00	Bottom layer	0.08		
				Thickest layer	0.08		
		Thickest layer not a source	0.00				
47:							
Dona Ana	45	Poor:		Fair:		Poor:	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Hard to reclaim	0.00
				Bottom layer	0.01		
		Thickest layer not a source	0.00				
Mohave	30	Poor:		Fair:		Poor:	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Rock fragment content	0.00
				Bottom layer	0.12	Carbonate content	0.08
		Thickest layer not a source	0.00				
48:							
Doubleadobe	85	Good:		Poor:		Good	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
49:							
Durazo	90	Poor:		Fair:		Fair:	
		Bottom layer not a source	0.00	Bottom layer	0.04	Too sandy	0.56
				Thickest layer	0.15		
		Thickest layer not a source	0.00				
50:							
Durazo	90	Poor:		Fair:		Fair:	
		Bottom layer not a source	0.00	Bottom layer	0.04	Too sandy	0.56
				Thickest layer	0.15		
		Thickest layer not a source	0.00				
51:							
Durazo	55	Poor:		Fair:		Fair:	
		Bottom layer not a source	0.00	Bottom layer	0.08	Too sandy	0.56
				Thickest layer	0.15		
		Thickest layer not a source	0.00				
Gothard	30	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
52:							
Durazo	50	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
Courtland	40	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
53:							
Durazo	55	Poor:		Fair:		Fair:	
		Bottom layer not a source	0.00	Bottom layer	0.08	Too sandy	0.56
		Thickest layer not a source	0.00	Thickest layer	0.15		
McAllister	30	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
54:							
Elfrida	90	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Sodium content	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Carbonate content	0.46
						Salinity	0.50
55:							
Elfrida	90	Poor:		Poor:		Fair:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Carbonate content	0.46
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
56:							
Elgin	35	Good:		Poor:		Good	
		Thickest layer	0.36	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
McAllister	30	Good:		Poor:		Good	
		Thickest layer	0.51	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
Stronghold	20	Good:		Poor:		Good	
		Thickest layer	0.37	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
57:							
Elgin	50	Good:		Poor:		Good	
		Thickest layer	0.19	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
Outlaw	40	Good:		Poor:		Good	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
58:							
Elgin	50	Fair:		Poor:		Poor:	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00	Too clayey	0.00
		Bottom layer	0.06	Thickest layer not a source	0.00	Hard to reclaim	0.00
						Slope	0.37
						Rock fragment content	0.97
Stronghold	40	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Rock fragment content	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.37
						Hard to reclaim	0.50
						Carbonate content	0.54
59:							
Eloma	80	Good:		Poor:		Good	
		Thickest layer	0.54	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
60:							
Eloma	40	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too clayey	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Hard to reclaim	0.00
						Rock fragment content	0.00
Caralampi	30	Fair:		Poor:		Poor:	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00	Hard to reclaim	0.00
		Bottom layer	0.06	Thickest layer not a source	0.00	Rock fragment content	0.00
White House	20	Fair:		Poor:		Poor:	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00	Too clayey	0.00
		Bottom layer	0.56	Thickest layer not a source	0.00	Hard to reclaim	0.00
61:							
Epitaph	90	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too clayey	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.96

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
62:							
Far	55	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.00
						Depth to bedrock	0.00
Hogris	25	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Hard to reclaim	0.00
						Rock fragment content	0.00
63:							
Far	35	Fair:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer	0.25	Thickest layer not a source	0.00	Slope	0.00
						Depth to bedrock	0.00
Huachuca	35	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.00
						Depth to bedrock	0.00
Hogris	20	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Hard to reclaim	0.00
						Rock fragment content	0.00
64:							
Far	35	Fair:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer	0.25	Thickest layer not a source	0.00	Slope	0.00
						Depth to bedrock	0.00
Huachuca	35	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.00
						Depth to bedrock	0.00
Hogris	20	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Hard to reclaim	0.00
						Rock fragment content	0.00
65:							
Forrest	85	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too clayey	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
66:							
Forrest	85	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too clayey	0.00
67:							
Forrest	85	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too clayey	0.00
68:							
Forrest	85	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too clayey	0.00
69:							
Forrest	85	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too clayey	0.00
70:							
Forrest	55	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Thickest layer not a source; Bottom layer	0.00; 0.01	Fair: Too clayey; Carbonate content	0.29; 0.92
Bonita	40	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too clayey	0.00
71:							
Gardencan	45	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Rock fragment content; Hard to reclaim	0.00; 0.00
Lanque	35	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Bottom layer not a source; Thickest layer	0.00; 0.06	Fair: Rock fragment content	0.50
72:							
Glendale	85	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
73:							
Gothard	90	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
74:							
Gothard	85	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
75:							
Graham	60	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Depth to bedrock	0.00
Lampshire	25	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Depth to bedrock	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.00
						Too sandy	0.00
76:							
Graveyard	45	Fair:		Poor:		Poor:	
		Thickest layer	0.19	Bottom layer not a source	0.00	Rock fragment content	0.00
		Bottom layer	0.56	Thickest layer not a source	0.00	Hard to reclaim	0.00
						Carbonate content	0.46
Sierravista	35	Fair:		Poor:		Poor:	
		Thickest layer	0.06	Bottom layer not a source	0.00	Hard to reclaim	0.00
		Bottom layer	0.69	Thickest layer not a source	0.00	Rock fragment content	0.00
77:							
Grizzle	80	Poor:		Poor:		Fair:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Carbonate content	0.97
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
78:							
Guest	90	Poor:		Fair:		Poor:	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Too clayey	0.00
		Thickest layer not a source	0.00	Bottom layer	0.01	Sodium content	0.85
79:							
Guest	80	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
80:							
Guest	90	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Thickest layer not a source; Bottom layer	0.00; 0.01	Poor: Too clayey	0.00
81:							
Guest	90	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Salinity	0.28
82:							
Guest	90	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
83:							
Guest	60	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
Cogswell	30	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
84:							
Guest	40	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Too clayey	0.07
Riveroad	40	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Thickest layer not a source; Bottom layer	0.00; 0.08	Good	
85:							
Hantz	85	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too clayey; Sodium content; Salinity	0.00; 0.00; 0.00
86:							
Haplustolls	70	Fair: Thickest layer not a source; Bottom layer	0.00; 0.56	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Hard to reclaim; Rock fragment content	0.00; 0.00

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
86:							
Fluvaquents	20	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Rock fragment content	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Hard to reclaim	0.00
						Depth to saturated zone	0.14
87:							
Haplustolls	70	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Hard to reclaim	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Rock fragment content	0.00
Fluvaquents	20	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Rock fragment content	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Hard to reclaim	0.00
						Depth to saturated zone	0.53
88:							
Hayhollow	30	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
Rafter	30	Good:		Poor:		Poor:	
		Thickest layer	0.23	Bottom layer not a source	0.00	Too sandy	0.00
		Bottom layer	1.00	Thickest layer not a source	0.00		
Riverwash	30	Not rated		Not rated		Not rated	
89:							
Kaboom	45	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Depth to bedrock	0.00
Reeup	35	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Too clayey	0.29
90:							
Kahn fine sandy loam	45	Poor:		Poor:		Fair:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Carbonate content	0.46
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
90:							
Kahn silt loam------	40	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Carbonate content	0.46
91:							
Kahn----------	40	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
Zapolote----------	40	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
92:							
Karro----------	90	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Carbonate content	0.00
93:							
Karro----------	90	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Carbonate content	0.00
94:							
Keysto----------	60	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Hard to reclaim; Rock fragment content	0.00; 0.00
Riverwash----------	30	Not rated		Not rated		Not rated	
95:							
Kuykendall----------	70	Good: Bottom layer not a source; Thickest layer	0.00; 1.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too sandy; Depth to bedrock	0.00; 0.00
Rock outcrop--------	20	Not rated		Not rated		Not rated	
96:							
Lanque----------	60	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
96:							
Stanford	30	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
97:							
Libby	45	Fair:		Poor:		Poor:	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00	Rock fragment content	0.00
		Bottom layer	0.31	Thickest layer not a source	0.00	Hard to reclaim	0.00
						Carbonate content	0.46
Gulch	35	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Rock fragment content	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Carbonate content	0.08
						Hard to reclaim	0.50
98:							
Luckyhills	90	Poor:		Fair:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer	0.04		
99:							
Luckyhills	50	Poor:		Fair:		Fair:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Hard to reclaim	0.68
		Thickest layer not a source	0.00	Thickest layer	0.06	Carbonate content	0.80
						Rock fragment content	0.88
						Slope	0.96
McNeal	40	Poor:		Fair:		Fair:	
		Bottom layer not a source	0.00	Thickest layer	0.00	Carbonate content	0.80
		Thickest layer not a source	0.00	Bottom layer	0.06	Slope	0.96
100:							
Lutzcan	50	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.00
						Depth to bedrock	0.00
Yarbam	35	Poor:		Poor:		Poor:	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.00
						Depth to bedrock	0.00
101:							
Mabray	45	Fair:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer	0.06	Thickest layer not a source	0.00	Slope	0.00
						Depth to bedrock	0.00

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
101:							
Chiricahua	30	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
						Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Depth to bedrock	0.54
Rock outcrop	15	Not rated		Not rated		Not rated	
102:							
Mabray	60	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Depth to bedrock	0.00
						Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Carbonate content	0.00
						Rock fragment content	0.00
Rock outcrop	30	Not rated		Not rated		Not rated	
103:							
Magoffin	40	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
						Depth to bedrock	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
Rock outcrop	30	Not rated		Not rated		Not rated	
Cherrycow	20	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
104:							
Major fine sandy loam	40	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Carbonate content	0.00
						Rock fragment content	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
Major silt loam	40	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Carbonate content	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
105:							
Mallet	45	Good:		Poor:		Good	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
Hooks	35	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
106:							
Marsh	100	Not rated		Not rated		Not rated	
107:							
McAllister	90	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
108:							
McAllister	50	Poor:		Fair:		Poor:	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Rock fragment content	0.00
		Thickest layer not a source	0.00	Bottom layer	0.06	Slope	0.37
						Carbonate content	0.97
Stronghold	30	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Rock fragment content	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Slope	0.37
						Hard to reclaim	0.50
						Carbonate content	0.54
109:							
McNeal	85	Poor:		Fair:		Poor:	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Rock fragment content	0.00
		Thickest layer not a source	0.00	Bottom layer	0.11	Carbonate content	0.08
110:							
McNeal	85	Poor:		Fair:		Poor:	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Rock fragment content	0.00
		Thickest layer not a source	0.00	Bottom layer	0.11	Carbonate content	0.08
111:							
Monzingo	55	Poor:		Poor:		Fair:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.16
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Hard to reclaim	0.54
						Carbonate content	0.92
Ugyp	15	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
Ugyp	10	Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
112:							
Naco	35	Poor: Thickest layer not a source; Bottom layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too clayey; Rock fragment content	0.00; 0.00
Ruins, thick surface	35	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Bottom layer not a source; Thickest layer	0.00; 0.07	Poor: Hard to reclaim	0.00
Ruins	20	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too clayey; Hard to reclaim	0.00; 0.00
113:							
Nolam	40	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Rock fragment content; Hard to reclaim; Carbonate content	0.00; 0.00; 0.46
Libby	25	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Carbonate content	0.46
Buntline	20	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Thickest layer not a source; Bottom layer	0.00; 0.01	Poor: Depth to cemented pan; Rock fragment content	0.00; 0.97
114:							
Outlaw		Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
Epitaph		Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
Paramore		Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too sandy	0.00

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
115:							
Oversight	90	Good:		Poor:		Good	
		Thickest layer	0.26	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
116:							
Oversight	80	Good:		Poor:		Good	
		Thickest layer	0.56	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
117:							
Oversight	60	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Hard to reclaim	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Rock fragment content	0.00
Lanque	30	Poor:		Fair:		Good	
		Bottom layer not a source	0.00	Bottom layer	0.07		
		Thickest layer not a source	0.00	Thickest layer	0.07		
118:							
Pedregosa	85	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Rock fragment content	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Hard to reclaim	0.00
						Depth to cemented pan	0.00
						Carbonate content	0.68
						Slope	0.96
119:							
Pedregosa	70	Good:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer	1.00	Thickest layer not a source	0.00	Depth to cemented pan	0.00
Tombstone	20	Good:		Poor:		Good	
		Bottom layer	1.00	Bottom layer not a source	0.00		
		Thickest layer	1.00	Thickest layer not a source	0.00		
120:							
Perilla	50	Poor:		Fair:		Fair:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Hard to reclaim	0.68
		Thickest layer not a source	0.00	Thickest layer	0.07		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
120:							
Durazo	40	Poor:		Fair:		Fair:	
		Bottom layer not a source	0.00	Thickest layer	0.15	Too sandy	0.56
		Thickest layer not a source	0.00	Bottom layer	0.90		
121:							
Pits	80	Not rated		Not rated		Not rated	
122:							
Pits	50	Not rated		Not rated		Not rated	
Dumps	50	Not rated		Not rated		Not rated	
123:							
Quiburi	40	Poor:		Poor:		Fair:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Sodium content	0.78
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
Fluvaquents	30	Poor:		Fair:		Poor:	
		Bottom layer not a source	0.00	Thickest layer	0.06	Hard to reclaim	0.00
		Thickest layer not a source	0.00	Bottom layer	0.06	Rock fragment content	0.00
						Too sandy	0.22
						Depth to saturated zone	0.98
Riverwash	20	Not rated		Not rated		Not rated	
124:							
Rafter	50	Good:		Poor:		Good	
		Thickest layer	0.73	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
Lanque	40	Good:		Poor:		Good	
		Thickest layer	0.51	Bottom layer not a source	0.00		
		Bottom layer	1.00	Thickest layer not a source	0.00		
125:							
Riveroad		Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
Ubik		Poor:		Poor:		Good	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00		
		Thickest layer not a source	0.00	Bottom layer not a source	0.00		
126:							
Riverwash	90	Not rated		Not rated		Not rated	

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
127:							
Riverwash	65	Not rated		Not rated		Not rated	
Bodecker	30	Fair:		Fair:		Poor:	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00	Hard to reclaim	0.00
		Bottom layer	0.25	Thickest layer	0.07	Rock fragment content	0.00
128:							
Rock outcrop	50	Not rated		Not rated		Not rated	
Magoffin	40	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Depth to bedrock	0.00
129:							
Sasabe sandy loam	55	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too clayey	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00		
Sasabe silt loam	35	Poor:		Fair:		Poor:	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Too clayey	0.00
		Thickest layer not a source	0.00	Bottom layer	0.07		
130:							
Sasabe	85	Poor:		Fair:		Poor:	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Too clayey	0.00
		Thickest layer not a source	0.00	Bottom layer	0.04		
131:							
Sasabe	85	Poor:		Fair:		Poor:	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Too clayey	0.00
		Thickest layer not a source	0.00	Bottom layer	0.04		
132:							
Schiefflin	80	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Depth to bedrock	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Rock fragment content	0.00
						Slope	0.96
133:							
Stronghold	90	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Rock fragment content	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Carbonate content	0.54
						Hard to reclaim	0.68

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
134:							
Stronghold----------	50	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Rock fragment content	0.00
						Hard to reclaim	0.50
						Carbonate content	0.54
Bernardino----------	40	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Rock fragment content	0.00
						Hard to reclaim	0.50
						Carbonate content	0.80
135:							
Surge----------	60	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Depth to bedrock	0.00
Rock outcrop--------	30	Not rated		Not rated		Not rated	
136:							
Sutherland----------	55	Good:		Poor:		Poor:	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Bottom layer	1.00	Thickest layer not a source	0.00	Depth to cemented pan	0.00
						Slope	0.96
Mule----------	35	Fair:		Poor:		Poor:	
		Bottom layer	0.12	Bottom layer not a source	0.00	Carbonate content	0.00
		Thickest layer	0.12	Thickest layer not a source	0.00	Rock fragment content	0.00
						Hard to reclaim	0.00
						Slope	0.96
137:							
Swisshelm----------	85	Poor:		Fair:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer	0.01		
138:							
Swisshelm----------	85	Poor:		Fair:		Good	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00		
		Thickest layer not a source	0.00	Thickest layer	0.01		
139:							
Tenneco----------	80	Poor:		Fair:		Good	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00		
		Thickest layer not a source	0.00	Bottom layer	0.08		

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
140:							
Terrarossa sandy loam	30	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Too clayey	0.00
Terrarossa gravelly loam	25	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Too clayey	0.00
Terrarossa very gravelly sandy loam	20	Fair:		Poor:		Poor:	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Bottom layer	0.19	Thickest layer not a source	0.00	Too clayey	0.00
						Hard to reclaim	0.00
141:							
Terrarossa	40	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Too clayey	0.00
Blacktail	35	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Slope	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Too clayey	0.29
						Carbonate content	0.46
						Hard to reclaim	0.50
Pyeatt	15	Poor:		Fair:		Poor:	
		Bottom layer not a source	0.00	Thickest layer not a source	0.00	Rock fragment content	0.00
		Thickest layer not a source	0.00	Bottom layer	0.04	Slope	0.00
						Carbonate content	0.97
142:							
Tombstone	90	Fair:		Poor:		Poor:	
		Thickest layer not a source	0.00	Bottom layer not a source	0.00	Rock fragment content	0.00
		Bottom layer	0.19	Thickest layer not a source	0.00	Hard to reclaim	0.00
						Slope	0.37
143:							
Turquoise	55	Poor:		Poor:		Poor:	
		Bottom layer not a source	0.00	Bottom layer not a source	0.00	Too sandy	0.00
		Thickest layer not a source	0.00	Thickest layer not a source	0.00	Depth to bedrock	0.54

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
143:							
Nugget	25	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Too sandy	0.00
144:							
Ubik silt loam	50	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Thickest layer not a source; Bottom layer not a source	0.00; 0.00	Fair: Sodium content	0.78
Ubik fine sandy loam	40	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
145:							
Ubik	90	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Sodium content	0.85
146:							
Ubik	90	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
147:							
Ubik	90	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Sodium content	0.85
148:							
Ubik	90	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Good	
149:							
Vana	80	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Fair: Thickest layer not a source; Bottom layer	0.00; 0.06	Poor: Depth to cemented pan	0.00
150:							
Vana	50	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Depth to cemented pan	0.00

Table 12A.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of gravel: Rating class	Value	Potential source of sand: Rating class	Value	Potential source of topsoil: Rating class and limiting features	Value
150:							
Moco	40	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Carbonate content	0.00
151:							
White House gravelly loam	40	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Slope; Too clayey; Rock fragment content	0.00; 0.44; 0.97
White House gravelly sandy loam	35	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Slope; Too clayey; Rock fragment content	0.00; 0.44; 0.97
152:							
Yarbam	60	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Bottom layer not a source; Thickest layer not a source	0.00; 0.00	Poor: Depth to bedrock; Rock fragment content; Slope; Carbonate content	0.00; 0.00; 0.00; 0.32
Rock outcrop	30	Not rated		Not rated		Not rated	

Table 12B.--Construction Materials

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the potential limitation. See text for further explanation of ratings in this table.)

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
1:					
Altar	55	Poor:		Good	
		Low content of organic matter	0.00		
		Droughty	0.09		
Mallet	30	Good		Good	
2:					
Anthony	45	Fair:		Good	
		Low content of organic matter	0.12		
Maricopa	40	Fair:		Good	
		Low content of organic matter	0.12		
		Droughty	0.50		
3:					
Arizo family	65	Poor:		Fair:	
		Droughty	0.00	Cobble content	0.45
		Low content of organic matter	0.00		
Riverwash	20	Not rated		Not rated	
4:					
Ashcreek	40	Good		Good	
Stanford	40	Good		Good	
5:					
Baboquivari	50	Fair:		Good	
		Low content of organic matter	0.12		
Combate	40	Poor:		Good	
		Wind erosion	0.00		
		Low content of organic matter	0.88		
6:					
Banshee	50	Poor:		Good	
		Low content of organic matter	0.00		
Banshee, thick surface	30	Poor:		Good	
		Low content of organic matter	0.00		
		Water erosion	0.37		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
7:					
Bella	80	Poor:		Poor:	
		Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Droughty	0.00		
8:					
Blakeney	65	Poor:		Poor:	
		Droughty	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00		
		Low content of organic matter	0.12		
Luckyhills	25	Fair:		Good	
		Low content of organic matter	0.12		
9:					
Bodecker		Poor:		Good	
		Low content of organic matter	0.00		
		Droughty	0.00		
Comoro		Poor:		Good	
		Low content of organic matter	0.00		
10:					
Bodecker	90	Poor:		Good	
		Droughty	0.00		
		Low content of organic matter	0.12		
11:					
Bodecker	90	Poor:		Good	
		Too alkaline	0.00		
		Droughty	0.00		
		Sodium content	0.00		
		Low content of organic matter	0.12		
12:					
Bonita	85	Poor:		Poor:	
		Too clayey	0.00	Shrink-swell	0.00
		Low content of organic matter	0.50	Low strength	0.00
13:					
Bonita	50	Good		Good	
Forrest	40	Poor:		Good	
		Low content of organic matter	0.00		
14:					
Borderland	90	Poor:		Good	
		Low content of organic matter	0.00		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
15:					
Borderline	70	Fair:		Good	
		Low content of organic matter	0.12		
		Carbonate content	0.92		
16:					
Boss		Poor:		Poor:	
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.00		
		Too sandy	0.00		
		Depth to bedrock	0.00		
		No water erosion limitation	0.99		
Krentz		Poor:		Good	
		Low content of organic matter	0.00		
		Droughty	0.00		
Paramore		Poor:		Fair:	
		Low content of organic matter	0.00	Depth to bedrock	0.16
		Droughty	0.32		
Rock outcrop		Not rated		Not rated	
17:					
Brookline	40	Fair:		Good	
		Droughty	0.11		
		Low content of organic matter	0.50		
Fluvaquents	30	Fair:		Fair:	
		Low content of organic matter	0.12	Depth to saturated zone	0.98
		Droughty	0.15		
Riverwash	25	Not rated		Not rated	
18:					
Brunkcow	35	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to bedrock	0.00		
Chiricahua	25	Poor:		Poor:	
		Droughty	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Too sandy	0.00		
		Depth to bedrock	0.54		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
18:					
Andrada	20	Poor:		Poor:	
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.00		
		Too sandy	0.00		
		Depth to bedrock	0.00		
		Carbonate content	0.92		
19:					
Brunkcow	30	Poor:		Poor:	
		Too sandy	0.00	Slope	0.00
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.00		
		Depth to bedrock	0.00		
Chiricahua	25	Poor:		Poor:	
		Too clayey	0.00	Slope	0.00
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.00		
		Depth to bedrock	0.00		
Lampshire	20	Poor:		Poor:	
		Too sandy	0.00	Slope	0.00
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.00		
		Depth to bedrock	0.00		
20:					
Budlamp	60	Poor:		Poor:	
		Droughty	0.00	Slope	0.00
		Depth to bedrock	0.00	Depth to bedrock	0.00
		Too acid	0.95		
Woodcutter	25	Poor:		Poor:	
		Droughty	0.00	Slope	0.00
		Depth to bedrock	0.00	Depth to bedrock	0.00
		Too acid	0.95		
21:					
Buntline	90	Poor:		Poor:	
		Droughty	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00		
		Low content of organic matter	0.50		
		Carbonate content	0.97		
22:					
Caralampi	80	Fair:		Good	
		Low content of organic matter	0.12		
		Droughty	0.46		
23:					
Caralampi	85	Fair:		Good	
		Low content of organic matter	0.12		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
24:					
Carbine	70	Poor:		Poor:	
		Droughty	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Slope	0.92
		Carbonate content	0.46		
25:					
Carbine	50	Poor:		Poor:	
		Low content of organic matter	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00		
		Droughty	0.42		
Hathaway	35	Poor:		Good	
		Low content of organic matter	0.00		
		Droughty	0.12		
26:					
Cazador	60	Good		Good	
Lesliecreek	30	Good		Good	
27:					
Cherrycow	50	Poor:		Fair:	
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.00		
Blacktail	35	Poor:		Good	
		Low content of organic matter	0.00		
		Droughty	0.43		
28:					
Cherrycow	35	Poor:		Fair:	
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.68		
Magoffin	30	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to bedrock	0.00		
Rock outcrop	20	Not rated		Not rated	
29:					
Chorro	30	Poor:		Good	
		Low content of organic matter	0.00		
		Sodium content	0.00		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
29:					
Doubleadobe	30	Poor:		Good	
		Low content of organic matter	0.00		
		Sodium content	0.00		
Gothard	30	Poor:		Good	
		Low content of organic matter	0.00		
		Sodium content	0.00		
30:					
Chorro	40	Poor:		Good	
		Low content of organic matter	0.00		
		Too alkaline	0.00		
		Sodium content	0.00		
		Water erosion	0.90		
Guest	40	Fair:		Good	
		No water erosion limitation	0.99		
31:					
Cogswell	85	Fair:		Good	
		Sodium content	0.00		
		No water erosion limitation	0.99		
32:					
Combate	70	Poor:		Good	
		Wind erosion	0.00		
		Low content of organic matter	0.88		
		Droughty	0.91		
33:					
Comoro	85	Fair:		Good	
		Low content of organic matter	0.50		
34:					
Comoro	85	Fair:		Good	
		Sodium content	0.00		
		Low content of organic matter	0.50		
		Droughty	0.95		
35:					
Contention		Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
		Low content of organic matter	0.12		
		No water erosion limitation	0.99		
Crystalgyp		Poor:		Fair:	
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.07		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
35:					
Monzingo		Fair:		Good	
		Low content of organic matter	0.12		
		Carbonate content	0.92		
Redington		Poor:		Good	
		Low content of organic matter	0.00		
		Droughty	0.47		
36:					
Contention	45	Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
		Low content of organic matter	0.12		
Ugyp	20	Fair:		Good	
		Low content of organic matter	0.12		
		Carbonate content	0.97		
		No water erosion limitation	0.99		
Ugyp	15	Fair:		Good	
		Low content of organic matter	0.12		
		Carbonate content	0.97		
		No water erosion limitation	0.99		
37:					
Courtland	85	Poor:		Good	
		Low content of organic matter	0.00		
38:					
Courtland	85	Poor:		Good	
		Low content of organic matter	0.00		
		Sodium content	0.00		
39:					
Courtland	55	Poor:		Good	
		Low content of organic matter	0.00		
Diaspar	30	Fair:		Fair:	
		Low content of organic matter	0.12	Shrink-swell	0.96
40:					
Courtland	35	Fair:		Fair:	
		Low content of organic matter	0.12	Low strength	0.22
				Shrink-swell	0.87
Sasabe	35	Fair:		Poor:	
		Low content of organic matter	0.12	Low strength	0.00
				Shrink-swell	0.49
		Too clayey	0.88		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
40:					
Diaspar	20	Fair:		Fair:	
		Low content of organic matter	0.12	Shrink-swell	0.96
41:					
Crowbar	60	Poor:		Good	
		Low content of organic matter	0.00		
		Droughty	0.13		
Brunopeak	30	Poor:		Good	
		Low content of organic matter	0.00		
		Droughty	0.15		
42:					
Deloro	40	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to bedrock	0.00		
Leyte	30	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to bedrock	0.00		
Lampshire	20	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to bedrock	0.00		
43:					
Denab	50	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to bedrock	0.54		
Castledome	30	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to bedrock	0.00		
44:					
Denied Access		Not rated		Not rated	
45:					
Diaspar	85	Fair:		Good	
		Low content of organic matter	0.12		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
46:					
Diaspar	85	Fair:		Good	
		Sodium content	0.00		
		Low content of organic matter	0.12		
		Droughty	0.85		
47:					
Dona Ana	45	Fair:		Good	
		Carbonate content	0.08		
		Low content of organic matter	0.12		
Mohave	30	Fair:		Good	
		Carbonate content	0.08		
		Low content of organic matter	0.12		
48:					
Doubleadobe	85	Poor:		Good	
		Low content of organic matter	0.00		
		Sodium content	0.00		
49:					
Durazo	90	Poor:		Good	
		Low content of organic matter	0.00		
		Wind erosion	0.00		
		Too sandy	0.56		
		Droughty	0.76		
50:					
Durazo	90	Poor:		Good	
		Too alkaline	0.00		
		Wind erosion	0.00		
		Low content of organic matter	0.00		
		Sodium content	0.00		
		Droughty	0.30		
		Too sandy	0.56		
51:					
Durazo	55	Poor:		Good	
		Low content of organic matter	0.00		
		Wind erosion	0.00		
		Droughty	0.09		
		Too sandy	0.56		
Gothard	30	Poor:		Good	
		Low content of organic matter	0.00		
		Sodium content	0.00		
52:					
Durazo	50	Poor:		Good	
		Low content of organic matter	0.00		
		Wind erosion	0.00		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
52:					
Courtland	40	Poor:		Good	
		Low content of organic matter	0.00		
53:					
Durazo	55	Poor:		Good	
		Low content of organic matter	0.00		
		Wind erosion	0.00		
		Droughty	0.47		
		Too sandy	0.56		
McAllister	30	Fair:		Fair:	
		Low content of organic matter	0.12	Shrink-swell	0.87
		Carbonate content	0.80		
54:					
Elfrida	90	Poor:		Fair:	
		Too alkaline	0.00	Shrink-swell	0.71
		Carbonate content	0.46		
		Low content of organic matter	0.50		
		Sodium content	0.85		
55:					
Elfrida	90	Fair:		Fair:	
		Carbonate content	0.46	Shrink-swell	0.71
		Low content of organic matter	0.50		
56:					
Elgin	35	Poor:		Good	
		Low content of organic matter	0.00		
McAllister	30	Poor:		Good	
		Low content of organic matter	0.00		
Stronghold	20	Poor:		Good	
		Low content of organic matter	0.00		
57:					
Elgin	50	Poor:		Good	
		Low content of organic matter	0.00		
Outlaw	40	Poor:		Good	
		Low content of organic matter	0.00		
		Carbonate content	0.92		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
58:					
Elgin	50	Poor:		Good	
		Too clayey	0.00		
		Low content of organic matter	0.12		
		Carbonate content	0.97		
		Droughty	0.99		
Stronghold	40	Fair:		Good	
		Low content of organic matter	0.12		
		Droughty	0.17		
		Carbonate content	0.54		
59:					
Eloma	80	Fair:		Good	
		Droughty	0.91		
60:					
Eloma	40	Poor:		Fair:	
		Too clayey	0.00	Cobble content	0.87
		Low content of organic matter	0.12	Shrink-swell	0.87
		Droughty	0.28		
		Cobble content	0.84		
Caralampi	30	Fair:		Fair:	
		Low content of organic matter	0.50	Cobble content	0.55
White House	20	Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
		Low content of organic matter	0.50	Shrink-swell	0.12
61:					
Epitaph	90	Poor:		Fair:	
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Too clayey	0.00	Depth to cemented pan	0.00
		Droughty	0.26		
62:					
Far	55	Poor:		Poor:	
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.00	Slope	0.00
		Too sandy	0.00		
		Depth to bedrock	0.00		
		Too acid	0.95		
Hogris	25	Poor:		Poor:	
		Cobble content	0.00	Slope	0.00
		Droughty	0.00	Cobble content	0.00
		Low content of organic matter	0.12		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
63:					
Far	35	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00	Slope	0.00
		Droughty	0.00		
		Depth to bedrock	0.00		
Huachuca	35	Poor:		Poor:	
		Too sandy	0.00	Slope	0.00
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.00	Stone content	0.97
		Depth to bedrock	0.00		
Hogris	20	Poor:		Poor:	
		Cobble content	0.00	Slope	0.00
		Droughty	0.00	Cobble content	0.00
		Low content of organic matter	0.12		
64:					
Far	35	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00	Slope	0.00
		Droughty	0.00		
		Depth to bedrock	0.00		
Huachuca	35	Poor:		Poor:	
		Too sandy	0.00	Slope	0.00
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.00	Stone content	0.97
		Depth to bedrock	0.00		
Hogris	20	Poor:		Poor:	
		Cobble content	0.00	Slope	0.00
		Droughty	0.00	Cobble content	0.00
		Low content of organic matter	0.12		
65:					
Forrest	85	Poor:		Fair:	
		Too clayey	0.00	Shrink-swell	0.45
		Low content of organic matter	0.12		
		Carbonate content	0.92		
66:					
Forrest	85	Poor:		Fair:	
		Too clayey	0.00	Shrink-swell	0.45
		Sodium content	0.00		
		Low content of organic matter	0.12		
		Carbonate content	0.92		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
67:					
Forrest	85	Poor:		Fair:	
		Too clayey	0.00	Shrink-swell	0.45
		Low content of organic matter	0.12		
		Carbonate content	0.92		
68:					
Forrest	85	Poor:		Fair:	
		Too clayey	0.00	Shrink-swell	0.45
		Low content of organic matter	0.12		
		Water erosion	0.90		
		Carbonate content	0.92		
69:					
Forrest	85	Poor:		Fair:	
		Too clayey	0.00	Shrink-swell	0.45
		Sodium content	0.00		
		Low content of organic matter	0.12		
		Water erosion	0.90		
		Carbonate content	0.92		
70:					
Forrest	55	Fair:		Poor:	
		Low content of organic matter	0.12	Low strength	0.00
		Too clayey	0.50	Shrink-swell	0.41
		Carbonate content	0.92		
Bonita	40	Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
71:					
Gardencan	45	Fair:		Fair:	
		Low content of organic matter	0.12	Shrink-swell	0.87
Lanque	35	Good		Good	
72:					
Glendale	85	Fair:		Poor:	
		Low content of organic matter	0.12	Low strength	0.00
		Water erosion	0.37	Shrink-swell	0.98
73:					
Gothard	90	Poor:		Good	
		Low content of organic matter	0.00		
		Sodium content	0.00		
74:					
Gothard	85	Poor:		Good	
		Low content of organic matter	0.00		
		Sodium content	0.00		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
75:					
Graham	60	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to bedrock	0.00		
Lampshire	25	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00		
		Droughty	0.00		
		Low content of organic matter	0.00		
76:					
Graveyard	45	Fair:		Good	
		Low content of organic matter	0.12		
		Droughty	0.28		
		Carbonate content	0.46		
Sierravista	35	Fair:		Fair:	
		Low content of organic matter	0.12	Shrink-swell	0.99
		Droughty	0.36		
		Carbonate content	0.46		
77:					
Grizzle	80	Fair:		Fair:	
		Low content of organic matter	0.12	Depth to bedrock	0.00
		Carbonate content	0.80		
		Droughty	0.88		
78:					
Guest	90	Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
		Sodium content	0.85	Shrink-swell	0.82
		Low content of organic matter	0.88		
		No water erosion limitation	0.99		
79:					
Guest	80	Fair:		Poor:	
		Low content of organic matter	0.88	Low strength	0.00
80:					
Guest	90	Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
		Sodium content	0.00	Shrink-swell	0.82
		Low content of organic matter	0.88		
		No water erosion limitation	0.99		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
81:					
Guest	90	Fair:		Poor:	
		Low content of organic matter	0.88	Low strength	0.00
		No water erosion limitation	0.99	Shrink-swell	0.12
82:					
Guest	90	Fair:		Poor:	
		Sodium content	0.00	Low strength	0.00
		Low content of organic matter	0.88	Shrink-swell	0.12
		No water erosion limitation	0.99		
83:					
Guest	60	Fair:		Poor:	
		Sodium content	0.00	Low strength	0.00
		Low content of organic matter	0.88	Shrink-swell	0.12
Cogswell	30	Fair:		Good	
		Sodium content	0.00		
		No water erosion limitation	0.99		
84:					
Guest	40	Fair:		Poor:	
		Low content of organic matter	0.12	Low strength	0.00
		Too clayey	0.12	Shrink-swell	0.12
		No water erosion limitation	0.99		
Riveroad	40	Fair:		Poor:	
		Low content of organic matter	0.12	Low strength	0.00
		No water erosion limitation	0.99	Shrink-swell	0.99
85:					
Hantz	85	Poor:		Poor:	
		Too alkaline	0.00	Low strength	0.00
		Sodium content	0.00	Shrink-swell	0.17
		Too clayey	0.00		
		Low content of organic matter	0.12		
		Salinity	0.50		
		Water erosion	0.90		
86:					
Haplustolls	70	Poor:		Poor:	
		Droughty	0.00	Cobble content	0.00
		Cobble content	0.36		
Fluvaquents	20	Poor:		Poor:	
		Cobble content	0.00	Cobble content	0.00
		Droughty	0.00	Depth to saturated zone	0.14

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
87:					
Haplustolls	70	Poor:		Poor:	
		Droughty	0.00	Cobble content	0.00
		Cobble content	0.00		
		Low content of organic matter	0.50		
Fluvaquents	20	Poor:		Poor:	
		Droughty	0.00	Cobble content	0.00
		Cobble content	0.00	Depth to saturated zone	0.53
		Low content of organic matter	0.12		
88:					
Hayhollow	30	Poor:		Good	
		Wind erosion	0.00		
		Droughty	0.98		
Rafter	30	Poor:		Good	
		Too sandy	0.00		
		Droughty	0.00		
Riverwash	30	Not rated		Not rated	
89:					
Kaboom	45	Poor:		Poor:	
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.00		
		Too sandy	0.00		
		Depth to bedrock	0.00		
		Carbonate content	0.46		
Reeup	35	Poor:		Fair:	
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Too clayey	0.50	Slope	0.02
		Droughty	0.85	Shrink-swell	0.99
90:					
Kahn fine sandy loam	45	Fair:		Poor:	
		Low content of organic matter	0.12	Low strength	0.00
		Carbonate content	0.46	Shrink-swell	0.94
Kahn silt loam	40	Fair:		Poor:	
		Low content of organic matter	0.12	Low strength	0.00
		Carbonate content	0.46	Shrink-swell	0.92
		Water erosion	0.90		
91:					
Kahn	40	Poor:		Good	
		Low content of organic matter	0.00		
		Carbonate content	0.92		
Zapolote	40	Poor:		Good	
		Low content of organic matter	0.00		
		Carbonate content	0.68		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
92:					
Karro	90	Poor:		Fair:	
		Too alkaline	0.00	Shrink-swell	0.91
		Carbonate content	0.00		
		Low content of organic matter	0.50		
		Salinity	0.88		
93:					
Karro	90	Poor:		Fair:	
		Carbonate content	0.00	Shrink-swell	0.91
		Sodium content	0.00		
		Low content of organic matter	0.50		
94:					
Keysto	60	Poor:		Poor:	
		Stone content	0.00	Stone content	0.00
		Droughty	0.00	Cobble content	0.00
		Low content of organic matter	0.12		
		Cobble content	0.41		
Riverwash	30	Not rated		Not rated	
95:					
Kuykendall	70	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to bedrock	0.00		
Rock outcrop	20	Not rated		Not rated	
96:					
Lanque	60	Good		Good	
Stanford	30	Good		Good	
97:					
Libby	45	Fair:		Fair:	
		Low content of organic matter	0.12	Shrink-swell	0.12
		Carbonate content	0.46		
Gulch	35	Fair:		Fair:	
		Carbonate content	0.08	Shrink-swell	0.87
		Low content of organic matter	0.12		
98:					
Luckyhills	90	Poor:		Good	
		Wind erosion	0.00		
		Low content of organic matter	0.12		
		Water erosion	0.90		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
99:					
Luckyhills	50	Fair:		Good	
		Low content of organic matter	0.12		
		Carbonate content	0.80		
McNeal	40	Fair:		Fair:	
		Carbonate content	0.01	Shrink-swell	0.99
		Low content of organic matter	0.12		
		No water erosion limitation	0.99		
100:					
Lutzcan	50	Poor:		Poor:	
		Too sandy	0.00	Slope	0.00
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.00	Cobble content	0.78
		Depth to bedrock	0.00		
Yarbam	35	Poor:		Poor:	
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.00	Slope	0.00
		Too sandy	0.00		
		Depth to bedrock	0.00		
		Carbonate content	0.32		
101:					
Mabray	45	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Carbonate content	0.00	Slope	0.02
		Droughty	0.00		
		Low content of organic matter	0.00		
		Depth to bedrock	0.00		
Chiricahua	30	Poor:		Poor:	
		Droughty	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00	Slope	0.02
		Too sandy	0.00		
		Depth to bedrock	0.54		
Rock outcrop	15	Not rated		Not rated	
102:					
Mabray	60	Poor:		Poor:	
		Depth to bedrock	0.00	Depth to bedrock	0.00
		Carbonate content	0.00	Slope	0.02
		Droughty	0.00		
		Cobble content	0.50		
Rock outcrop	30	Not rated		Not rated	

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
103:					
Magoffin	40	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to bedrock	0.00		
Rock outcrop	30	Not rated		Not rated	
Cherrycow	20	Poor:		Fair:	
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.92		
104:					
Major fine sandy loam	40	Poor:		Poor:	
		Carbonate content	0.00	Low strength	0.00
		Low content of organic matter	0.12		
Major silt loam	40	Poor:		Good	
		Carbonate content	0.00		
		Low content of organic matter	0.12		
		Water erosion	0.90		
105:					
Mallet	45	Fair:		Good	
		Droughty	0.99		
Hooks	35	Good		Good	
106:					
Marsh	100	Not rated		Not rated	
107:					
McAllister	90	Fair:		Fair:	
		Low content of organic matter	0.12	Shrink-swell	0.87
		Carbonate content	0.80		
108:					
McAllister	50	Fair:		Fair:	
		Carbonate content	0.97		
Stronghold	30	Fair:		Good	
		Low content of organic matter	0.12		
		Droughty	0.17		
		Carbonate content	0.54		
109:					
McNeal	85	Fair:		Good	
		Carbonate content	0.01		
		Low content of organic matter	0.12		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
110:					
McNeal	85	Fair:		Good	
		Carbonate content	0.01		
		Low content of organic matter	0.12		
111:					
Monzingo	55	Fair:		Good	
		Low content of organic matter	0.12		
		Carbonate content	0.92		
Ugyp	15	Fair:		Good	
		Low content of organic matter	0.12		
		Carbonate content	0.92		
Ugyp	10	Fair:		Good	
		Low content of organic matter	0.12		
		Carbonate content	0.92		
112:					
Naco	35	Poor:		Fair:	
		Too clayey	0.00	Cobble content	0.09
		Low content of organic matter	0.12		
Ruins, thick surface	35	Poor:		Poor:	
		Wind erosion	0.00	Low strength	0.00
		Low content of organic matter	0.12		
Ruins	20	Poor:		Good	
		Too clayey	0.00		
		Low content of organic matter	0.12		
113:					
Nolam	40	Fair:		Poor:	
		Cobble content	0.01	Cobble content	0.00
		Droughty	0.01		
		Low content of organic matter	0.12		
		Carbonate content	0.46		
Libby	25	Fair:		Poor:	
		Low content of organic matter	0.12	Low strength	0.00
				Shrink-swell	0.71
		Carbonate content	0.46		
Buntline	20	Poor:		Poor:	
		Droughty	0.00	Depth to cemented pan	0.00
		Depth to cemented pan	0.00	Cobble content	0.37
		Low content of organic matter	0.12		
		Carbonate content	0.97		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
114:					
Outlaw		Fair:		Good	
		Carbonate content	0.92		
		No water erosion limitation	0.99		
Epitaph		Poor:		Fair:	
		Low content of organic matter	0.00	Depth to bedrock	0.00
		Droughty	0.11	Depth to cemented pan	0.00
		No water erosion limitation	0.99		
Paramore		Poor:		Fair:	
		Low content of organic matter	0.00	Depth to bedrock	0.16
		Too sandy	0.00		
		Droughty	0.04		
115:					
Oversight	90	Poor:		Good	
		Low content of organic matter	0.00		
		Droughty	0.47		
116:					
Oversight	80	Poor:		Good	
		Low content of organic matter	0.00		
		Droughty	0.00		
117:					
Oversight	60	Fair:		Fair:	
		Droughty	0.73	Cobble content	0.19
		Cobble content	0.87		
		Low content of organic matter	0.88		
Lanque	30	Poor:		Good	
		Wind erosion	0.00		
		Low content of organic matter	0.50		
118:					
Pedregosa	85	Fair:		Poor:	
		Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Low content of organic matter	0.12		
		Droughty	0.18		
		Carbonate content	0.68		
119:					
Pedregosa	70	Poor:		Poor:	
		Too sandy	0.00	Depth to cemented pan	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to cemented pan	0.00		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
119:					
Tombstone	20	Poor:		Good	
		Low content of organic matter	0.00		
		Droughty	0.00		
120:					
Perilla	50	Fair:		Good	
		Low content of organic matter	0.12		
		Droughty	0.97		
Durazo	40	Poor:		Good	
		Low content of organic matter	0.00		
		Wind erosion	0.00		
		Droughty	0.20		
		Too sandy	0.56		
121:					
Pits	80	Not rated		Not rated	
122:					
Pits	50	Not rated		Not rated	
Dumps	50	Not rated		Not rated	
123:					
Quiburi	40	Poor:		Good	
		Too alkaline	0.00		
		Low content of organic matter	0.12		
		Sodium content	0.78		
		Water erosion	0.90		
Fluvaquents	30	Poor:		Fair:	
		Droughty	0.00	Cobble content	0.96
		Low content of organic matter	0.12	Depth to saturated zone	0.98
		Too sandy	0.22		
Riverwash	20	Not rated		Not rated	
124:					
Rafter	50	Poor:		Good	
		Droughty	0.00		
		Too acid	0.92		
Lanque	40	Good		Good	
125:					
Riveroad		Fair:		Poor:	
		Low content of organic matter	0.12	Low strength	0.00
		No water erosion limitation	0.99	Shrink-swell	0.96

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
125:					
Ubik		Fair:		Good	
		Low content of organic matter	0.12		
		No water erosion limitation	0.99		
126:					
Riverwash	90	Not rated		Not rated	
127:					
Riverwash	65	Not rated		Not rated	
Bodecker	30	Poor:		Good	
		Wind erosion	0.00		
		Droughty	0.00		
		Low content of organic matter	0.12		
128:					
Rock outcrop	50	Not rated		Not rated	
Magoffin	40	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to bedrock	0.00		
129:					
Sasabe sandy loam	55	Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
		Low content of organic matter	0.12	Shrink-swell	0.53
Sasabe silt loam	35	Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
		Low content of organic matter	0.12	Shrink-swell	0.69
		Water erosion	0.90		
130:					
Sasabe	85	Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
		Low content of organic matter	0.12	Shrink-swell	0.75
131:					
Sasabe	85	Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
		Sodium content	0.00	Shrink-swell	0.75
		Low content of organic matter	0.12		
132:					
Schiefflin	80	Poor:		Poor:	
		Droughty	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Stone content	0.96
		Too acid	0.95		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
133:					
Stronghold	90	Fair:		Good	
		Low content of organic matter	0.50		
		Carbonate content	0.54		
134:					
Stronghold	50	Fair:		Fair:	
		Low content of organic matter	0.12	Slope	0.50
		Droughty	0.23		
		Carbonate content	0.54		
Bernardino	40	Fair:		Fair:	
		Low content of organic matter	0.12	Slope	0.50
		Carbonate content	0.46		
135:					
Surge	60	Poor:		Poor:	
		Droughty	0.00	Depth to bedrock	0.00
		Too sandy	0.00		
		Low content of organic matter	0.00		
		Depth to bedrock	0.00		
Rock outcrop	30	Not rated		Not rated	
136:					
Sutherland	55	Poor:		Poor:	
		Droughty	0.00	Depth to cemented pan	0.00
		Carbonate content	0.00		
		Too sandy	0.00		
		Low content of organic matter	0.00		
		Depth to cemented pan	0.00		
Mule	35	Poor:		Good	
		Carbonate content	0.00		
		Low content of organic matter	0.12		
		Droughty	0.91		
137:					
Swisshelm	85	Fair:		Good	
		Low content of organic matter	0.88		
138:					
Swisshelm	85	Fair:		Good	
		Low content of organic matter	0.88		
139:					
Tenneco	80	Fair:		Good	
		Low content of organic matter	0.12		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
140:					
Terrarossa sandy loam	30	Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
		Low content of organic matter	0.12	Slope	0.08
				Shrink-swell	0.12
Terrarossa gravelly loam	25	Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
		Low content of organic matter	0.12	Slope	0.08
				Shrink-swell	0.12
Terrarossa very gravelly sandy loam	20	Poor:		Fair:	
		Too clayey	0.00	Slope	0.08
		Low content of organic matter	0.12	Shrink-swell	0.12
141:					
Terrarossa	40	Poor:		Poor:	
		Too clayey	0.00	Low strength	0.00
		Low content of organic matter	0.12	Shrink-swell	0.12
				Slope	0.32
Blacktail	35	Poor:		Fair:	
		Carbonate content	0.00	Slope	0.32
		Low content of organic matter	0.12		
		Too clayey	0.50		
Pyeatt	15	Fair:		Fair:	
		Low content of organic matter	0.50	Slope	0.32
		Carbonate content	0.80		
142:					
Tombstone	90	Fair:		Good	
		Droughty	0.06		
		Low content of organic matter	0.12		
		Carbonate content	0.80		
143:					
Turquoise	55	Poor:		Poor:	
		Too sandy	0.00	Depth to bedrock	0.00
		Low content of organic matter	0.00		
		Droughty	0.00		
		Depth to bedrock	0.54		
Nugget	25	Poor:		Fair:	
		Too sandy	0.00	Depth to bedrock	0.00
		Droughty	0.00		
		Low content of organic matter	0.00		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
144:					
Ubik silt loam	50	Fair:		Good	
		Low content of organic matter	0.12		
		Sodium content	0.78		
		Water erosion	0.90		
Ubik fine sandy loam	40	Poor:		Good	
		Low content of organic matter	0.00		
145:					
Ubik	90	Fair:		Good	
		Low content of organic matter	0.12		
		Sodium content	0.85		
		Water erosion	0.90		
146:					
Ubik	90	Fair:		Good	
		Sodium content	0.00		
		Low content of organic matter	0.12		
		Water erosion	0.90		
147:					
Ubik	90	Fair:		Good	
		Low content of organic matter	0.12		
		Sodium content	0.85		
		Water erosion	0.90		
148:					
Ubik	90	Fair:		Good	
		Sodium content	0.00		
		Low content of organic matter	0.12		
		Water erosion	0.90		
149:					
Vana	80	Poor:		Poor:	
		Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Carbonate content	0.00	Shrink-swell	0.87
		Droughty	0.00		
		Low content of organic matter	0.88		
150:					
Vana	50	Poor:		Poor:	
		Depth to cemented pan	0.00	Depth to cemented pan	0.00
		Carbonate content	0.00	Low strength	0.78
		Droughty	0.00		
		Low content of organic matter	0.88		
Moco	40	Poor:		Fair:	
		Carbonate content	0.00	Shrink-swell	0.87
		Low content of organic matter	0.12		

Table 12B.--Construction Materials--Continued

Map symbol and soil name	Pct. of map unit	Potential source of reclamation material: Rating class and limiting features	Value	Potential source of roadfill: Rating class and limiting features	Value
151:					
White House gravelly loam	40	Fair:		Fair:	
		Low content of organic matter	0.50	Low strength	0.22
		Too clayey	0.50	Shrink-swell	0.83
		Too acid	0.95	Slope	0.98
White House gravelly sandy loam	35	Fair:		Fair:	
		Too clayey	0.50	Shrink-swell	0.67
		Too acid	0.95	Slope	0.98
152:					
Yarbam	60	Poor:		Poor:	
		Droughty	0.00	Depth to bedrock	0.00
		Depth to bedrock	0.00	Slope	0.00
		Carbonate content	0.32		
Rock outcrop	30	Not rated		Not rated	

Table 13.--Engineering Index Properties

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
1:												
Altar----------	0-1	Sandy loam	SC-SM, SM	A-2	0	0	90-100	85-100	55-70	25-40	20-25	NP-5
	1-10	Sandy loam	SC-SM, SM	A-2	0	0	90-100	85-100	55-70	25-40	20-25	NP-5
	10-25	Very gravelly sandy loam	SM, SC-SM, GM, GW-GM	A-2, A-1	0	0-10	30-45	25-40	10-25	10-15	20-25	NP-5
	25-40	Very cobbly sandy loam	SC-SM, GW-GM, GM, SM	A-2	0	30-50	40-55	35-50	20-35	10-15	20-25	NP-5
	40-60	Extremely cobbly coarse sand	GW-GM, GM, GW	A-1	0	45-65	20-35	15-30	10-25	5-15	15-20	NP
Mallet----------	0-6	Fine sandy loam	SC-SM, SM	A-4	0	0	100	95-100	70-85	40-50	15-25	NP-5
	6-22	Fine sandy loam	SC-SM, SM	A-4	0	0	100	95-100	70-85	40-50	20-25	NP-5
	22-55	Fine sandy loam	SC-SM, SM	A-2	0	0	90-100	85-95	60-80	35-50	20-25	NP-5
	55-60	Extremely gravelly loamy sand	GW-GM, GW	A-1	0	0	20-30	15-25	10-20	3-10	15-25	NP-5
2:												
Anthony---------	0-15	Sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-95	50-65	25-40	20-25	NP-5
	15-40	Sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-95	50-65	25-40	20-25	NP-5
	40-60	Sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-95	50-65	25-40	20-25	NP-5
Maricopa--------	0-5	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	5-24	Sandy loam	SC-SM, SM	A-2	0	0	90-100	85-95	50-65	25-35	20-25	NP-5
	24-60	Gravelly sand	SP, SP-SM, SW-SM, SW	A-1	0	0	65-80	60-75	30-50	3-10	10-20	NP-5
3:												
Arizo family----	0-4	Very cobbly sand	SP, GP, SW, SW-SM	A-1	0-3	25-35	50-70	45-65	20-30	3-10	10-20	NP-5
	4-12	Gravelly coarse sand	SP-SM, SP, SW, SW-SM	A-1	0	0-5	60-80	55-75	30-50	3-10	10-20	NP-5
	12-26	Extremely cobbly coarse sand	GP-GM, GP, GW, GW-GM	A-1	0	50-65	30-45	25-40	15-25	0-5	10-20	NP-5
	26-60	Gravelly loamy coarse sand	SP-SM, SM, SW-SM	A-1, A-3, A-2	0	0-5	60-80	55-75	25-55	5-20	10-20	NP-5
Riverwash-------	0-60	Stratified gravel	---	---	---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
4:												
Ashcreek--------	0-6	Clay	CL	A-7	0	0	100	100	90-100	90-100	35-55	15-30
	6-36	Clay	CL	A-7	0	0	100	100	90-100	90-100	35-55	20-30
	36-52	Cobbly clay	CH, CL	A-7	0	10-20	85-95	80-90	70-80	60-80	40-65	20-30
	52-60	Clay	CL	A-7	0	0-10	85-95	80-90	70-80	60-80	40-50	20-30
Stanford--------	0-2	Sandy loam	SC-SM, SM	A-4, A-2	0	0	85-95	80-90	50-65	25-40	20-25	NP-5
	2-21	Sandy clay loam	SC, SM	A-4, A-2	0	0	85-95	80-90	65-70	30-50	30-35	5-10
	21-37	Clay loam	CL	A-6	0	0	95-100	90-100	85-100	65-80	30-40	10-15
	37-60	Gravelly sandy clay loam	SC, SM	A-2, A-4	0	0	70-80	65-75	50-70	25-40	30-35	5-10
5:												
Baboquivari-----	0-1	Sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-95	50-60	25-40	15-20	NP-5
	1-24	Loam, sandy clay loam	CL, CL-ML, SC-SM, SC	A-4, A-6	0	0	90-100	85-95	70-80	40-60	20-35	5-15
	24-34	Sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-95	50-60	25-40	15-20	NP-5
	34-60	Coarse sandy loam, gravelly loamy sand	SC-SM, SM	A-1, A-2	0	0	70-90	65-85	30-50	10-30	15-20	NP-5
Combate---------	0-2	Loamy sand	SC-SM, SM, SP-SM	A-1, A-2	0	0	75-95	70-90	40-65	10-15	15-25	NP-5
	2-32	Sandy loam, coarse sandy loam	SC-SM, SM	A-1, A-4, A-2	0	0	85-100	80-100	40-70	15-40	15-25	NP-5
	32-60	Sandy loam	SC-SM, SM	A-2, A-4	0	0	85-100	80-100	50-70	25-40	15-25	NP-5
6:												
Banshee, thick surface--------	0-3	Sandy loam	SC-SM, SM	A-2	0	0-5	85-95	80-90	50-60	25-35	20-25	NP-5
	3-19	Clay	CL, CH	A-7	0	0	95-100	90-100	80-100	70-95	40-60	20-45
	19-26	Clay	CL, CH	A-7	0	0	90-100	85-95	75-95	65-90	40-60	20-45
	26-42	Clay	CH, CL	A-7	0	0	95-100	90-100	80-100	70-95	40-60	20-45
	42-60	Cobbly fine sandy loam	SM, SC-SM	A-2	0	20-50	60-75	55-70	45-60	20-35	15-25	NP-5
Banshee---------	0-7	Very fine sandy loam	CL-ML, ML	A-4	0	0-5	95-100	95-100	80-95	50-65	20-25	NP-5
	7-13	Fine sandy loam	SC-SM, SM	A-4, A-2	0	0	85-95	80-90	55-75	30-50	20-25	NP-5
	13-24	Sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	55-70	30-40	20-25	NP-5
	24-44	Clay	CH, CL	A-7	0	0	100	95-100	85-100	70-95	40-60	20-45
	44-60	Clay	CH, CL	A-7	0	0	100	95-100	85-100	70-95	40-60	20-45

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
7:												
Bella----------	0-1	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	60-85	35-55	20-25	NP-5
	1-10	Loam	CL-ML, ML	A-4	0	0	80-95	75-90	65-85	45-70	20-25	NP-5
	10-15	Gravelly fine sandy loam	SC-SM, SM	A-4, A-2	0	---	65-80	60-75	40-65	25-40	20-25	NP-5
	15-25	Petrocalcic material	---	---	---	---	---	---	---	---	---	---
	25-45	Gravelly loam	CL-ML, CL	A-4	0	0	65-80	60-75	50-70	35-55	25-30	5-10
	45-60	Sandy clay loam	SC, SM	A-4, A-2, A-6	0	0	80-95	75-90	60-80	25-50	30-40	5-15
8:												
Blakeney--------	0-11	Fine sandy loam	CL-ML, ML, SM, SC-SM	A-2, A-4	0	0	85-100	80-95	55-80	30-55	20-25	NP-5
	11-18	Petrocalcic material	---	---	---	---	---	---	---	---	---	---
	18-41	Fine sandy loam	ML, CL-ML, SC-SM, SM	A-4	0	0	90-100	85-100	60-85	35-55	20-25	NP-5
	41-60	Loam	CL-ML, ML	A-4	0	0-5	90-100	85-100	70-95	50-75	20-25	NP-5
Luckyhills------	0-3	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	85-100	80-95	55-80	30-50	20-25	NP-5
	3-13	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	85-100	80-95	55-80	30-50	20-25	NP-5
	13-38	Loam	ML	A-4	0	0	90-100	85-100	70-95	50-75	25-30	NP-5
	38-60	Loam	ML	A-4	0	0-5	90-100	85-100	70-95	50-75	25-30	NP-5
9:												
Bodecker--------	0-5	Gravelly coarse sand	SW-SM	A-2-4	0	0	65-70	60-65	30-45	3-10	15-20	NP
	5-35	Very gravelly coarse sand	GW	A-2-4	0	0	35-40	30-35	15-25	0-5	15-20	NP
	35-54	Extremely gravelly coarse sand	GW	A-2-4	0	0-10	25-30	20-25	10-20	0-5	15-20	NP
	54-60	Silt loam	CL	A-4, A-6	0	0	95-100	90-100	80-100	60-90	30-35	10
Comoro----------	0-9	Fine sandy loam	SC-SM, SM	A-4	0	0	95-100	90-100	60-85	35-55	20-25	NP-5
	9-19	Sandy loam	SC-SM, SM	A-4	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	19-40	Sandy loam	SC-SM, SM	A-2-4	0	0	95-100	90-100	45-75	15-30	20-25	NP-5
	40-60	Sand	SW-SM	A-3	0	0	90-95	85-95	40-65	5-15	15-20	NP
10:												
Bodecker--------	0-6	Very gravelly sandy loam	SC-SM, SM	A-2, A-1	0	0-5	40-50	35-45	20-30	10-20	15-25	NP-5
	6-52	Extremely gravelly sand	GW-GM	A-1	0	0-5	20-30	15-25	10-20	1-5	15-25	NP-5
	52-60	Silt loam	ML, CL-ML	A-4	0	0-5	100	100	90-100	70-90	15-25	NP-5

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
11:												
Bodecker--------	0-6	Very gravelly sandy loam	SC-SM, SM	A-2, A-1	0	0-5	40-50	35-45	20-30	10-20	15-25	NP-5
	6-52	Extremely gravelly sand	GW-GM	A-1	0	0-5	20-30	15-25	10-20	1-5	15-25	NP-5
	52-60	Silt loam	ML, CL-ML	A-4	0	0-5	100	100	90-100	70-90	15-25	NP-5
12:												
Bonita----------	0-9	Clay	CL, CH	A-7	0	0	100	100	90-100	75-95	40-55	20-35
	9-23	Clay	CL, CH	A-7	0	0	100	100	90-100	75-95	40-60	20-45
	23-60	Clay	CH, CL	A-7	0	0	100	95-100	85-100	70-95	40-60	20-45
13:												
Bonita----------	0-1	Loam	CL, CL-ML	A-4	0	0	100	95-100	80-95	60-75	25-30	5-10
	1-9	Clay loam	CL	A-6, A-4	0	0	100	95-100	85-100	65-80	35-40	10-20
	9-23	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	50-60	30-45
	23-44	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	50-60	30-45
	44-60	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	45-60	25-45
Forrest---------	0-1	Loam	CL, ML	A-4	0	0	100	95-100	80-95	60-75	25-30	5-10
	1-5	Clay loam	CL	A-7, A-4	0	0	100	95-100	85-100	65-80	35-40	10-20
	5-17	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	17-26	Clay	CH, CL	A-7	0	0	100	100	90-100	75-100	40-55	20-35
	26-60	Clay loam	CL	A-7, A-4	0	0	100	95-100	85-100	65-80	35-40	10-20
14:												
Borderland------	0-1	Sandy clay loam	SC, SM	A-6	0	0-5	95-100	90-100	70-90	30-50	30-40	5-15
	1-10	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-65	20-50
	10-23	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-65	20-50
	23-60	Cobbly sandy loam	SM, SW-SM, SC-SM	A-2	0	25-35	75-90	70-85	40-60	20-35	15-25	NP-5
15:												
Borderline------	0-2	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-100	60-85	35-55	15-25	NP-5
	2-18	Loam	CL-ML, ML	A-4	0	0	80-95	75-90	65-85	45-70	15-25	NP-5
	18-41	Sandy loam	SC-SM, SM	A-1, A-2	0	0	80-95	75-90	45-65	20-35	15-25	NP-5
	41-50	Sandy loam	SC-SM, SM	A-1, A-4, A-2	0	0	90-100	85-100	50-70	25-40	15-25	NP-5
	50-60	Gravelly sandy loam	GC-GM, GM, SM, SC-SM	A-1, A-2	0	0	55-80	50-75	30-50	15-30	15-25	NP-5
16:												
Boss----------	0-2	Clay loam	CL, ML	A-6	0	0	85-95	80-90	70-90	55-70	35-40	10-20
	2-14	Clay	CH, CL	A-7	0	0	95-100	90-100	80-100	65-95	40-60	20-45
	14-60	Unweathered bedrock			0	0	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
16:												
Krentz----------	0-1	Gravelly loam	SC, SC-SM	A-2, A-4	0	0	55-70	50-65	40-55	30-50	25-30	5-10
	1-21	Very gravelly loam	GM, SM	A-4, A-2	0	0	35-50	30-45	25-40	20-35	30-35	5-10
	21-37	Extremely gravelly sandy loam	GW-GM, GM, GW	A-3, A-1	0	0	20-35	15-30	9-20	5-15	20-30	NP-5
	37-60	Extremely gravelly sand, extremely gravelly loamy sand	GW	A-3, A-1	0	10-20	5-10	0-5	0-5	0-1	0-15	NP-5
Paramore--------	0-1	Gravelly silty clay loam	CL, ML	A-6	0	0-5	65-80	60-75	55-75	50-70	35-40	10-20
	1-7	Gravelly clay	CH, CL	A-7	0	0	65-80	60-75	55-75	50-70	40-60	20-45
	7-29	Clay	CH, CL	A-7	0	0	90-100	85-100	75-100	65-80	40-60	20-45
	29-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
17:												
Brookline-------	0-3	Fine sandy loam	CL-ML, ML, SM, SC-SM	A-4	0	0	90-100	85-95	70-90	40-60	20-25	NP-5
	3-18	Fine sandy loam	CL-ML, ML, SM, SC-SM	A-4	0	0	90-100	85-95	70-90	40-60	20-25	NP-5
	18-29	Coarse sand	SP-SM, SP, SW, SW-SM	A-1	0	0	60-75	55-70	25-50	3-10	15-20	NP-5
	29-60	Very gravelly coarse sand	SP-SM, SW, SP, SW-SM	A-1	0	15-30	55-95	50-80	25-45	3-10	15-20	NP-5
Fluvaquents-----	0-10	Coarse sand	SW-SM	A-1, A-3	0	0-5	90-100	85-95	40-65	5-12	10-15	NP-5
	10-25	Fine sandy loam	SC-SM, SM	A-4	0	0	95-100	90-100	60-85	35-50	20-25	NP-5
	25-45	Coarse sand	SW-SM	A-1, A-3	0	0-5	90-100	85-95	40-65	5-10	10-15	NP-5
	45-60	Very cobbly sand, very gravelly coarse sand	GW-GM, SW, GW, SW-SM	A-1	0	15-50	40-70	35-65	20-45	3-10	10-15	NP-5
Riverwash-------	0-60	Stratified gravel	---	---	---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
18:												
Brunkcow--------	0-2	Coarse sandy loam	SC-SM, SM, SC	A-2	0	0	95-100	90-100	50-65	20-30	20-25	NP-5
	2-8	Sandy clay loam	SC	A-2, A-6	0	0	85-100	80-100	70-90	30-50	30-40	5-15
	8-12	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
	12-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Chiricahua------	0-3	Sandy loam	SC, SC-SM	A-1, A-2	0	0	80-95	75-90	45-60	20-35	25-30	5-10
	3-16	Clay loam	CL, ML	A-6	0	0	95-100	90-100	80-100	60-80	35-40	10-15
	16-25	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
	25-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Andrada---------	0-1	Gravelly sandy loam	GM, SM	A-1	0	0-5	60-75	55-70	35-50	15-25	20-30	NP-5
	1-6	Gravelly sandy loam	GM, SM	A-1, A-2	0	0-5	55-80	50-75	30-50	15-30	20-30	NP-5
	6-19	Very gravelly loam	GC, GC-GM	A-1, A-2	0	0-5	35-50	30-45	25-45	20-35	25-30	5-10
	19-60	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
19:												
Brunkcow--------	0-2	Very cobbly sandy loam	SC-SM, SM	A-1, A-2	0-5	45-60	65-85	60-80	35-55	20-30	20-25	NP-5
	2-10	Clay loam	CL, ML	A-6	0	0	85-100	80-95	70-95	55-75	35-40	10-15
	10-15	Sandy clay loam	SM	A-2, A-4	0	0	85-100	80-95	65-85	30-50	30-35	5-10
	15-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Chiricahua------	0-3	Very cobbly sandy loam	SM	A-1, A-2	0	50-60	75-90	70-85	40-60	20-35	25-30	NP-5
	3-20	Clay	CL	A-7	0	0	95-100	95-100	80-100	65-90	40-50	20-30
	20-27	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
	27-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Lampshire-------	0-1	Very cobbly sandy loam	GC-GM, GM, SM, SC-SM	A-1	0	35-50	50-65	45-60	25-40	15-25	20-25	NP-5
	1-9	Very cobbly sandy loam	GC-GM, SC, GC, SC-SM	A-1, A-2	0	35-50	50-65	45-60	25-40	15-25	25-30	5-10
	9-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
20:												
Budlamp---------	0-2	Very gravelly fine sandy loam	GM, GC-GM, GP-GM	A-1	0	0-5	35-55	25-50	20-35	10-20	20-25	NP-5
	2-8	Extremely gravelly fine sandy loam	GP-GM	A-1	0	0-5	15-35	10-25	5-20	5-10	20-25	NP-5
	8-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Woodcutter------	0-2	Very gravelly fine sandy loam	GC-GM, GM, GP-GM	A-1	0	0	35-45	25-40	20-35	10-20	20-25	NP-5
	2-6	Very gravelly loam	GM	A-1, A-2	0	0	35-55	30-40	20-40	15-30	20-30	NP-5
	6-12	Very gravelly clay loam, very gravelly sandy clay loam	GC-GM, GC, GP-GC	A-1, A-2	0	0	35-45	30-40	25-40	10-30	25-35	5-15
	12-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
21:												
Buntline--------	0-14	Clay loam	CL	A-6, A-4	0	0	90-100	85-95	75-95	60-75	30-40	10-15
	14-16	Gravelly clay loam	CL, SC	A-6, A-4	0	0	65-75	60-70	55-70	40-55	30-40	10-15
	16-23	Petrocalcic material			0	0	---	---	---	---	---	---
	23-60	Clay loam	CL	A-6, A-4	0	0	95-100	90-100	85-100	65-80	30-40	10-15
22:												
Caralampi-------	0-1	Sandy loam	SC-SM, SM	A-1, A-2	0	0	90-100	85-95	50-60	25-40	20-30	NP-5
	1-10	Gravelly sandy loam	SC-SM, SM	A-2, A-1	0	0	55-65	50-60	30-40	15-25	25-30	5
	10-27	Very gravelly clay loam	GC, GM	A-2	0	10-20	35-45	30-40	30-40	20-30	30-40	10-15
	27-48	Extremely gravelly sandy clay loam	GW-GM, GC, GW-GC, GM	A-2	0	10-40	20-30	15-25	10-20	5-15	30-40	10-15
	48-60	Extremely gravelly sandy clay loam	GW-GM, GW-GC, GC, GM	A-2	0	10-40	25-35	20-30	15-30	5-15	30-40	10-15

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
23:												
Caralampi-------	0-2	Very gravelly sandy loam	SC-SM, SM, GM, GC-GM	A-2, A-1	0	0	40-50	35-45	20-30	10-15	25-30	5
	2-28	Very gravelly sandy clay loam	GC, GM	A-2	0	10-20	40-50	30-40	25-35	10-20	30-40	10-15
	28-60	Gravelly clay loam	SM, ML	A-2, A-4	0	10-40	65-80	60-75	55-75	40-60	30-40	10-15
24:												
Carbine---------	0-2	Very gravelly loam	GC-GM, GM	A-2, A-4	0	0-10	45-55	40-50	35-50	25-40	20-25	NP-5
	2-9	Gravelly fine sandy loam	SC-SM, SM	A-2, A-4	0	10-20	65-80	60-75	40-65	25-40	20-25	NP-5
	9-16	Gravelly loam	SC-SM, SM	A-4	0	10-20	65-80	60-75	50-70	35-55	20-25	NP-5
	16-60	Petrocalcic material	---	---	---	---	---	---	---	---	---	---
25:												
Carbine---------	0-1	Sandy loam	SC-SM, SM	A-2	0	0	85-95	80-90	50-60	25-35	20-25	NP-5
	1-9	Loam	CL-ML, ML	A-4	0	0	85-95	80-90	75-85	50-70	20-25	NP-5
	9-18	Petrocalcic material	---	---	---	---	---	---	---	---	---	---
	18-60	Very gravelly sandy loam	GW-GM, GC-GM, GM	A-1, A-2	0	0-10	40-50	35-45	20-30	10-20	20-25	NP-5
Hathaway--------	0-2	Gravelly fine sandy loam	SC-SM, SM	A-2, A-4, A-1	0	0-10	65-75	60-70	40-65	25-40	20-25	NP-5
	2-9	Very gravelly loam	SC-SM, SM, SC	A-4, A-2	0	10-20	50-60	45-55	40-50	30-40	20-30	NP-5
	9-25	Very gravelly loam	SC-SM, SM, SC	A-4, A-2	0	10-20	50-60	45-55	40-50	30-40	20-30	NP-5
	25-60	Extremely gravelly sandy loam	GC-GM, GW-GM, GM	A-2, A-1	0	20-30	25-35	20-30	10-20	5-10	20-25	NP-5
26:												
Cazador---------	0-2	Clay loam	CL, ML	A-4	0	0	95-100	90-100	80-100	60-80	35-40	10-20
	2-9	Clay	CH, CL	A-7, A-6	0	0	100	100	90-100	75-95	40-55	20-35
	9-30	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	40-60	20-45
	30-50	Clay	CH, CL	A-7	0	0	100	95-100	88-100	70-95	40-60	20-45
	50-60	Clay	CH, CL	A-7	0	0	100	95-100	88-100	70-95	40-60	20-45

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
26:												
Lesliecreek-----	0-4	Loam	CL, CL-ML	A-4	0	0	100	95-100	80-95	55-75	25-30	5-10
	4-12	Clay loam	ML, CL	A-6, A-4	0	0	100	100	90-100	70-80	30-40	10-15
	12-32	Loam	CL, CL-ML	A-4	0	0	100	100	85-95	60-75	25-30	5-10
	32-50	Silty clay loam	ML, CL	A-6, A-4	0	0	85-95	80-90	75-90	70-85	30-40	10-15
	50-60	Clay loam	ML, CL	A-6, A-4	0	0	95-100	90-100	80-100	60-80	30-40	10-15
27:												
Cherrycow-------	0-2	Gravelly sandy loam	SC-SM, SM	A-2, A-1	0	0	70-80	65-75	40-50	20-30	20-25	NP-5
	2-9	Clay	CH, CL	A-7	0	0	95-100	90-100	80-100	65-95	40-60	20-45
	9-18	Sandy loam	SC-SM, SM	A-2	0	0	85-95	80-90	50-60	25-35	20-25	NP-5
	18-40	Very gravelly coarse sand	GC-GM, SM, SC-SM, GM	A-2, A-1	0	0	45-55	40-50	25-35	10-20	15-25	NP-5
	40-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Blacktail-------	0-2	Fine sandy loam	SC-SM, SM	A-4, A-2	0	0	85-95	80-90	55-75	30-50	20-25	NP-5
	2-6	Cobbly clay loam	CL	A-6, A-4	0	10-20	80-90	75-85	70-85	50-70	35-40	10-20
	6-14	Clay	CH, CL	A-7, A-6	0	0	100	95-100	90-100	70-95	40-60	20-45
	14-24	Gravelly sandy clay	SC	A-2	0	0	70-80	65-75	55-70	30-45	40-60	20-45
	24-60	Very gravelly coarse sand	SC-SM, GC-GM, GM, SM	A-2, A-1	0	0-10	45-55	40-50	25-35	10-20	15-25	NP-5
28:												
Cherrycow-------	0-2	Sandy loam	SC-SM, SM	A-2	0	0-10	90-100	85-95	50-60	25-35	20-25	NP-5
	2-14	Clay	CH, CL	A-7	0	0	90-100	85-100	75-100	65-95	45-60	25-45
	14-20	Sandy clay loam	SC	A-2, A-4	0	0	85-100	80-95	65-85	25-50	30-40	5-15
	20-30	Sandy clay loam	SC	A-2, A-4	0	0	85-100	80-95	65-85	25-50	30-40	5-15
	30-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Magoffin--------	0-2	Gravelly sandy loam	SC-SM, SM	A-2	0	0-5	65-80	60-75	35-50	18-30	20-25	NP-5
	2-10	Sandy loam	SC-SM, SM	A-2	0	0	85-100	80-95	50-60	25-35	20-25	NP-5
	10-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
29:												
Chorro----------	0-2	Fine sandy loam	SC, CL, ML, SM	A-4	0	0	100	95-100	65-85	40-55	20-30	NP-5
	2-11	Fine sandy loam	ML, SC, SM, CL	A-4	0	0	100	95-100	65-85	40-55	20-30	NP-5
	11-24	Loam	CL, CL-ML	A-4	0	0	100	100	85-95	60-75	25-30	5-10
	24-44	Silty clay loam	CL, ML	A-6, A-4	0	0	100	100	95-100	85-95	30-40	10-20
	44-60	Silty clay	CH, CL	A-7	0	0	100	100	95-100	90-95	40-50	20-30
Doubleadobe-----	0-1	Sandy loam	SC-SM, SM	A-4, A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	1-4	Clay loam	ML, CL	A-6, A-4	0	0	100	95-100	85-100	65-80	30-40	10-15
	4-13	Clay	CH	A-7	0	0	100	100	90-100	75-95	40-55	20-35
	13-31	Clay	CH	A-7	0	0	100	100	90-100	75-95	40-55	20-35
	31-60	Gravelly clay loam	CL, SC	A-4, A-6, A-2	0	0-5	50-60	45-55	40-55	30-45	30-40	10-20
Gothard---------	0-3	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	95-100	60-70	30-40	20-25	NP-5
	3-8	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	95-100	60-70	30-40	20-30	NP-5
	8-18	Sandy clay loam	ML, CL, SM, SC	A-6, A-4, A-2	0	0	100	95-100	75-90	35-55	30-40	10-15
	18-30	Sandy clay loam	ML, CL, SM, SC	A-6, A-2, A-4	0	0	100	95-100	75-90	35-55	30-40	5-15
	30-60	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	45-55	25-35
30:												
Chorro----------	0-5	Silt loam	CL, CL-ML	A-6, A-4	0	0	90-100	85-95	75-95	60-85	25-30	5-10
	5-14	Clay	CH, CL	A-7	0	0	100	100	95-100	75-95	40-60	20-45
	14-27	Loam	CL-ML, ML	A-6, A-4	0	0	100	100	85-95	60-75	25-30	5-10
	27-60	Fine sandy loam	SC, SC-SM	A-2	0	0	90-100	85-100	60-85	35-50	25-30	5-10
Guest----------	0-5	Clay loam	CL, ML	A-4, A-6	0	0	100	95-100	85-100	65-80	35-40	10-20
	5-20	Clay	CL, CH	A-7, A-6	0	0	100	100	95-100	75-95	40-60	20-45
	20-48	Silty clay	CL	A-7, A-6	0	0	100	100	95-100	90-95	40-50	20-30
	48-60	Fine sandy loam	SM	A-2	0	0	100	95-100	65-85	40-55	25-30	NP-5
31:												
Cogswell--------	0-5	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	40-55	20-35
	5-20	Silty clay	CL	A-7, A-6	0	0	100	100	95-100	90-95	40-50	20-30
	20-33	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	40-55	20-35
	33-42	Clay loam	CL, ML	A-6, A-4	0	0	100	100	90-100	70-80	30-40	10-15
	42-53	Fine sandy loam	SC-SM, ML, CL-ML, SM	A-4	0	0	100	100	70-85	40-55	20-25	NP-5
	53-57	Loam	CL, CL-ML	A-4	0	0	100	100	80-95	55-75	25-30	5-10
	57-63	Silty clay loam	CL, ML	A-6, A-4	0	0	100	95-100	95-100	85-95	35-40	10-20

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
32:												
Combate---------	0-5	Loamy sand	SC-SM, SP-SM, SM	A-1, A-2	0	0	75-95	70-90	40-65	10-15	15-25	NP-5
	5-21	Loamy sand	SM, SC-SM, SP-SM	A-1, A-2	0	0	75-95	70-90	40-65	10-15	15-25	NP-5
	21-46	Sandy loam, coarse sandy loam	SC-SM, SM	A-1, A-2, A-4	0	0	85-100	80-100	40-70	15-40	15-25	NP-5
	46-60	Sandy loam	SC-SM, SM	A-2, A-4	0	0	85-100	80-100	50-70	25-40	15-25	NP-5
33:												
Comoro----------	0-8	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	8-19	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	19-46	Fine sandy loam	SM, CL-ML, SC-SM, ML	A-4	0	0	95-100	90-100	60-85	35-55	20-25	NP-5
	46-60	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
34:												
Comoro----------	0-8	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	8-19	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	19-46	Fine sandy loam	SM, CL-ML, SC-SM, ML	A-4	0	0	95-100	90-100	60-85	35-55	20-25	NP-5
	46-60	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
Contention------	0-3	Silt loam	CL, CL-ML	A-4	0	0	100	100	90-100	70-90	25-30	5-10
	3-11	Silty clay, silty clay loam	CH, ML	A-7	0	0	100	100	95-100	75-95	35-55	10-30
	11-21	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	45-60	20-45
	21-60	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	45-60	20-45
Crystalgyp------	0-1	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	25-40	15-25	NP-5
	1-10	Sandy loam, loamy sand	SC-SM, SM	A-2, A-4	0	0	100	100	50-75	15-40	15-25	NP-5
	10-30	Loam, sandy loam	CL-ML, ML, SM, SC-SM	A-2, A-4	0	0	100	100	60-95	30-75	20-25	NP-5
	30-60	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
Monzingo--------	0-3	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	90-95	85-90	60-75	35-50	15-20	NP-5
	3-19	Loam	CL-ML, ML	A-4	0	0	90-100	85-100	70-95	50-75	15-25	NP-5
	19-26	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-100	60-75	35-50	20-25	NP-5
	26-45	Fine sandy loam, loam	CL-ML, SC-SM	A-2, A-4	0	0	90-100	85-100	60-95	35-75	20-25	NP-5
	45-55	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-100	60-95	35-75	15-20	NP-5
	55-60	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-100	60-95	35-75	15-20	NP-5

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
35:												
Redington-------	0-1	Fine sandy loam	SC-SM, SM	A-4	0	0	90-100	85-100	60-85	35-55	15-25	NP-5
	1-6	Fine sandy loam	SM, SC-SM	A-4	0	0	90-100	85-100	60-85	35-55	15-25	NP-5
	6-16	Loamy sand	SM, SP-SM	A-1	0	0-10	85-100	80-95	40-70	10-20	15-20	NP
	16-36	Sand	SM, SP-SM	A-3, A-1	0	0-10	85-95	80-90	40-60	5-15	15-20	NP
	36-42	Sand	SM, SW-SM	A-1, A-3	0	0	95-100	90-100	45-70	5-15	15-20	NP
	42-60	Sand	SM, SP-SM	A-1, A-3	0	0	95-100	90-100	45-70	5-15	15-20	NP
36:												
Contention------	0-2	Loam	CL, CL-ML	A-4	0	0	100	100	85-95	60-75	20-30	5-10
	2-7	Silty clay, silty clay loam	CH, ML	A-7	0	0	100	100	95-100	75-95	35-55	10-30
	7-32	Silty clay	CH, CL	A-7	0	0	100	100	90-100	90-95	45-60	20-45
	32-60	Silty clay	CH, CL	A-7	0	0	100	100	90-100	90-95	45-60	20-45
Ugyp----------	0-3	Fine sandy loam	SC-SM, SM	A-2	0	0	90-100	85-100	60-85	35-55	20-25	NP-5
	3-13	Silt loam	CL-ML, ML	A-4	0	0	90-100	85-100	75-100	60-90	20-25	NP-5
	13-30	Fine sandy loam	SC-SM, SM	A-2	0	0	90-100	85-100	60-85	35-55	20-25	NP-5
	30-52	Stratified loamy coarse sand to sandy loam	SC-SM, SM	A-1, A-2, A-3	0	0	90-95	85-90	40-65	10-35	15-25	NP-5
	52-60	Loamy fine sand, fine sand	SC-SM, SM	A-2	0	0	90-100	85-100	55-80	15-30	15-20	NP-5
Ugyp----------	0-3	Fine sandy loam	SC-SM, SM	A-2	0	0	90-100	85-100	60-85	35-55	20-25	NP-5
	3-13	Silt loam	CL-ML, ML	A-4	0	0	90-100	85-100	75-100	60-90	20-25	NP-5
	13-30	Fine sandy loam	SC-SM, SM	A-2	0	0	90-100	85-100	60-85	35-55	20-25	NP-5
	30-52	Stratified loamy coarse sand to sandy loam	SC-SM, SM	A-1, A-3, A-2	0	0	90-95	85-90	40-65	10-35	15-25	NP-5
	52-60	Loamy fine sand, fine sand	SC-SM, SM	A-2	0	0	90-100	85-100	55-80	15-30	15-20	NP-5
37:												
Courtland-------	0-8	Sandy loam	SM, SC-SM	A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	8-14	Sandy loam	SM, SC-SM	A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	14-20	Sandy loam	SM, SC-SM	A-4, A-2	0	0	95-100	90-100	55-70	30-40	25-25	NP-5
	20-49	Sandy clay loam	SC, SC-SM	A-6, A-4	0	0	100	95-100	75-90	35-55	30-40	5-15
	49-60	Sandy clay loam	SC-SM, SC	A-6, A-4	0	0	100	95-100	75-90	35-55	30-40	5-15

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
38:												
Courtland-------	0-8	Sandy loam	SM, SC-SM	A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	8-14	Sandy loam	SM, SC-SM	A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	14-20	Sandy loam	SM, SC-SM	A-4, A-2	0	0	95-100	90-100	55-70	30-40	25-25	NP-5
	20-49	Sandy clay loam	SC, SC-SM	A-6, A-4	0	0	100	95-100	75-90	35-55	30-40	5-15
	49-60	Sandy clay loam	SC-SM, SC	A-6, A-4	0	0	100	95-100	75-90	35-55	30-40	5-15
39:												
Courtland-------	0-8	Sandy loam	SM, SC-SM	A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	8-14	Sandy loam	SM, SC-SM	A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	14-20	Sandy loam	SM, SC-SM	A-4, A-2	0	0	95-100	90-100	55-70	30-40	25-25	NP-5
	20-49	Sandy clay loam	SC, SC-SM	A-6, A-4	0	0	100	95-100	75-90	35-55	30-40	5-15
	49-60	Sandy clay loam	SC-SM, SC	A-6, A-4	0	0	100	95-100	75-90	35-55	30-40	5-15
Diaspar---------	0-20	Sandy loam	SC, SC-SM, SM	A-2, A-4	0	0	85-90	75-90	55-80	25-45	15-30	NP-10
	20-41	Sandy clay loam	SM	A-2, A-6, A-7	0	0	85-90	75-90	65-80	30-50	35-45	10-15
	41-60	Gravelly sandy clay loam	GC, SC	A-2, A-6, A-7	0	0-5	65-90	50-75	45-65	20-40	35-45	20-25
40:												
Courtland-------	0-6	Sandy loam	SC, SC-SM	A-1, A-2	0	0	85-90	75-90	40-60	20-35	25-30	5-10
	6-24	Sandy clay loam	CL	A-6	0	0	80-95	75-90	70-90	55-70	30-40	10-15
	24-36	Gravelly clay loam	GC, SC	A-6	0	0-5	65-90	50-75	50-70	35-50	30-40	10-15
	36-60	Clay loam	CL	A-6	0	0	80-95	75-90	70-90	55-70	30-40	10-20
Sasabe----------	0-3	Sandy loam	SC, SC-SM	A-1, A-2	0	0	85-90	75-90	40-60	20-35	25-30	5-10
	3-11	Sandy clay loam	SC	A-2, A-6	0	0	85-90	75-90	60-80	30-50	30-40	10-15
	11-36	Clay loam	CL	A-7	0	0	80-95	75-90	70-90	55-70	40-45	15-20
	36-60	Sandy clay loam	SC, SM	A-4, A-6	0	0	80-95	75-90	60-75	35-50	30-40	5-15
Diaspar---------	0-20	Sandy loam	SC, SC-SM, SM	A-2, A-4	0	0	85-90	75-90	55-80	25-45	15-30	NP-10
	20-41	Sandy clay loam	SM	A-2, A-6, A-7	0	0	85-90	75-90	65-80	30-50	35-45	10-15
	41-60	Gravelly sandy clay loam	GC, SC	A-2, A-6, A-7	0	0-5	65-90	50-75	45-65	20-40	35-45	20-25
41:												
Crowbar---------	0-1	Fine sandy loam	SC-SM, SM	A-4	0	0	95-100	90-100	60-85	35-55	20-25	NP-5
	1-12	Gravelly sandy clay loam	SC, SM	A-6, A-1, A-4	0	0-10	65-75	60-70	50-60	20-40	25-40	5-15
	12-26	Extremely gravelly sandy clay loam	GW-GM, GC, GW-GC, GM	A-1	0	25-35	30-40	25-35	20-30	10-20	25-40	5-15
	26-60	Extremely gravelly sandy clay loam	GW-GM, GC, GW-GC, GM	A-1	0	25-35	30-40	25-35	20-30	10-20	30-40	5-15

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
41:												
Brunopeak-------	0-3	Very gravelly sandy loam	GM, GC-GM, GW-GM	A-2, A-1	0	0-10	40-50	35-45	20-30	10-20	25-30	NP-5
	3-16	Extremely gravelly clay loam	GC, GW-GC, GM, GW-GM	A-2	0	25-35	25-35	20-30	20-30	15-25	35-40	10-20
	16-42	Extremely cobbly sandy clay	GC, GW-GC	A-2	0	40-50	35-45	30-40	25-40	15-25	40-50	20-30
	42-60	Extremely cobbly sandy clay	GC, GM	A-2	0	40-60	35-45	30-40	25-40	15-25	40-50	20-30
42:												
Deloro----------	0-2	Very gravelly sandy loam	GM, GC-GM, GP-GM, GW-GM	A-1	0	0-20	35-45	30-40	20-30	10-15	20-25	NP-5
	2-11	Extremely gravelly sandy clay loam	GC, GP-GC, GW-GC	A-2	0	5-20	25-35	20-30	15-30	5-15	35-40	10-15
	11-19	Extremely gravelly clay	GP-GC, GC, GW-GC	A-2	0	5-20	20-30	15-25	15-25	10-25	40-55	20-35
	19-29	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
	29-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Leyte----------	0-1	Gravelly sandy loam	GC-GM, GM, SM, SC-SM	A-2, A-1	0	0-15	65-75	60-70	35-50	20-30	20-25	NP-5
	1-4	Very cobbly clay loam	CL, SC, GC	A-6, A-2	0	15-35	60-70	55-65	50-65	40-50	35-40	15-20
	4-12	Cobbly clay	CH, CL	A-7	0	15-45	80-90	75-85	70-80	55-80	40-55	20-35
	12-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Lampshire-------	0-1	Very gravelly sandy loam	GC-GM, GW-GC, GW	A-2, A-1	0	5-20	40-50	35-45	20-30	10-20	25-30	NP-5
	1-9	Very cobbly sandy loam	GC-GM, GW, GW-GC	A-2, A-1	0	45-55	55-65	50-60	30-40	15-20	25-30	NP-5
	9-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
43:												
Denab----------	0-1	Gravelly sandy loam	SC-SM, SM	A-2	0	0	70-80	65-75	40-50	20-30	15-25	NP-5
	1-7	Loam	CL-ML, ML	A-4	0	0	90-100	85-95	70-80	50-70	20-25	NP-5
	7-15	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
	15-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Castledome------	0-1	Fine sandy loam	SC-SM, SM, ML	A-4	0	0	100	95-100	65-85	40-55	20-25	NP-5
	1-2	Clay loam	CL, ML	A-6, A-4	0	0	100	95-100	85-100	65-80	35-40	10-20
	2-9	Clay	CL	A-7	0	0	95-100	85-95	75-95	65-90	40-50	20-30
	9-34	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
	34-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
44:												
Denied Access.												
45:												
Diaspar---------	0-6	Sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	60-70	30-40	20-25	NP-5
	6-10	Sandy loam	SC-SM	A-2, A-4	0	0	100	95-100	60-70	30-40	25-25	5
	10-60	Sandy loam	SC-SM	A-2, A-4	0	0-5	100	95-100	60-70	30-40	25-25	5
46:												
Diaspar---------	0-6	Sandy loam	SC-SM, SM	A-2, A-4	0	0	100	95-100	60-70	30-40	20-25	NP-5
	6-10	Sandy loam	SC-SM	A-2, A-4	0	0	100	95-100	60-70	30-40	25-25	5
	10-60	Sandy loam	SC-SM	A-2, A-4	0	0-5	100	95-100	60-70	30-40	25-25	5
47:												
Dona Ana--------	0-2	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	25-40	20-25	NP-5
	2-16	Clay loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	85-100	65-80	25-40	5-15
	16-24	Clay loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	85-100	65-80	25-40	5-15
	24-38	Very gravelly coarse sandy loam	GC-GM, GP-GM, GM	A-1	0	0-15	40-55	35-50	20-35	10-20	20-25	NP-5
	38-60	Very cobbly coarse sand	GP, SP, SW-SM, SW	A-1	0	20-40	50-65	45-60	20-40	3-10	15-20	NP
Mohave----------	0-2	Fine sandy loam	SC-SM, SM	A-4	0	0	100	95-100	70-85	40-50	20-25	NP-5
	2-13	Sandy clay loam	CL, ML, SM, SC	A-2, A-4, A-6	0	0	90-100	85-100	70-90	30-55	30-40	5-15
	13-22	Sandy clay loam	SC, SM	A-2, A-6, A-4	0	0	90-100	85-95	70-85	30-50	30-40	5-15
	22-35	Gravelly sandy clay loam	GM, GC, SC, SM	A-2, A-1, A-4, A-6	0	0-5	60-80	55-75	45-70	20-40	30-40	5-15
	35-60	Loamy fine sand	SM	A-2	0	0	95-100	90-100	50-75	15-30	15-20	NP

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
48:												
Doubleadobe-----	0-1	Sandy loam	SC-SM, SM	A-4, A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	1-4	Clay loam	ML, CL	A-6, A-4	0	0	100	95-100	85-100	65-80	30-40	10-15
	4-13	Clay	CH	A-7	0	0	100	100	90-100	75-95	40-55	20-35
	13-31	Clay	CH	A-7	0	0	100	100	90-100	75-95	40-55	20-35
	31-60	Gravelly clay loam	CL, SC	A-6, A-2, A-4	0	0-5	50-60	45-55	40-55	30-45	30-40	10-20
49:												
Durazo----------	0-8	Loamy sand	SM	A-2	0	0	100	95-100	50-75	15-30	15-20	NP
	8-48	Loamy sand	SM	A-2	0	0	100	95-100	50-75	15-30	15-20	NP
	48-60	Sandy clay loam	SC, SM	A-2, A-4	0	0	100	95-100	75-90	30-55	30-35	5-10
50:												
Durazo----------	0-8	Loamy sand	SM	A-2	0	0	100	95-100	50-75	15-30	15-20	NP
	8-48	Loamy sand	SM	A-2	0	0	100	95-100	50-75	15-30	15-20	NP
	48-60	Sandy clay loam	SC, SM	A-2, A-4	0	0	100	95-100	75-90	30-55	30-35	5-10
51:												
Durazo----------	0-6	Loamy sand	SM	A-2	0	0	100	95-100	50-75	15-30	15-20	NP
	6-44	Loamy sand	SM	A-2	0	0	100	95-100	50-75	15-30	15-20	NP
	44-60	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	95-100	50-70	30-40	20-25	NP-5
Gothard---------	0-3	Loam	CL-ML, ML	A-4	0	0	100	95-100	80-95	60-75	25-30	5-10
	3-8	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	95-100	60-70	30-40	20-30	NP-5
	8-18	Sandy clay loam	SC, CL, SM, ML	A-6, A-2, A-4	0	0	100	95-100	75-90	35-55	30-40	10-15
	18-30	Sandy clay loam	CL, ML, SC, SM	A-6, A-4, A-2	0	0	100	95-100	75-90	35-55	30-40	5-15
	30-60	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	45-55	25-35
52:												
Durazo----------	0-2	Loamy fine sand	SM	A-2	0	0	100	95-100	70-85	30-50	15-20	NP
	2-51	Loamy fine sand	SM	A-2	0	0	100	95-100	70-85	30-50	15-20	NP
	51-60	Sandy loam	SC-SM, SM	A-2	0	0	100	95-100	60-70	30-40	20-25	NP-5
Courtland-------	0-1	Sandy loam	SC-SM, SM	A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	1-5	Sandy loam	SC-SM, SM	A-2	0	0	100	95-100	60-70	30-40	20-25	NP-5
	5-12	Sandy loam	SC-SM, SM	A-2	0	0	100	95-100	60-70	30-40	25-30	5
	12-39	Sandy clay loam	SC, CL, ML, SM	A-4, A-6	0	0	100	95-100	75-90	35-55	30-40	5-15
	39-60	Sandy clay loam	CL, ML, SC, SM	A-4, A-6	0	0	100	95-100	75-90	35-55	30-40	5-15

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
53:												
Durazo----------	0-6	Loamy sand	SM	A-2	0	0	100	95-100	50-75	15-30	15-20	NP
	6-44	Loamy sand	SM	A-2	0	0	100	95-100	50-75	15-30	15-20	NP
	44-60	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	95-100	50-70	30-40	20-25	NP-5
McAllister------	0-7	Loam	ML, CL-ML	A-4	0	0	100	95-100	80-95	60-75	25-30	5-10
	7-26	Clay loam	ML, CL	A-4, A-6	0	0	100	95-100	85-100	65-80	30-40	10-15
	26-60	Clay loam	ML, CL	A-4, A-6	0	0	100	95-100	85-100	65-80	30-40	10-15
54:												
Elfrida---------	0-9	Clay loam	CL	A-6, A-4	0	0	100	100	90-100	70-80	30-40	10-15
	9-23	Clay loam	CL	A-6, A-4	0	0	100	100	90-100	70-80	30-40	10-15
	23-46	Clay loam	CL	A-6, A-4	0	0	100	100	90-100	70-80	30-40	10-15
	46-60	Clay	CL	A-6	0	0	100	100	90-100	75-95	40-45	20-25
55:												
Elfrida---------	0-9	Clay loam	CL	A-6, A-4	0	0	100	100	90-100	70-80	30-40	10-15
	9-23	Clay loam	CL	A-6, A-4	0	0	100	100	90-100	70-80	30-40	10-15
	23-46	Clay loam	CL	A-6, A-4	0	0	100	100	90-100	70-80	30-40	10-15
	46-60	Clay	CL	A-6	0	0	100	100	90-100	75-95	40-45	20-25
56:												
Elgin----------	0-1	Fine sandy loam	SC-SM, ML, CL-ML, SM	A-4	0	0	100	95-100	65-85	40-55	20-25	NP-5
	1-10	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	10-22	Clay loam	CL	A-6	0	0	85-95	80-90	70-90	55-70	35-40	15-20
	22-38	Clay loam	CL	A-6, A-4	0	0	85-95	80-90	70-90	55-70	35-40	10-20
	38-60	Gravelly sandy clay loam	SC, SM	A-6, A-4, A-2	0	0	70-80	65-75	50-70	20-40	30-40	5-15
McAllister------	0-1	Fine sandy loam	SC-SM, ML, CL-ML, SM	A-4	0	0	95-100	90-100	60-85	35-55	20-25	NP-5
	1-9	Clay loam	CL, ML	A-6, A-4	0	0	100	100	90-100	70-80	30-40	10-15
	9-20	Sandy clay loam	SC, CL, ML, SM	A-4, A-6, A-2	0	0-10	85-95	80-90	65-80	30-50	30-40	5-15
	20-34	Sandy clay loam	CL, SC, SM, ML	A-4, A-6, A-2	0	0	85-95	80-90	65-80	30-50	30-40	5-15
	34-60	Sandy loam	SC-SM, SM	A-2	0	0-10	85-95	80-90	50-65	25-35	20-25	NP-5
Stronghold------	0-1	Sandy loam	SC-SM, SM	A-4, A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	1-19	Loam	CL-ML, ML	A-4	0	0	85-95	80-90	70-85	50-70	20-25	NP-5
	19-41	Gravelly sandy loam	SC-SM, SM	A-2, A-1	0	0-5	70-80	65-75	40-50	20-30	20-25	NP-5
	41-51	Loam	CL-ML, ML	A-4	0	0	100	95-100	80-95	60-75	20-25	NP-5
	51-60	Extremely gravelly loamy sand	GW-GM, GW	A-1	0	5-15	20-30	15-25	5-20	3-10	15-25	NP-5

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
57:												
Elgin----------	0-2	Sandy loam	SM, SC-SM	A-2, A-4	0	0	95-100	90-100	55-70	25-40	20-25	NP-5
	2-7	Sandy clay loam	SM	A-6	0	0	90-100	85-95	70-85	30-50	30-40	5-15
	7-19	Clay	CL, CH	A-7	0	0	100	100	95-100	75-95	40-60	20-45
	19-26	Clay	CL, CH	A-7	0	0	95-100	90-100	80-100	70-95	40-60	20-45
	26-43	Very gravelly clay loam	CL, SC	A-4, A-6	0	20-30	40-60	35-55	30-50	25-45	30-40	10-20
	43-60	Gravelly coarse sandy loam	SC-SM, SC	A-2	0	0-5	65-75	60-70	35-50	20-30	25-30	5-10
Outlaw----------	0-2	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	95-100	55-70	35-40	25-30	5-15
	2-13	Clay	CH, CL	A-7	0	0	100	95-100	85-100	70-95	45-70	25-55
	13-28	Clay	CH, CL	A-7	0	0	95-100	90-100	80-100	65-95	45-70	25-55
	28-60	Loam	CL, CL-ML	A-4	0	0	85-95	80-90	65-75	50-70	25-30	5-10
58:												
Elgin----------	0-1	Very gravelly fine sandy loam	GC-GM, GP-GM, GM	A-1	0	0-5	30-50	25-45	20-35	10-25	20-25	NP-5
	1-15	Clay	CL	A-6, A-7	0	0-5	85-100	80-95	70-95	60-90	35-50	15-25
	15-21	Gravelly sandy clay loam	GC, SC	A-2, A-6	0	0-5	55-80	50-75	40-65	20-40	30-40	10-15
	21-27	Gravelly sandy loam	GM, SC-SM, GC-GM, SM	A-1, A-2	0	0-5	55-80	50-75	30-50	15-30	20-25	NP-5
	27-60	Very gravelly sandy loam	GC-GM, GM, GP-GM	A-1	0	0-5	40-55	35-50	20-35	10-20	20-25	NP-5
Stronghold------	0-2	Very gravelly sandy loam	GC, GP-GC, GC-GM	A-1, A-2	0	0-5	30-50	25-45	20-45	10-35	20-25	5-10
	2-18	Gravelly sandy loam, gravelly fine sandy loam	GC, GC-GM, SC-SM, SC	A-1, A-2	0	0-5	55-80	50-75	30-50	15-30	20-25	5-10
	18-60	Gravelly sandy loam, gravelly loamy sand	GM, GC-GM, SC-SM, SM	A-1, A-2	0	0-5	55-80	50-75	20-50	10-30	15-25	NP-5
59:												
Eloma----------	0-3	Gravelly loam	SC, SC-SM	A-4, A-6	0	0-5	65-80	60-75	50-70	35-55	25-30	5-10
	3-30	Very gravelly clay	GC	A-7, A-2	0	0-5	35-50	30-45	25-40	20-40	40-60	20-45
	30-42	Very gravelly clay loam	SC, GC	A-6, A-2	0	0-5	40-55	35-50	30-50	25-40	35-40	10-20
	42-60	Very gravelly sandy clay loam	GW-GM, GC	A-6, A-2	0	0-5	30-55	25-45	20-40	10-25	30-40	10-15

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
60:												
Eloma----------	0-1	Very gravelly sandy loam	GM, GC-GM, GW-GM	A-1	0	0-10	35-50	30-45	18-30	10-20	20-25	NP-5
	1-10	Very gravelly clay loam	GC	A-2, A-6	0	0-5	40-55	35-50	30-50	25-40	35-40	15-20
	10-27	Very gravelly clay	GC	A-2	0	0-10	35-45	30-40	25-40	25-35	40-55	20-35
	27-60	Extremely cobbly clay	GC	A-2	0-5	45-65	25-45	20-40	20-40	15-35	40-55	20-35
Caralampi-------	0-1	Sandy loam	SC-SM, SM	A-2	0	0	85-100	80-95	50-60	20-35	20-25	NP-5
	1-12	Gravelly clay loam	ML, SC, CL, SM	A-6	0	0-10	60-75	55-70	50-70	40-55	35-40	10-15
	12-50	Very cobbly clay loam	GC, GM	A-2, A-6	0	25-40	50-70	45-65	40-65	30-50	35-40	10-15
	50-60	Very gravelly coarse sandy loam	GC-GM, GP-GM, GM	A-1	0	0-10	40-55	35-50	20-35	10-20	15-25	NP-5
White House-----	0-1	Sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-100	50-70	25-40	20-25	NP-5
	1-5	Sandy clay loam	ML, SC, CL, SM	A-2, A-4, A-6	0	0	95-100	90-100	70-90	30-55	30-40	5-15
	5-35	Clay	CH, CL	A-7	0	0	95-100	90-100	80-100	65-95	40-55	20-35
	35-60	Extremely gravelly clay	GC	A-2	0	5-15	20-35	15-30	15-30	15-25	40-55	20-35
61:												
Epitaph---------	0-1	Very cobbly clay loam	GC, CL, SC	A-6, A-7	0	40-50	60-80	55-75	50-75	40-60	25-45	10-20
	1-6	Clay	CH, CL	A-6, A-7	0	0-5	90-100	85-100	75-100	65-90	30-65	10-45
	6-27	Clay	CH, CL	A-6, A-7	0	0-5	90-100	85-100	75-100	65-90	30-65	10-45
	27-38	Petrocalcic material	---	---	---	---	---	---	---	---	---	---
	38-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
62:												
Far----------	0-1	Slightly decomposed plant material	---	---	---	---	---	---	---	---	---	---
	1-3	Stony fine sandy loam	SC-SM, SM	A-2, A-4	25-30	0-5	85-90	80-85	55-65	30-45	20-25	NP-5
	3-16	Very cobbly fine sandy loam	GC-GM, GM	A-2	0-5	40-45	60-65	55-60	40-50	25-35	20-25	NP-5
	16-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
62:												
Hogris----------	0-2	Slightly decomposed plant material	---	---	---	---	---	---	---	---	---	---
	2-5	Extremely cobbly fine sandy loam	GC, GC-GM, GP-GM, GM	A-1, A-2	0	30-35	35-40	30-35	25-30	10-15	15-25	NP-10
	5-14	Extremely cobbly sandy loam, extremely cobbly fine sandy loam	GC, GM, GC-GM	A-1, A-2	0	55-60	55-60	50-55	30-40	15-25	15-25	NP-10
	14-38	Extremely cobbly sandy loam	GC, GC-GM, GM	A-1, A-2	0	55-60	55-60	50-55	30-40	15-25	15-25	NP-10
	38-60	Extremely cobbly sandy loam	GC-GM, GC, GM, SC-SM	A-1, A-2	0	70-75	60-65	55-60	35-40	20-25	15-25	NP-10
63:												
Far----------	0-1	Slightly decomposed plant material	---	---	---	---	---	---	---	---	---	---
	1-7	Very gravelly sandy loam	GC-GM, GM, GP-GM	A-1	0	0-5	30-50	25-45	15-30	10-20	20-25	NP-5
	7-16	Very gravelly fine sandy loam, very gravelly sandy loam	GC, GP-GC, GC-GM	A-1, A-2	0	0-5	30-50	25-45	15-35	10-20	20-30	5-10
	16-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Huachuca--------	0-3	Slightly decomposed plant material	---	---	---	---	---	---	---	---	---	---
	3-8	Very stony loam	ML, SM	A-4	45-50	10-15	75-80	70-75	60-65	40-55	20-30	NP-5
	8-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
63:												
Hogris----------	0-2	Slightly decomposed plant material	---	---	---	---	---	---	---	---	---	---
	2-9	Extremely cobbly loam	GC-GM, GC, GM, GP-GM	A-1, A-2	0	30-35	35-40	30-35	25-30	10-15	15-25	NP-10
	9-14	Extremely cobbly sandy loam, extremely cobbly fine sandy loam	GC, GC-GM, GM	A-1, A-2	0	55-60	55-60	50-55	30-40	15-25	15-25	NP-10
	14-60	Extremely cobbly sandy loam	GC, GC-GM, GM	A-1, A-2	0	55-60	55-60	50-55	30-40	15-25	15-25	NP-10
64:												
Far----------	0-1	Slightly decomposed plant material	---	---	---	---	---	---	---	---	---	---
	1-7	Very gravelly sandy loam	GM, GC-GM, GP-GM	A-1	0	0-5	30-50	25-45	15-30	10-20	20-25	NP-5
	7-16	Very gravelly fine sandy loam, very gravelly sandy loam	GC-GM, GC, GP-GC	A-1, A-2	0	0-5	30-50	25-45	15-35	10-20	20-30	5-10
	16-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Huachuca--------	0-3	Slightly decomposed plant material	---	---	---	---	---	---	---	---	---	---
	3-8	Very stony loam	ML, SM	A-4	45-50	10-15	75-80	70-75	60-65	40-55	20-30	NP-5
	8-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
64:												
Hogris----------	0-2	Slightly decomposed plant material	---	---	---	---	---	---	---	---	---	---
	2-9	Extremely cobbly loam	GC-GM, GM, GC, GP-GM	A-1, A-2	0	30-35	35-40	30-35	25-30	10-15	15-25	NP-10
	9-14	Extremely cobbly sandy loam, extremely cobbly fine sandy loam	GC, GC-GM, GM	A-1, A-2	0	55-60	55-60	50-55	30-40	15-25	15-25	NP-10
	14-60	Extremely cobbly sandy loam	GC, GM, GC-GM	A-1, A-2	0	55-60	55-60	50-55	30-40	15-25	15-25	NP-10
65:												
Forrest---------	0-6	Clay loam	CL	A-4, A-7, A-6	0	0	100	95-100	85-100	65-80	35-40	10-20
	6-28	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	28-37	Clay	CL, CH	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	37-60	Clay loam	CL	A-4, A-7, A-6	0	0	100	95-100	85-100	65-80	35-40	10-20
66:												
Forrest---------	0-6	Clay loam	CL	A-4, A-6, A-7	0	0	100	95-100	85-100	65-80	35-40	10-20
	6-28	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	28-37	Clay	CL, CH	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	37-60	Clay loam	CL	A-4, A-6, A-7	0	0	100	95-100	85-100	65-80	35-40	10-20
67:												
Forrest---------	0-6	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	95-100	55-70	30-40	20-25	NP-5
	6-28	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	28-37	Clay	CL, CH	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	37-60	Clay loam	CL	A-4, A-7, A-6	0	0	100	95-100	85-100	65-80	35-40	10-20
68:												
Forrest---------	0-6	Silt loam	ML	A-4	0	0	100	95-100	85-100	65-90	20-30	NP-5
	6-28	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	28-37	Clay	CL, CH	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	37-60	Clay loam	CL	A-4, A-6, A-7	0	0	100	95-100	85-100	65-80	35-40	10-20
69:												
Forrest---------	0-6	Silt loam	ML	A-4	0	0	100	95-100	85-100	65-90	20-30	NP-5
	6-28	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	28-37	Clay	CL, CH	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	37-60	Clay loam	CL	A-6, A-4, A-7	0	0	100	95-100	85-100	65-80	35-40	10-20

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
70:												
Forrest---------	0-1	Fine sandy loam	SC-SM, SM	A-4	0	0	90-100	85-95	60-80	35-50	20-25	NP-5
	1-7	Sandy clay loam	SC	A-2, A-6	0	0	90-100	85-95	70-85	30-50	30-40	10-15
	7-39	Clay loam, clay	CL	A-7	0	0	90-100	85-100	75-100	60-95	40-50	15-25
	39-60	Sandy clay loam	SC	A-4, A-6	0	0	90-100	85-95	60-80	35-50	25-30	8-12
Bonita----------	0-2	Silt loam	CL-ML, ML	A-4	0	0	95-100	95-100	70-90	55-80	15-25	NP-5
	2-5	Silty clay loam	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	80-95	70-90	25-40	5-15
	5-20	Silty clay	CH, CL	A-6, A-7	0	0	95-100	90-100	80-100	80-95	35-60	15-35
	20-40	Clay	CH, CL	A-6, A-7	0	0	95-100	90-100	80-100	60-85	35-65	15-45
	40-60	Clay loam	CL, CL-ML	A-4, A-6	0	0	90-100	85-95	75-95	60-75	25-40	5-15
71:												
Gardencan-------	0-4	Sandy loam	SC-SM, SC, SM	A-1, A-2	0	0	85-90	75-90	40-60	20-35	15-30	NP-10
	4-20	Sandy clay loam	SC, SM	A-4, A-2, A-6	0	0	85-90	75-90	60-80	30-50	30-40	5-15
	20-39	Gravelly clay loam	GC, SC	A-6	0	0-5	55-80	50-75	45-65	35-50	30-40	10-15
	39-60	Very cobbly sandy clay loam	GM, SC, GC, SM	A-2	0	50-55	65-70	60-65	50-55	25-35	30-40	5-15
Lanque----------	0-4	Sandy loam	SC-SM, SM	A-1, A-2	0	0	80-90	75-90	40-60	20-35	20-25	NP-5
	4-19	Sandy loam, coarse sandy loam	SC-SM, SM	A-1, A-2	0	0	80-90	75-90	40-60	20-35	20-25	NP-5
	19-46	Coarse sandy loam, sandy loam	SC-SM, SM	A-1, A-2	0	0	75-90	70-90	30-55	15-30	20-25	NP-5
	46-60	Sandy clay loam	SC, SM	A-4, A-2, A-6	0	0	85-90	70-90	60-80	30-50	30-40	5-15
72:												
Glendale--------	0-7	Very fine sandy loam	CL-ML, ML	A-4	0	0	100	95-100	80-95	50-65	20-25	NP-5
	7-31	Silty clay loam	CL	A-6	0	0	100	95-100	90-100	80-95	30-40	10-15
	31-45	Loam	CL, CL-ML	A-4	0	0	100	95-100	80-95	55-75	25-30	5-10
	45-60	Silty clay loam	CL	A-6	0	0	100	95-100	90-100	80-95	30-40	10-15
73:												
Gothard---------	0-3	Loam	CL-ML, ML	A-4	0	0	100	95-100	80-95	60-75	25-30	5-10
	3-8	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	95-100	60-70	30-40	20-30	NP-5
	8-18	Sandy clay loam	SC, CL, SM, ML	A-6, A-4, A-2	0	0	100	95-100	75-90	35-55	30-40	10-15
	18-30	Sandy clay loam	ML, CL, SM, SC	A-6, A-4, A-2	0	0	100	95-100	75-90	35-55	30-40	5-15
	30-60	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	45-55	25-35

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
74:												
Gothard---------	0-3	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	95-100	60-70	30-40	20-25	NP-5
	3-8	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	95-100	60-70	30-40	20-30	NP-5
	8-18	Sandy clay loam	CL, ML, SC, SM	A-6, A-4, A-2	0	0	100	95-100	75-90	35-55	30-40	10-15
	18-30	Sandy clay loam	ML, CL, SM, SC	A-6, A-4, A-2	0	0	100	95-100	75-90	35-55	30-40	5-15
	30-60	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	45-55	25-35
75:												
Graham----------	0-1	Very cobbly loam	CL, SC-SM, CL-ML, SC	A-4	0	55-65	80-90	75-85	65-80	45-65	25-30	5-10
	1-10	Clay	CH, CL	A-6, A-7	0	0-10	90-100	85-100	75-100	65-90	35-60	15-40
	10-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Lampshire-------	0-5	Very stony loam	GC, GC-GM	A-2, A-4	25-40	25-35	50-65	45-60	40-60	25-45	25-30	5-10
	5-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
76:												
Graveyard-------	0-3	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	85-100	80-95	55-80	30-50	20-25	NP-5
	3-9	Sandy loam	SC-SM, SM	A-2, A-4	0	0	85-100	80-95	50-70	25-40	20-25	NP-5
	9-16	Very gravelly sandy loam	GC-GM, GW-GM, GM	A-1	0	0	35-50	30-45	20-30	10-20	20-25	NP-5
	16-34	Extremely gravelly sandy loam	GP, GW, GW-GM	A-1	0	0	15-30	10-25	5-15	3-10	20-25	NP-5
	34-56	Very gravelly sandy loam	GC-GM, GM, GW-GM	A-1	0	0	35-50	30-45	20-30	10-20	20-25	NP-5
	56-60	Extremely gravelly sandy loam	GP-GM, GW, GP, GW-GM	A-1	0	0	20-35	15-30	10-20	5-10	20-25	NP-5
Sierravista-----	0-3	Fine sandy loam	SC-SM, SM	A-1, A-4	0	0	90-100	85-100	60-85	35-50	20-25	NP-5
	3-21	Very gravelly sandy clay loam	GC, GC-GM	A-1, A-2	0	0-10	40-55	35-50	25-45	15-30	25-40	5-15
	21-42	Very gravelly sandy clay loam	GC, GC-GM	A-1, A-2	0	0	40-55	35-50	25-45	15-30	25-40	5-15
	42-60	Extremely gravelly sandy loam	GP-GM, GW-GM	A-1	0	5-15	15-30	10-25	5-15	5-10	20-25	NP-5

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
77:												
Grizzle---------	0-1	Coarse sandy loam	SC-SM, SM	A-2	0	0	90-100	85-95	50-65	25-35	15-25	NP-5
	1-6	Clay loam	CL	A-6	0	0	95-100	85-100	75-100	60-75	30-35	10-15
	6-32	Loam	CL, CL-ML	A-4	0	0	95-100	85-100	70-95	50-75	25-30	5-10
	32-50	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
	50-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
78:												
Guest----------	0-6	Silty clay loam	ML, CL	A-4, A-6	0	0	100	100	95-100	85-95	35-40	10-20
	6-14	Silty clay loam, clay loam, silty clay	CL, ML	A-4, A-6	0	0	100	100	95-100	85-95	35-40	10-20
	14-39	Silty clay	CL, CH	A-7	0	0	100	100	95-100	90-95	40-50	20-30
	39-60	Fine sandy loam	SC-SM, CL-ML	A-4	0	0	100	95-100	65-85	40-55	20-25	NP-5
79:												
Guest----------	0-7	Silty clay loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	80-95	70-90	25-40	5-15
	7-60	Clay, clay loam, silty clay	CH, CL	A-7	0	0	90-100	90-100	80-100	70-95	40-55	20-35
80:												
Guest----------	0-6	Silty clay loam	ML, CL	A-4, A-6	0	0	100	100	95-100	85-95	35-40	10-20
	6-14	Silty clay loam, clay loam, silty clay	CL, ML	A-4, A-6	0	0	100	100	95-100	85-95	35-40	10-20
	14-39	Silty clay	CL, CH	A-7	0	0	100	100	95-100	90-95	40-50	20-30
	39-60	Fine sandy loam	SC-SM, CL-ML	A-4	0	0	100	95-100	65-85	40-55	20-25	NP-5
81:												
Guest----------	0-9	Silty clay	ML, CL	A-7, A-6	0	0	100	100	95-100	90-95	40-50	15-30
	9-60	Clay, clay loam, silty clay	CL	A-7, A-6	0	0	100	100	90-100	75-95	40-50	20-30
82:												
Guest----------	0-9	Silty clay	ML, CL	A-7, A-6	0	0	100	100	95-100	90-95	40-50	15-30
	9-60	Clay	CL	A-7, A-6	0	0	100	100	95-100	90-95	40-50	20-30
83:												
Guest----------	0-9	Clay	ML, CL	A-7, A-6	0	0	100	100	95-100	90-95	40-50	20-30
	9-60	Clay	CL	A-7, A-6	0	0	100	100	95-100	90-95	40-50	20-30

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
83:												
Cogswell--------	0-5	Silty clay loam	CL, ML	A-6, A-4	0	0	100	100	95-100	85-95	35-40	10-20
	5-20	Silty clay	CL	A-7, A-6	0	0	100	100	95-100	90-95	40-50	20-30
	20-33	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	40-55	20-35
	33-42	Clay loam	CL, ML	A-6, A-4	0	0	100	100	90-100	70-80	30-40	10-15
	42-53	Fine sandy loam	CL-ML, SC-SM, SM, ML	A-4	0	0	100	100	70-85	40-55	20-25	NP-5
	53-57	Loam	CL, CL-ML	A-4	0	0	100	100	80-95	55-75	25-30	5-10
	57-63	Silty clay loam	CL, ML	A-6, A-4	0	0	100	95-100	95-100	85-95	35-40	10-20
84:												
Guest----------	0-1	Clay loam	CL	A-6	0	0	100	95-100	85-100	65-80	35-40	15-20
	1-10	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	10-38	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
	38-60	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-55	20-35
Riveroad--------	0-14	Fine sandy loam	CL-ML, ML, SM, SC-SM	A-4	0	0	100	95-100	70-85	40-55	20-25	NP-5
	14-22	Silt loam	CL, CL-ML	A-4	0	0	100	95-100	85-100	65-90	25-30	5-10
	22-33	Silty clay loam	CL	A-6	0	0	100	95-100	90-100	80-95	30-35	10-15
	33-53	Silty clay	CL	A-7	0	0	100	95-100	90-100	85-95	40-50	20-30
	53-60	Sandy loam	SC-SM, SM	A-2	0	0	90-100	85-95	50-65	25-35	20-25	NP-5
85:												
Hantz----------	0-3	Silt loam	CL, ML, CL-ML	A-4	0	0	95-100	90-100	80-100	65-90	25-35	5-10
	3-14	Silty clay loam	CL, ML	A-6	0	0	100	95-100	90-100	80-95	35-40	10-15
	14-42	Silty clay	CL	A-7	0	0	100	95-100	90-100	85-95	40-50	20-30
	42-60	Silty clay	CL	A-7	0	0	100	95-100	90-100	85-95	40-50	20-30
86:												
Haplustolls-----	0-2	Slightly decomposed plant material	---	---	---	---	---	---	---	---	---	---
	2-8	Very cobbly loamy sand	SM, SP-SM	A-1, A-2	0	55-60	75-80	70-75	35-55	10-20	10-15	NP
	8-27	Very cobbly coarse sandy loam	SC-SM, SM	A-1	0	50-55	75-80	70-75	30-45	15-20	20-25	NP-5
	27-37	Very cobbly coarse sand	SP, SP-SM	A-1	0	55-60	75-80	70-75	30-35	0-5	10-15	NP
	37-42	Very cobbly sandy loam	GC-GM, GM, SM, SC-SM	A-1	0	35-40	55-60	50-55	30-35	15-20	20-25	NP-5
	42-60	Extremely gravelly coarse sand	GP, GP-GM	A-1	0	10-15	25-30	20-25	10-15	0-5	10-15	NP

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
86:												
Fluvaquents-----	0-1	Extremely cobbly fine sandy loam	GC-GM, GM	A-1, A-2	0	55-60	55-60	50-55	35-45	20-30	15-25	NP-5
	1-2	Extremely cobbly coarse sand	SP, SP-SM	A-1	0	60-65	55-60	50-55	20-25	0-5	10-15	NP
	2-5	Extremely cobbly fine sandy loam	GC-GM, GM	A-1, A-2	0	70-75	50-55	45-50	30-45	20-30	15-25	NP-5
	5-20	Extremely cobbly fine sandy loam	GC-GM, GM	A-2	0	70-75	60-65	55-60	40-50	25-35	15-25	NP-5
	20-60	Extremely cobbly coarse sand	SP, SP-SM	A-1	0	80-85	55-70	50-65	20-30	0-5	10-15	NP
87:												
Haplustolls-----	0-2	Slightly decomposed plant material	---	---	---	---	---	---	---	---	---	---
	2-10	Gravelly fine sandy loam	GC, SM, GC-GM, GM	A-1, A-2, A-4	0	0	55-80	50-75	35-55	20-40	10-20	NP-10
	10-22	Extremely cobbly coarse sand	SP, SP-SM	A-1	0	65-70	60-65	55-60	20-25	0-5	10-15	NP-5
	22-60	Extremely cobbly coarse sand	SP, SP-SM	A-1	0	75-80	70-75	65-70	25-35	0-5	10-15	NP-5
Fluvaquents-----	0-10	Extremely cobbly coarse sand	SP, SP-SM	A-1	0	55-60	55-60	50-55	20-25	0-5	5-10	NP-5
	10-25	Extremely cobbly coarse sand	GP, GP-GM, SP-SM, SP	A-1	0	70-75	50-55	45-50	20-25	0-5	5-10	NP-5
	25-60	Extremely cobbly coarse sand	GP, GP-GM	A-1	0	80-85	35-40	30-35	15-20	0-5	5-10	NP-5

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
88:												
Hayhollow-------	0-2	Slightly decomposed plant material	---	---	---	---	---	---	---	---	---	---
	2-9	Sand	SC-SM, SW-SM, SM	A-3, A-1	0	0	100	90-100	45-70	5-15	15-20	NP
	9-22	Sandy loam	SC-SM, SM	A-2	0	0	100	95-100	55-70	25-40	20-25	NP-5
	22-34	Sand	SW-SM, SM, SC-SM	A-3, A-1	0	0	100	95-100	50-70	5-15	15-20	NP
	34-51	Sandy loam	SC-SM, SM	A-2	0	0	100	95-100	55-70	25-40	20-25	NP-5
	51-60	Sandy loam	SC-SM, SM	A-2	0	0	100	95-100	55-70	25-40	20-25	NP-5
Rafter----------	0-6	Gravelly fine sandy loam	SC-SM, SM	A-1, A-2	0-5	0-10	55-65	50-60	35-50	20-30	20-25	NP-5
	6-24	Extremely cobbly sandy loam	GM, GW-GM	A-1	0-5	50-60	20-30	15-25	9-18	5-10	20-25	NP-5
	24-42	Extremely cobbly coarse sand	GW, GW-GM	A-1	0-5	50-60	20-30	15-25	8-18	0-5	15-25	NP-5
	42-60	Extremely gravelly sandy loam	GW, GW-GM	A-1	0-5	20-30	20-30	15-25	9-18	5-10	20-25	NP-5
Riverwash-------	0-60	Stratified gravel	---	---	---	---	---	---	---	---	---	---
89:												
Kaboom----------	0-2	Very gravelly sandy loam	GC-GM, GC, GP-GC	A-1, A-2	0	0-5	30-55	25-50	15-30	5-15	20-30	5-10
	2-5	Clay loam	CL	A-6	0	0	90-100	90-100	90-100	65-75	30-40	15-25
	5-13	Clay loam	CL	A-6	0	0	90-100	90-100	90-100	65-75	30-40	15-25
	13-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Reeup----------	0-2	Loam	CL, CL-ML	A-4	0	0	90-100	90-100	75-90	55-75	25-30	5-10
	2-7	Gravelly clay loam	GC, CL, SC	A-6	0	0	55-80	50-75	50-70	35-55	30-40	10-20
	7-29	Clay loam, clay	CL	A-7	0	0	90-100	90-100	90-100	65-80	40-50	15-25
	29-32	Very gravelly clay loam	GC, GM	A-1, A-2	0	0	30-55	25-50	25-50	15-35	40-45	15-20
	32-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
90:												
Kahn fine sandy loam----------	0-8	Fine sandy loam	SC	A-4	0	0	100	100	70-85	40-55	20-25	NP-5
	8-18	Loam	CL, CL-ML	A-4	0	0	100	100	85-95	60-75	25-30	5-10
	18-60	Clay loam	CL	A-6	0	0	100	100	90-100	70-80	30-40	10-15
Kahn silt loam--	0-1	Silt loam	CL, CL-ML	A-4	0	0	100	100	90-100	70-90	25-30	5-10
	1-15	Loam	CL, CL-ML	A-4	0	0	100	100	85-95	60-75	25-30	5-10
	15-43	Clay loam	CL	A-6	0	0	100	100	90-100	70-80	30-40	10-15
	43-60	Clay loam	CL	A-6	0	0	100	100	90-100	70-80	30-40	10-15
91:												
Kahn----------	0-2	Loam	CL-ML, ML	A-6, A-4	0	0	90-100	85-95	70-80	50-70	25-30	5
	2-10	Clay loam	CL	A-6	0	0	80-90	75-85	65-85	50-70	30-40	10-15
	10-41	Clay loam	CL	A-6	0	0	90-100	85-95	75-95	60-75	30-40	10-15
	41-60	Clay loam	CL	A-6	0	0	85-100	80-95	70-95	55-75	30-40	10-15
Zapolote--------	0-1	Clay loam	ML, CL	A-6	0	0	100	95-100	85-100	65-80	30-40	10-15
	1-5	Clay loam	CL	A-6	0	0	95-100	90-100	80-100	60-80	30-40	10-20
	5-29	Clay	CL, CH	A-7	0	0	85-100	80-95	70-95	65-90	40-55	20-35
	29-60	Clay	CL	A-7	0	0	85-100	80-95	70-95	65-90	40-50	20-30
92:												
Karro----------	0-14	Loam	ML, CL-ML	A-4	0	0	100	95-100	80-95	60-75	25-30	5-10
	14-44	Clay loam	CL	A-4, A-6	0	0	100	95-100	85-100	65-80	30-40	10-15
	44-60	Clay loam	CL	A-6, A-4	0	0	100	95-100	85-100	65-80	30-40	10-15
93:												
Karro----------	0-14	Loam	ML, CL-ML	A-4	0	0	100	95-100	80-95	60-75	25-30	5-10
	14-44	Clay loam	CL	A-4, A-6	0	0	100	95-100	85-100	65-80	30-40	10-15
	44-60	Clay loam	CL	A-6, A-4	0	0	100	95-100	85-100	65-80	30-40	10-15
94:												
Keysto----------	0-9	Very cobbly sandy loam	SC-SM, SW-SM, SM	A-1, A-2	0-5	45-60	55-80	50-75	20-50	10-30	15-25	NP-5
	9-30	Extremely bouldery sandy loam	SC-SM, SM	A-1, A-2	25-35	40-50	45-70	40-65	25-50	15-30	15-25	NP-5
	30-60	Extremely bouldery coarse sand	GW, GW-GM, SW-SM, SW	A-1	40-50	25-35	45-70	40-65	20-45	3-10	15-25	NP-5
Riverwash-------	0-60	Stratified gravel	---	---	---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
95:												
Kuykendall------	0-1	Clay	CH, CL	A-6, A-4	0	0	100	100	90-100	75-95	40-50	15-30
	1-7	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	45-60	25-45
	7-18	Clay	CH	A-7	0	0	85-95	80-90	70-90	60-85	50-65	30-50
	18-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
96:												
Lanque----------	0-4	Sandy loam	SM, SC-SM	A-2	0	0	90-100	85-95	50-65	25-40	20-25	NP-5
	4-12	Sandy loam	SM, SC-SM	A-2	0	0	90-100	85-95	50-65	25-40	20-25	NP-5
	12-33	Fine sandy loam	SM, SC-SM	A-4	0	0	90-100	85-95	60-80	35-50	20-25	NP-5
	33-60	Loam	SM, SC-SM	A-4	0	0	90-100	85-95	70-80	50-70	20-25	NP-5
Stanford--------	0-2	Fine sandy loam	SM, SC-SM	A-2	0	0	100	95-100	65-85	40-50	20-25	NP-5
	2-10	Sandy loam	SM, SC-SM	A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	10-16	Sandy loam	SM, SC-SM	A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	16-30	Loam	CL, ML	A-4	0	0	100	95-100	80-95	60-75	30-30	5-10
	30-60	Clay loam	CL, ML	A-4	0	0	100	95-100	85-100	65-80	30-35	10
97:												
Libby----------	0-1	Very gravelly sandy loam	GC, GP-GC, GC-GM	A-1, A-2	0	0-5	30-45	25-40	15-30	5-15	20-30	5-15
	1-13	Clay	CH, CL	A-7	0	0	90-100	90-100	80-100	70-85	45-55	30-40
	13-25	Gravelly clay	CL, GC, CH, SC	A-7	0	0	55-80	50-75	45-70	40-65	45-55	30-40
	25-60	Very gravelly clay loam	GC	A-2	0	0-5	30-45	25-40	20-40	15-30	35-50	20-35
Gulch----------	0-1	Gravelly fine sandy loam	GC-GM, GM, SM, SC-SM	A-1, A-2	0	0	55-80	50-75	35-55	20-35	10-25	NP-10
	1-3	Sandy loam	SC, SC-SM, SM	A-2, A-4	0	0	90-100	90-100	55-70	25-40	10-25	NP-10
	3-10	Sandy clay loam	SC	A-2, A-6	0	0	90-100	90-100	70-90	30-50	25-40	15-25
	10-24	Clay loam	CL	A-6	0	0	90-100	90-100	90-100	65-80	30-40	10-15
	24-40	Gravelly clay loam	GC, SC	A-6	0	0	55-80	50-75	45-65	35-45	30-40	10-20
	40-60	Gravelly clay loam	GC, SC	A-6	0	0	55-80	50-75	45-65	35-45	30-40	10-20

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
98:												
Luckyhills------	0-3	Loamy sand	SC-SM, SM	A-1, A-2	0	0	90-100	85-95	40-70	15-25	15-20	NP-5
	3-26	Sandy loam, fine sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-95	50-80	25-50	15-25	NP-5
	26-34	Gravelly sandy loam	SC-SM, SM	A-1, A-2	0	0	75-90	70-85	40-60	20-35	15-25	NP-5
	34-60	Silt loam	CL, CL-ML	A-4	0	0	90-100	85-95	75-95	60-85	20-30	5-10
99:												
Luckyhills------	0-2	Very gravelly sandy loam	GC-GM, GM, GP-GM	A-1	0	0	40-55	35-50	20-35	10-15	15-25	NP-5
	2-13	Gravelly sandy loam	SC, GC-GM, SC-SM, SM	A-1, A-2	0	0	55-80	50-75	30-50	15-30	15-30	NP-10
	13-31	Sandy loam	SC, SM, SC-SM	A-2	0	0	85-95	80-90	50-60	25-35	15-30	NP-10
	31-39	Gravelly sandy loam	SC, GC-GM, SC-SM, SM	A-1, A-2	0	0	55-80	50-75	30-50	15-30	15-30	NP-10
	39-60	Gravelly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0	0	60-80	55-75	45-70	30-45	20-30	5-10
McNeal----------	0-1	Very gravelly sandy loam	GM, GC-GM, GP-GM	A-1	0	0	40-55	35-50	20-35	10-20	15-25	NP-5
	1-21	Clay loam	CL, ML	A-6	0	0	90-100	85-95	75-95	60-75	35-40	10-15
	21-41	Sandy clay loam	SC, SC-SM	A-2, A-6, A-4	0	0	85-95	80-90	65-80	30-50	20-40	5-15
	41-60	Sandy loam	SC-SM, SM	A-2	0	0	85-95	80-90	50-60	25-35	15-25	NP-5
100:												
Lutzcan---------	0-2	Very cobbly sandy clay loam	GC-GM, SC, GC, SC-SM	A-2, A-1, A-4, A-6	0-5	25-50	45-80	40-75	30-70	15-40	25-35	5-15
	2-18	Very cobbly clay loam, very cobbly loam	CL, GC, SC	A-6	0-5	40-55	65-95	60-90	50-90	35-70	30-40	10-20
	18-60	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
Yarbam----------	0-2	Very gravelly loam	GC-GM, GP-GC, GM	A-1, A-4	0-5	0-20	25-55	20-50	15-50	10-40	15-25	NP-5
	2-9	Very gravelly loam	GC-GM, GM	A-1, A-4	0	0-10	45-55	40-50	35-50	25-40	15-25	NP-5
	9-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
101:												
Mabray----------	0-5	Very cobbly loam	GC, GC-GM	A-2, A-4	0	25-40	55-70	50-65	40-60	30-50	20-30	5-10
	5-11	Extremely cobbly loam, very cobbly loam	GC-GM, GC, GP-GC, SC	A-2, A-1, A-4	0	25-50	25-70	20-65	15-60	10-50	20-30	5-10
	11-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Chiricahua------	0-1	Very gravelly clay loam	GP-GC, GC, SC, SP-SC	A-2	0	0	50-70	30-50	20-40	10-30	25-45	15-25
	1-20	Gravelly clay, gravelly clay loam, clay	GC, CL, SC	A-7	0	0	70-90	60-85	45-65	40-55	40-50	15-25
	20-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
102:												
Mabray----------	0-8	Extremely cobbly loam	GC, GC-GM, GP-GC	A-1, A-2	0	35-50	25-35	20-30	15-30	10-20	20-30	5-10
	8-11	Extremely cobbly loam, very cobbly loam	GC-GM, GP-GC, GC, SC	A-1, A-2, A-4	0	25-50	25-70	20-65	15-60	10-50	20-30	5-10
	11-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
103:												
Magoffin--------	0-2	Sandy loam	SC-SM, SM	A-4, A-2	0	0-10	100	95-100	60-70	30-40	20-25	NP-5
	2-12	Sandy loam	SC-SM, SM	A-4, A-2	0	10-20	95-100	90-100	55-70	30-40	20-25	NP-5
	12-15	Cobbly sandy loam	SC-SM, SM	A-2, A-1	0	20-30	85-95	80-90	50-60	25-35	20-25	NP-5
	15-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
103:												
Cherrycow-------	0-2	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	95-100	55-70	25-40	20-25	NP-5
	2-11	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	100	60-70	30-40	20-25	NP-5
	11-25	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	40-60	20-45
	25-33	Sandy clay	CH, SC, CL	A-7	0	0	100	100	85-95	45-60	40-50	20-30
	33-40	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	100	60-70	30-40	20-25	NP-5
	40-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
104:												
Major fine sandy loam----------	0-2	Fine sandy loam	SC-SM, SM	A-4	0	0	90-100	90-100	65-85	35-45	20-25	NP-5
	2-7	Sandy loam	SC-SM, SM	A-2-4, A-4	0	0	90-100	90-100	55-70	25-40	20-25	NP-5
	7-22	Gravelly loam	GC, GC-GM, SC-SM, SC	A-2, A-4	0	0-5	55-80	50-75	40-65	25-50	20-30	5-10
	22-36	Loam	CL, CL-ML	A-4	0	0	90-100	90-100	75-90	55-75	20-30	5-10
	36-60	Clay loam	CL	A-6	0	0	90-100	90-100	90-100	65-80	30-40	10-20
Major silt loam	0-7	Silt loam	ML	A-4	0	0	100	95-100	85-100	65-90	20-30	NP-5
	7-21	Fine sandy loam	SC-SM, SM	A-4	0	0	100	95-100	70-85	40-50	20-25	NP-5
	21-50	Loam	CL, CL-ML	A-4	0	0	100	95-100	80-95	60-75	25-30	5-10
	50-60	Silty clay	CL	A-7	0	0	100	95-100	95-100	85-95	40-50	20-30
105:												
Mallet----------	0-2	Sandy loam	SW-SM, SM, SC-SM	A-2	0	0	90-100	85-100	50-70	25-40	20-25	NP-5
	2-18	Sandy loam	SW-SM, SC-SM, SM	A-2	0	0	95-100	85-100	50-70	25-40	25-30	5
	18-35	Fine sandy loam	SW-SM, SC-SM, SM	A-3, A-2	0	0	95-100	85-100	60-85	35-50	20-25	NP-5
	35-45	Gravelly sandy loam	SW-SM, SM	A-1, A-2	0	0	70-85	65-80	40-55	20-35	15-25	NP-5
	45-60	Gravelly sand	GW, GM, GW-GM	A-3, A-1, A-2	0	0	60-75	55-70	30-40	3-10	15-20	NP
Hooks----------	0-2	Sandy loam		A-2	0	0	90-100	85-100	50-70	25-40	20-25	NP-5
	2-14	Silty clay loam		A-6	0	0	90-100	85-100	80-95	70-85	30-40	10-15
	14-46	Silty clay loam		A-6	0	0	90-100	85-100	80-95	70-85	30-40	10-15
	46-60	Clay loam		A-6	0	0	90-100	85-100	75-100	65-80	30-40	10-15
106:												
Marsh.												
107:												
McAllister------	0-8	Loam	ML, CL-ML	A-4	0	0	100	95-100	80-95	60-75	25-30	5-10
	8-27	Clay loam	ML, CL	A-4, A-6	0	0	100	95-100	85-100	65-80	30-40	10-15
	27-60	Clay loam	ML, CL	A-4, A-6	0	0	100	95-100	85-100	65-80	30-40	10-15

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
108:												
McAllister------	0-2	Gravelly fine sandy loam	GC-GM, GM, SM, SC-SM	A-2, A-4	0	0	55-80	50-75	45-65	25-40	20-25	NP-5
	2-35	Gravelly sandy clay loam	GC, SC	A-2, A-6	0	0	55-80	50-75	40-65	18-40	30-40	10-15
	35-60	Sandy loam	SC, SC-SM	A-1, A-2	0	0	80-95	75-90	45-60	20-35	20-30	5-10
Stronghold------	0-1	Very gravelly loamy sand	GP-GM, GW-GM	A-1	0	0-5	30-50	25-45	15-35	5-10	15-20	NP-5
	1-25	Gravelly sandy loam, gravelly fine sandy loam	GC-GM, GC, SC, SC-SM	A-1, A-2	0	0-5	55-80	50-75	30-50	15-30	20-25	5-10
	25-60	Gravelly sandy loam, gravelly loamy sand	GM, SC-SM, GC-GM, SM	A-1, A-2	0	0-5	55-80	50-75	20-50	10-30	15-25	NP-5
109:												
McNeal----------	0-2	Gravelly sandy loam	SM, SC-SM	A-1, A-2	0	0	65-75	60-70	35-50	20-30	20-25	NP-5
	2-5	Loam	CL-ML, ML	A-4	0	0	95-100	90-100	75-95	55-75	25-30	5-10
	5-24	Gravelly clay loam	ML, CL	A-4, A-6	0	0	65-75	60-70	55-70	40-55	30-40	10-15
	24-53	Loam	CL, CL-ML	A-4	0	0	95-100	90-100	75-95	55-75	25-30	5-10
	53-60	Loamy fine sand	SC-SM, SM	A-2, A-1	0	0	85-95	80-90	45-70	15-20	15-25	NP-5
110:												
McNeal----------	0-2	Gravelly sandy loam	SM, SC-SM	A-1, A-2	0	0	65-75	60-70	35-50	20-30	20-25	NP-5
	2-5	Loam	CL-ML, ML	A-4	0	0	95-100	90-100	75-95	55-75	25-30	5-10
	5-24	Gravelly clay loam	ML, CL	A-4, A-6	0	0	65-75	60-70	55-70	40-55	30-40	10-15
	24-53	Loam	CL, CL-ML	A-4	0	0	95-100	90-100	75-95	55-75	25-30	5-10
	53-60	Loamy fine sand	SC-SM, SM	A-2, A-1	0	0	85-95	80-90	45-70	15-20	15-25	NP-5
111:												
Monzingo--------	0-9	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	90-95	85-90	60-75	35-50	15-20	NP-5
	9-30	Loam	CL-ML, ML	A-4	0	0	90-100	85-100	70-95	50-75	15-25	NP-5
	30-60	Fine sandy loam, loam	CL-ML, SC-SM	A-2, A-4	0	0	90-100	85-100	60-95	35-75	20-25	NP-5
Ugyp----------	0-4	Sandy loam	SC-SM, SM	A-2	0	0	95-100	90-100	55-70	25-40	20-25	NP-5
	4-10	Fine sandy loam	SC-SM, SM	A-2	0	0	90-100	85-100	60-85	35-55	20-25	NP-5
	10-33	Loam	CL-ML, ML	A-4	0	0	95-100	90-100	75-85	55-75	20-25	NP-5
	33-60	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	80-100	60-90	20-25	NP-5

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
111:												
Ugyp----------	0-4	Sandy loam	SC-SM, SM	A-2	0	0	95-100	90-100	55-70	25-40	20-25	NP-5
	4-10	Fine sandy loam	SC-SM, SM	A-2	0	0	90-100	85-100	60-85	35-55	20-25	NP-5
	10-33	Loam	CL-ML, ML	A-4	0	0	95-100	90-100	75-85	55-75	20-25	NP-5
	33-60	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	80-100	60-90	20-25	NP-5
112:												
Naco----------	0-2	Fine sandy loam	SC-SM, SM	A-4	0	0	95-100	90-100	60-85	35-50	20-25	NP-5
	2-8	Sandy loam	SC-SM, SM	A-2	0	0	95-100	90-100	55-70	25-40	20-25	NP-5
	8-15	Very cobbly clay	GC	A-7	0	25-40	50-65	45-60	40-60	35-50	40-50	20-30
	15-44	Very cobbly clay	GC	A-7	0	30-50	40-65	35-60	30-60	25-50	40-50	20-30
	44-60	Clay	CH, CL	A-7	0	0	100	95-100	85-100	70-95	40-50	20-30
Ruins, thick surface--------	0-22	Loamy fine sand	SM	A-2, A-4	0	0	100	95-100	65-80	30-45	10-15	NP-5
	22-27	Loamy fine sand	SM	A-2, A-4	0	0	100	95-100	65-80	30-45	10-15	NP-5
	27-40	Clay	CH, CL	A-7	0	0	100	95-100	85-100	70-95	44-55	25-35
	40-60	Cobbly clay	CH, CL	A-7	0	20-35	75-90	70-85	65-80	50-80	45-55	25-35
Ruins----------	0-5	Fine sandy loam	SC-SM, SM	A-2	0	0	85-100	80-95	55-80	30-50	20-25	NP-5
	5-9	Gravelly clay loam	SC, SM	A-6	0	0-5	65-80	60-75	55-75	40-60	35-40	10-15
	9-28	Clay	CH, CL	A-7	0	0	100	95-100	85-100	70-95	45-55	25-35
	28-60	Very cobbly clay loam	GC, GM	A-2, A-6	0	30-50	45-65	40-60	35-60	25-50	35-40	10-15
113:												
Nolam----------	0-1	Fine sandy loam	SC-SM, SM	A-4	0	0	90-100	85-95	60-80	35-50	20-25	NP-5
	1-19	Very cobbly sandy clay loam	GM, GC, SC, SM	A-1, A-2	0	25-45	45-65	40-60	35-60	20-35	30-40	5-15
	19-38	Extremely cobbly sandy loam	GP-GM, GM, GW, GW-GM	A-1	0-5	45-65	20-40	15-35	10-25	5-15	25-30	NP-5
	38-60	Extremely cobbly sandy loam	GP-GM, GW, GP, GW-GM	A-1	0-5	45-65	15-35	10-30	6-20	3-10	20-25	NP-5
Libby----------	0-1	Gravelly fine sandy loam	GM, SM	A-1, A-2, A-4	0	0	60-75	55-70	40-60	20-40	20-30	NP-5
	1-8	Loam	CL, CL-ML	A-4	0	0	95-100	90-100	75-95	55-75	25-30	5-10
	8-23	Clay	CL	A-7	0	0	95-100	90-100	80-100	70-95	40-50	20-30
	23-60	Clay loam	CL	A-6, A-7	0	0	95-100	90-100	80-100	65-80	30-45	10-20

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
113:												
Buntline--------	0-1	Gravelly fine sandy loam	GC-GM, SM, GM, SC-SM	A-2, A-1, A-4	0	0	60-75	55-70	40-60	20-40	20-25	NP-5
	1-8	Sandy loam	SC-SM, SM	A-2, A-4	0	0	85-100	80-95	50-65	25-40	15-25	NP-5
	8-23	Petrocalcic material			0	0	---	---	---	---	---	---
	23-47	Extremely cobbly sandy loam	GP-GM, GM, GW-GM	A-1	0	50-75	55-65	50-60	20-30	10-20	20-30	NP-5
	47-60	Sandy clay loam	SM	A-2, A-4	0	0	85-100	80-95	65-85	30-50	30-35	5-10
114:												
Outlaw----------	0-1	Silty clay loam	ML, CL	A-6	0	0	100	100	95-100	85-95	35-40	10-20
	1-32	Clay	CH	A-7	0	0	100	95-100	90-100	75-95	60-70	40-55
	32-46	Loam	ML	A-4	0	0-10	90-100	80-100	70-95	45-75	30-35	5-10
	46-60	Clay loam	ML, CL	A-6	0	0	90-100	85-100	70-95	50-70	35-40	10-20
Epitaph---------	0-1	Silty clay loam	CL, ML	A-7, A-6	0	0-5	95-100	90-100	85-100	75-95	35-40	10-20
	1-9	Silty clay	CH, CL	A-7	0	0	90-100	85-100	80-100	75-95	40-60	20-45
	9-24	Clay	CH, CL	A-7	0	0	100	95-100	90-100	70-95	40-60	20-45
	24-33	Petrocalcic material	---	---	---	---	---	---	---	---	---	---
	33-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Paramore--------	0-1	Silty clay loam	CL, ML	A-7, A-6	0	0-5	100	95-100	90-100	80-95	35-40	10-20
	1-8	Clay	CH, CL	A-7	0	0	100	95-100	85-100	70-95	40-60	20-45
	8-22	Clay	CH, CL	A-7	0	0	90-100	85-100	75-100	65-80	40-60	20-45
	22-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
115:												
Oversight-------	0-3	Gravelly sandy loam	SC-SM, SM	A-2, A-1	0	0-5	55-65	50-60	30-40	15-25	20-25	NP-5
	3-14	Very gravelly sandy loam	GC-GM	A-2, A-1	0	0-15	40-50	35-45	20-30	10-20	25-25	NP-5
	14-29	Very cobbly loam	SC-SM, SC	A-4	0	10-35	50-60	45-55	40-50	30-40	25-30	5-10
	29-48	Very gravelly sandy clay loam	GC, GM	A-2	0	0-5	35-50	30-45	25-35	10-25	30-40	5-15
	48-60	Extremely gravelly sandy clay loam	GC, GM	A-2	0	0-5	20-30	15-25	12-20	5-15	30-40	5-15

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
116:												
Oversight-------	0-1	Sandy loam	SC-SM, SM	A-4, A-2	0	0	100	95-100	55-70	30-40	20-25	NP-5
	1-7	Sandy loam	SC-SM, SM	A-4, A-1	0	0	85-95	80-90	50-60	25-35	20-25	NP-5
	7-15	Gravelly sandy loam	SC-SM, SM	A-1	0	0-10	55-65	50-60	30-40	15-25	20-25	NP-5
	15-42	Extremely cobbly sandy loam	GW-GM, GM, GW	A-1	0	40-50	20-30	15-25	10-20	5-10	20-25	NP-5
	42-60	Extremely gravelly loamy sand	GW-GM, GW	A-1	0	20-30	15-25	10-20	5-15	3-10	20-25	NP-5
117:												
Oversight-------	0-1	Fine sandy loam	SC-SM, SM	A-4	0	0	95-100	90-100	60-85	35-55	20-25	NP-5
	1-12	Sandy loam	SC-SM, SM	A-2, A-4	0	0-10	95-100	90-100	55-70	25-40	20-25	NP-5
	12-25	Very cobbly sandy loam	GC-GM, SP-SM, GM	A-1	0	25-40	45-65	40-60	25-40	10-25	20-25	NP-5
	25-45	Very cobbly sandy loam	SC-SM, SM	A-1	0	40-50	50-70	45-65	25-40	15-25	20-25	NP-5
	45-60	Very cobbly sandy clay loam	SM	A-2	0-10	25-40	50-70	45-65	35-60	15-35	30-35	5-10
Lanque----------	0-3	Loamy sand	SC-SM, SM	A-1, A-2	0	0	90-100	85-95	40-70	15-20	15-25	NP-5
	3-25	Sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-95	50-65	25-40	15-25	NP-5
	25-60	Sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-95	50-65	25-40	15-25	NP-5
118:												
Pedregosa-------	0-1	Very gravelly fine sandy loam	GC-GM, GM, GP-GM	A-1, A-2	0	0	30-55	25-50	20-45	10-30	15-25	NP-10
	1-7	Very gravelly fine sandy loam	GC-GM, GP-GM, GM	A-1, A-2	0	0	30-55	25-50	20-45	10-30	15-25	NP-10
	7-13	Petrocalcic material	---	---	---	---	---	---	---	---	---	---
	13-60	Very gravelly sandy loam, gravelly sandy loam	GC-GM, GM, SM, SC-SM	A-1	0	0	35-65	30-60	25-50	15-25	15-25	NP-10

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
119:												
Pedregosa-------	0-2	Gravelly sandy loam	SC-SM, SM	A-1	0	0	60-70	55-65	30-45	15-25	20-25	NP-5
	2-13	Very gravelly loam	GC-GM, GM	A-2, A-1	0	0-10	40-50	35-45	30-45	20-35	20-25	NP-5
	13-18	Very cobbly fine sandy loam	GC-GM, GM	A-2, A-1	0	15-25	55-65	50-60	35-50	20-30	20-25	NP-5
	18-60	Petrocalcic material	---	---	---	---	---	---	---	---	---	---
Tombstone-------	0-2	Very gravelly sandy loam	GC-GM, GM	A-1	0	0	40-50	35-45	20-30	10-20	20-25	NP-5
	2-15	Very gravelly sandy loam	GC-GM, GM	A-1	0	0-10	35-45	30-40	20	10-15	20-25	NP-5
	15-60	Extremely gravelly sandy loam	GW-GC, GC-GM, GW-GM	A-1	0	25-35	25-35	20-30	10-20	5-15	20-25	NP-5
120:												
Perilla---------	0-5	Sandy loam	SC-SM, SM	A-4, A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	5-21	Sandy loam	SC-SM, SM	A-4, A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	21-29	Fine sandy loam	ML, SM, SC-SM	A-4	0	0	100	95-100	65-85	40-55	20-25	NP-5
	29-60	Gravelly sandy loam	SC-SM, SM	A-2, A-4, A-1	0	0	65-75	60-70	35-50	20-30	20-25	NP-5
Durazo----------	0-10	Loamy sand	SM	A-2	0	0	100	95-100	50-75	15-30	15-20	NP
	10-31	Loamy sand	SM	A-2	0	0	100	95-100	50-75	15-30	15-20	NP
	31-60	Sand	SW-SM, SM	A-1, A-3	0	0	100	95-100	50-70	5-15	15-20	NP
121:												
Pits.												
122:												
Pits.												
Dumps.												

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
123:												
Quiburi---------	0-1	Slightly decomposed plant material	---	---	---	---	---	---	---	---	---	---
	1-6	Very fine sandy loam	CL-ML, ML	A-4	0	0	100	95-100	80-95	50-65	20-25	NP-5
	6-36	Very fine sandy loam	CL-ML, ML	A-4	0	0	100	95-100	80-95	50-65	20-25	NP-5
	36-51	Stratified very fine sandy loam to silt loam	CL-ML, ML	A-4	0	0	100	95-100	80-100	50-90	20-25	NP-5
	51-60	Very fine sandy loam	CL-ML, ML	A-4	0	0	100	95-100	80-95	50-65	20-25	NP-5
Fluvaquents-----	0-4	Coarse sand	SM, SP-SM, SW-SM	A-1, A-2, A-3	0	0-5	90-100	85-95	45-65	5-15	10-20	NP-5
	4-20	Coarse sand	SM, SW-SM, SP-SM	A-1, A-2, A-3	0	0-5	90-100	85-95	45-65	5-15	10-20	NP-5
	20-50	Gravelly coarse sand	SP, SP-SM, SW	A-1	0	25-40	75-90	70-85	25-35	0-5	10-20	NP-5
Riverwash-------	0-60	Stratified gravel	---	---	---	---	---	---	---	---	---	---
124:												
Rafter----------	0-2	Gravelly sandy loam	SC-SM, SM	A-1	0	0-5	55-65	50-60	30-40	15-25	20-25	NP-5
	2-12	Very gravelly sandy loam	GC-GM, GM	A-1	0	0-5	45-55	40-50	25-35	10-20	20-25	NP-5
	12-28	Extremely gravelly sandy loam	GW, GW-GM	A-1	0	25-35	20-30	15-25	10-20	5-10	20-25	NP-5
	28-60	Extremely gravelly coarse sand	GW	A-1	0	20-30	10-20	5-15	3-10	0-5	15-25	NP-5
Lanque----------	0-2	Fine sandy loam	SC-SM, SM	A-2	0	0	85-95	80-90	55-75	30-50	20-25	NP-5
	2-24	Sandy loam	SC-SM, SM	A-2	0	0	85-95	80-90	50-65	25-35	20-25	NP-5
	24-50	Gravelly sandy loam	SC-SM, SM	A-2, A-1	0	0	70-80	65-75	40-50	20-30	20-25	NP-5
	50-60	Gravelly sandy loam	SC-SM, SM	A-2, A-1	0	0	70-80	65-75	40-50	20-30	20-25	NP-5

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
125:												
Riveroad--------	0-1	Silt loam	CL, CL-ML	A-4	0	0	100	95-100	85-100	65-90	25-30	5-10
	1-21	Silt loam	CL, CL-ML	A-4	0	0	100	95-100	85-100	65-90	25-30	5-10
	21-60	Silty clay loam	CL	A-6	0	0	100	95-100	90-100	80-95	30-35	10-15
Ubik----------	0-5	Loam	CL-ML, ML	A-4	0	0	95-100	90-100	75-95	55-75	20-25	NP-5
	5-16	Silt loam	CL-ML, ML	A-4	0	0	95-100	90-100	80-100	65-90	20-25	NP-5
	16-60	Fine sandy loam	ML, SC-SM, CL-ML, SM	A-4	0	0	90-100	85-100	60-85	35-55	20-25	NP-5
126:												
Riverwash-------	0-60	Stratified gravel	---	---	---	---	---	---	---	---	---	---
127:												
Riverwash-------	0-60	Stratified gravel	---	---	---	---	---	---	---	---	---	---
Bodecker--------	0-3	Loamy fine sand	SC-SM, SM	A-2	0	0-5	90-100	85-95	55-75	20-30	15-25	NP-5
	3-12	Gravelly sand	GM, GP-GM, SM, SC-SM	A-1, A-3, A-2	0	0-5	55-80	50-75	30-60	5-15	15-25	NP-5
	12-29	Very gravelly coarse sand	GP-GM, GP, GW	A-1	0	0-5	30-50	25-45	10-15	0-5	15-25	NP-5
	29-48	Gravelly sand	SP, SP-SM	A-1	0	0-5	55-80	50-75	25-50	0-10	15-25	NP-5
	48-60	Very gravelly coarse sand	GP, GW, GP-GM	A-1	0	0-5	30-50	25-45	10-15	0-5	15-25	NP-5
128:												
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Magoffin--------	0-3	Cobbly sandy loam	SC-SM, SM	A-2, A-4, A-1	0	30-40	90-100	85-95	50-65	25-40	20-25	NP-5
	3-13	Sandy loam	SC-SM, SM	A-4, A-2, A-1	0	5-15	100	95-100	55-70	30-40	20-25	NP-5
	13-15	Loamy sand	SC-SM, SM	A-1	0	0-10	85-95	80-90	40-70	10-30	20-25	NP-5
	15-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
129:												
Sasabe sandy loam----------	0-5	Sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-100	50-70	25-40	20-25	NP-5
	5-13	Sandy clay loam	SC	A-2, A-6	0	0	90-100	85-95	65-85	30-50	30-40	10-15
	13-36	Clay	CH, CL	A-6, A-7	0	0	95-100	90-100	80-100	70-95	35-65	15-45
	36-54	Sandy clay loam	SC, SC-SM	A-2, A-4, A-6	0	0	90-100	85-95	65-85	30-50	25-40	5-15
	54-60	Clay loam	CL	A-6, A-7	0	0	95-100	90-100	80-100	65-80	30-45	10-20

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
129:												
Sasabe silt loam	0-4	Silt loam	CL, CL-ML	A-4	0	0	95-100	90-100	80-100	60-90	25-30	5-10
	4-13	Clay loam	CL	A-6, A-7	0	0	95-100	90-100	80-100	65-80	30-45	10-25
	13-43	Clay	CH, CL	A-6, A-7	0	0	95-100	90-100	80-100	70-95	35-65	15-45
	43-60	Sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-100	50-70	25-40	20-25	NP-5
130:												
Sasabe----------	0-7	Gravelly sandy loam	SC-SM, SM	A-2, A-1	0	0	65-75	60-70	35-50	20-30	20-25	NP-5
	7-10	Sandy loam	SC-SM, SM	A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	10-20	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	40-60	20-45
	20-30	Sandy clay loam	SC, SM	A-4, A-6	0	0	100	95-100	75-90	30-55	30-40	10-15
	30-60	Sandy clay loam	SC, SM	A-6, A-4	0	0	100	95-100	75-90	30-55	30-40	10-15
131:												
Sasabe----------	0-7	Gravelly sandy loam	SC-SM, SM	A-2, A-1	0	0	65-75	60-70	35-50	20-30	20-25	NP-5
	7-10	Sandy loam	SC-SM, SM	A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	10-20	Clay	CH, CL	A-7	0	0	100	100	90-100	75-95	40-60	20-45
	20-30	Sandy clay loam	SC, SM	A-4, A-6	0	0	100	95-100	75-90	30-55	30-40	10-15
	30-60	Sandy clay loam	SC, SM	A-6, A-4	0	0	100	95-100	75-90	30-55	30-40	10-15
132:												
Schiefflin------	0-6	Very stony loamy sand	SC-SM, SM, SP-SM	A-1, A-2	35-50	0-5	75-95	70-90	35-65	10-15	15-20	NP-5
	6-18	Gravelly sand	SP-SM, SP, SW, SW-SM	A-1	0	0-5	65-80	60-75	30-50	3-10	15-20	NP-5
	18-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
133:												
Stronghold------	0-2	Gravelly fine sandy loam	SM, SC-SM	A-4, A-2	0	0-5	65-75	60-70	40-60	25-40	20-25	NP-5
	2-9	Fine sandy loam	SM, SC-SM	A-4	0	0-5	90-100	85-95	60-80	35-50	20-25	NP-5
	9-49	Gravelly loam	SC-SM, SM	A-4	0	0-5	65-75	60-70	50-65	35-50	20-25	NP-5
	49-54	Loam	CL-ML, ML	A-4	0	0-5	95-100	90-100	75-95	55-75	20-25	NP-5
	54-60	Gravelly loam	SC-SM, SM	A-4	0	0-5	65-75	60-70	50-65	35-50	20-25	NP-5

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
134:												
Stronghold------	0-8	Very gravelly loam	GC-GM, GC, GP-GC	A-1, A-2	0	0-5	30-50	25-45	20-45	10-35	20-25	5-10
	8-20	Gravelly sandy loam, gravelly fine sandy loam	GC-GM, GC, SC, SC-SM	A-1, A-2	0	0-5	55-80	50-75	30-50	15-30	20-25	5-10
	20-60	Gravelly sandy loam, gravelly loamy sand	GM, GC-GM, SC-SM, SM	A-1, A-2	0	0-5	55-80	50-75	20-50	10-30	15-25	NP-5
Bernardino------	0-2	Very gravelly fine sandy loam	GC-GM, GC, SC, SC-SM	A-1, A-2, A-4	0	0-5	55-80	50-75	35-45	20-40	20-25	5-10
	2-15	Clay loam, clay	CL	A-6, A-7	0	0-5	90-100	85-95	75-95	60-90	35-50	15-30
	15-18	Gravelly clay loam	CL, GC, SC	A-6, A-7	0	0-5	55-80	50-75	45-75	35-60	25-45	10-20
	18-60	Gravelly sandy loam, gravelly loamy sand	GP-GM, GM, SC-SM, SM	A-1, A-2	0	0-5	55-80	50-75	25-50	10-30	15-25	NP-5
135:												
Surge-----------	0-2	Sandy loam	SC-SM, SM	A-4, A-2	0	0	95-100	90-100	55-70	25-40	20-25	NP-5
	2-7	Sandy clay loam	SC-SM, SC, CL	A-4, A-2	0	0	95-100	85-100	50-90	25-55	25-30	5-10
	7-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
136:												
Sutherland------	0-1	Gravelly fine sandy loam	GC-GM, GM	A-1, A-2	0	0	60-75	55-70	40-50	15-30	15-25	NP-5
	1-18	Very gravelly fine sandy loam	GC, GM, GC-GM	A-1, A-2	0	0	35-55	30-50	20-40	15-30	15-30	NP-10
	18-42	Petrocalcic material	---	---	---	---	---	---	---	---	---	---
	42-60	Very gravelly sandy loam, very gravelly fine sandy loam	GC, GC-GM, GP-GM, GM	A-1, A-2	0	0	35-55	30-50	20-40	10-30	15-30	NP-10

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
136:												
Mule----------	0-2	Very gravelly fine sandy loam	GC, GC-GM, GM	A-1, A-2	0	0-5	35-55	30-50	20-40	15-30	15-30	NP-10
	2-10	Very gravelly fine sandy loam	GC, GC-GM, GM	A-1, A-2	0	0-10	35-55	30-50	20-40	15-30	15-30	NP-10
	10-60	Very gravelly loam	GC, GC-GM, GM	A-1, A-4, A-2	0	0-10	35-55	30-50	25-50	20-40	15-30	NP-10
137:												
Swisshelm-------	0-12	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	12-22	Loam	ML, CL-ML	A-4	0	0	95-100	90-100	75-95	55-75	20-30	NP-5
	22-42	Fine sandy loam	SC-SM, ML, SM, CL-ML	A-4	0	0	95-100	90-100	60-85	35-55	20-25	NP-5
	42-60	Clay loam	CL, ML	A-4, A-6	0	0	100	95-100	85-100	65-80	30-40	10-15
138:												
Swisshelm-------	0-12	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	12-22	Loam	ML, CL-ML	A-4	0	0	95-100	90-100	75-95	55-75	20-30	NP-5
	22-42	Fine sandy loam	ML, SC-SM, CL-ML, SM	A-4	0	0	95-100	90-100	60-85	35-55	20-25	NP-5
	42-60	Clay loam	CL, ML	A-4, A-6	0	0	100	95-100	85-100	65-80	30-40	10-15
139:												
Tenneco---------	0-2	Fine sandy loam	SC-SM, SM	A-4	0	0	95-100	90-100	60-85	35-55	20-25	NP-5
	2-11	Loam, sandy clay loam	CL, CL-ML	A-6	0	0	100	95-100	80-100	55-80	25-40	5-15
	11-41	Loam	CL, CL-ML	A-4	0	0	95-100	90-100	75-85	55-75	25-35	5-10
	41-60	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	25-40	20-25	NP-5
140:												
Terrarossa sandy loam----------	0-2	Sandy loam	SM	A-2, A-4	0	0	90-100	85-100	50-70	30-40	20-30	NP-5
	2-9	Sandy loam	SM	A-2, A-4	0	0	90-100	85-100	50-70	30-40	20-30	NP-5
	9-27	Clay	CL	A-7	0	0	95-100	90-100	80-100	70-95	40-50	20-30
	27-60	Clay	CL	A-7	0	0	95-100	90-100	80-100	70-95	40-50	20-30
Terrarossa gravelly loam--	0-4	Gravelly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0	0-5	55-80	50-75	40-65	30-50	25-30	5-10
	4-8	Very gravelly loam	GC, GC-GM	A-1, A-2	0	0-10	30-45	25-40	20-40	15-30	25-30	5-10
	8-46	Clay	CL	A-7	0	0	95-100	90-100	80-100	70-95	40-50	20-30
	46-60	Clay	CL	A-7	0	0	95-100	90-100	80-100	70-95	40-50	20-30

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
140:												
Terrarossa very gravelly sandy loam----------	0-3	Very gravelly sandy loam	GM, GP-GM	A-1	0	0-10	30-45	25-40	15-30	5-15	20-30	NP-5
	3-10	Gravelly clay	GC, CL, SC	A-7	0	0-5	55-80	50-75	50-70	40-65	40-50	20-30
	10-27	Clay	CL	A-7	0	0	95-100	90-100	80-100	70-95	40-50	20-30
	27-60	Very gravelly clay	GC	A-2	0	0-10	30-55	25-50	25-40	20-30	40-50	20-30
141:												
Terrarossa------	0-9	Gravelly loam	GC, GC-GM, SC-SM, SC	A-2, A-4	0	0-5	55-80	50-75	40-65	30-50	25-30	5-10
	9-30	Clay	CL	A-7	0	0	95-100	90-100	80-100	70-95	40-50	20-30
	30-60	Clay	CL	A-7	0	0	95-100	90-100	80-100	70-95	40-50	20-30
Blacktail-------	0-3	Gravelly loam	GC, SC	A-2, A-6	0	0	55-80	50-75	40-65	30-45	25-35	10-20
	3-7	Clay loam	CL	A-6, A-7	0	0	90-100	90-100	80-100	65-80	35-45	20-30
	7-23	Clay, clay loam	CL	A-6, A-7	0	0	90-100	90-100	80-100	65-85	35-45	15-25
	23-32	Sandy loam	SC, SC-SM, SM	A-2	0	0	90-100	90-100	55-70	25-35	15-25	NP-10
	32-60	Gravelly sandy loam	SC, GC, SC-SM, SM	A-1, A-2	0	0	55-80	50-75	30-50	15-25	15-25	NP-10
Pyeatt----------	0-9	Gravelly loam	GC-GM, GC, SC, SC-SM	A-2, A-4	0	0-5	55-80	50-75	45-65	30-50	25-30	5-10
	9-35	Gravelly fine sandy loam	GM, SC-SM, GC-GM, SM	A-1, A-2	0	0-5	55-80	50-75	40-60	20-35	20-25	NP-5
	35-41	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	90-100	60-85	30-45	20-25	NP-5
	41-60	Fine sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	90-100	60-85	30-45	20-25	NP-5
142:												
Tombstone-------	0-1	Very gravelly fine sandy loam	GC-GM, GM, GP-GM	A-1	0	0-5	30-55	25-50	20-40	10-20	20-25	NP-5
	1-5	Gravelly fine sandy loam	GM, GC-GM, SC-SM, SM	A-1, A-2	0	0-5	55-80	50-75	35-55	20-30	20-25	NP-5
	5-13	Gravelly sandy loam	GM, SC-SM, GC-GM, SM	A-1, A-2	0	0-5	55-80	50-75	30-50	15-30	20-25	NP-5
	13-60	Very gravelly sandy loam, very gravelly loamy sand	GM, GP-GM, GC-GM, GW-GM	A-1	0	0-5	30-55	25-50	10-35	5-20	20-25	NP-5

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct	Pct					Pct	
143:												
Turquoise-------	0-1	Loamy coarse sand	SM	A-2	0	0-5	90-100	85-95	40-70	15-20	15-20	NP
	1-5	Sandy loam	SC-SM, SM	A-4, A-2	0	0	90-100	85-95	50-60	25-40	15-25	NP-5
	5-22	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
	22-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Nugget----------	0-1	Sandy loam	SC-SM, SM	A-4, A-2	0	15-25	90-100	85-95	40-70	15-20	20-25	NP-5
	1-5	Gravelly sandy loam	SC-SM, SM	A-2	0	0-5	65-75	60-70	35-50	20-30	20-25	5
	5-12	Gravelly sandy clay	SC	A-6, A-2	0	0	65-75	60-70	50-65	30-40	30-40	10-20
	12-24	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
	24-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
144:												
Ubik silt loam--	0-10	Silt loam	CL, ML, CL-ML	A-4, A-6	0	0	85-100	80-100	80-95	65-90	15-30	NP-10
	10-32	Loam	CL, CL-ML, ML, SC	A-4, A-6	0	0	85-100	80-100	65-95	45-60	20-25	5-10
	32-60	Fine sandy loam	SC-SM, SM	A-4, A-6	0	0	85-100	80-100	60-80	35-50	15-25	NP-5
Ubik fine sandy loam----------	0-8	Fine sandy loam	SC, SM, SC-SM	A-4, A-6	0	0	85-100	80-100	60-80	35-50	15-25	NP-5
	8-30	Loam	ML, SC, CL, CL-ML	A-6, A-4	0	0	85-100	80-100	65-95	45-60	15-25	NP-5
	30-60	Fine sandy loam	SC, SC-SM, SM	A-4, A-6	0	0	85-100	80-100	60-80	35-50	15-25	NP-5
145:												
Ubik----------	0-7	Loam	ML	A-4	0	0	95-100	90-100	75-95	55-75	20-30	NP-5
	7-16	Loam	ML	A-4	0	0	95-100	90-100	75-95	55-75	20-30	NP-5
	16-36	Very fine sandy loam	ML, SC-SM, CL-ML, SM	A-4	0	0	95-100	90-100	75-95	45-65	20-25	NP-5
	36-55	Loam	ML	A-4	0	0	95-100	90-100	75-95	55-75	20-30	NP-5
	55-63	Stratified sandy loam to loam to silt loam	SM, ML	A-4, A-2	0	0	95-100	90-100	55-100	30-90	20-30	NP-5

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
146:												
Ubik----------	0-7	Loam	ML	A-4	0	0	95-100	90-100	75-95	55-75	20-30	NP-5
	7-16	Loam	ML	A-4	0	0	95-100	90-100	75-95	55-75	20-30	NP-5
	16-36	Very fine sandy loam	CL-ML, SM, ML, SC-SM	A-4	0	0	95-100	90-100	75-95	45-65	20-25	NP-5
	36-55	Loam	ML	A-4	0	0	95-100	90-100	75-95	55-75	20-30	NP-5
	55-63	Stratified sandy loam to loam to silt loam	SM, ML	A-4, A-2	0	0	95-100	90-100	55-100	30-90	20-30	NP-5
147:												
Ubik----------	0-7	Sandy loam	SC-SM, SM	A-4, A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	7-16	Loam	ML	A-4	0	0	95-100	90-100	75-95	55-75	20-30	NP-5
	16-36	Very fine sandy loam	CL-ML, ML, SM, SC-SM	A-4	0	0	95-100	90-100	75-95	45-65	20-25	NP-5
	36-55	Loam	ML	A-4	0	0	95-100	90-100	75-95	55-75	20-30	NP-5
	55-63	Stratified sandy loam to loam to silt loam	SM, ML	A-4, A-2	0	0	95-100	90-100	55-100	30-90	20-30	NP-5
148:												
Ubik----------	0-7	Sandy loam	SC-SM, SM	A-4, A-2	0	0	95-100	90-100	55-70	30-40	20-25	NP-5
	7-16	Loam	ML	A-4	0	0	95-100	90-100	75-95	55-75	20-30	NP-5
	16-36	Very fine sandy loam	ML, CL-ML, SC-SM, SM	A-4	0	0	95-100	90-100	75-95	45-65	20-25	NP-5
	36-55	Loam	ML	A-4	0	0	95-100	90-100	75-95	55-75	20-30	NP-5
	55-63	Stratified sandy loam to loam to silt loam	SM, ML	A-4, A-2	0	0	95-100	90-100	55-100	30-90	20-30	NP-5
149:												
Vana----------	0-1	Fine sandy loam	SC-SM, SM	A-4	0	0	95-100	90-100	60-85	35-55	20-25	NP-5
	1-8	Sandy loam	SC-SM, SM	A-2, A-4	0	0	90-100	85-100	50-70	25-40	20-25	NP-5
	8-14	Sandy clay loam	SM	A-2, A-4	0	0-10	80-95	75-90	60-80	25-50	30-35	5-10
	14-24	Petrocalcic material	---	---	---	---	---	---	---	---	---	---
	24-60	Sandy loam	SC-SM, SM	A-1, A-2	0	0-10	80-95	75-90	45-60	20-35	20-25	NP-5

Table 13.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments: >10 inches	Fragments: 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
150:												
Vana----------	0-2	Sandy loam	SC-SM, SM	A-2, A-4	0	0	95-100	90-100	55-70	25-40	20-25	NP-5
	2-8	Sandy clay loam	ML, SM	A-2, A-4	0	0	95-100	90-100	70-90	30-55	30-35	5-10
	8-13	Clay loam	CL, ML	A-6	0	0-5	85-100	80-95	70-95	55-75	30-40	10-15
	13-18	Petrocalcic material	---	---	---	---	---	---	---	---	---	---
	18-60	Gravelly loam	SC, SC-SM	A-2, A-4	0	0-10	60-75	55-70	45-65	30-55	25-30	5-10
Moco----------	0-1	Fine sandy loam	SC-SM, SM	A-4	0	0	95-100	90-100	60-85	35-55	20-25	NP-5
	1-10	Clay loam	CL, ML	A-6	0	0	95-100	90-100	80-100	65-80	35-40	10-15
	10-20	Clay loam, loam	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	75-100	55-80	25-40	5-15
	20-60	Clay loam, loam	CL, SC-SM, CL-ML	A-4, A-6	0	0	95-100	80-100	70-100	45-80	25-40	5-15
151:												
White House gravelly loam--	0-2	Gravelly loam	GC-GM, GC, SC, SC-SM	A-2, A-1, A-4	---	0-5	55-80	50-75	35-60	15-45	25-30	5-10
	2-18	Clay loam, clay	CL	A-7	---	0	85-100	80-95	75-95	60-80	40-50	15-25
	18-29	Gravelly clay loam	GC, CL, GM, SC	A-6, A-7	---	0-5	55-80	50-75	50-70	40-55	35-45	10-20
	29-33	Loamy sand	SC-SM, SM	A-2	---	0	85-100	80-95	50-70	15-20	10-20	NP-5
	33-60	Clay loam	CL	A-6	---	0	85-100	80-95	75-95	55-70	30-40	10-20
White House gravelly sandy loam----------	0-5	Gravelly sandy loam	GC-GM, SC, GC, SC-SM	A-2, A-1, A-4	---	0-5	55-80	50-75	35-60	15-45	25-30	5-10
	5-25	Clay loam, clay	CL	A-7	---	0	85-100	80-95	75-95	60-80	40-50	15-25
	25-45	Gravelly clay loam	GC, CL, GM, SC	A-6, A-7	---	0-5	55-80	50-75	50-70	40-55	35-45	10-20
	45-60	Clay loam	CL	A-6	---	0	85-100	80-95	75-95	55-70	30-40	10-20
152:												
Yarbam----------	0-2	Very cobbly loam	SC-SM, SM	A-2, A-4	0-15	15-30	60-75	55-70	50-65	30-50	20-25	NP-5
	2-9	Very gravelly loam	GC-GM, SM, GM	A-2, A-1, A-4	0	0-10	45-55	40-50	35-50	25-40	20-25	NP-5
	9-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 14.--Physical Properties of the Soils

(Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
1:												
Altar----------	0-1	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.20	.24	5	3	86
	1-10	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.20	.24			
	10-25	5-15	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.5-1.0	.10	.24			
	25-40	5-15	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.5-1.0	.10	.24			
	40-60	2-7	1.45-1.60	20-40	0.01-0.03	0.0-2.9	0.0-0.5	.02	.15			
Mallet----------	0-6	2-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.24	.28	5	3	86
	6-22	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.28	.28			
	22-55	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.24	.28			
	55-60	2-10	1.45-1.60	6-20	0.01-0.03	0.0-2.9	0.0-0.5	.02	.17			
2:												
Anthony----------	0-15	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-1.0	.24	.24	5	3	86
	15-40	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
	40-60	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
Maricopa----------	0-5	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-1.0	.24	.24	3	3	86
	5-24	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
	24-60	1-5	1.45-1.60	6-20	0.03-0.07	0.0-2.9	0.0-0.5	.05	.10			
3:												
Arizo family----------	0-4	2-5	1.45-1.60	6-101	0.02-0.04	0.0-2.9	0.0-0.5	.05	.15	5	5	56
	4-12	2-5	1.45-1.60	20-101	0.03-0.06	0.0-2.9	0.0-0.5	.02	.10			
	12-26	2-5	1.45-1.60	20-101	0.01-0.03	0.0-2.9	0.0-0.0	.02	.10			
	26-60	2-5	1.45-1.60	20-101	0.04-0.06	0.0-2.9	0.0-0.0	.05	.15			
Riverwash----------	0-60	---	---	---	---	---	---	---	---	---	---	---
4:												
Ashcreek----------	0-6	35-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	1.0-3.0	.32	.32	5	4	86
	6-36	40-50	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-3.0	.32	.32			
	36-52	40-60	1.15-1.30	0.001-0.06	0.09-0.13	9.0-10.9	0.5-2.0	.20	.32			
	52-60	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.5-1.0	.24	.32			
Stanford----------	0-2	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.17	.24	5	3	86
	2-21	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	1.0-3.0	.24	.32			
	21-37	27-35	1.25-1.40	0.2-6	0.17-0.21	3.0-5.9	1.0-2.0	.28	.32			
	37-60	20-35	1.25-1.40	0.2-0.6	0.09-0.13	3.0-5.9	0.5-1.0	.20	.32			
5:												
Baboquivari----------	0-1	3-10	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.20	.24	5	3	86
	1-24	20-30	1.25-1.50	0.2-2	0.13-0.19	3.0-5.9	1.0-2.0	.28	.32			
	24-34	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.15	.24			
	34-60	3-10	1.35-1.50	6-20	0.04-0.07	0.0-2.9	0.0-0.5	.15	.24			
Combate----------	0-2	3-10	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	2-32	3-15	1.35-1.50	2-6	0.07-0.13	0.0-2.9	0.5-1.0	.24	.24			
	32-60	3-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
6:												
Banshee----------	0-3	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	3	3	86
	3-19	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	1.0-2.0	.32	.32			
	19-26	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-2.0	.32	.32			
	26-42	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-2.0	.32	.32			
	42-60	3-15	1.35-1.50	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.15	.24			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
6:												
Banshee, thick surface	0-7	5-15	1.35-1.50	2-6	0.13-0.17	0.0-2.9	1.0-2.0	.55	.55	4	3	86
	7-13	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.24	.28			
	13-24	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.24	.24			
	24-44	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-2.0	.32	.32			
	44-60	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-1.0	.32	.32			
7:												
Bella	0-1	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.28	.28	2	3	86
	1-10	10-18	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.5-1.0	.32	.32			
	10-15	10-18	1.35-1.50	2-6	0.08-0.12	0.0-2.9	0.5-1.0	.17	.28			
	15-25	---	---	---	---	---	---	---	---			
	25-45	18-27	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-0.5	.24	.32			
	45-60	20-35	1.25-1.40	0.2-0.6	0.14-0.19	0.0-2.9	0.0-0.5	.32	.32			
8:												
Blakeney	0-11	8-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.20	.28	1	3	86
	11-18	---	---	---	---	---	---	---	---			
	18-41	8-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.20	.28			
	41-60	8-18	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.28	.32			
Luckyhills	0-3	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-1.0	.20	.28	2	3	86
	3-13	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-1.0	.20	.28			
	13-38	10-20	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.28	.32			
	38-60	10-20	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.28	.32			
9:												
Bodecker	0-5	1-5	1.45-1.60	6-20	0.03-0.06	0.0-2.9	0.0-1.0	.05	.10	5	4	86
	5-35	1-5	1.45-1.60	6-20	0.02-0.04	0.0-2.9	0.0-1.0	.02	.10			
	35-54	1-5	1.45-1.60	6-20	0.01-0.03	0.0-2.9	0.0-0.5	.02	.10			
	54-60	25-30	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	0.0-0.5	.37	.43			
Comoro	0-9	5-10	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.24	.28	5	3	86
	9-19	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24			
	19-40	3-10	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-1.0	.15	.24			
	40-60	1-5	1.45-1.60	6-20	0.05-0.08	0.0-2.9	0.0-1.0	.10	.10			
10:												
Bodecker	0-6	3-10	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-0.5	.10	.24	5	5	56
	6-52	3-10	1.45-1.50	6-20	0.01-0.03	0.0-2.9	0.0-0.5	.02	.10			
	52-60	3-15	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	0.0-0.5	.43	.43			
11:												
Bodecker	0-6	3-10	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-0.5	.10	.24	5	5	56
	6-52	3-10	1.45-1.50	6-20	0.01-0.03	0.0-2.9	0.0-0.5	.02	.10			
	52-60	3-15	1.15-1.30	0.6-2	0.09-0.13	0.0-2.9	0.0-0.5	.43	.43			
12:												
Bonita	0-9	40-55	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-2.0	.32	.32	5	4	86
	9-23	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-2.0	.32	.32			
	23-60	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.0-1.0	.32	.32			
13:												
Bonita	0-1	15-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	1.0-3.0	.32	.32	5	4L	86
	1-9	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-3.0	.32	.32			
	9-23	50-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-2.0	.32	.32			
	23-44	50-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-2.0	.32	.32			
	44-60	45-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.0-1.0	.32	.32			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
13:												
Forrest	0-1	15-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	1.0-2.0	.32	.32	3	6	48
	1-5	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.32	.32			
	5-17	40-55	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	1.0-2.0	.32	.32			
	17-26	40-55	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	26-60	30-40	1.15-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
14:												
Borderland	0-1	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	2.0-3.0	.20	.32	3	5	56
	1-10	40-65	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-3.0	.32	.32			
	10-23	40-65	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-2.0	.32	.32			
	23-60	3-10	1.35-1.50	0.6-2	0.07-0.10	0.0-2.9	0.0-0.5	.17	.24			
15:												
Borderline	0-2	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.24	.28	3	3	86
	2-18	5-18	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.24	.37			
	18-41	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.17	.28			
	41-50	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.28			
	50-60	5-18	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.0-0.5	.15	.28			
16:												
Boss	0-2	30-40	1.25-1.40	0.2-0.6	0.17-0.21	6.0-8.9	1.0-3.0	.17	.37	1	5	56
	2-14	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.5-2.0	.37	.37			
	14-60	---	---	---	---	---	---	---	---			
Krentz	0-1	15-27	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-3.0	.15	.32	3	6	48
	1-21	20-27	1.25-1.40	0.6-2	0.07-0.11	0.0-2.9	0.5-2.0	.10	.32			
	21-37	5-20	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.5-1.0	.05	.24			
	37-60	0-3	1.85-2.60	6-20	0.01-0.03	0.0-0.0	0.0-0.5	.02	.15			
Paramore	0-1	30-40	1.15-1.30	0.2-0.6	0.12-0.17	6.0-8.9	1.0-3.0	.17	.32	2	5	56
	1-7	40-60	1.15-1.30	0.001-0.06	0.09-0.13	9.0-10.9	0.5-2.0	.32	.32			
	7-29	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.5-1.0	.32	.32			
	29-60	---	---	---	---	---	---	---	---			
Rock outcrop	0-60	---	---	---	---	---	---	---	---	---	---	---
17:												
Brookline	0-3	5-10	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-2.0	.28	.28	2	3	86
	3-18	5-10	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-2.0	.28	.28			
	18-29	1-5	1.45-1.60	6-20	0.03-0.07	0.0-2.9	0.0-1.0	.05	.10			
	29-60	1-5	1.45-1.60	6-20	0.02-0.04	0.0-2.9	0.0-1.0	.02	.10			
Fluvaquents	0-10	2-8	1.45-1.60	6-20	0.03-0.07	0.0-2.9	1.0-2.0	.10	.10	4	8	0
	10-25	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-1.0	.28	.28			
	25-45	2-8	1.45-1.60	6-20	0.03-0.07	0.0-2.9	0.0-0.5	.10	.10			
	45-60	1-5	1.45-1.60	6-20	0.02-0.04	0.0-2.9	0.0-0.5	.02	.10			
Riverwash	0-60	---	---	---	---	---	---	---	---	---	---	---
18:												
Brunkcow	0-2	5-15	1.35-1.50	6-20	0.07-0.12	0.0-2.9	1.0-2.0	.20	.20	1	5	56
	2-8	20-35	1.25-1.40	0.2-0.6	0.14-0.19	0.0-5.9	1.0-2.0	.32	.32			
	8-12	---	---	---	---	---	---	---	---			
	12-60	---	---	---	---	---	---	---	---			
Chiricahua	0-3	10-20	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	2	6	48
	3-16	30-40	1.25-1.40	0.06-0.2	0.17-0.21	3.0-5.9	1.0-2.0	.32	.32			
	16-25	---	---	---	---	---	---	---	---			
	25-60	---	---	---	---	---	---	---	---			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
18:												
Andrada----------	0-1	5-20	1.35-1.50	2-6	0.07-0.10	0.0-2.9	1.0-2.0	.15	.24	1	5	56
	1-6	5-20	1.35-1.50	2-6	0.07-0.10	0.0-2.9	1.0-2.0	.10	.24			
	6-19	10-25	1.25-1.40	0.6-2	0.07-0.11	0.0-2.9	0.5-2.0	.10	.32			
	19-60	---	---	---	---	---	---	---	---			
19:												
Brunkcow----------	0-2	5-15	1.35-1.50	2-6	0.03-0.05	0.0-2.9	1.0-2.0	.10	.24	1	8	0
	2-10	27-35	1.25-1.40	0.2-0.6	0.17-0.21	0.0-2.9	1.0-2.0	.32	.32			
	10-15	20-35	1.25-1.40	0.2-0.6	0.14-0.19	0.0-2.9	1.0-2.0	.32	.32			
	15-60	---	---	---	---	---	---	---	---			
Chiricahua----------	0-3	10-18	1.35-1.50	2-6	0.03-0.05	0.0-2.9	1.0-2.0	.05	.24	2	8	0
	3-20	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	20-27	---	---	---	---	---	---	---	---			
	27-60	---	---	---	---	---	---	---	---			
Lampshire----------	0-1	5-15	1.35-1.50	0.6-2	0.05-0.08	0.0-2.9	1.0-2.0	.10	.24	1	8	0
	1-9	10-20	1.35-1.50	0.6-2	0.05-0.08	0.0-2.9	1.0-2.0	.10	.24			
	9-60	---	---	---	---	---	---	---	---			
20:												
Budlamp----------	0-2	5-18	1.35-1.50	2-6	0.06-0.09	0.0-2.9	1.0-3.0	.10	.28	1	6	48
	2-8	5-18	1.35-1.50	2-6	0.03-0.06	0.0-2.9	1.0-2.0	.05	.28			
	8-60	---	---	---	---	---	---	---	---			
Woodcutter----------	0-2	5-15	1.35-1.50	2-6	0.06-0.08	0.0-2.9	1.0-2.0	.10	.28	1	6	48
	2-6	8-18	1.25-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-2.0	.15	.32			
	6-12	20-35	1.25-1.40	0.2-0.6	0.06-0.13	3.0-5.9	1.0-2.0	.15	.32			
	12-60	---	---	---	---	---	---	---	---			
21:												
Buntline----------	0-14	27-35	1.25-1.40	0.6-2	0.17-0.21	0.0-2.9	0.0-1.0	.32	.32	1	4	86
	14-16	27-35	1.25-1.40	0.6-2	0.12-0.17	0.0-2.9	0.0-0.5	.15	.32			
	16-23	0-0	---	---	---	---	---	---	---			
	23-60	27-35	1.25-1.40	0.6-2	0.17-0.21	0.0-2.9	0.0-0.5	.32	.32			
22:												
Caralampi----------	0-1	5-20	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.24	.24	5	6	48
	1-10	10-20	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.5-2.0	.15	.24			
	10-27	25-35	1.25-1.40	0.2-0.6	0.08-0.13	0.0-2.9	0.0-1.0	.10	.32			
	27-48	25-35	1.25-1.40	0.2-0.6	0.03-0.06	0.0-2.9	0.0-0.5	.05	.32			
	48-60	25-35	1.25-1.40	0.2-0.6	0.03-0.06	0.0-2.9	0.0-0.5	.05	.32			
23:												
Caralampi----------	0-2	10-20	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.5-2.0	.15	.24	5	6	48
	2-28	20-35	1.25-1.40	0.2-0.6	0.06-0.10	0.0-2.9	0.0-1.0	.10	.32			
	28-60	27-35	1.25-1.40	0.2-0.6	0.12-0.17	0.0-2.9	0.0-0.5	.20	.32			
24:												
Carbine----------	0-2	5-18	1.25-1.40	2-6	0.07-0.11	0.0-2.9	1.0-3.0	.15	.32	2	8	0
	2-9	5-18	1.35-1.50	2-6	0.08-0.12	0.0-2.9	1.0-3.0	.10	.24			
	9-16	5-18	1.25-1.40	2-6	0.10-0.14	0.0-2.9	1.0-3.0	.15	.32			
	16-60	---	---	---	---	---	---	---	---			
25:												
Carbine----------	0-1	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.17	.24	2	4L	86
	1-9	5-18	1.25-1.40	2-6	0.13-0.18	0.0-2.9	1.0-3.0	.24	.32			
	9-18	---	---	---	---	---	---	---	---			
	18-60	5-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-0.5	.10	.24			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
25:												
Hathaway----------	0-2	5-18	1.35-1.50	2-6	0.08-0.12	0.0-2.9	1.0-3.0	.15	.28	2	5	56
	2-9	8-20	1.25-1.40	2-6	0.07-0.11	0.0-2.9	1.0-3.0	.15	.32			
	9-25	8-20	1.25-1.40	2-6	0.07-0.11	0.0-2.9	0.5-2.0	.15	.32			
	25-60	5-18	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.0-1.0	.05	.24			
26:												
Cazador----------	0-2	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-3.0	.32	.32	5	4	86
	2-9	40-55	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	1.0-3.0	.32	.32			
	9-30	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.5-2.0	.32	.32			
	30-50	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.5-1.0	.32	.32			
	50-60	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.5-1.0	.32	.32			
Lesliecreek----------	0-4	10-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	1.0-3.0	.32	.32	5	5	56
	4-12	27-35	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	1.0-3.0	.32	.32			
	12-32	18-27	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.5-2.0	.32	.32			
	32-50	27-35	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.28	.37			
	50-60	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.28	.32			
27:												
Cherrycow----------	0-2	5-18	1.35-1.50	2-6	0.07-0.10	0.0-2.9	1.0-3.0	.15	.24	3	6	48
	2-9	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-3.0	.28	.32			
	9-18	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.17	.24			
	18-40	3-10	1.45-1.60	6-20	0.02-0.04	0.0-2.9	0.0-0.5	.05	.10			
	40-60	---	---	---	---	---	---	---	---			
Blacktail----------	0-2	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.20	.28	2	6	56
	2-6	30-40	1.25-1.40	0.2-0.6	0.12-0.17	3.0-5.9	1.0-2.0	.20	.32			
	6-14	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.5-1.0	.32	.32			
	14-24	40-60	1.15-1.40	0.06-0.2	0.10-0.14	6.0-8.9	0.5-1.0	.20	.32			
	24-60	3-10	1.45-1.60	6-20	0.02-0.04	0.0-2.9	0.0-0.5	.05	.10			
28:												
Cherrycow----------	0-2	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.17	.24	3	7	38
	2-14	45-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-3.0	.24	.32			
	14-20	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.6-2.0	.24	.32			
	20-30	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.5-1.0	.28	.32			
	30-60	---	---	---	---	---	---	---	---			
Magoffin----------	0-2	5-10	1.35-1.50	2-6	0.07-0.10	0.0-2.9	1.0-3.0	.15	.24	1	7	38
	2-10	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.17	.24			
	10-60	---	---	---	---	---	---	---	---			
Rock outcrop----------	0-60	---	---	---	---	---	---	---	---	---	---	---
29:												
Chorro----------	0-2	5-20	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.28	.28	2	3	86
	2-11	5-20	1.35-1.50	2-6	0.06-0.12	0.0-2.9	1.0-2.0	.28	.28			
	11-24	3-27	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-2.0	.32	.32			
	24-44	27-40	1.15-1.30	0.2-0.6	0.14-0.17	3.0-5.9	0.0-0.5	.32	.32			
	44-60	40-50	1.15-1.30	0.06-0.2	0.07-0.09	3.0-5.9	0.0-0.5	.37	.37			
Doubleadobe----------	0-1	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.24	.24	2	3	86
	1-4	27-35	1.25-1.40	0.2-0.6	0.15-0.19	3.0-5.9	0.5-2.0	.32	.32			
	4-13	40-55	1.15-1.30	0.06-0.2	0.11-0.13	6.0-8.9	0.0-1.0	.32	.32			
	13-31	40-55	1.15-1.30	0.06-0.2	0.11-0.13	6.0-8.9	0.0-1.0	.32	.32			
	31-60	27-40	1.25-1.40	0.2-0.6	0.10-0.14	3.0-5.9	0.0-1.0	.15	.32			
Gothard----------	0-3	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.24	.24	2	3	86
	3-8	5-20	1.35-1.50	2-6	0.07-0.12	0.0-2.9	0.5-2.0	.24	.24			
	8-18	25-35	1.25-1.40	0.2-0.6	0.11-0.15	3.0-5.9	0.0-1.0	.32	.32			
	18-30	20-35	1.25-1.40	0.2-0.6	0.07-0.10	3.0-5.9	0.0-1.0	.32	.32			
	30-60	45-55	1.15-1.30	0.06-0.2	0.07-0.08	6.0-8.9	0.0-1.0	.32	.32			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
30:												
Chorro----------	0-5	15-27	1.15-1.30	0.6-2	0.14-0.19	0.0-2.9	1.0-2.0	.43	.43	2	4L	86
	5-14	40-60	1.15-1.30	0.06-0.2	0.11-0.13	3.0-5.9	1.0-2.0	.32	.32			
	14-27	10-25	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-0.5	.32	.32			
	27-60	10-20	1.35-1.50	2-6	0.04-0.08	0.0-2.9	0.0-0.5	.28	.28			
Guest----------	0-5	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.32	.32	5	4	86
	5-20	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.5-1.0	.32	.32			
	20-48	40-50	1.15-1.30	0.06-0.2	0.13-0.17	6.0-8.9	0.5-1.0	.37	.37			
	48-60	10-20	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
31:												
Cogswell----------	0-5	40-55	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	1.0-3.0	.32	.32	3	4L	86
	5-20	40-50	1.15-1.30	0.06-0.2	0.10-0.12	6.0-8.9	0.5-2.0	.37	.37			
	20-33	40-55	1.15-1.30	0.06-0.2	0.10-0.13	6.0-8.9	0.0-1.0	.32	.32			
	33-42	27-35	1.25-1.40	0.2-0.6	0.13-0.15	3.0-5.9	0.0-0.5	.32	.32			
	42-53	5-15	1.35-1.50	0.6-2	0.07-0.09	0.0-2.9	0.0-0.5	.28	.28			
	53-57	10-25	1.25-1.40	0.6-2	0.11-0.12	0.0-2.9	0.0-0.5	.32	.32			
	57-63	30-40	1.15-1.30	0.2-0.6	0.10-0.12	3.0-5.9	0.0-0.5	.37	.37			
32:												
Combate----------	0-5	3-10	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.5-1.0	.17	.17	5	2	134
	5-21	3-10	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.5-1.0	.17	.17			
	21-46	3-15	1.35-1.50	2-6	0.07-0.13	0.0-2.9	0.5-1.0	.24	.24			
	46-60	3-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
33:												
Comoro----------	0-8	5-10	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	5	3	86
	8-19	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24			
	19-46	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-1.0	.24	.28			
	46-60	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-1.0	.20	.24			
34:												
Comoro----------	0-8	5-10	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	5	3	86
	8-19	5-15	1.35-1.50	2-6	0.07-0.08	0.0-2.9	1.0-2.0	.20	.24			
	19-46	5-15	1.35-1.50	2-6	0.07-0.09	0.0-2.9	0.0-1.0	.24	.28			
	46-60	5-15	1.35-1.50	2-6	0.07-0.08	0.0-2.9	0.0-1.0	.20	.24			
35:												
Contention----------	0-3	15-25	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	0.5-1.0	.37	.37	5	4L	86
	3-11	30-50	1.15-1.30	0.06-0.6	0.13-0.21	6.0-8.9	0.0-0.5	.32	.32			
	11-21	40-55	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.0-0.5	.32	.32			
	21-60	40-55	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.0-0.5	.32	.32			
Crystalgyp----------	0-1	3-10	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.20	.24	3	3	86
	1-10	3-10	1.35-1.60	2-20	0.05-0.13	0.0-2.9	0.0-0.5	.20	.20			
	10-30	5-10	1.25-1.50	2-6	0.08-0.18	0.0-2.9	0.0-0.5	.32	.32			
	30-60	---	---	---	---	---	---	---	---			
Monzingo----------	0-3	5-10	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.20	.24	3	3	86
	3-19	5-15	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.20	.37			
	19-26	10-18	1.80-1.95	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
	26-45	10-18	1.25-1.50	0.6-2	0.08-0.18	0.0-2.9	0.0-0.5	.28	.28			
	45-55	10-18	1.80-1.95	0.6-2	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
	55-60	10-18	1.35-1.40	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
Redington----------	0-1	3-10	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.28	.28	4	3	86
	1-6	3-10	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.28	.28			
	6-16	3-8	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.5-1.0	.17	.17			
	16-36	1-8	1.45-1.60	6-20	0.05-0.08	0.0-2.9	0.0-0.5	.10	.10			
	36-42	1-8	1.80-1.95	2-6	0.05-0.08	0.0-2.9	0.0-0.5	.10	.10			
	42-60	1-8	1.45-1.60	6-20	0.05-0.08	0.0-2.9	0.0-0.5	.10	.10			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
36:												
Contention----------	0-2	10-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.5-1.0	.32	.32	5	4L	86
	2-7	30-50	1.15-1.30	0.06-0.6	0.13-0.21	6.0-8.9	0.0-0.5	.32	.32			
	7-32	40-55	1.15-1.30	0.001-0.06	0.13-0.17	9.0-10.9	0.0-0.5	.32	.32			
	32-60	40-55	1.15-1.30	0.001-0.06	0.13-0.17	9.0-10.9	0.0-0.5	.32	.32			
Ugyp----------	0-3	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.24	.28	2	3	86
	3-13	5-18	1.15-1.30	2-6	0.15-0.21	0.0-2.9	0.0-0.5	.37	.43			
	13-30	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.24	.28			
	30-52	3-18	1.35-1.60	2-20	0.05-0.13	0.0-2.9	0.0-0.5	.20	.24			
	52-60	3-10	1.45-1.60	6-20	0.05-0.12	0.0-2.9	0.0-0.5	.17	.20			
Ugyp----------	0-3	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.24	.28	2	3	86
	3-13	5-18	1.15-1.30	2-6	0.15-0.21	0.0-2.9	0.0-0.5	.37	.43			
	13-30	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.24	.28			
	30-52	3-18	1.35-1.60	2-20	0.05-0.13	0.0-2.9	0.0-0.5	.20	.24			
	52-60	3-10	1.45-1.60	6-20	0.05-0.12	0.0-2.9	0.0-0.5	.17	.20			
37:												
Courtland----------	0-8	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	5	3	86
	8-14	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.20	.24			
	14-20	10-20	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.20	.24			
	20-49	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.28	.32			
	49-60	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.28	.32			
38:												
Courtland----------	0-8	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	5	3	86
	8-14	5-15	1.35-1.50	2-6	0.07-0.08	0.0-2.9	0.5-1.0	.20	.24			
	14-20	10-20	1.35-1.50	2-6	0.07-0.08	0.0-2.9	0.0-0.5	.20	.24			
	20-49	20-35	1.25-1.40	0.2-0.6	0.11-0.13	3.0-5.9	0.0-0.5	.28	.32			
	49-60	20-35	1.25-1.40	0.2-0.6	0.11-0.13	3.0-5.9	0.0-0.5	.28	.32			
39:												
Courtland----------	0-8	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	5	3	86
	8-14	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.20	.24			
	14-20	10-20	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.20	.24			
	20-49	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.28	.32			
	49-60	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.28	.32			
Diaspar----------	0-20	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.20	.24	5	3	86
	20-41	20-35	1.25-1.40	0.6-2	0.14-0.19	3.0-5.9	0.0-0.5	.24	.32			
	41-60	20-35	1.25-1.40	0.6-2	0.08-0.13	3.0-5.9	0.0-0.5	.24	.32			
40:												
Courtland----------	0-6	10-20	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.24	.24	5	3	86
	6-24	27-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-1.0	.32	.32			
	24-36	27-35	1.25-1.40	0.2-0.6	0.12-0.17	3.0-5.9	0.0-0.5	.32	.32			
	36-60	27-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
Sasabe----------	0-3	10-20	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-1.0	.24	.24	5	3	86
	3-11	25-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
	11-36	35-40	1.25-1.40	0.2-0.6	0.17-0.21	6.0-8.9	0.0-0.5	.32	.32			
	36-60	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
Diaspar----------	0-20	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.17	.24	5	3	86
	20-41	20-35	1.25-1.40	0.6-2	0.14-0.19	3.0-5.9	0.0-0.5	.24	.32			
	41-60	20-35	1.25-1.40	0.6-2	0.08-0.13	3.0-5.9	0.0-0.5	.24	.32			
41:												
Crowbar----------	0-1	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.24	.28	5	5	56
	1-12	18-35	1.25-1.40	0.2-0.6	0.09-0.13	3.0-5.9	0.0-2.0	.17	.32			
	12-26	18-35	1.25-1.40	0.2-0.6	0.03-0.06	3.0-5.9	0.0-1.0	.05	.32			
	26-60	20-35	1.25-1.40	0.2-0.6	0.03-0.06	3.0-5.9	0.0-1.0	.05	.32			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
41:												
Brunopeak----------	0-3	15-20	1.35-1.50	2-6	0.05-0.08	0.0-2.9	1.0-3.0	.10	.24	3	7	38
	3-16	30-40	1.25-1.40	0.2-0.6	0.05-0.08	3.0-5.9	1.0-2.0	.05	.37			
	16-42	40-50	1.25-1.40	0.06-0.2	0.04-0.07	6.0-8.9	0.0-1.0	.05	.32			
	42-60	35-50	1.25-1.40	0.06-0.2	0.04-0.07	6.0-8.9	0.0-1.0	.05	.32			
42:												
Deloro----------	0-2	5-15	1.35-1.50	2-6	0.05-0.08	0.0-2.9	1.0-2.0	.10	.24	1	7	38
	2-11	30-35	1.25-1.40	0.2-0.6	0.03-0.06	0.0-2.9	0.0-1.0	.05	.32			
	11-19	40-55	1.15-1.30	0.06-0.2	0.03-0.06	3.0-5.9	0.0-1.0	.10	.37			
	19-29	---	---	---	---	---	---	---	---			
	29-60	---	---	---	---	---	---	---	---			
Leyte----------	0-1	5-15	1.35-1.50	2-6	0.07-0.10	0.0-2.9	1.0-3.0	.15	.24	1	8	0
	1-4	35-40	1.25-1.40	0.2-0.6	0.08-0.13	0.0-2.9	0.0-3.0	.10	.37			
	4-12	40-55	1.15-1.30	0.06-0.2	0.09-0.13	3.0-5.9	0.0-2.0	.24	.37			
	12-60	---	---	---	---	---	---	---	---			
Lampshire----------	0-1	10-20	1.35-1.50	2-6	0.05-0.08	0.0-2.9	1.0-2.0	.10	.24	1	7	38
	1-9	10-20	1.35-1.50	2-6	0.05-0.08	0.0-2.9	1.0-2.0	.10	.24			
	9-60	---	---	---	---	---	---	---	---			
43:												
Denab----------	0-1	3-15	1.35-1.50	2-6	0.07-0.10	0.0-2.9	1.0-3.0	.10	.24	1	6	48
	1-7	7-18	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.5-2.0	.28	.32			
	7-15	---	---	---	---	---	---	---	---			
	15-60	---	---	---	---	---	---	---	---			
Castledome----------	0-1	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-2.0	.20	.28	2	5	56
	1-2	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.32	.32			
	2-9	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.5-1.0	.24	.32			
	9-34	---	---	---	---	---	---	---	---			
	34-60	---	---	---	---	---	---	---	---			
44:												
Denied Access.												
45:												
Diaspar----------	0-6	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	6-10	10-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.24	.24			
	10-60	10-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
46:												
Diaspar----------	0-6	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	6-10	10-18	1.35-1.50	2-6	0.07-0.08	0.0-2.9	0.5-1.0	.24	.24			
	10-60	10-18	1.35-1.50	2-6	0.07-0.08	0.0-2.9	0.0-0.5	.24	.24			
47:												
Dona Ana----------	0-2	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-1.0	.24	.24	2	3	86
	2-16	18-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-1.0	.32	.32			
	16-24	18-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
	24-38	5-10	1.35-1.50	6-20	0.05-0.08	0.0-2.9	0.0-0.5	.05	.17			
	38-60	2-5	1.45-1.60	6-20	0.02-0.04	0.0-2.9	0.0-0.5	.02	.15			
Mohave----------	0-2	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-1.0	.24	.24	3	3	86
	2-13	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-1.0	.32	.32			
	13-22	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
	22-35	20-35	1.25-1.40	0.2-0.6	0.09-0.13	0.0-2.9	0.0-0.5	.15	.32			
	35-60	2-5	1.45-1.60	6-20	0.08-0.12	0.0-2.9	0.0-0.5	.17	.17			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
48:												
Doubleadobe----------	0-1	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.24	.24	2	3	86
	1-4	27-35	1.25-1.40	0.2-0.6	0.15-0.19	3.0-5.9	0.5-2.0	.32	.32			
	4-13	40-55	1.15-1.30	0.06-0.2	0.11-0.13	6.0-8.9	0.0-1.0	.32	.32			
	13-31	40-55	1.15-1.30	0.06-0.2	0.11-0.13	6.0-8.9	0.0-1.0	.32	.32			
	31-60	27-40	1.25-1.40	0.2-0.6	0.10-0.14	3.0-5.9	0.0-1.0	.15	.32			
49:												
Durazo----------	0-8	1-5	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.0-1.0	.17	.17	5	2	134
	8-48	1-5	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.0-1.0	.17	.17			
	48-60	20-30	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
50:												
Durazo----------	0-8	1-5	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.0-1.0	.17	.17	5	2	134
	8-48	1-5	1.45-1.60	6-20	0.04-0.05	0.0-2.9	0.0-1.0	.17	.17			
	48-60	20-30	1.25-1.40	0.2-0.6	0.11-0.13	3.0-5.9	0.0-0.5	.32	.32			
51:												
Durazo----------	0-6	1-5	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.0-1.0	.17	.17	5	2	134
	6-44	1-5	1.45-1.60	6-20	0.04-0.05	0.0-2.9	0.0-1.0	.17	.17			
	44-60	5-15	1.35-1.50	2-6	0.07-0.08	0.0-2.9	0.0-0.5	.24	.24			
Gothard----------	0-3	10-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	1.0-2.0	.32	.32	2	4L	86
	3-8	5-20	1.35-1.50	2-6	0.07-0.12	0.0-2.9	0.5-2.0	.24	.24			
	8-18	25-35	1.25-1.40	0.2-0.6	0.11-0.15	3.0-5.9	0.0-1.0	.32	.32			
	18-30	20-35	1.25-1.40	0.2-0.6	0.07-0.10	3.0-5.9	0.0-1.0	.32	.32			
	30-60	45-55	1.15-1.30	0.06-0.2	0.07-0.08	6.0-8.9	0.0-1.0	.32	.32			
52:												
Durazo----------	0-2	1-5	1.45-1.60	6-20	0.08-0.12	0.0-2.9	0.0-1.0	.20	.20	5	2	134
	2-51	1-5	1.45-1.60	6-20	0.08-0.12	0.0-2.9	0.0-1.0	.20	.20			
	51-60	5-10	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
Courtland----------	0-1	5-10	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24	5	4	86
	1-5	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.24	.24			
	5-12	10-20	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.24	.24			
	12-39	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-1.0	.32	.32			
	39-60	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-1.0	.32	.32			
53:												
Durazo----------	0-6	1-5	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.0-1.0	.17	.17	5	2	134
	6-44	1-5	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.0-1.0	.17	.17			
	44-60	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
McAllister----------	0-7	10-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	1.0-2.0	.32	.32	3	4L	86
	7-26	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.5-2.0	.32	.32			
	26-60	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
54:												
Elfrida----------	0-9	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.32	.32	3	4L	86
	9-23	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.32	.32			
	23-46	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-1.0	.32	.32			
	46-60	40-45	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-1.0	.32	.32			
55:												
Elfrida----------	0-9	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.32	.32	3	4L	86
	9-23	27-35	1.25-1.40	0.2-0.6	0.13-0.15	3.0-5.9	1.0-2.0	.32	.32			
	23-46	27-35	1.25-1.40	0.2-0.6	0.13-0.15	3.0-5.9	0.0-1.0	.32	.32			
	46-60	40-45	1.15-1.30	0.06-0.2	0.10-0.13	6.0-8.9	0.0-1.0	.32	.32			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
56:												
Elgin----------	0-1	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.20	.28	3	5	56
	1-10	40-55	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	1.0-2.0	.32	.32			
	10-22	35-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.24	.32			
	22-38	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.24	.32			
	38-60	20-35	1.25-1.40	0.2-0.6	0.09-0.13	3.0-5.9	0.0-0.5	.20	.32			
McAllister----------	0-1	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.24	.28	3	4	86
	1-9	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.32	.32			
	9-20	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.5-2.0	.24	.32			
	20-34	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.5-1.0	.24	.32			
	34-60	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.17	.24			
Stronghold----------	0-1	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	2	4L	86
	1-19	8-18	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-1.0	.24	.32			
	19-41	5-18	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.0-0.5	.15	.24			
	41-51	8-18	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.32	.32			
	51-60	3-10	1.45-1.60	6-20	0.01-0.03	0.0-2.9	0.0-0.5	.02	.17			
57:												
Elgin----------	0-2	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.15	.24	3	5	56
	2-7	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.5-1.0	.28	.32			
	7-19	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.5-1.0	.32	.32			
	19-26	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	26-43	28-40	1.25-1.40	0.2-0.6	0.08-0.13	3.0-5.9	0.0-0.5	.10	.32			
	43-60	10-20	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.0-0.5	.05	.20			
Outlaw----------	0-2	10-20	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.20	.24	4	3	86
	2-13	45-70	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.5-2.0	.32	.32			
	13-28	45-70	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.0-0.5	.32	.32			
	28-60	15-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.0-0.5	.24	.32			
58:												
Elgin----------	0-1	8-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.10	.28	3	5	56
	1-15	40-55	1.15-1.30	0.06-0.2	0.14-0.16	3.0-5.9	0.5-1.0	.32	.32			
	15-21	25-35	1.25-1.40	0.2-0.6	0.09-0.13	0.0-2.9	0.0-0.5	.20	.32			
	21-27	8-18	1.35-1.50	2-6	0.07-0.11	0.0-2.9	0.0-0.5	.17	.24			
	27-60	8-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-0.5	.17	.24			
Stronghold----------	0-2	8-18	1.35-1.50	0.6-6	0.06-0.11	0.0-2.9	1.0-2.0	.10	.24	2	7	38
	2-18	8-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-1.0	.10	.24			
	18-60	3-15	1.45-1.60	2-20	0.03-0.08	0.0-2.9	0.0-0.5	.05	.17			
59:												
Eloma----------	0-3	18-25	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-2.0	.17	.32	5	6	48
	3-30	40-60	1.15-1.30	0.06-0.2	0.06-0.10	3.0-5.9	0.5-2.0	.10	.32			
	30-42	30-40	1.25-1.40	0.2-0.6	0.08-0.13	0.0-2.9	0.0-1.0	.10	.32			
	42-60	25-35	1.25-1.40	0.2-0.6	0.06-0.10	0.0-2.9	0.0-0.5	.05	.32			
60:												
Eloma----------	0-1	5-15	1.35-1.50	2-6	0.05-0.08	0.0-2.9	1.0-2.0	.05	.24	5	8	0
	1-10	30-40	1.25-1.40	0.2-0.6	0.08-0.13	0.0-2.9	0.5-2.0	.10	.32			
	10-27	40-60	1.15-1.30	0.06-0.2	0.06-0.10	3.0-5.9	0.0-1.0	.10	.32			
	27-60	40-60	1.15-1.30	0.06-0.2	0.03-0.06	3.0-5.9	0.0-0.5	.05	.32			
Caralampi----------	0-1	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.10	.24	5	8	0
	1-12	30-35	1.25-1.40	0.2-0.6	0.12-0.17	0.0-2.9	0.5-2.0	.20	.32			
	12-50	30-35	1.25-1.40	0.2-0.6	0.08-0.13	0.0-2.9	0.0-1.0	.10	.32			
	50-60	3-10	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-0.5	.05	.17			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
60:												
White House----------	0-1	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	4	3	86
	1-5	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.5-2.0	.32	.32			
	5-35	40-55	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-1.0	.32	.32			
	35-60	40-55	1.15-1.30	0.2-0.6	0.03-0.06	6.0-8.9	0.0-0.5	.05	.32			
61:												
Epitaph----------	0-1	30-40	1.25-1.40	0.2-0.6	0.08-0.13	3.0-5.9	1.0-2.0	.10	.32	2	7	38
	1-6	35-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-2.0	.32	.32			
	6-27	35-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-2.0	.32	.32			
	27-38	---	---	---	---	---	---	---	---			
	38-60	---	---	---	---	---	---	---	---			
62:												
Far----------	0-1	---	---	---	---	---	---	---	---	1	8	0
	1-3	5-15	1.35-1.50	2-6	0.08-0.12	0.0-2.9	2.0-4.0	.10	.20			
	3-16	5-15	1.35-1.50	2-6	0.06-0.09	0.0-2.9	2.0-4.0	.10	.20			
	16-60	---	---	---	---	---	---	---	---			
Hogris----------	0-2	---	---	---	---	---	---	---	---	5	8	0
	2-5	5-18	1.35-1.50	2-6	0.03-0.06	0.0-2.9	0.5-1.0	.10	.24			
	5-14	5-18	1.35-1.50	2-6	0.03-0.06	0.0-2.9	0.0-0.5	.10	.24			
	14-38	5-18	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.10	.24			
	38-60	5-18	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.10	.24			
63:												
Far----------	0-1	---	---	---	---	---	---	---	---	1	8	0
	1-7	10-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	2.0-4.0	.10	.24			
	7-16	10-20	1.35-1.50	2-6	0.05-0.09	0.0-2.9	2.0-4.0	.10	.28			
	16-60	---	---	---	---	---	---	---	---			
Huachuca----------	0-3	---	---	---	---	---	---	---	---	1	8	48
	3-8	7-18	1.25-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-3.0	.17	.28			
	8-60	---	---	---	---	---	---	---	---			
Hogris----------	0-2	---	---	---	---	---	---	---	---	5	8	0
	2-9	5-18	1.25-1.40	2-6	0.05-0.07	0.0-2.9	0.5-1.0	.10	.24			
	9-14	5-18	1.35-1.50	2-6	0.03-0.06	0.0-2.9	0.0-0.5	.10	.24			
	14-60	5-18	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.10	.24			
64:												
Far----------	0-1	---	---	---	---	---	---	---	---	1	8	0
	1-7	10-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	2.0-4.0	.10	.24			
	7-16	10-20	1.35-1.50	2-6	0.05-0.09	0.0-2.9	2.0-4.0	.10	.28			
	16-60	---	---	---	---	---	---	---	---			
Huachuca----------	0-3	---	---	---	---	---	---	---	---	1	8	48
	3-8	7-18	1.25-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-3.0	.17	.28			
	8-60	---	---	---	---	---	---	---	---			
Hogris----------	0-2	---	---	---	---	---	---	---	---	5	8	0
	2-9	5-18	1.25-1.40	2-6	0.04-0.07	0.0-2.9	0.5-1.0	.10	.24			
	9-14	5-18	1.35-1.50	2-6	0.03-0.06	0.0-2.9	0.0-0.5	.10	.24			
	14-60	5-18	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.10	.24			
65:												
Forrest----------	0-6	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.32	.32	3	4	86
	6-28	40-55	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	1.0-2.0	.32	.32			
	28-37	40-55	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	37-60	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
66:												
Forrest----------	0-6	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.32	.32	3	4	86
	6-28	40-55	1.15-1.30	0.06-0.2	0.10-0.13	6.0-8.9	1.0-2.0	.32	.32			
	28-37	40-55	1.15-1.30	0.06-0.2	0.10-0.13	6.0-8.9	0.0-0.5	.32	.32			
	37-60	30-40	1.25-1.40	0.2-0.6	0.13-0.15	3.0-5.9	0.0-0.5	.32	.32			
67:												
Forrest----------	0-6	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.24	.24	3	3	86
	6-28	40-55	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	1.0-2.0	.32	.32			
	28-37	40-55	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	37-60	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
68:												
Forrest----------	0-6	5-20	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	1.0-2.0	.43	.43	3	5	56
	6-28	40-55	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	1.0-2.0	.32	.32			
	28-37	40-55	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	37-60	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
69:												
Forrest----------	0-6	5-20	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	1.0-2.0	.43	.43	3	5	56
	6-28	40-55	1.15-1.30	0.06-0.2	0.10-0.13	6.0-8.9	1.0-2.0	.32	.32			
	28-37	40-55	1.15-1.30	0.06-0.2	0.10-0.13	6.0-8.9	0.0-0.5	.32	.32			
	37-60	30-40	1.25-1.40	0.2-0.6	0.13-0.15	3.0-5.9	0.0-0.5	.32	.32			
70:												
Forrest----------	0-1	8-12	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.20	.20	3	3	86
	1-7	25-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	1.0-2.0	.28	.28			
	7-39	35-45	1.15-1.40	0.06-0.6	0.14-0.21	6.0-8.9	0.0-0.5	.28	.28			
	39-60	20-26	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.1	.32	.32			
Bonita----------	0-2	10-15	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	1.0-3.0	.32	.32	5	5	56
	2-5	27-35	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	1.0-3.0	.32	.32			
	5-20	40-55	1.15-1.30	0.001-0.06	0.13-0.17	9.0-10.9	1.0-3.0	.32	.32			
	20-40	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-2.0	.32	.32			
	40-60	27-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-1.0	.32	.32			
71:												
Gardencan----------	0-4	10-20	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	4-20	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
	20-39	27-35	1.25-1.40	0.2-0.6	0.12-0.17	3.0-5.9	0.0-0.5	.24	.32			
	39-60	20-35	1.25-1.40	0.2-0.6	0.06-0.10	3.0-5.9	0.0-0.5	.24	.32			
Lanque----------	0-4	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.24	.24	5	3	86
	4-19	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.20	.20			
	19-46	5-15	1.35-1.50	2-6	0.07-0.13	0.0-2.9	0.3-2.0	.20	.20			
	46-60	20-35	1.25-1.40	0.2-0.6	0.14-0.19	0.0-2.9	0.3-1.0	.32	.32			
72:												
Glendale----------	0-7	5-15	1.35-1.50	2-6	0.13-0.17	0.0-2.9	0.0-0.5	.55	.55	5	3	86
	7-31	27-35	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.37	.37			
	31-45	15-27	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.0-0.5	.32	.32			
	45-60	27-35	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.37	.37			
73:												
Gothard----------	0-3	10-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	1.0-2.0	.32	.32	2	4L	86
	3-8	5-20	1.35-1.50	2-6	0.07-0.12	0.0-2.9	0.5-2.0	.24	.24			
	8-18	25-35	1.25-1.40	0.2-0.6	0.11-0.15	3.0-5.9	0.0-1.0	.32	.32			
	18-30	20-35	1.25-1.40	0.2-0.6	0.07-0.10	3.0-5.9	0.0-1.0	.32	.32			
	30-60	45-55	1.15-1.30	0.06-0.2	0.07-0.08	6.0-8.9	0.0-1.0	.32	.32			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
74:												
Gothard----------	0-3	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.24	.24	2	3	86
	3-8	5-20	1.35-1.50	2-6	0.07-0.12	0.0-2.9	0.5-2.0	.24	.24			
	8-18	25-35	1.25-1.40	0.2-0.6	0.11-0.15	3.0-5.9	0.0-1.0	.32	.32			
	18-30	20-35	1.25-1.40	0.2-0.6	0.07-0.10	3.0-5.9	0.0-1.0	.32	.32			
	30-60	45-55	1.15-1.30	0.06-0.2	0.07-0.08	6.0-8.9	0.0-1.0	.32	.32			
75:												
Graham----------	0-1	15-25	1.25-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-3.0	.10	.32	1	8	0
	1-10	40-55	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.0-2.0	.24	.32			
	10-60	---	---	---	---	---	---	---	---			
Lampshire----------	0-5	10-20	1.25-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-2.0	.15	.32	1	8	0
	5-60	---	---	---	---	---	---	---	---			
76:												
Graveyard----------	0-3	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-1.0	.28	.28	2	3	86
	3-9	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
	9-16	5-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-0.5	.10	.24			
	16-34	5-18	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.05	.24			
	34-56	5-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-0.5	.10	.24			
	56-60	5-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-0.5	.05	.24			
Sierravista----------	0-3	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-1.0	.28	.28	4	3	86
	3-21	18-35	1.25-1.40	0.2-0.6	0.06-0.10	3.0-5.9	0.0-0.5	.10	.32			
	21-42	18-35	1.25-1.40	0.2-0.6	0.06-0.10	3.0-5.9	0.0-0.5	.10	.32			
	42-60	5-15	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.05	.24			
77:												
Grizzle----------	0-1	5-15	1.35-1.50	2-6	0.07-0.12	0.0-2.9	0.0-0.5	.20	.20	3	3	86
	1-6	28-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
	6-32	15-27	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.0-0.5	.32	.32			
	32-50	---	---	---	---	---	---	---	---			
	50-60	---	---	---	---	---	---	---	---			
78:												
Guest----------	0-6	30-40	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.37	.37	5	7	38
	6-14	30-40	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.37	.37			
	14-39	40-50	1.15-1.30	0.06-0.2	0.13-0.17	6.0-8.9	0.5-1.0	.32	.32			
	39-60	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.28	.28			
79:												
Guest----------	0-7	25-40	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.32	.32	5	4	86
	7-60	35-50	1.15-1.30	0.06-0.2	0.13-0.21	6.0-8.9	0.5-1.0	.32	.32			
80:												
Guest----------	0-6	30-40	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.37	.37	5	7	38
	6-14	30-40	1.15-1.30	0.2-0.6	0.13-0.15	3.0-5.9	0.5-1.0	.37	.37			
	14-39	40-50	1.15-1.30	0.06-0.2	0.10-0.12	6.0-8.9	0.5-1.0	.32	.32			
	39-60	5-18	1.35-1.50	2-6	0.07-0.09	0.0-2.9	0.5-1.0	.28	.28			
81:												
Guest----------	0-9	35-50	1.15-1.30	0.06-0.2	0.13-0.17	6.0-8.9	0.5-1.0	.37	.37	5	4	86
	9-60	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.5-1.0	.32	.32			
82:												
Guest----------	0-9	35-50	1.15-1.30	0.06-0.2	0.13-0.17	6.0-8.9	0.5-1.0	.37	.37	5	4	86
	9-60	40-50	1.15-1.30	0.06-0.2	0.10-0.13	6.0-8.9	0.5-1.0	.32	.32			
83:												
Guest----------	0-9	40-50	1.15-1.30	0.06-0.2	0.13-0.17	6.0-8.9	0.5-1.0	.32	.32	5	4	86
	9-60	40-50	1.15-1.30	0.06-0.2	0.10-0.13	6.0-8.9	0.5-1.0	.32	.32			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
83:												
Cogswell----------	0-5	30-40	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	1.0-3.0	.37	.37	3	4L	86
	5-20	40-50	1.15-1.30	0.06-0.2	0.10-0.12	6.0-8.9	0.5-2.0	.37	.37			
	20-33	40-55	1.15-1.30	0.06-0.2	0.10-0.13	6.0-8.9	0.0-1.0	.32	.32			
	33-42	27-35	1.25-1.40	0.2-0.6	0.13-0.15	3.0-5.9	0.0-0.5	.32	.32			
	42-53	5-15	1.35-1.50	0.6-2	0.07-0.09	0.0-2.9	0.0-0.5	.28	.28			
	53-57	10-25	1.25-1.40	0.6-2	0.11-0.12	0.0-2.9	0.0-0.5	.32	.32			
	57-63	30-40	1.15-1.30	0.2-0.6	0.10-0.12	3.0-5.9	0.0-0.5	.37	.37			
84:												
Guest----------	0-1	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.37	.37	5	4L	86
	1-10	35-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-1.0	.32	.32			
	10-38	35-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	38-60	35-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
Riveroad----------	0-14	10-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.24	.24	5	3	86
	14-22	18-27	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	0.0-1.0	.37	.37			
	22-33	27-35	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.37	.37			
	33-53	40-50	1.15-1.30	0.06-0.2	0.13-0.17	3.0-5.9	0.0-0.5	.32	.32			
	53-60	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.20	.20			
85:												
Hantz----------	0-3	15-30	1.15-1.30	0.6-2	0.14-0.19	0.0-2.9	0.0-0.5	.43	.43	5	4L	86
	3-14	30-40	1.15-1.30	0.2-0.6	0.15-0.19	3.0-5.9	0.0-0.5	.32	.32			
	14-42	40-50	1.15-1.30	0.06-0.2	0.09-0.12	6.0-8.9	0.0-0.5	.37	.37			
	42-60	40-50	1.15-1.30	0.06-0.2	0.09-0.12	6.0-8.9	0.0-0.5	.37	.37			
86:												
Haplustolls----------	0-2	---	---	---	---	---	---	---	---	4	8	0
	2-8	3-8	1.45-1.60	6-20	0.03-0.05	0.0-2.9	1.0-3.0	.10	.17			
	8-27	5-10	1.35-1.50	6-20	0.05-0.08	0.0-2.9	1.0-3.0	.10	.20			
	27-37	3-8	1.45-1.60	20-101	0.02-0.04	0.0-2.9	0.0-1.0	.10	.20			
	37-42	5-10	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-1.0	.15	.24			
	42-60	3-8	1.45-1.60	20-101	0.01-0.03	0.0-2.9	0.0-1.0	.10	.10			
Fluvaquents----------	0-1	3-10	1.35-1.50	2-6	0.03-0.06	0.0-2.9	1.0-2.0	.10	.28	3	8	0
	1-2	1-5	1.45-1.60	20-101	0.01-0.03	0.0-2.9	1.0-2.0	.02	.10			
	2-5	3-10	1.35-1.50	2-6	0.03-0.06	0.0-2.9	0.0-5.0	.10	.28			
	5-20	3-10	1.35-1.50	2-6	0.03-0.06	0.0-2.9	0.0-5.0	.10	.28			
	20-60	1-5	1.45-1.60	20-20	0.01-0.03	0.0-2.9	0.0-5.0	.02	.10			
87:												
Haplustolls----------	0-2	---	---	---	---	---	---	---	---	2	8	0
	2-10	5-15	1.35-1.50	2-6	0.08-0.12	0.0-2.9	1.0-3.0	.15	.28			
	10-22	3-8	1.45-1.60	20-101	0.01-0.03	0.0-2.9	1.0-2.0	.05	.10			
	22-60	3-8	1.45-1.60	20-101	0.01-0.03	0.0-2.9	0.0-1.0	.05	.10			
Fluvaquents----------	0-10	2-8	1.45-1.60	20-101	0.01-0.03	0.0-2.9	1.0-2.0	.02	.10	4	8	0
	10-25	2-8	1.45-1.60	20-101	0.01-0.03	0.0-2.9	0.0-0.5	.02	.10			
	25-60	2-8	1.45-1.60	20-101	0.01-0.03	0.0-2.9	0.0-0.5	.02	.10			
88:												
Hayhollow----------	0-2	---	---	---	---	---	---	---	---	5	1	220
	2-9	3-7	1.45-1.60	6-20	0.05-0.08	0.0-2.9	1.0-3.0	.10	.10			
	9-22	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.24	.24			
	22-34	3-7	1.45-1.60	6-20	0.05-0.08	0.0-2.9	1.0-3.0	.10	.10			
	34-51	5-15	1.35-1.60	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.24	.24			
	51-60	5-15	1.35-1.60	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.24	.24			
Rafter----------	0-6	---	1.35-1.50	2-6	0.08-0.12	0.0-2.9	1.0-3.0	.15	.28	5	5	56
	6-24	---	1.35-1.50	2-6	0.03-0.05	0.0-2.9	1.0-3.0	.02	.24			
	24-42	---	1.45-1.60	6-20	0.01-0.03	0.0-2.9	0.5-1.0	.02	.10			
	42-60	---	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.5-1.0	.02	.24			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
88:												
Riverwash	0-60	---	---	---	---	---	---	---	---	---	---	---
89:												
Kaboom	0-2	10-20	1.35-1.50	2-6	0.10-0.13	0.0-2.9	0.0-0.5	.10	.24	1	6	48
	2-5	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
	5-13	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
	13-60	---	---	---	---	---	---	---	---			
Reeup	0-2	10-27	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.0-0.5	.32	.32	2	4L	86
	2-7	27-40	1.25-1.40	0.2-0.6	0.12-0.16	3.0-5.9	0.0-0.5	.24	.32			
	7-29	35-45	1.25-1.40	0.06-0.2	0.14-0.21	6.0-8.9	0.0-0.5	.32	.32			
	29-32	35-40	1.25-1.40	0.2-0.6	0.08-0.13	6.0-8.9	0.0-0.5	.24	.32			
	32-60	---	---	---	---	---	---	---	---			
90:												
Kahn fine sandy loam	0-8	8-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-2.0	.28	.28	2	3	86
	8-18	18-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.5-2.0	.32	.32			
	18-60	25-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
Kahn silt loam	0-1	10-25	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	0.5-2.0	.43	.43	2	4L	86
	1-15	18-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.5-2.0	.32	.32			
	15-43	25-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
	43-60	25-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
91:												
Kahn	0-2	10-20	1.25-1.40	0.02-6	0.13-0.18	0.0-2.9	0.0-1.0	.24	.32	2	4L	86
	2-10	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.28	.32			
	10-41	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
	41-60	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
Zapolote	0-1	27-35	1.25-1.40	0.2-0.6	0.17-0.21	6.0-8.9	0.5-2.0	.24	.32	2	4L	86
	1-5	27-40	1.25-1.40	0.2-0.6	0.17-0.21	6.0-8.9	0.5-1.0	.28	.32			
	5-29	40-55	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.0-0.5	.32	.32			
	29-60	40-50	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.0-0.5	.32	.32			
92:												
Karro	0-14	10-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	1.0-2.0	.32	.32	2	4L	86
	14-44	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-1.0	.32	.32			
	44-60	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
93:												
Karro	0-14	10-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	1.0-2.0	.32	.32	2	4L	86
	14-44	27-35	1.25-1.40	0.2-0.6	0.13-0.15	3.0-5.9	0.0-1.0	.32	.32			
	44-60	27-35	1.25-1.40	0.2-0.6	0.13-0.15	3.0-5.9	0.0-0.5	.32	.32			
94:												
Keysto	0-9	3-10	1.35-1.50	2-6	0.05-0.08	0.0-2.9	1.0-3.0	.10	.24	4	7	38
	9-30	3-10	1.35-1.50	2-6	0.03-0.05	0.0-2.9	1.0-2.0	.05	.24			
	30-60	3-10	1.45-1.60	6-20	0.01-0.03	0.0-2.9	0.0-0.5	.02	.10			
Riverwash	0-60	---	---	---	---	---	---	---	---	---	---	---
95:												
Kuykendall	0-1	35-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	1.0-3.0	.20	.32	1	6	48
	1-7	45-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	1.0-3.0	.32	.32			
	7-18	50-65	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.5-2.0	.24	.32			
	18-60	---	---	---	---	---	---	---	---			
Rock outcrop	0-60	---	---	---	---	---	---	---	---	---	---	---

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
96:												
Lanque----------	0-4	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.20	.24	5	5	56
	4-12	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.20	.24			
	12-33	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.24	.28			
	33-60	5-15	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.5-1.0	.28	.32			
Stanford----------	0-2	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-3.0	.24	.28	5	3	86
	2-10	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.20	.24			
	10-16	10-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24			
	16-30	20-27	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	1.0-2.0	.28	.32			
	30-60	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.28	.32			
97:												
Libby----------	0-1	10-20	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-0.5	.10	.24	2	6	48
	1-13	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	13-25	40-50	1.15-1.30	0.06-0.2	0.10-0.13	6.0-8.9	0.0-0.5	.24	.32			
	25-60	30-40	1.25-1.40	0.2-0.6	0.08-0.13	6.0-8.9	0.0-0.5	.24	.32			
Gulch----------	0-1	5-15	1.35-1.50	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.15	.24	4	5	56
	1-3	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
	3-10	20-35	1.25-1.40	0.2-0.6	0.14-0.16	3.0-5.9	0.0-0.5	.32	.32			
	10-24	27-35	1.25-1.40	0.2-0.6	0.17-0.20	3.0-5.9	0.0-0.5	.32	.32			
	24-40	27-40	1.25-1.40	0.2-0.6	0.12-0.17	3.0-5.9	0.0-0.5	.24	.32			
	40-60	27-40	1.25-1.40	0.2-0.6	0.12-0.17	3.0-5.9	0.0-0.5	.24	.32			
98:												
Luckyhills----------	0-3	3-10	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.0-1.0	.17	.17	2	2	134
	3-26	8-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
	26-34	8-15	1.35-1.50	2-6	0.07-0.11	0.0-2.9	0.0-0.5	.15	.24			
	34-60	10-18	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	0.0-0.5	.43	.43			
99:												
Luckyhills----------	0-2	5-15	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-1.0	.05	.24	2	7	38
	2-13	5-18	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.0-1.0	.10	.24			
	13-31	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
	31-39	5-18	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.0-0.5	.10	.24			
	39-60	10-18	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-0.5	.17	.32			
McNeal----------	0-1	5-15	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-1.0	.05	.24	2	7	38
	1-21	30-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.37	.37			
	21-41	20-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
	41-60	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
100:												
Lutzcan----------	0-2	20-27	1.25-1.40	0.2-0.6	0.06-0.10	0.0-2.9	1.0-3.0	.05	.32	2	8	0
	2-18	28-35	1.25-1.40	0.2-0.6	0.07-0.14	3.0-5.9	0.6-2.0	.10	.32			
	18-60	---	---	---	---	---	---	---	---			
Yarbam----------	0-2	5-18	1.25-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-3.0	.05	.32	1	8	0
	2-9	5-18	1.25-1.40	2-6	0.07-0.11	0.0-2.9	1.0-2.0	.10	.32			
	9-60	---	---	---	---	---	---	---	---			
101:												
Mabray----------	0-5	15-25	1.25-1.40	0.6-2	0.07-0.11	0.0-2.9	1.0-2.0	.05	.32	1	8	0
	5-11	15-25	1.25-1.40	0.6-2	0.04-0.11	0.0-2.9	0.5-1.0	.05	.32			
	11-60	---	---	---	---	---	---	---	---			
Chiricahua----------	0-1	20-35	1.25-1.40	0.2-0.6	0.08-0.13	3.0-5.9	1.0-2.0	.10	.32	2	8	0
	1-20	35-45	1.15-1.40	0.06-0.2	0.09-0.16	6.0-8.9	1.0-2.0	.24	.32			
	20-60	---	---	---	---	---	---	---	---			
Rock outcrop----------	0-60	---	---	---	---	---	---	---	---	---	---	---

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
102:												
Mabray----------	0-8	15-25	1.25-1.40	0.6-2	0.04-0.07	0.0-2.9	1.0-2.0	.05	.32	1	8	0
	8-11	15-25	1.25-1.40	0.6-2	0.04-0.11	0.0-2.9	0.5-1.0	.05	.32			
	11-60	---	---	---	---	---	---	---	---			
Rock outcrop----------	0-60	---	---	---	---	---	---	---	---	---	---	---
103:												
Magoffin----------	0-2	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.20	.24	1	4	86
	2-12	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24			
	12-15	5-18	1.35-1.50	2-6	0.07-0.10	0.0-2.9	1.0-2.0	.15	.24			
	15-60	---	---	---	---	---	---	---	---			
Rock outcrop----------	0-60	---	---	---	---	---	---	---	---	---	---	---
Cherrycow----------	0-2	5-10	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.20	.24	3	4	86
	2-11	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.24	.24			
	11-25	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.5-2.0	.32	.32			
	25-33	40-50	1.25-1.40	0.06-0.2	0.12-0.17	6.0-8.9	0.5-1.0	.32	.32			
	33-40	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
	40-60	---	---	---	---	---	---	---	---			
104:												
Major fine sandy loam	0-2	5-12	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.24	.24	2	3	86
	2-7	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
	7-22	7-27	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-0.5	.24	.32			
	22-36	7-27	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.0-0.5	.32	.32			
	36-60	27-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
Major silt loam-------	0-7	5-20	1.15-1.30	2-6	0.15-0.21	0.0-2.9	0.0-1.0	.43	.43	2	4L	86
	7-21	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
	21-50	18-27	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.0-0.5	.32	.32			
	50-60	40-50	1.15-1.30	0.2-0.6	0.13-0.17	3.0-5.9	0.0-0.5	.32	.32			
105:												
Mallet----------	0-2	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	5	4	86
	2-18	10-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.24	.24			
	18-35	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.20	.28			
	35-45	2-10	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.0-0.5	.15	.24			
	45-60	2-7	1.45-1.60	6-20	0.03-0.06	0.0-2.9	0.0-0.5	.05	.10			
Hooks----------	0-2	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	5	3	86
	2-14	27-35	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.32	.37			
	14-46	27-35	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.32	.37			
	46-60	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.28	.32			
106:												
Marsh.												
107:												
McAllister----------	0-8	10-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	1.0-2.0	.32	.32	3	4L	86
	8-27	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.5-2.0	.32	.32			
	27-60	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
108:												
McAllister----------	0-2	8-15	1.35-1.50	2-6	0.08-0.11	0.0-2.9	1.0-2.0	.17	.28	3	5	56
	2-35	24-35	1.25-1.40	0.2-0.6	0.09-0.12	3.0-5.9	0.5-2.0	.17	.32			
	35-60	10-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.15	.24			
Stronghold----------	0-1	3-10	1.45-1.60	6-20	0.03-0.05	0.0-2.9	1.0-2.0	.05	.17	2	6	48
	1-25	8-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-1.0	.10	.24			
	25-60	3-15	1.35-1.60	2-20	0.03-0.08	0.0-2.9	0.0-0.5	.05	.17			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
109:												
McNeal----------	0-2	5-15	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.0-1.0	.15	.24	2	5	56
	2-5	10-27	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.0-0.5	.32	.32			
	5-24	27-35	1.25-1.40	0.2-0.6	0.12-0.17	3.0-5.9	0.0-0.5	.15	.32			
	24-53	15-27	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.0-0.5	.32	.32			
	53-60	1-10	1.45-1.60	6-20	0.08-0.12	0.0-2.9	0.0-0.5	.17	.20			
110:												
McNeal----------	0-2	5-15	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.0-1.0	.15	.24	2	5	56
	2-5	10-27	1.25-1.40	0.6-2	0.11-0.12	0.0-2.9	0.0-0.5	.32	.32			
	5-24	27-35	1.25-1.40	0.2-0.6	0.10-0.11	3.0-5.9	0.0-0.5	.15	.32			
	24-53	15-27	1.25-1.40	0.6-2	0.11-0.12	0.0-2.9	0.0-0.5	.32	.32			
	53-60	1-10	1.45-1.60	6-20	0.07-0.08	0.0-2.9	0.0-0.5	.17	.20			
111:												
Monzingo----------	0-9	5-10	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.20	.24	4	3	86
	9-30	5-15	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.20	.37			
	30-60	10-18	1.85-1.95	0.6-2	0.08-0.18	0.0-2.9	0.0-0.5	.28	.28			
Ugyp----------	0-4	5-10	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.24	.28	2	3	86
	4-10	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.24	.28			
	10-33	5-18	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.32	.37			
	33-60	10-18	1.15-1.30	2-6	0.15-0.21	0.0-2.9	0.0-0.5	.32	.43			
Ugyp----------	0-4	5-10	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.24	.28	2	3	86
	4-10	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.24	.28			
	10-33	5-18	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.32	.37			
	33-60	10-18	1.15-1.30	2-6	0.15-0.21	0.0-2.9	0.0-0.5	.32	.43			
112:												
Naco----------	0-2	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.05	.28	3	5	56
	2-8	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.24	.24			
	8-15	40-60	1.15-1.30	0.001-0.06	0.06-0.10	9.0-10.9	0.5-1.0	.10	.32			
	15-44	40-60	1.15-1.30	0.001-0.06	0.06-0.10	9.0-10.9	0.0-0.5	.10	.32			
	44-60	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.0-0.5	.32	.32			
Ruins, thick surface--	0-22	1-5	1.45-1.60	6-20	0.08-0.12	0.0-2.9	0.0-0.5	.20	.20	4	2	134
	22-27	1-5	1.45-1.60	6-20	0.08-0.12	0.0-2.9	0.5-1.0	.20	.20			
	27-40	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.5-1.0	.32	.32			
	40-60	40-60	1.15-1.30	0.001-0.06	0.09-0.13	9.0-10.9	0.0-0.5	.20	.32			
Ruins----------	0-5	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.17	.28	4	3	86
	5-9	30-40	1.25-1.40	0.2-0.6	0.12-0.17	3.0-5.9	1.0-2.0	.20	.32			
	9-28	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.5-1.0	.32	.32			
	28-60	30-40	1.15-1.30	0.2-0.6	0.08-0.13	3.0-5.9	0.0-0.5	.10	.32			
113:												
Nolam----------	0-1	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-1.0	.24	.28	2	3	86
	1-19	20-35	1.25-1.40	0.2-0.6	0.06-0.10	3.0-5.9	0.0-0.5	.32	.32			
	19-38	10-20	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.20	.24			
	38-60	5-15	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.20	.24			
Libby----------	0-1	5-20	1.35-1.50	2-6	0.08-0.12	0.0-2.9	0.0-0.5	.17	.28	2	5	56
	1-8	10-25	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.0-0.5	.32	.32			
	8-23	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	23-60	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
Buntline----------	0-1	5-15	1.35-1.50	2-6	0.08-0.12	0.0-2.9	0.0-1.0	.15	.28	1	5	56
	1-8	10-20	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
	8-23	0-0	---	---	---	---	---	---	---			
	23-47	5-20	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.05	.24			
	47-60	20-30	1.25-1.40	0.2-0.6	0.14-0.19	0.0-2.9	0.0-0.5	.32	.32			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
114:												
Outlaw----------	0-1	30-40	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	1.0-3.0	.37	.37	4	4L	86
	1-32	60-75	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.5-2.0	.32	.32			
	32-46	20-27	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.0-0.5	.20	.32			
	46-60	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.24	.32			
Epitaph----------	0-1	30-40	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	1.0-3.0	.24	.37	2	4	86
	1-9	40-55	1.15-1.30	0.06-0.2	0.13-0.17	6.0-8.9	1.0-2.0	.37	.37			
	9-24	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	1.0-2.0	.32	.32			
	24-33	---	---	---	---	---	---	---	---			
	33-60	---	---	---	---	---	---	---	---			
Paramore----------	0-1	30-40	1.15-1.30	0.2-0.6	0.17-0.21	6.0-8.9	1.0-3.0	.28	.37	2	4	86
	1-8	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.5-2.0	.32	.32			
	8-22	40-60	1.15-1.30	0.001-0.06	0.14-0.16	9.0-10.9	0.5-1.0	.32	.32			
	22-60	---	---	---	---	---	---	---	---			
115:												
Oversight----------	0-3	5-15	1.35-1.50	2-6	0.07-0.10	0.0-2.9	1.0-2.0	.15	.24	5	7	38
	3-14	10-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	1.0-2.0	.10	.24			
	14-29	10-25	1.25-1.40	0.6-6	0.07-0.11	0.0-2.9	0.0-1.0	.10	.32			
	29-48	20-35	1.25-1.40	0.2-0.6	0.06-0.10	0.0-2.9	0.0-1.0	.05	.32			
	48-60	20-35	1.25-1.40	0.2-0.6	0.03-0.05	0.0-2.9	0.0-1.0	.05	.32			
116:												
Oversight----------	0-1	3-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.20	.24	5	3	86
	1-7	3-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.20	.24			
	7-15	3-15	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.5-1.0	.15	.24			
	15-42	3-15	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.02	.24			
	42-60	3-10	1.45-1.60	6-20	0.01-0.03	0.0-2.9	0.0-0.5	.02	.17			
117:												
Oversight----------	0-1	5-10	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-3.0	.24	.24	5	5	86
	1-12	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.24	.24			
	12-25	5-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.5-1.0	.05	.24			
	25-45	5-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.5-1.0	.05	.24			
	45-60	20-30	1.25-1.40	0.2-0.6	0.06-0.10	0.0-2.9	0.5-1.0	.10	.32			
Lanque----------	0-3	3-10	1.45-1.60	6-20	0.05-0.07	0.0-2.9	1.0-3.0	.17	.17	5	2	134
	3-25	3-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.24	.24			
	25-60	3-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-1.0	.24	.24			
118:												
Pedregosa----------	0-1	5-15	1.35-1.50	2-6	0.06-0.09	0.0-2.9	1.0-2.0	.10	.28	2	6	48
	1-7	10-18	1.35-1.50	2-6	0.06-0.09	0.0-2.9	1.0-2.0	.10	.28			
	7-13	---	---	---	---	---	---	---	---			
	13-60	5-15	1.35-1.50	2-6	0.05-0.10	0.0-2.9	0.0-0.5	.10	.24			
119:												
Pedregosa----------	0-2	5-18	1.35-1.50	2-6	0.07-0.10	0.0-2.9	1.0-2.0	.15	.24	2	6	48
	2-13	8-18	1.25-1.40	2-6	0.07-0.11	0.0-2.9	1.0-2.0	.10	.32			
	13-18	5-18	1.35-1.50	2-6	0.06-0.09	0.0-2.9	0.5-1.0	.10	.28			
	18-60	---	---	---	---	---	---	---	---			
Tombstone----------	0-2	8-15	1.35-1.50	2-6	0.05-0.08	0.0-2.9	1.0-2.0	.10	.24	2	7	38
	2-15	8-15	1.35-1.50	2-6	0.05-0.08	0.0-2.9	1.0-2.0	.05	.24			
	15-60	8-15	1.35-1.50	2-6	0.03-0.05	0.0-2.9	0.0-0.5	.05	.24			
120:												
Perilla----------	0-5	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-1.0	.20	.24	5	3	86
	5-21	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-1.0	.20	.24			
	21-29	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.24	.28			
	29-60	5-18	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.0-0.5	.15	.24			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
120:												
Durazo----------	0-10	1-5	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.0-1.0	.17	.17	5	2	134
	10-31	1-5	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.0-1.0	.17	.17			
	31-60	1-5	1.45-1.60	6-20	0.05-0.08	0.0-2.9	0.0-0.5	.10	.10			
121:												
Pits.												
122:												
Pits.												
Dumps.												
123:												
Quiburi----------	0-1	---	---	---	---	---	---	---	---	5	3	86
	1-6	5-18	1.35-1.50	2-6	0.13-0.17	0.0-2.9	0.0-1.0	.43	.55			
	6-36	5-18	1.35-1.50	2-6	0.13-0.17	0.0-2.9	0.0-0.5	.43	.55			
	36-51	5-18	1.35-1.50	2-6	0.13-0.21	0.0-2.9	0.0-0.5	.43	.55			
	51-60	5-18	1.35-1.50	2-6	0.13-0.17	0.0-2.9	0.0-0.5	.43	.55			
Fluvaquents----------	0-4	3-8	1.45-1.60	20-101	0.03-0.07	0.0-2.9	0.5-1.0	.10	.10	5	8	0
	4-20	3-8	1.45-1.60	20-101	0.03-0.07	0.0-2.9	0.5-1.0	.10	.10			
	20-50	3-8	1.45-1.60	20-101	0.03-0.07	0.0-2.9	0.0-0.5	.05	.10			
Riverwash----------	0-60	---	---	---	---	---	---	---	---	---	---	---
124:												
Rafter----------	0-2	5-10	1.35-1.50	2-6	0.07-0.10	0.0-2.9	1.0-3.0	.15	.24	5	6	48
	2-12	5-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	1.0-3.0	.10	.24			
	12-28	5-18	1.35-1.50	2-6	0.03-0.05	0.0-2.9	1.0-2.0	.05	.24			
	28-60	3-10	1.45-1.60	6-20	0.01-0.03	0.0-2.9	0.5-1.0	.02	.10			
Lanque----------	0-2	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-3.0	.20	.28	5	3	86
	2-24	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.17	.24			
	24-50	5-15	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.5-2.0	.15	.24			
	50-60	5-15	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.5-1.0	.15	.24			
125:												
Riveroad----------	0-1	10-25	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	1.0-2.0	.37	.37	5	5	56
	1-21	18-27	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	0.0-1.0	.37	.37			
	21-60	27-35	1.15-1.30	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.37	.37			
Ubik----------	0-5	5-15	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-1.0	.37	.37	5	5	56
	5-16	5-15	1.15-1.30	2-6	0.15-0.21	0.0-2.9	0.0-0.5	.32	.32			
	16-60	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
126:												
Riverwash----------	0-60	---	---	---	---	---	---	---	---	---	---	---
127:												
Riverwash----------	0-60	---	---	---	---	---	---	---	---	---	---	---
Bodecker----------	0-3	3-10	1.45-1.60	6-20	0.08-0.12	0.0-2.9	0.0-0.5	.17	.17	5	2	134
	3-12	3-10	1.45-1.60	6-20	0.04-0.05	0.0-2.9	0.0-0.5	.05	.15			
	12-29	3-10	1.45-1.60	20-101	0.02-0.05	0.0-2.9	0.0-0.5	.05	.15			
	29-48	3-10	1.45-1.60	6-20	0.04-0.05	0.0-2.9	0.0-0.5	.05	.15			
	48-60	3-10	1.45-1.60	20-101	0.02-0.05	0.0-2.9	0.0-0.5	.05	.15			
128:												
Rock outcrop----------	0-60	---	---	---	---	---	---	---	---	---	---	---

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
128:												
Magoffin----------	0-3	5-15	1.35-1.50	2-6	0.07-0.10	0.0-2.9	1.0-3.0	.15	.24	1	6	48
	3-13	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24			
	13-15	5-10	1.45-1.60	6-20	0.05-0.07	0.0-2.9	1.0-2.0	.15	.17			
	15-60	---	---	---	---	---	---	---	---			
129:												
Sasabe sandy loam-----	0-5	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-1.0	.24	.24	5	3	86
	5-13	25-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
	13-36	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	36-54	25-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
	54-60	30-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
Sasabe silt loam------	0-4	15-25	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	0.0-1.0	.43	.43	5	6	48
	4-13	27-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
	13-43	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	43-60	10-20	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
130:												
Sasabe----------	0-7	5-18	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.0-1.0	.15	.24	5	5	56
	7-10	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
	10-20	40-60	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.24	.32			
	20-30	25-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
	30-60	25-35	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
131:												
Sasabe----------	0-7	5-18	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.0-1.0	.15	.24	5	5	56
	7-10	5-18	1.35-1.50	2-6	0.07-0.08	0.0-2.9	0.0-0.5	.24	.24			
	10-20	40-60	1.15-1.30	0.06-0.2	0.10-0.13	6.0-8.9	0.0-0.5	.24	.32			
	20-30	25-35	1.25-1.40	0.2-0.6	0.11-0.13	3.0-5.9	0.0-0.5	.32	.32			
	30-60	25-35	1.25-1.40	0.2-0.6	0.11-0.13	3.0-5.9	0.0-0.5	.32	.32			
132:												
Schiefflin----------	0-6	3-10	1.45-1.60	6-20	0.05-0.08	0.0-2.9	1.0-3.0	.10	.15	1	5	86
	6-18	3-10	1.45-1.60	6-20	0.04-0.07	0.0-2.9	1.0-2.0	.10	.15			
	18-60	---	---	---	---	---	---	---	---			
133:												
Stronghold----------	0-2	5-15	1.35-1.50	2-6	0.08-0.12	0.0-2.9	1.0-2.0	.10	.28	2	5	56
	2-9	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	1.0-2.0	.24	.28			
	9-49	7-15	1.25-1.40	2-6	0.10-0.14	0.0-2.9	0.0-1.0	.15	.32			
	49-54	7-15	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.28	.32			
	54-60	7-15	1.25-1.40	2-6	0.10-0.14	0.0-2.9	0.0-0.5	.15	.32			
134:												
Stronghold----------	0-8	8-18	1.25-1.40	2-6	0.06-0.11	0.0-2.9	1.0-2.0	.15	.32	2	7	38
	8-20	8-18	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-1.0	.10	.24			
	20-60	3-15	1.35-1.60	2-20	0.03-0.08	0.0-2.9	0.0-0.5	.05	.17			
Bernardino----------	0-2	10-18	1.35-1.50	2-6	0.05-0.10	0.0-2.9	1.0-2.0	.10	.28	2	6	48
	2-15	35-50	1.25-1.40	0.06-0.2	0.14-0.21	3.0-5.9	0.5-1.0	.32	.32			
	15-18	30-40	1.25-1.40	0.2-0.6	0.12-0.17	3.0-5.9	0.0-0.5	.15	.32			
	18-60	5-12	1.35-1.60	2-20	0.04-0.09	0.0-2.9	0.0-0.5	.10	.17			
135:												
Surge----------	0-2	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.20	.24	1	3	86
	2-7	20-30	1.25-1.40	0.2-2	0.14-0.19	0.0-2.9	0.0-0.5	.28	.32			
	7-60	---	---	---	---	---	---	---	---			
Rock outcrop----------	0-60	---	---	---	---	---	---	---	---	---	---	---

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
136:												
Sutherland----------	0-1	5-15	1.35-1.50	2-6	0.08-0.12	0.0-2.9	1.0-3.0	.10	.28	1	6	48
	1-18	5-18	1.35-1.50	2-6	0.06-0.09	0.0-2.9	0.0-2.0	.10	.28			
	18-42	---	---	---	---	---	---	---	---			
	42-60	5-18	1.35-1.50	2-6	0.05-0.09	0.0-2.9	0.0-0.5	.10	.28			
Mule----------	0-2	5-18	1.35-1.50	2-6	0.06-0.09	0.0-2.9	1.0-3.0	.10	.28	2	5	56
	2-10	5-18	1.35-1.50	2-6	0.06-0.09	0.0-2.9	1.0-2.0	.10	.28			
	10-60	5-18	1.25-1.40	0.6-2	0.07-0.11	0.0-2.9	0.0-0.5	.10	.32			
137:												
Swisshelm----------	0-12	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	5	3	86
	12-22	7-20	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.5-1.0	.28	.32			
	22-42	5-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.24	.28			
	42-60	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.28	.32			
138:												
Swisshelm----------	0-12	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-2.0	.20	.24	5	3	86
	12-22	7-20	1.25-1.40	2-6	0.11-0.12	0.0-2.9	0.5-1.0	.28	.32			
	22-42	5-18	1.35-1.50	2-6	0.07-0.09	0.0-2.9	0.5-1.0	.24	.28			
	42-60	27-35	1.25-1.40	0.2-0.6	0.13-0.15	3.0-5.9	0.5-1.0	.28	.32			
139:												
Tenneco----------	0-2	7-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-2.0	.28	.28	5	3	86
	2-11	18-35	1.25-1.40	0.2-2	0.13-0.19	3.0-5.9	0.5-1.0	.32	.32			
	11-41	18-27	1.25-1.40	0.6-2	0.14-0.18	0.0-2.9	0.0-0.5	.32	.32			
	41-60	7-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
140:												
Terrarossa sandy loam	0-2	8-20	1.35-1.40	2-6	0.08-0.13	0.0-2.9	0.0-1.0	.24	.24	3	3	86
	2-9	8-20	1.35-1.40	2-6	0.08-0.13	0.0-2.9	0.0-1.0	.24	.24			
	9-27	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	27-60	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
Terrarossa gravelly loam----------	0-4	15-27	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-1.0	.20	.32	3	6	48
	4-8	15-27	1.15-1.30	0.6-2	0.07-0.11	0.0-2.9	0.0-0.5	.15	.32			
	8-46	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	46-60	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
Terrarossa very gravelly sandy loam--	0-3	8-20	1.35-1.50	2-6	0.05-0.08	0.0-2.9	0.0-1.0	.10	.24	3	5	86
	3-10	40-50	1.15-1.30	0.06-0.2	0.09-0.13	6.0-8.9	0.0-0.5	.20	.32			
	10-27	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	27-60	40-50	1.15-1.30	0.06-0.2	0.06-0.10	6.0-8.9	0.0-0.5	.20	.32			
141:												
Terrarossa----------	0-9	15-27	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-1.0	.20	.32	3	6	48
	9-30	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
	30-60	40-50	1.15-1.30	0.06-0.2	0.14-0.16	6.0-8.9	0.0-0.5	.32	.32			
Blacktail----------	0-3	18-27	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-2.0	.20	.32	2	5	56
	3-7	27-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	1.0-2.0	.32	.32			
	7-23	35-45	1.15-1.40	0.06-0.2	0.14-0.21	6.0-8.9	0.0-0.5	.32	.32			
	23-32	8-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			
	32-60	8-18	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.0-0.5	.15	.24			
Pyeatt----------	0-9	8-18	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-2.0	.20	.32	2	5	56
	9-35	5-15	1.35-1.50	2-6	0.08-0.12	0.0-2.9	0.0-1.0	.20	.28			
	35-41	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-1.0	.28	.28			
	41-60	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-1.0	.28	.28			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea- bility (Ksat)	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
142:												
Tombstone----------	0-1	8-10	1.35-1.50	2-6	0.06-0.08	0.0-2.9	1.0-2.0	.10	.28	2	6	48
	1-5	8-15	1.35-1.50	2-6	0.08-0.11	0.0-2.9	1.0-2.0	.10	.28			
	5-13	8-15	1.35-1.50	2-6	0.07-0.09	0.0-2.9	0.5-1.0	.17	.24			
	13-60	5-15	1.35-1.60	2-20	0.03-0.07	0.0-2.9	0.0-0.5	.05	.17			
143:												
Turquoise----------	0-1	2-5	1.45-1.60	6-20	0.05-0.07	0.0-2.9	1.0-2.0	.15	.17	2	6	48
	1-5	3-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.17	.24			
	5-22	---	---	---	---	---	---	---	---			
	22-60	---	---	---	---	---	---	---	---			
Nugget----------	0-1	5-15	1.35-1.50	2-6	0.08-0.13	0.0-2.9	1.0-3.0	.17	.24	2	6	48
	1-5	10-18	1.35-1.50	2-6	0.07-0.10	0.0-2.9	0.6-3.0	.15	.24			
	5-12	35-40	1.25-1.40	0.06-0.2	0.10-0.14	3.0-5.9	0.5-2.0	.17	.32			
	12-24	---	---	---	---	---	---	---	---			
	24-60	---	---	---	---	---	---	---	---			
144:												
Ubik silt loam--------	0-10	5-20	1.15-1.30	0.6-2	0.15-0.21	0.0-2.9	0.5-1.0	.43	.43	5	5	56
	10-32	8-18	1.25-1.40	0.6-2	0.13-0.18	0.0-2.9	0.0-0.5	.32	.32			
	32-60	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
Ubik fine sandy loam--	0-8	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.28	.28	5	3	86
	8-30	5-15	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.5-1.0	.32	.32			
	30-60	5-15	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.0-0.5	.28	.28			
145:												
Ubik----------	0-7	7-20	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.5-1.0	.28	.32	5	4L	86
	7-16	7-20	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.28	.32			
	16-36	5-18	1.35-1.50	2-6	0.13-0.17	0.0-2.9	0.0-0.5	.43	.55			
	36-55	7-20	1.25-1.40	2-6	0.13-0.17	0.0-2.9	0.0-0.5	.28	.32			
	55-63	5-20	1.15-1.50	2-6	0.08-0.21	0.0-2.9	0.0-0.5	.37	.43			
146:												
Ubik----------	0-7	7-20	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.5-1.0	.28	.32	5	4L	86
	7-16	7-20	1.25-1.40	2-6	0.11-0.12	0.0-2.9	0.0-0.5	.28	.32			
	16-36	5-18	1.35-1.50	2-6	0.10-0.12	0.0-2.9	0.0-0.5	.43	.55			
	36-55	7-20	1.25-1.40	2-6	0.10-0.12	0.0-2.9	0.0-0.5	.28	.32			
	55-63	5-20	1.15-1.50	2-6	0.07-0.13	0.0-2.9	0.0-0.5	.37	.43			
147:												
Ubik----------	0-7	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.20	.24	5	3	86
	7-16	7-20	1.25-1.40	2-6	0.13-0.18	0.0-2.9	0.0-0.5	.28	.32			
	16-36	5-18	1.35-1.50	2-6	0.13-0.17	0.0-2.9	0.0-0.5	.43	.55			
	36-55	7-20	1.25-1.40	2-6	0.13-0.17	0.0-2.9	0.0-0.5	.28	.32			
	55-63	5-20	1.15-1.50	2-6	0.08-0.21	0.0-2.9	0.0-0.5	.37	.43			
148:												
Ubik----------	0-7	5-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.20	.24	5	3	86
	7-16	7-20	1.25-1.40	2-6	0.11-0.12	0.0-2.9	0.0-0.5	.28	.32			
	16-36	5-18	1.35-1.50	2-6	0.10-0.12	0.0-2.9	0.0-0.5	.43	.55			
	36-55	7-20	1.25-1.40	2-6	0.10-0.12	0.0-2.9	0.0-0.5	.28	.32			
	55-63	5-20	1.15-1.50	2-6	0.07-0.13	0.0-2.9	0.0-0.5	.37	.43			
149:												
Vana----------	0-1	10-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-2.0	.28	.28	1	4	86
	1-8	10-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-1.0	.24	.24			
	8-14	20-30	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.0-0.5	.32	.32			
	14-24	---	---	---	---	---	---	---	---			
	24-60	10-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.0-0.5	.24	.24			

Table 14.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permea-bility (Ksat)	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors Kw	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In	Pct	g/cc	In/hr	In/in	Pct	Pct					
150:												
Vana----------	0-2	10-18	1.35-1.50	2-6	0.08-0.13	0.0-2.9	0.5-2.0	.24	.24	1	3	86
	2-8	20-30	1.25-1.40	0.2-0.6	0.14-0.19	3.0-5.9	0.5-1.0	.32	.32			
	8-13	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-0.5	.32	.32			
	13-18	---	---	---	---	---	---	---	---			
	18-60	10-25	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	0.0-0.5	.15	.32			
Moco----------	0-1	7-18	1.35-1.50	2-6	0.08-0.15	0.0-2.9	0.5-1.0	.28	.28	3	3	86
	1-10	27-35	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.5-1.0	.32	.32			
	10-20	18-35	1.25-1.40	0.2-2	0.13-0.21	3.0-5.9	0.0-0.5	.32	.32			
	20-60	18-35	1.25-1.40	0.2-2	0.13-0.21	3.0-5.9	0.0-0.5	.28	.32			
151:												
White House gravelly loam----------	0-2	18-27	1.25-1.40	0.6-2	0.10-0.14	0.0-2.9	1.0-2.0	.20	.32	5	5	56
	2-18	35-45	1.15-1.40	0.06-0.2	0.14-0.21	6.0-8.9	1.0-2.0	.32	.32			
	18-29	30-40	1.25-1.40	0.2-0.6	0.12-0.17	3.0-5.9	0.0-1.0	.20	.32			
	29-33	3-10	1.45-1.60	6-20	0.05-0.07	0.0-2.9	0.0-1.0	.17	.17			
	33-60	27-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-1.0	.32	.32			
White House gravelly sandy loam----------	0-5	18-27	1.35-1.50	0.6-2	0.07-0.10	0.0-2.9	1.0-2.0	.15	.24	5	5	56
	5-25	35-45	1.15-1.40	0.06-0.2	0.14-0.21	6.0-8.9	1.0-2.0	.28	.28			
	25-45	30-40	1.25-1.40	0.2-0.6	0.12-0.17	3.0-5.9	0.0-1.0	.15	.28			
	45-60	27-40	1.25-1.40	0.2-0.6	0.17-0.21	3.0-5.9	0.0-1.0	.28	.28			
152:												
Yarbam----------	0-2	5-18	1.25-1.40	2-6	0.07-0.11	0.0-2.9	1.0-3.0	.15	.32	1	7	38
	2-9	5-18	1.25-1.40	2-6	0.07-0.11	0.0-2.9	1.0-2.0	.15	.32			
	9-60	---	---	---	---	---	---	---	---			
Rock outcrop----------	0-60	---	---	---	---	---	---	---	---	---	---	---

Table 15.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
1:							
Altar	0-1	4.0-13	6.1-7.3	0	0	0	0
	1-10	4.0-13	6.1-7.3	0	0	0	0
	10-25	4.0-13	6.1-7.3	0	0	0	0
	25-40	4.0-11	6.1-7.3	0-1	0	0	0
	40-60	1.0-5.0	6.6-7.8	0-1	0	0	0
Mallet	0-6	3.0-13	6.1-7.3	0	0	0	0
	6-22	4.0-15	6.1-7.3	0	0	0	0
	22-55	3.0-13	6.1-7.3	0	0	0	0
	55-60	1.0-7.0	6.1-8.4	0-1	0	0	0
2:							
Anthony	0-15	2.0-13	6.6-7.8	0-2	0	0	0
	15-40	2.0-12	6.6-7.8	1-5	0	0	0
	40-60	2.0-12	6.6-7.8	1-5	0-2	0.0-2.0	0
Maricopa	0-5	2.0-11	7.4-8.4	0-2	0	0	0
	5-24	2.0-10	7.4-8.4	0-5	0	0	0
	24-60	1.0-4.0	7.4-8.4	1-5	0-2	0.0-2.0	0
3:							
Arizo family	0-4	3.0-5.0	7.4-7.8	0-3	0	0	0
	4-12	2.0-5.0	7.4-8.4	0-3	0-1	0	0
	12-26	2.0-5.0	7.4-8.4	0-3	0-1	0.0-2.0	0
	26-60	2.0-5.0	7.4-8.4	0-3	0-1	0.0-2.0	0
Riverwash	0-60	---	---	---	---	---	---
4:							
Ashcreek	0-6	18-36	6.1-7.3	0	0	0	0
	6-36	20-36	6.1-7.3	0	0	0	0
	36-52	17-40	6.1-7.3	0	0	0	0
	52-60	17-32	6.1-7.3	0	0	0	0
Stanford	0-2	4.0-15	6.1-7.3	0	0	0	0
	2-21	10-27	6.1-7.3	0	0	0	0
	21-37	13-25	6.1-7.3	0	0	0	0
	37-60	9.0-23	6.1-7.3	0	0	0	0
5:							
Baboquivari	0-1	3.0-9.0	6.6-7.8	0	0	0	0
	1-24	10-18	6.6-7.8	0	0	0	0
	24-34	3.0-9.0	6.6-7.8	0-10	0	0	0
	34-60	2.0-6.0	7.4-7.8	0-10	0	0	0
Combate	0-2	5.0-10	6.6-7.8	0	0	0	0
	2-32	5.0-10	6.6-7.8	0	0	0	0
	32-60	5.0-10	7.4-8.4	0	0	0	0
6:							
Banshee	0-3	4.0-13	6.6-7.8	0-3	0	0	0
	3-19	18-40	6.6-7.8	0-3	0	0	0
	19-26	16-40	6.6-8.4	5-15	0-2	0.0-2.0	0-2
	26-42	16-40	6.6-8.4	1-10	0-4	0.0-8.0	0-13
	42-60	1.0-10	6.6-8.4	0-3	0-4	0.0-8.0	0-13

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
6:							
Banshee, thick surface	0-7	4.0-13	6.6-7.8	0-3	0	0	0
	7-13	4.0-13	6.6-7.8	0-3	0	0	0
	13-24	4.0-13	6.6-7.8	0-3	0	0	0
	24-44	16-40	6.6-8.4	0-3	0-2	0.0-2.0	0-2
	44-60	16-40	6.6-8.4	1-15	0-4	0.0-8.0	0-13
7:							
Bella	0-1	3.0-16	7.4-8.4	3-10	0-1	0.0-2.0	0
	1-10	5.0-14	7.4-8.4	5-20	2-10	0.0-2.0	0
	10-15	5.0-14	7.4-8.4	5-20	2-10	0.0-2.0	0
	15-25	---	---	---	---	---	---
	25-45	8.0-22	7.4-8.4	15-55	5-15	0.0-2.0	0
	45-60	8.0-22	7.4-8.4	15-55	5-15	0.0-2.0	0
8:							
Blakeney	0-11	5.0-12	7.4-8.4	3-10	0	0.0-2.0	0
	11-18	---	---	---	---	---	---
	18-41	4.0-12	7.4-8.4	5-20	0-1	0.0-2.0	0
	41-60	4.0-12	7.4-8.4	5-20	0-1	0.0-2.0	0
Luckyhills	0-3	4.0-11	7.4-8.4	0-4	0	0.0-2.0	0
	3-13	4.0-13	7.4-8.4	5-30	0-1	0.0-2.0	0
	13-38	4.0-13	7.4-8.4	5-30	0-1	0.0-2.0	0
	38-60	4.0-13	7.4-8.4	5-30	0-1	0.0-2.0	0
9:							
Bodecker	0-5	1.0-5.0	7.4-8.4	0-2	0	0	0
	5-35	1.0-5.0	7.4-8.4	0-2	0	0	0
	35-54	1.0-4.0	7.4-8.4	1-5	0	0.0-2.0	0-2
	54-60	10-19	7.9-8.4	1-5	0	0.0-2.0	0-2
Comoro	0-9	4.0-10	6.6-7.3	0-2	0	0	0
	9-19	4.0-13	7.4-7.8	0-2	0	0	0
	19-40	1.0-8.0	7.4-8.4	1-5	0	0.0-2.0	0-2
	40-60	1.0-5.0	7.4-8.4	1-5	0	0.0-2.0	0-2
10:							
Bodecker	0-6	1.0-7.0	7.4-8.4	3-5	0	0	0
	6-52	1.0-7.0	7.4-8.4	3-5	0	0	0
	52-60	1.0-10	7.9-8.4	3-5	0	0	0
11:							
Bodecker	0-6	1.0-7.0	7.4-9.0	3-5	0	0.0-4.0	0-13
	6-52	1.0-7.0	7.4-11.0	3-5	0-4	4.0-20.0	13-40
	52-60	1.0-10	7.9-11.0	3-5	0-4	4.0-20.0	13-40
12:							
Bonita	0-9	18-37	7.4-8.4	1-5	0-2	0	0
	9-23	18-40	7.4-8.4	5-10	0-2	0	0
	23-60	16-38	7.9-8.4	5-10	0-2	0	0
13:							
Bonita	0-1	8.0-21	7.4-7.8	0-5	0	0	0
	1-9	14-30	7.4-7.8	0-5	0	0	0
	9-23	22-40	7.4-7.8	0-5	0	0	0
	23-44	22-40	7.4-8.4	5-10	0	0.0-2.0	0
	44-60	18-38	7.4-8.4	5-10	1-4	0.0-2.0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
13:							
Forrest	0-1	8.0-19	6.6-7.8	0-5	0	0	0
	1-5	14-28	6.6-7.8	0-5	0	0	0
	5-17	18-37	7.4-7.8	0-5	0	0	0
	17-26	16-34	7.4-8.4	0-20	1-4	0	0
	26-60	12-25	7.4-8.4	15-35	0-4	0.0-2.0	0-2
14:							
Borderland	0-1	12-27	6.6-7.8	0	0	0	0
	1-10	18-45	6.6-7.8	0-5	0	0	0
	10-23	18-43	7.4-8.4	5-15	0	0	0
	23-60	1.0-7.0	7.4-8.4	15-35	0	0.0-2.0	0-2
15:							
Borderline	0-2	5.0-15	7.4-8.4	0-5	0-2	0.0-2.0	0
	2-18	5.0-15	7.4-8.4	10-30	5-10	0.0-2.0	0
	18-41	5.0-15	7.4-8.4	10-30	5-10	0.0-2.0	0
	41-50	5.0-15	7.4-8.4	10-20	0-2	0.0-2.0	0
	50-60	5.0-15	7.4-8.4	10-20	0-2	0.0-2.0	0
16:							
Boss	0-2	14-30	6.6-7.3	0	0	0	0
	2-14	17-40	6.6-7.8	0-2	0	0	0
	14-60	---	---	---	---	---	---
Krentz	0-1	8.0-22	6.6-7.8	0	0	0	0
	1-21	9.0-20	6.6-7.8	0-2	0	0	0
	21-37	3.0-14	7.4-7.8	0-5	0	0	0
	37-60	0.0-3.0	7.4-7.8	0-5	0	0	0
Paramore	0-1	14-30	6.6-7.3	0	0	0	0
	1-7	17-40	6.6-7.3	0-2	0	0	0
	7-29	17-38	6.6-7.8	0-2	0	0.0-2.0	0-2
	29-60	---	---	---	---	---	---
Rock outcrop	0-60	---	---	---	---	---	---
17:							
Brookline	0-3	2.0-10	7.4-8.4	0-4	0	0	0
	3-18	2.0-10	7.4-8.4	0-5	0	0	0
	18-29	1.0-5.0	7.4-8.4	0-5	0	0	0
	29-60	1.0-5.0	7.4-8.4	0-5	0	0	0
Fluvaquents	0-10	3.0-9.0	7.4-8.4	0-1	0	0	0
	10-25	2.0-11	7.4-8.4	0-1	0	0	0
	25-45	2.0-6.0	7.4-8.4	0-2	0	0	0
	45-60	1.0-4.0	7.4-8.4	0-2	0	0	0
Riverwash	0-60	---	---	---	---	---	---
18:							
Brunkcow	0-2	4.0-13	5.6-6.5	0	0	0	0
	2-8	9.0-23	5.6-7.3	0	0	0	0
	8-12	---	---	---	---	---	---
	12-60	---	---	---	---	---	---
Chiricahua	0-3	6.0-16	6.1-7.3	0	0	0	0
	3-16	14-28	6.1-7.3	0	0	0	0
	16-25	---	---	---	---	---	---
	25-60	---	---	---	---	---	---

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
18:							
Andrada----------	0-1	4.0-16	7.4-8.4	5-30	0	0	0
	1-6	4.0-16	7.4-8.4	10-30	0	0	0
	6-19	5.0-19	7.4-8.4	10-30	0	0.0-2.0	0
	19-60	---	---	---	---	---	---
19:							
Brunkcow----------	0-2	4.0-13	5.6-7.3	0	0	0	0
	2-10	13-25	5.6-7.3	0	0	0	0
	10-15	10-25	5.6-7.3	0	0	0	0
	15-60	---	---	---	---	---	---
Chiricahua----------	0-3	6.0-14	6.1-7.3	0	0	0	0
	3-20	20-30	6.1-7.3	0	0	0	0
	20-27	---	---	---	---	---	---
	27-60	---	---	---	---	---	---
Lampshire----------	0-1	4.0-13	6.6-7.8	0	0	0	0
	1-9	6.0-16	6.6-7.8	0	0	0	0
	9-60	---	---	---	---	---	---
20:							
Budlamp----------	0-2	5.0-15	5.6-6.5	0	0	0	0
	2-8	5.0-15	6.1-7.3	0	0	0	0
	8-60	---	---	---	---	---	---
Woodcutter----------	0-2	2.0-10	5.6-6.5	0	0	0	0
	2-6	3.0-10	6.1-7.3	0	0	0	0
	6-12	8.0-20	6.1-7.3	0	0	0	0
	12-60	---	---	---	---	---	---
21:							
Buntline----------	0-14	11-23	7.4-8.4	0-3	0	0	0
	14-16	11-22	7.4-8.4	0-5	0	0	0
	16-23	---	---	---	---	---	---
	23-60	11-22	7.4-8.4	5-30	0-2	0.0-2.0	0
22:							
Caralampi----------	0-1	3.0-16	6.1-7.3	0	0	0	0
	1-10	5.0-16	6.1-7.3	0	0	0	0
	10-27	10-23	6.1-7.3	0-5	0	0	0
	27-48	10-22	6.6-7.8	0-5	0	0	0
	48-60	10-22	6.6-7.8	5-10	0	0.0-2.0	0
23:							
Caralampi----------	0-2	5.0-16	6.1-7.3	0	0	0	0
	2-28	10-23	6.1-7.3	0-5	0	0	0
	28-60	10-22	6.6-7.8	5-10	0	0.0-2.0	0
24:							
Carbine----------	0-2	4.0-20	7.4-8.4	3-15	0	0.0-2.0	0
	2-9	4.0-20	7.4-8.4	15-40	0	0.0-2.0	0
	9-16	4.0-20	7.4-8.4	15-40	0	0.0-2.0	0
	16-60	---	---	---	---	---	---
25:							
Carbine----------	0-1	4.0-17	7.4-8.4	3-15	0	0.0-2.0	0
	1-9	4.0-17	7.4-8.4	15-40	0	0.0-2.0	0
	9-18	---	---	---	---	---	---
	18-60	2.0-12	7.4-8.4	15-40	0	0.0-2.0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
25:							
Hathaway----------	0-2	4.0-17	7.4-8.4	0-10	0	0.0-2.0	0
	2-9	5.0-18	7.4-8.4	0-10	0	0.0-2.0	0
	9-25	4.0-16	7.4-8.4	15-40	0	0.0-2.0	0
	25-60	2.0-13	7.4-8.4	15-40	0	0.0-2.0	0
26:							
Cazador----------	0-2	14-30	7.4-7.8	5-10	0	0.0-2.0	0
	2-9	18-39	7.4-8.4	0-10	0	0.0-2.0	0
	9-30	17-40	7.4-8.4	5-15	0	0.0-2.0	0
	30-50	17-38	7.4-8.4	5-15	0	0.0-2.0	0
	50-60	17-38	7.4-8.4	5-15	0	0.0-2.0	0
Lesliecreek----------	0-4	6.0-21	7.4-7.8	0-5	0	0.0-2.0	0
	4-12	13-27	7.4-8.4	3-5	0	0.0-2.0	0
	12-32	8.0-20	7.4-8.4	3-10	0	0.0-2.0	0
	32-50	12-23	7.4-8.4	3-10	0	0.0-2.0	0
	50-60	12-23	7.4-8.4	3-10	0	0.0-2.0	0
27:							
Cherrycow----------	0-2	4.0-17	6.1-6.5	0	0	0	0
	2-9	18-42	6.1-7.3	0	0	0	0
	9-18	3.0-15	6.1-7.3	0	0	0	0
	18-40	1.0-7.0	6.1-7.3	0	0	0	0
	40-60	---	---	---	---	---	---
Blacktail----------	0-2	4.0-15	6.1-7.3	0	0	0	0
	2-6	14-28	6.1-7.3	0-5	0	0	0
	6-14	17-38	6.6-7.8	0-10	0	0.0-2.0	0
	14-24	17-38	6.6-7.8	5-15	0	0.0-2.0	0
	24-60	1.0-7.0	6.6-7.8	15-30	0	0.0-2.0	0
28:							
Cherrycow----------	0-2	4.0-15	6.1-6.5	0	0	0	0
	2-14	20-42	6.1-7.3	0	0	0	0
	14-20	9.0-25	6.6-7.3	0	0	0	0
	20-30	9.0-23	6.6-7.3	0	0	0	0
	30-60	---	---	---	---	---	---
Magoffin----------	0-2	4.0-12	6.1-6.5	0	0	0	0
	2-10	4.0-13	6.1-6.5	0	0	0	0
	10-60	---	---	---	---	---	---
Rock outcrop---------	0-60	---	---	---	---	---	---
29:							
Chorro----------	0-2	4.0-16	7.9-8.4	5-10	0-2	0.0-2.0	0-13
	2-11	4.0-16	8.5-11.0	5-10	2-5	4.0-16.0	13-50
	11-24	9.0-20	8.5-11.0	10-25	2-5	4.0-16.0	13-50
	24-44	11-25	8.5-11.0	10-25	1-5	4.0-16.0	13-50
	44-60	16-31	8.5-11.0	15-25	1-5	4.0-32.0	13-60
Doubleadobe----------	0-1	3.0-13	7.4-8.4	2-10	0-2	2.0-8.0	0-13
	1-4	12-25	8.5-11.0	5-20	2-5	4.0-32.0	13-50
	4-13	16-35	7.9-9.0	5-20	2-5	4.0-32.0	13-50
	13-31	16-35	7.9-9.0	15-60	1-5	4.0-32.0	13-60
	31-60	11-26	8.5-11.0	15-60	1-5	4.0-32.0	13-60

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
29:							
Gothard	0-3	3.0-13	7.9-8.4	0-5	0-2	0.0-2.0	0-13
	3-8	3.0-16	7.9-9.0	0-5	0-2	0.0-4.0	0-13
	8-18	10-23	8.5-11.0	0-5	0-2	4.0-16.0	13-30
	18-30	8.0-23	8.5-11.0	5-15	1-5	4.0-32.0	13-30
	30-60	18-35	8.5-11.0	10-25	1-5	4.0-32.0	13-50
30:							
Chorro	0-5	8.0-20	7.9-8.4	5-10	0-2	0.0-2.0	0-13
	5-14	18-40	8.5-11.0	10-25	2-5	4.0-16.0	13-50
	14-27	4.0-16	8.5-11.0	10-25	1-5	4.0-16.0	13-50
	27-60	4.0-13	9.1-11.0	15-25	1-5	8.0-32.0	30-60
Guest	0-5	14-28	7.4-7.8	0-5	0-1	0.0-2.0	0
	5-20	17-38	7.4-7.8	5-10	1-4	0.0-2.0	0
	20-48	17-32	7.4-7.8	5-10	1-4	0.0-2.0	0
	48-60	4.0-13	7.4-7.8	0-10	1-4	0.0-4.0	0-2
31:							
Cogswell	0-5	18-39	7.4-9.0	1-5	0-4	0.0-4.0	0-13
	5-20	16-34	8.4-9.0	5-10	0-4	0.0-4.0	13-40
	20-33	16-35	8.4-11.0	15-40	0-4	4.0-20.0	13-40
	33-42	11-22	8.4-11.0	10-40	0-4	4.0-20.0	13-40
	42-53	2.0-10	8.4-11.0	1-10	0-4	4.0-20.0	13-40
	53-57	4.0-16	8.4-11.0	5-10	0-4	4.0-20.0	13-40
	57-63	12-25	8.4-11.0	5-15	0-4	4.0-20.0	13-40
32:							
Combate	0-5	5.0-10	6.6-7.8	0	0	0	0
	5-21	5.0-10	6.6-7.8	0	0	0	0
	21-46	5.0-10	6.6-7.8	0	0	0	0
	46-60	5.0-10	7.4-8.4	0	0	0	0
33:							
Comoro	0-8	4.0-10	7.4-8.4	0-2	0	0	0
	8-19	4.0-13	7.4-8.4	0-2	0	0	0
	19-46	2.0-11	7.4-8.4	1-5	0	0.0-2.0	0-2
	46-60	2.0-11	7.4-8.4	1-5	0	0.0-2.0	0-2
34:							
Comoro	0-8	4.0-10	7.4-9.0	0-2	0-4	0.0-4.0	0-13
	8-19	4.0-13	8.4-9.0	0-2	0-4	0.0-4.0	0-13
	19-46	2.0-11	8.4-11.0	1-5	0-4	4.0-20.0	13-40
	46-60	2.0-11	8.4-11.0	1-5	0-4	4.0-20.0	13-40
35:							
Contention	0-3	11-18	7.4-8.4	5-10	0-5	0.0-2.0	0
	3-11	12-30	7.4-8.4	5-15	1-15	0.0-2.0	0
	11-21	16-33	7.4-8.4	5-15	1-15	0.0-2.0	0
	21-60	16-30	7.4-8.4	5-15	5-15	0.0-2.0	0
Crystalgyp	0-1	2.0-7.0	7.4-8.4	0-10	5-10	0.0-2.0	0
	1-10	2.0-7.0	7.4-8.4	0-3	10-50	0.0-2.0	0
	10-30	2.0-7.0	7.4-8.4	0-3	20-80	0.0-2.0	0
	30-60	---	---	---	---	---	---
Monzingo	0-3	5.0-10	7.4-8.4	1-15	0-5	0.0-2.0	0
	3-19	5.0-12	7.4-8.4	5-35	5-20	0.0-2.0	0
	19-26	10-15	7.4-8.4	5-25	5-20	0.0-2.0	0
	26-45	10-15	7.4-8.4	5-25	5-20	0.0-2.0	0
	45-55	10-15	7.4-8.4	5-25	5-20	0.0-2.0	0
	55-60	10-15	7.4-8.4	5-25	5-20	0.0-2.0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
35:							
Redington----------	0-1	2.0-8.0	7.4-8.4	0-10	0-1	0.0-2.0	0
	1-6	2.0-8.0	7.4-8.4	0-10	0-5	0.0-2.0	0
	6-16	2.0-6.0	7.4-8.4	0-10	5-10	0.0-2.0	0
	16-36	1.0-5.0	7.4-8.4	0-10	5-10	0.0-2.0	0
	36-42	1.0-5.0	7.4-8.4	15-35	5-10	0.0-2.0	0
	42-60	1.0-5.0	7.4-8.4	10-25	5-10	0.0-2.0	0
36:							
Contention----------	0-2	8.0-18	7.4-8.4	5-10	0-5	0.0-2.0	0
	2-7	12-30	7.4-8.4	5-15	1-15	0.0-2.0	0
	7-32	16-33	7.4-8.4	5-15	1-15	0.0-2.0	0
	32-60	16-30	7.4-8.4	5-15	5-15	0.0-2.0	0
Ugyp----------	0-3	3.0-14	7.4-8.4	1-15	0-5	0.0-2.0	0
	3-13	2.0-13	7.4-8.4	5-30	5-10	0.0-2.0	0
	13-30	2.0-13	7.4-8.4	5-30	5-10	0.0-2.0	0
	30-52	1.0-13	7.4-8.4	5-30	5-10	0.0-2.0	0
	52-60	1.0-7.0	7.4-8.4	5-30	5-10	0.0-2.0	0
Ugyp----------	0-3	3.0-14	7.4-8.4	1-15	0-5	0.0-2.0	0
	3-13	2.0-13	7.4-8.4	5-30	5-10	0.0-2.0	0
	13-30	2.0-13	7.4-8.4	5-30	5-10	0.0-2.0	0
	30-52	1.0-13	7.4-8.4	5-30	5-10	0.0-2.0	0
	52-60	1.0-7.0	7.4-8.4	5-30	5-10	0.0-2.0	0
37:							
Courtland----------	0-8	4.0-13	7.4-7.8	0	0	0	0
	8-14	3.0-11	7.4-7.8	0	0	0	0
	14-20	4.0-13	7.4-7.8	0	0	0	0
	20-49	8.0-22	7.4-8.4	1-5	0	0	0
	49-60	8.0-22	7.4-8.4	5-10	0	0	0
38:							
Courtland----------	0-8	4.0-13	7.4-8.4	0	0-4	0.0-4.0	0-13
	8-14	3.0-11	7.4-8.4	0	0-4	0.0-4.0	0-13
	14-20	4.0-13	8.4-9.0	0	0-4	4.0-20.0	13-40
	20-49	8.0-22	8.4-11.0	1-5	0-4	4.0-20.0	13-40
	49-60	8.0-22	8.4-11.0	5-10	0-4	4.0-20.0	13-40
39:							
Courtland----------	0-8	4.0-13	7.4-7.8	0	0	0	0
	8-14	3.0-11	7.4-7.8	0	0	0	0
	14-20	4.0-13	7.4-7.8	0	0	0	0
	20-49	8.0-22	7.4-8.4	1-5	0	0	0
	49-60	8.0-22	7.4-8.4	5-10	0	0	0
Diaspar----------	0-20	5.0-15	6.1-7.3	0	0	0.0-2.0	0
	20-41	20-25	7.4-8.4	0-1	0	0.0-2.0	0
	41-60	15-25	7.4-7.8	0-1	0	0.0-2.0	0
40:							
Courtland----------	0-6	5.0-10	7.4-7.8	0	0	0	0
	6-24	15-25	7.4-7.8	0	0	0	0
	24-36	15-25	7.4-7.8	0	0	0	0
	36-60	15-30	7.4-8.4	0-10	0	0	0
Sasabe----------	0-3	5.0-10	7.4-7.8	0	0	0	0
	3-11	15-25	7.4-7.8	0	0	0	0
	11-36	20-30	7.4-7.8	0	0	0	0
	36-60	20-30	7.4-8.4	0-5	0	0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
40:							
Diaspar----------	0-20	5.0-15	6.1-7.3	0	0	0.0-2.0	0
	20-41	20-25	7.4-8.4	0-1	0	0.0-2.0	0
	41-60	15-25	7.4-8.4	0-1	0	0.0-2.0	0
41:							
Crowbar----------	0-1	5.0-13	5.6-6.5	0	0	0	0
	1-12	7.0-25	6.1-6.5	0	0	0	0
	12-26	7.0-23	6.1-7.3	0	0	0	0
	26-60	8.0-23	6.6-7.8	0	0	0	0
Brunopeak----------	0-3	8.0-18	5.6-6.5	0	0	0	0
	3-16	14-28	6.1-6.5	0	0	0	0
	16-42	16-32	6.1-7.3	0	0	0	0
	42-60	14-32	6.1-7.3	0	0	0	0
42:							
Deloro----------	0-2	4.0-13	6.1-7.3	0	0	0	0
	2-11	12-23	6.1-7.3	0	0	0	0
	11-19	16-35	6.1-7.3	0	0	0	0
	19-29	---	---	---	---	---	---
	29-60	---	---	---	---	---	---
Leyte----------	0-1	4.0-15	5.6-7.3	0	0	0	0
	1-4	14-30	5.6-7.3	0	0	0	0
	4-12	16-37	5.6-7.3	0	0	0	0
	12-60	---	---	---	---	---	---
Lampshire----------	0-1	6.0-16	6.6-7.3	0	0	0	0
	1-9	6.0-16	6.6-7.3	0	0	0	0
	9-60	---	---	---	---	---	---
43:							
Denab----------	0-1	3.0-15	7.4-8.4	0-5	0	0.0-2.0	0
	1-7	4.0-15	7.4-8.4	5-20	0	0.0-2.0	0
	7-15	---	---	---	---	---	---
	15-60	---	---	---	---	---	---
Castledome----------	0-1	3.0-13	7.4-8.4	0-3	0	0	0
	1-2	13-26	7.4-8.4	0-5	0	0	0
	2-9	17-32	7.4-8.4	0-5	0	0	0
	9-34	---	---	---	---	---	---
	34-60	---	---	---	---	---	---
44:							
Denied Access.							
45:							
Diaspar----------	0-6	3.0-13	7.4-8.4	0-1	0	0.0-2.0	0
	6-10	5.0-13	7.4-8.4	0-1	0	0.0-2.0	0
	10-60	4.0-12	7.4-8.4	0-5	0	0.0-2.0	0
46:							
Diaspar----------	0-6	3.0-13	7.4-9.0	0-1	0-4	0.0-4.0	0-13
	6-10	5.0-13	7.4-11.0	0-1	0-4	4.0-20.0	13-40
	10-60	4.0-12	7.4-11.0	0-5	0-4	4.0-20.0	13-40

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
47:							
Dona Ana	0-2	4.0-11	7.4-8.4	5-15	0	0	0
	2-16	8.0-23	7.4-8.4	15-55	0	0.0-2.0	0
	16-24	8.0-22	7.4-8.4	15-55	0	0.0-2.0	0
	24-38	2.0-7.0	7.4-8.4	5-10	0-2	0.0-2.0	0
	38-60	2.0-4.0	7.4-8.4	5-10	0-2	0.0-2.0	0
Mohave	0-2	4.0-11	7.4-7.8	0-5	0	0	0
	2-13	8.0-23	7.4-7.8	0-5	0	0	0
	13-22	8.0-23	7.4-8.4	15-55	0	0.0-2.0	0
	22-35	8.0-23	7.4-8.4	15-55	0-2	0.0-2.0	0
	35-60	2.0-5.0	7.4-8.4	10-25	0-2	0.0-2.0	0
48:							
Doubleadobe	0-1	3.0-13	7.4-8.4	2-10	0-2	2.0-8.0	0-13
	1-4	12-25	8.5-11.0	5-20	2-5	4.0-40.0	13-50
	4-13	16-35	7.9-9.0	5-20	2-5	4.0-40.0	13-50
	13-31	16-35	7.9-9.0	15-60	1-5	4.0-40.0	13-60
	31-60	11-26	8.5-11.0	15-60	1-5	4.0-40.0	13-60
49:							
Durazo	0-8	0.5-5.0	6.6-7.8	0	0	0	0
	8-48	0.5-5.0	6.6-7.8	0	0	0	0
	48-60	8.0-19	6.6-7.8	0-3	0	0	0
50:							
Durazo	0-8	0.5-5.0	8.0-9.0	0	0-4	0.0-4.0	0-13
	8-48	0.5-5.0	8.0-11.0	0	0-4	4.0-20.0	13-40
	48-60	8.0-19	8.0-11.0	0-3	0-4	4.0-20.0	13-40
51:							
Durazo	0-6	0.5-5.0	6.6-8.4	0	0-4	0.0-4.0	0-13
	6-44	0.5-5.0	8.4-9.0	0	0-4	0.0-4.0	0-13
	44-60	2.0-10	8.4-11.0	0-3	0-4	4.0-20.0	13-40
Gothard	0-3	6.0-19	7.4-9.0	0-15	0	0	0
	3-8	3.0-16	7.9-9.0	0-5	0-2	0.0-4.0	0-13
	8-18	10-23	8.5-11.0	0-5	0-2	4.0-16.0	13-30
	18-30	8.0-23	8.5-11.0	5-15	1-5	4.0-32.0	13-30
	30-60	18-35	8.5-11.0	10-25	1-5	4.0-32.0	13-50
52:							
Durazo	0-2	0.5-5.0	6.6-7.8	0	0	0	0
	2-51	0.5-5.0	6.6-7.8	0	0	0	0
	51-60	2.0-7.0	6.6-7.8	0-3	0	0	0
Courtland	0-1	2.0-7.0	6.6-7.8	0	0	0	0
	1-5	4.0-13	6.6-7.8	0	0	0	0
	5-12	6.0-16	6.6-7.8	0	0	0	0
	12-39	8.0-23	6.6-7.8	0	0	0	0
	39-60	8.0-23	6.6-8.4	0-3	0	0	0
53:							
Durazo	0-6	0.5-5.0	6.6-7.8	0	0	0	0
	6-44	0.5-5.0	6.6-7.8	0	0	0	0
	44-60	2.0-10	6.6-7.8	0-3	0	0	0
McAllister	0-7	6.0-19	7.4-8.4	0-15	0	0	0
	7-26	12-25	7.4-8.4	5-20	0-4	0	0
	26-60	11-22	7.9-8.4	15-30	0-4	0.0-4.0	0-8

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
54:							
Elfrida	0-9	13-25	7.9-8.4	5-10	0	0.0-4.0	0-13
	9-23	13-25	7.9-8.4	5-10	0	0.0-4.0	0-13
	23-46	11-23	7.9-9.0	15-40	0-2	4.0-8.0	13-30
	46-60	11-23	7.9-9.0	15-40	0-2	4.0-8.0	13-30
55:							
Elfrida	0-9	13-25	7.9-8.4	5-10	0	0.0-4.0	0-13
	9-23	13-25	7.9-9.0	5-10	0-4	4.0-20.0	0-40
	23-46	11-23	7.9-11.0	15-40	0-4	4.0-20.0	13-40
	46-60	11-23	7.9-11.0	15-40	0-4	4.0-20.0	13-40
56:							
Elgin	0-1	4.0-13	6.6-7.3	0	0	0	0
	1-10	18-37	6.6-7.8	0-5	0	0	0
	10-22	15-26	7.4-8.4	5-15	0	0	0
	22-38	12-25	7.4-8.4	10-25	0	0.0-2.0	0
	38-60	8.0-22	7.4-8.4	10-25	0	0.0-2.0	0
McAllister	0-1	4.0-15	7.4-8.4	0-5	0	0	0
	1-9	13-25	7.4-8.4	0-10	0	0	0
	9-20	9.0-25	7.4-8.4	15-30	0	0.0-2.0	0
	20-34	9.0-23	7.4-8.4	15-30	0	0.0-2.0	0
	34-60	2.0-12	7.4-8.4	10-25	0	0.0-2.0	0
Stronghold	0-1	7.0-13	7.4-8.4	5-15	0	0	0
	1-19	3.0-13	7.4-8.4	14-40	0	0.0-2.0	0
	19-41	2.0-12	7.4-8.4	14-40	0	0.0-2.0	0
	41-51	3.0-12	7.4-8.4	14-40	0	0.0-2.0	0
	51-60	1.0-7.0	7.9-8.4	14-40	0	0.0-2.0	0
57:							
Elgin	0-2	4.0-13	6.6-7.8	0	0	0	0
	2-7	9.0-23	6.6-7.8	0	0	0	0
	7-19	17-38	6.6-7.8	0-15	0	0	0
	19-26	16-37	7.4-8.4	5-15	0	0	0
	26-43	11-25	7.4-8.4	10-25	0	0.0-2.0	0-2
	43-60	4.0-13	7.4-8.4	5-25	0	0.0-2.0	0-2
Outlaw	0-2	6.0-18	7.4-8.4	0-5	0	0	0
	2-13	19-46	7.4-8.4	0-5	0	0	0
	13-28	18-43	7.4-8.4	20-50	0	0	0
	28-60	6.0-16	7.9-8.4	15-50	0	0.0-2.0	0-2
58:							
Elgin	0-1	3.0-10	6.6-7.8	0	0	0	0
	1-15	15-30	6.6-8.4	0	0	0	0
	15-21	10-20	7.4-8.4	5-15	0	0	0
	21-27	3.0-15	7.9-8.4	10-25	0	0	0
	27-60	3.0-15	7.9-8.4	10-25	0	0	0
Stronghold	0-2	4.0-12	7.4-8.4	5-15	0	0	0
	2-18	4.0-12	7.4-8.4	14-40	0	0	0
	18-60	2.0-9.0	7.9-8.4	14-40	0	0	0
59:							
Eloma	0-3	9.0-19	6.6-7.8	0	0	0	0
	3-30	17-40	6.6-7.8	0	0	0	0
	30-42	12-26	7.4-7.8	0-5	0	0	0
	42-60	10-22	7.4-7.8	0-5	0	0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
60:							
Eloma	0-1	3.0-13	6.6-7.8	0	0	0	0
	1-10	13-28	6.6-7.8	0	0	0	0
	10-27	16-38	6.6-7.8	0	0	0	0
	27-60	16-37	6.6-7.8	0	0	0	0
Caralampi	0-1	3.0-13	6.1-7.3	0	0	0	0
	1-12	13-25	6.1-7.3	0	0	0	0
	12-50	12-23	6.1-7.3	0-5	0	0	0
	50-60	2.0-7.0	6.6-8.4	5-10	0-2	0.0-2.0	0
White House	0-1	4.0-13	6.1-7.3	0	0	0	0
	1-5	9.0-25	6.1-7.3	0	0	0	0
	5-35	16-35	6.1-7.3	0	0	0	0
	35-60	16-34	6.6-8.4	0-10	0-2	0.0-2.0	0
61:							
Epitaph	0-1	14-28	7.4-7.8	0-5	0	0	0
	1-6	16-40	7.4-7.8	0-5	0	0	0
	6-27	16-40	7.4-8.4	3-10	0	0	0
	27-38	---	---	---	---	---	---
	38-60	---	---	---	---	---	---
62:							
Far	0-1	---	---	---	---	---	---
	1-3	2.0-10	5.6-6.5	0	0	0	0
	3-16	2.0-10	5.6-6.5	0	0	0	0
	16-60	---	---	---	---	---	---
Hogris	0-2	---	---	---	---	---	---
	2-5	2.0-10	6.1-7.3	0	0	0	0
	5-14	2.0-10	6.1-7.3	0	0	0	0
	14-38	2.0-10	6.1-7.3	0	0	0	0
	38-60	2.0-10	6.1-7.3	0	0	0	0
63:							
Far	0-1	---	---	---	---	---	---
	1-7	15-25	5.6-6.5	0	0	0	0
	7-16	15-25	5.6-6.5	0	0	0	0
	16-60	---	---	---	---	---	---
Huachuca	0-3	---	---	---	---	---	---
	3-8	5.0-15	6.6-7.8	5-15	0	0	0
	8-60	---	---	---	---	---	---
Hogris	0-2	---	---	---	---	---	---
	2-9	2.0-10	6.1-7.3	0	0	0	0
	9-14	2.0-10	6.1-7.3	0	0	0	0
	14-60	2.0-10	6.1-7.3	0	0	0	0
64:							
Far	0-1	---	---	---	---	---	---
	1-7	15-25	5.6-6.5	0	0	0	0
	7-16	15-25	5.6-6.5	0	0	0	0
	16-60	---	---	---	---	---	---
Huachuca	0-3	---	---	---	---	---	---
	3-8	5.0-15	6.6-7.8	5-15	0	0	0
	8-60	---	---	---	---	---	---

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
64:							
Hogris	0-2	---	---	---	---	---	---
	2-9	2.0-10	6.1-7.3	0	0	0	0
	9-14	2.0-10	6.1-7.3	0	0	0	0
	14-60	2.0-10	6.1-7.3	0	0	0	0
65:							
Forrest	0-6	14-28	6.6-7.3	0-5	0	0	0
	6-28	18-37	7.4-8.4	0-20	0-1	0	0
	28-37	16-34	7.4-8.4	15-30	1-3	0	0
	37-60	12-25	7.9-8.4	10-30	0-3	0.0-2.0	0-2
66:							
Forrest	0-6	14-28	7.4-8.4	0-5	0-4	0.0-4.0	0-13
	6-28	18-37	8.4-9.0	0-20	0-4	4.0-20.0	13-40
	28-37	16-34	8.4-11.0	15-30	1-4	4.0-20.0	13-40
	37-60	12-25	8.4-11.0	10-30	0-4	4.0-20.0	13-40
67:							
Forrest	0-6	4.0-15	6.6-7.3	0-5	0	0	0
	6-28	18-37	7.4-8.4	0-20	0-1	0	0
	28-37	16-34	7.4-8.4	15-30	1-3	0	0
	37-60	12-25	7.9-8.4	10-30	0-3	0.0-2.0	0-2
68:							
Forrest	0-6	4.0-16	6.6-7.3	0-5	0	0	0
	6-28	18-37	7.4-8.4	0-20	0-1	0	0
	28-37	16-34	7.4-8.4	15-30	1-3	0	0
	37-60	12-25	7.9-8.4	10-30	0-3	0.0-2.0	0-2
69:							
Forrest	0-6	4.0-16	6.6-8.4	0-5	0-4	0.0-4.0	0-13
	6-28	18-37	8.4-9.0	0-20	0-4	4.0-20.0	13-40
	28-37	16-34	8.4-11.0	15-30	1-4	4.0-20.0	13-40
	37-60	12-25	8.4-11.0	10-30	0-4	4.0-20.0	13-40
70:							
Forrest	0-1	6.0-10	6.6-7.3	0-5	0	0	0
	1-7	13-24	6.6-7.8	0-5	0-1	0	0
	7-39	17-25	7.4-8.4	5-35	0-1	0	0
	39-60	11-19	7.9-8.4	5-20	0-1	0	0
Bonita	0-2	6.0-11	7.4-7.8	0-5	0-2	0	0
	2-5	12-23	7.4-7.8	0-5	0-4	0	0
	5-20	17-34	7.4-7.8	0-5	0-4	0	0
	20-40	16-36	7.4-8.4	5-10	0-4	0	0
	40-60	10-21	7.9-8.4	5-10	0-4	0	0
71:							
Gardencan	0-4	5.0-15	5.6-7.3	0	0	0	0
	4-20	10-25	5.6-7.3	0	0	0	0
	20-39	15-30	6.6-7.8	0	0	0	0
	39-60	10-25	6.6-7.8	0	0	0	0
Lanque	0-4	0.0-10	6.1-7.3	0	0	0	0
	4-19	0.0-10	6.1-7.3	0	0	0	0
	19-46	0.0-10	6.6-7.3	0	0	0	0
	46-60	10-25	6.6-7.3	0	0	0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
72:							
Glendale	0-7	2.0-10	7.4-8.4	0-5	0	0	0
	7-31	11-22	7.4-8.4	5-15	0	0	0
	31-45	6.0-17	7.4-8.4	5-15	0-2	0.0-4.0	0-2
	45-60	11-22	7.4-8.4	5-15	0-2	0.0-4.0	0-2
73:							
Gothard	0-3	6.0-19	7.4-9.0	0-15	0	0	0
	3-8	3.0-16	7.9-9.0	0-5	0-2	0.0-4.0	0-13
	8-18	10-23	8.5-11.0	0-5	0-2	4.0-16.0	13-30
	18-30	8.0-23	8.5-11.0	5-15	1-5	4.0-32.0	13-30
	30-60	18-35	8.5-11.0	10-25	1-5	4.0-32.0	13-50
74:							
Gothard	0-3	3.0-13	7.9-8.4	0-5	0-2	0.0-2.0	0-13
	3-8	3.0-16	7.9-9.0	0-5	0-2	0.0-4.0	0-13
	8-18	10-23	8.5-11.0	0-5	0-2	4.0-16.0	13-30
	18-30	8.0-23	8.5-11.0	5-15	1-5	4.0-40.0	13-30
	30-60	18-35	8.5-11.0	10-25	1-5	4.0-40.0	13-50
75:							
Graham	0-1	10-20	6.6-7.3	0	0	0	0
	1-10	18-35	6.6-7.8	0	0	0	0
	10-60	---	---	---	---	---	---
Lampshire	0-5	6.0-16	6.6-7.8	0	0	0	0
	5-60	---	---	---	---	---	---
76:							
Graveyard	0-3	2.0-11	7.4-8.4	3-14	0-1	0.0-2.0	0
	3-9	2.0-10	7.4-8.4	15-40	0-5	0.0-2.0	0
	9-16	2.0-10	7.4-8.4	15-40	0-5	0.0-2.0	0
	16-34	2.0-10	7.4-8.4	15-40	0-5	0.0-2.0	0
	34-56	2.0-10	7.4-8.4	15-40	0-5	0.0-2.0	0
	56-60	2.0-10	7.4-8.4	15-40	0-5	0.0-2.0	0
Sierravista	0-3	2.0-11	7.4-8.4	0	0	0	0
	3-21	7.0-22	7.4-8.4	0-5	0	0	0
	21-42	7.0-22	7.4-8.4	0-5	0-2	0.0-2.0	0
	42-60	2.0-10	7.4-8.4	15-40	0-2	0.0-2.0	0
77:							
Grizzle	0-1	6.0-25	7.4-7.8	5-10	0	0	0
	1-6	20-25	7.9-8.4	15-30	0	0	0
	6-32	12-20	7.9-8.4	10-25	0	0	0
	32-50	---	---	---	---	---	---
	50-60	---	---	---	---	---	---
78:							
Guest	0-6	14-28	7.4-8.4	0-10	1-3	0.0-4.0	0-13
	6-14	14-28	7.4-8.4	0-10	1-4	0.0-4.0	0-13
	14-39	16-31	7.4-8.4	5-10	0-4	0.0-4.0	0-13
	39-60	2.0-12	7.4-8.4	5-10	0-4	0.0-4.0	0-13
79:							
Guest	0-7	12-28	7.4-8.4	0-4	0	0.0-4.0	0
	7-60	15-32	7.4-8.4	0-10	0-4	0.0-4.0	0-4

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
80:							
Guest	0-6	14-28	7.4-8.4	0-10	1-4	0.0-4.0	0-13
	6-14	14-28	7.4-9.0	0-10	1-4	0.0-20.0	0-13
	14-39	16-31	8.4-11.0	5-10	0-4	0.0-20.0	13-40
	39-60	2.0-12	8.4-11.0	5-10	0-4	0.0-20.0	13-40
81:							
Guest	0-9	15-32	7.4-8.4	0-4	0	0.0-4.0	0-4
	9-60	17-32	7.4-8.4	0-10	0-4	0.0-13.0	0-8
82:							
Guest	0-9	15-32	7.4-9.0	0-4	0-4	0.0-4.0	0-13
	9-60	17-32	8.4-11.0	0-10	0-4	4.0-20.0	13-40
83:							
Guest	0-9	15-32	7.4-9.0	0-4	0-4	0.0-4.0	0-13
	9-60	17-32	8.4-11.0	0-10	0-4	4.0-20.0	13-40
Cogswell	0-5	14-30	7.4-9.0	1-5	0-4	0.0-4.0	0-13
	5-20	16-34	8.4-9.0	5-10	0-4	0.0-4.0	13-40
	20-33	16-35	8.4-11.0	15-40	0-4	4.0-20.0	13-40
	33-42	11-22	8.4-11.0	10-40	0-4	4.0-20.0	13-40
	42-53	2.0-10	8.4-11.0	1-10	0-4	4.0-20.0	13-40
	53-57	4.0-16	8.4-11.0	5-10	0-4	4.0-20.0	13-40
	57-63	12-25	8.4-11.0	5-15	0-4	4.0-20.0	13-40
84:							
Guest	0-1	14-28	7.4-8.4	0-10	1-4	0.0-2.0	0
	1-10	14-32	7.4-8.4	0-10	1-4	0.0-2.0	0
	10-38	14-31	7.4-8.4	5-10	0-4	0.0-2.0	0
	38-60	14-31	7.4-8.4	5-10	0-4	0.0-2.0	0-2
Riveroad	0-14	6.0-14	7.4-8.4	0-3	0-2	0	0
	14-22	7.0-18	7.4-8.4	0-5	0-4	0.0-2.0	0
	22-33	11-22	7.4-8.4	0-5	0-4	0.0-2.0	0
	33-53	16-31	7.4-8.4	0-5	0-4	0.0-2.0	0
	53-60	2.0-10	7.4-8.4	0-5	0-4	0.0-2.0	0
85:							
Hantz	0-3	6.0-20	7.9-9.0	5-15	0	4.0-8.0	0-13
	3-14	12-25	7.9-9.0	5-15	0-2	4.0-8.0	13-30
	14-42	16-31	8.5-11.0	5-15	0-2	8.0-16.0	30-50
	42-60	16-31	8.5-11.0	5-15	0	8.0-16.0	30-50
86:							
Haplustolls	0-2	---	---	---	---	---	---
	2-8	2.0-8.0	6.6-7.3	0	0	0	0
	8-27	2.0-10	6.6-7.8	0	0	0	0
	27-37	2.0-8.0	7.4-7.8	0	0	0	0
	37-42	2.0-10	7.4-7.8	0	0	0	0
	42-60	2.0-8.0	7.4-7.8	0	0	0	0
Fluvaquents	0-1	2.0-6.0	6.6-7.3	0	0	0	0
	1-2	1.0-3.0	6.6-7.3	0	0	0	0
	2-5	2.0-6.0	6.6-7.3	0	0	0	0
	5-20	2.0-10	6.6-7.8	0	0	0	0
	20-60	1.0-3.0	6.6-7.8	0	0	0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
87:							
Haplustolls----------	0-2	---	---	---	---	---	---
	2-10	2.0-10	6.6-7.8	0	0	0	0
	10-22	2.0-8.0	6.6-7.8	0	0	0	0
	22-60	2.0-8.0	6.6-7.8	0	0	0	0
Fluvaquents----------	0-10	0.0-5.0	7.4-7.8	0	0	0	0
	10-25	0.0-5.0	7.4-7.8	0	0	0	0
	25-60	0.0-5.0	7.4-7.8	0	0	0	0
88:							
Hayhollow----------	0-2	---	---	---	---	---	---
	2-9	3.0-10	6.1-7.3	0	0	0	0
	9-22	4.0-15	6.1-7.3	0	0	0	0
	22-34	3.0-10	6.6-7.3	0	0	0	0
	34-51	3.0-11	6.6-7.3	0	0	0	0
	51-60	3.0-11	6.1-7.3	0	0	0	0
Rafter----------	0-6	4.0-12	6.1-6.5	0	0	0	0
	6-24	4.0-17	6.1-7.3	0	0	0	0
	24-42	2.0-8.0	6.1-7.3	0	0	0	0
	42-60	3.0-13	6.1-7.3	0	0	0	0
Riverwash----------	0-60	---	---	---	---	---	---
89:							
Kaboom----------	0-2	5.0-15	7.4-8.4	0-10	0-3	0.0-2.0	0
	2-5	15-30	7.4-8.4	15-40	5-20	0.0-2.0	0
	5-13	15-30	7.4-8.4	15-40	5-20	0.0-2.0	0
	13-60	---	---	---	---	---	---
Reeup----------	0-2	5.0-20	7.4-8.4	0-10	0-3	0.0-2.0	0
	2-7	15-30	7.4-8.4	5-15	4-10	0.0-2.0	0
	7-29	20-30	7.4-8.4	5-15	4-10	0.0-2.0	0
	29-32	20-30	7.4-8.4	5-15	4-10	0.0-2.0	0
	32-60	---	---	---	---	---	---
90:							
Kahn fine sandy loam	0-8	3.0-15	7.4-8.4	0-5	0-1	0.0-2.0	0
	8-18	10-20	7.4-8.4	0-20	0-1	0.0-2.0	0
	18-60	10-22	7.4-8.4	10-45	0-4	0.0-2.0	0
Kahn silt loam-------	0-1	3.0-20	7.4-8.4	0-5	0-1	0.0-2.0	0
	1-15	10-20	7.4-8.4	0-20	0-1	0.0-2.0	0
	15-43	10-22	7.4-8.4	10-45	0-2	0.0-2.0	0
	43-60	10-22	7.4-8.4	5-20	0-4	0.0-2.0	0
91:							
Kahn----------	0-2	4.0-14	7.9-8.4	5-20	0-4	0.0-2.0	0-2
	2-10	11-17	7.9-8.4	15-45	0-4	0.0-2.0	0-2
	10-41	11-17	7.9-8.4	20-45	1-5	0.0-2.0	0-2
	41-60	11-17	7.9-8.4	5-20	1-5	0.0-4.0	0-2
Zapolote----------	0-1	12-25	7.4-8.4	15-25	0-2	0.0-2.0	0
	1-5	12-26	7.4-8.4	20-30	0-2	0.0-2.0	0
	5-29	16-34	7.4-8.4	25-35	1-5	0.0-2.0	0
	29-60	16-31	7.4-8.4	20-30	1-5	0.0-4.0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
92:							
Karro	0-14	6.0-19	7.9-8.4	15-30	0	0.0-2.0	0-2
	14-44	11-23	7.9-9.0	40-65	0	0.0-8.0	0-2
	44-60	11-22	7.9-9.0	40-65	0-4	4.0-16.0	0-2
93:							
Karro	0-14	6.0-19	7.9-8.4	15-30	0-4	0.0-4.0	0-13
	14-44	11-23	7.9-9.0	40-65	0-4	4.0-20.0	13-40
	44-60	11-22	7.9-11.0	40-65	0-4	4.0-20.0	13-40
94:							
Keysto	0-9	3.0-12	6.1-7.3	0	0	0	0
	9-30	3.0-10	6.1-7.3	0	0	0	0
	30-60	1.0-7.0	6.1-7.3	0-2	0	0	0
Riverwash	0-60	---	---	---	---	---	---
95:							
Kuykendall	0-1	16-36	6.6-7.3	0	0	0	0
	1-7	20-42	6.6-7.8	0	0	0	0
	7-18	21-43	6.6-7.8	0-5	0	0	0
	18-60	---	---	---	---	---	---
Rock outcrop	0-60	---	---	---	---	---	---
96:							
Lanque	0-4	4.0-15	6.1-6.5	0	0	0	0
	4-12	4.0-15	6.1-6.5	0	0	0	0
	12-33	4.0-13	6.6-7.3	0	0	0	0
	33-60	3.0-11	6.6-7.3	0	0	0	0
Stanford	0-2	4.0-15	6.1-7.3	0	0	0	0
	2-10	4.0-17	6.1-7.3	0	0	0	0
	10-16	6.0-15	6.1-7.3	0	0	0	0
	16-30	10-20	6.1-7.3	0	0	0	0
	30-60	12-23	6.1-7.3	0	0	0	0
97:							
Libby	0-1	5.0-15	7.4-8.4	0-5	0	0.0-2.0	0
	1-13	25-40	7.4-8.4	10-20	0	0.0-2.0	0
	13-25	25-40	7.4-8.4	15-40	0-2	0.0-2.0	0
	25-60	20-35	7.4-8.4	15-40	0-2	2.0-4.0	0
Gulch	0-1	5.0-10	7.4-8.4	0-5	0	0.0-2.0	0
	1-3	5.0-10	7.4-8.4	0-5	0	0.0-2.0	0
	3-10	10-25	7.4-8.4	10-20	1-4	0.0-2.0	0
	10-24	15-30	7.4-8.4	10-20	1-4	0.0-2.0	0
	24-40	15-30	7.4-8.4	15-55	1-4	0.0-2.0	0
	40-60	15-30	7.4-8.4	15-55	1-4	0.0-2.0	0
98:							
Luckyhills	0-3	2.0-6.0	7.4-8.4	0-4	0	0	0
	3-26	4.0-10	7.4-8.4	5-20	0	0	0
	26-34	4.0-10	7.9-8.4	5-20	0	0	0
	34-60	4.0-12	7.9-8.4	10-30	0	0	0
99:							
Luckyhills	0-2	4.0-11	7.4-8.4	0-4	0	0	0
	2-13	4.0-13	7.4-8.4	5-25	0	0	0
	13-31	2.0-12	7.4-8.4	15-30	0	0	0
	31-39	2.0-12	7.4-8.4	10-25	0	0	0
	39-60	4.0-12	7.4-8.4	5-20	0	0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
99:							
McNeal	0-1	4.0-11	7.4-8.4	0-5	0	0	0
	1-21	14-26	7.4-8.4	5-40	0	0	0
	21-41	8.0-21	7.4-8.4	20-55	0	0	0
	41-60	2.0-9.0	7.4-8.4	5-20	0	0	0
100:							
Lutzcan	0-2	15-25	6.6-7.3	0	0	0	0
	2-18	15-25	6.6-7.8	0	0	0	0
	18-60	---	---	---	---	---	---
Yarbam	0-2	5.0-15	7.4-8.4	10-40	0	0.0-2.0	0
	2-9	5.0-15	7.4-8.4	20-40	0	0.0-2.0	0
	9-60	---	---	---	---	---	---
101:							
Mabray	0-5	8.0-20	7.4-8.4	40-60	0	0	0
	5-11	7.0-17	7.4-8.4	40-60	0	0	0
	11-60	---	---	---	---	---	---
Chiricahua	0-1	15-25	6.1-7.3	0	0	0	0
	1-20	20-30	6.1-7.3	0	0	0	0
	20-60	---	---	---	---	---	---
Rock outcrop	0-60	---	---	---	---	---	---
102:							
Mabray	0-8	8.0-20	7.4-8.4	40-60	0	0	0
	8-11	7.0-17	7.4-8.4	40-60	0	0	0
	11-60	---	---	---	---	---	---
Rock outcrop	0-60	---	---	---	---	---	---
103:							
Magoffin	0-2	4.0-15	6.1-7.3	0	0	0	0
	2-12	4.0-13	6.6-7.3	0	0	0	0
	12-15	4.0-13	6.6-7.3	0	0	0	0
	15-60	---	---	---	---	---	---
Rock outcrop	0-60	---	---	---	---	---	---
Cherrycow	0-2	4.0-12	6.1-6.5	0	0	0	0
	2-11	4.0-17	6.1-6.5	0	0	0	0
	11-25	17-40	6.1-7.3	0	0	0	0
	25-33	17-32	6.1-7.3	0	0	0	0
	33-40	2.0-12	6.1-7.3	0	0	0	0
	40-60	---	---	---	---	---	---
104:							
Major fine sandy loam	0-2	5.0-15	7.4-8.4	0-10	0-4	0.0-2.0	0
	2-7	5.0-15	7.4-8.4	20-40	0-4	0.0-2.0	0
	7-22	5.0-20	7.4-8.4	20-60	0-4	0.0-2.0	0
	22-36	5.0-20	7.4-8.4	20-60	0-4	0.0-2.0	0
	36-60	15-30	6.6-8.4	0-10	5-15	0.0-2.0	0
Major silt loam	0-7	2.0-14	7.9-8.4	20-50	0-4	0.0-2.0	0-2
	7-21	2.0-12	7.9-8.4	20-50	0-4	0.0-2.0	0-2
	21-50	7.0-17	7.9-8.4	20-60	0-4	0.0-2.0	0-2
	50-60	16-31	7.4-8.4	20-60	5-15	0.0-4.0	0-2

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
105:							
Mallet	0-2	4.0-13	6.6-7.3	0	0	0	0
	2-18	6.0-15	6.1-7.3	0	0	0	0
	18-35	3.0-11	6.6-7.3	0	0	0	0
	35-45	1.0-7.0	6.6-7.3	0	0	0	0
	45-60	1.0-5.0	6.1-7.3	0	0	0	0
Hooks	0-2	3.0-11	6.1-7.3	0	0	0	0
	2-14	13-25	6.1-7.3	0	0	0	0
	14-46	12-23	6.1-7.8	0	0	0	0
	46-60	11-22	6.6-7.8	0	0	0	0
106:							
Marsh.							
107:							
McAllister	0-8	6.0-19	7.4-8.4	0-15	0	0	0
	8-27	12-25	7.4-8.4	5-20	0	0	0
	27-60	11-22	7.9-9.0	15-30	0-4	0.0-8.0	0-13
108:							
McAllister	0-2	4.0-10	7.4-8.4	0	0	0	0
	2-35	10-18	7.4-8.4	5-30	0	0	0
	35-60	4.0-12	7.9-8.4	10-25	0	0	0
Stronghold	0-1	2.0-6.0	7.4-8.4	5-15	0	0	0
	1-25	4.0-12	7.4-8.4	14-40	0	0	0
	25-60	2.0-9.0	7.9-8.4	14-40	0	0	0
109:							
McNeal	0-2	2.0-11	7.4-8.4	0-5	0	0	0
	2-5	4.0-17	7.4-8.4	5-40	0	0	0
	5-24	11-22	7.4-8.4	15-55	0	0	0
	24-53	6.0-17	7.4-8.4	20-55	0	0	0
	53-60	0.5-7.0	7.4-8.4	5-20	0	0	0
110:							
McNeal	0-2	2.0-11	7.4-8.4	0-5	0-4	0.0-4.0	0-13
	2-5	4.0-17	7.4-9.0	5-40	0-4	0.0-4.0	0-13
	5-24	11-22	7.4-9.0	15-55	0-4	0.0-4.0	0-13
	24-53	6.0-17	8.4-11.0	20-55	0-4	4.0-20.0	13-40
	53-60	0.5-7.0	8.4-11.0	5-20	0-4	4.0-20.0	13-40
111:							
Monzingo	0-9	5.0-10	7.4-8.4	1-15	0-5	0.0-2.0	0
	9-30	5.0-12	7.4-8.4	5-35	5-20	0.0-2.0	0
	30-60	10-15	7.4-8.4	5-25	5-20	0.0-2.0	0
Ugyp	0-4	3.0-8.0	7.4-8.4	1-15	0-5	0.0-2.0	0
	4-10	2.0-15	7.4-8.4	1-15	5-10	0.0-2.0	0
	10-33	2.0-15	7.4-8.4	5-25	5-10	0.0-2.0	0
	33-60	4.0-15	7.4-8.4	10-30	5-10	0.0-2.0	0
Ugyp	0-4	3.0-8.0	7.4-8.4	1-15	0-5	0.0-2.0	0
	4-10	2.0-15	7.4-8.4	1-15	5-10	0.0-2.0	0
	10-33	2.0-15	7.4-8.4	5-25	5-10	0.0-2.0	0
	33-60	4.0-15	7.4-8.4	10-30	5-10	0.0-2.0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
112:							
Naco	0-2	4.0-15	6.6-7.3	0	0	0	0
	2-8	4.0-15	6.6-7.3	0	0	0	0
	8-15	17-38	6.6-7.8	0	0	0	0
	15-44	16-37	6.6-7.8	0	0	0	0
	44-60	16-37	6.6-7.8	0	0	0	0
Ruins, thick surface	0-22	1.0-4.0	6.6-7.8	0	0	0	0
	22-27	2.0-5.0	6.6-7.8	0	0	0	0
	27-40	17-38	6.6-7.8	0	0	0	0
	40-60	16-37	6.6-7.8	0	0	0	0
Ruins	0-5	4.0-15	6.1-7.3	0	0	0	0
	5-9	14-28	6.1-7.3	0	0	0	0
	9-28	17-38	6.1-7.3	0	0	0	0
	28-60	12-25	6.6-7.8	0	0	0	0
113:							
Nolam	0-1	2.0-11	6.6-7.8	0-5	0	0	0
	1-19	8.0-22	6.6-7.8	0-5	0	0	0
	19-38	4.0-13	6.6-7.8	15-40	0-2	0	0
	38-60	2.0-10	6.6-7.8	15-40	0-2	0.0-2.0	0
Libby	0-1	5.0-13	7.4-8.4	0-10	0	0.0-2.0	0
	1-8	4.0-16	7.4-8.4	0-10	0	0.0-2.0	0
	8-23	16-31	7.4-8.4	15-40	0-2	0.0-2.0	0
	23-60	12-25	7.4-8.4	15-40	0-2	2.0-4.0	0
Buntline	0-1	2.0-11	7.4-8.4	0-3	0	0	0
	1-8	4.0-13	7.4-8.4	0-5	0	0	0
	8-23	---	---	---	---	---	---
	23-47	2.0-13	7.4-8.4	5-30	0-2	0.0-2.0	0
	47-60	8.0-19	7.4-8.4	5-30	0-2	0.0-2.0	0
114:							
Outlaw	0-1	15-30	7.4-8.4	0-5	0	0.0-2.0	0
	1-32	25-49	7.4-8.4	0-5	0	0.0-2.0	0
	32-46	8.0-18	7.9-8.4	20-50	0	0.0-2.0	0
	46-60	12-25	7.9-8.4	0-15	0	0.0-2.0	0
Epitaph	0-1	14-30	7.4-7.8	0-5	0	0	0
	1-9	18-37	7.4-7.8	0-5	0	0	0
	9-24	18-40	7.4-8.4	3-10	0	0.0-2.0	0-2
	24-33	---	---	---	---	---	---
	33-60	---	---	---	---	---	---
Paramore	0-1	14-30	6.6-7.3	0	0	0	0
	1-8	17-40	6.6-7.3	0-2	0	0	0
	8-22	17-38	6.6-7.3	0-2	0	0.0-2.0	0-2
	22-60	---	---	---	---	---	---
115:							
Oversight	0-3	4.0-13	6.1-7.3	0	0	0	0
	3-14	6.0-15	6.1-7.3	0	0	0	0
	14-29	5.0-17	6.1-7.3	0	0	0	0
	29-48	8.0-23	6.1-7.3	0	0	0	0
	48-60	8.0-23	6.1-7.3	0	0	0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
116:							
Oversight	0-1	2.0-13	7.4-7.8	0-2	0	0	0
	1-7	2.0-13	7.4-7.8	0-3	0	0	0
	7-15	2.0-11	7.4-8.4	0-3	0	0	0
	15-42	1.0-10	7.4-8.4	5-15	0	0.0-2.0	0
	42-60	1.0-7.0	7.4-8.4	5-15	0	0.0-2.0	0
117:							
Oversight	0-1	4.0-12	6.1-7.3	0	0	0	0
	1-12	3.0-16	6.1-7.3	0	0	0	0
	12-25	3.0-14	6.1-7.3	0	0	0	0
	25-45	3.0-14	6.1-7.3	0	0	0	0
	45-60	9.0-20	6.1-7.3	0	0	0	0
Lanque	0-3	3.0-12	6.1-7.3	0	0	0	0
	3-25	3.0-15	6.1-7.3	0	0	0	0
	25-60	1.0-11	6.1-7.3	0	0	0	0
118:							
Pedregosa	0-1	2.0-10	7.4-8.4	2-10	0	0	0
	1-7	2.0-10	7.4-8.4	5-25	0	0	0
	7-13	---	---	---	---	---	---
	13-60	2.0-10	7.4-8.4	15-40	0	0	0
119:							
Pedregosa	0-2	4.0-15	7.4-8.4	2-10	0	0.0-2.0	0
	2-13	5.0-15	7.4-8.4	5-25	0	0.0-2.0	0
	13-18	3.0-15	7.4-8.4	15-40	0	0.0-2.0	0
	18-60	---	---	---	---	---	---
Tombstone	0-2	5.0-13	7.9-8.4	5-15	0	0.0-2.0	0
	2-15	5.0-13	7.9-8.4	5-30	0	0.0-2.0	0
	15-60	3.0-10	7.9-8.4	5-30	0	0.0-2.0	0
120:							
Perilla	0-5	2.0-13	---	0-4	0	0	0
	5-21	2.0-13	---	0-4	0	0	0
	21-29	2.0-12	---	0-4	0	0	0
	29-60	2.0-12	---	0-4	0	0	0
Durazo	0-10	0.5-5.0	6.6-7.8	0	0	0	0
	10-31	0.5-5.0	6.6-7.8	0	0	0	0
	31-60	0.5-4.0	6.6-7.8	0-3	0	0	0
121:							
Pits.							
122:							
Pits.							
Dumps.							
123:							
Quiburi	0-1	---	---	---	---	---	---
	1-6	2.0-13	7.9-8.4	0-4	0	0	0
	6-36	2.0-12	7.9-11.0	0-5	0	2.0-4.0	0-13
	36-51	2.0-12	7.9-11.0	0-5	0-2	2.0-4.0	0-13
	51-60	2.0-12	7.9-9.0	0-5	0-2	2.0-4.0	0-13
Fluvaquents	0-4	1.0-5.0	7.4-8.4	0	0	0	0
	4-20	1.0-5.0	7.4-8.4	0	0	0	0
	20-50	1.0-5.0	7.4-8.4	0	0	0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
123:							
Riverwash	0-60	---	---	---	---	---	---
124:							
Rafter	0-2	4.0-12	5.6-6.0	0	0	0	0
	2-12	4.0-17	5.6-6.5	0	0	0	0
	12-28	4.0-15	5.6-6.5	0	0	0	0
	28-60	2.0-8.0	6.1-7.3	0	0	0	0
Lanque	0-2	4.0-15	6.1-7.3	0	0	0	0
	2-24	4.0-15	6.1-7.3	0	0	0	0
	24-50	3.0-13	6.1-7.3	0	0	0	0
	50-60	3.0-11	6.1-7.3	0	0	0	0
125:							
Riveroad	0-1	6.0-19	7.4-8.4	0-3	0-2	0	0
	1-21	7.0-18	7.4-8.4	0-5	0-4	0.0-2.0	0
	21-60	11-22	7.4-8.4	0-5	0-4	0.0-2.0	0
Ubik	0-5	2.0-11	6.6-7.8	0-3	0	0.0-4.0	0-4
	5-16	2.0-10	6.6-7.8	0-3	0	0.0-4.0	0-4
	16-60	2.0-10	6.6-7.8	0-3	0-3	0.0-4.0	0-4
126:							
Riverwash	0-60	---	---	---	---	---	---
127:							
Riverwash	0-60	---	---	---	---	---	---
Bodecker	0-3	2.0-6.0	7.4-8.4	3-5	0	0	0
	3-12	2.0-6.0	7.4-8.4	3-5	0	0	0
	12-29	2.0-6.0	7.9-8.4	3-5	0	0	0
	29-48	2.0-6.0	7.9-8.4	3-5	0	0	0
	48-60	2.0-6.0	7.9-8.4	3-5	0	0	0
128:							
Rock outcrop	0-60	---	---	---	---	---	---
Magoffin	0-3	4.0-15	6.1-6.5	0	0	0	0
	3-13	4.0-13	6.1-7.3	0	0	0	0
	13-15	4.0-10	6.1-7.3	0	0	0	0
	15-60	---	---	---	---	---	---
129:							
Sasabe sandy loam	0-5	2.0-13	7.4-8.4	0	0	0	0
	5-13	10-23	7.4-8.4	0	0	0	0
	13-36	16-38	7.4-8.4	0	0	0	0
	36-54	10-23	7.4-8.4	0	0	0	0
	54-60	12-26	7.4-8.4	0	0	0	0
Sasabe silt loam	0-4	6.0-17	7.4-8.4	0	0	0	0
	4-13	11-25	7.4-8.4	0	0	0	0
	13-43	16-37	7.4-8.4	0	0	0	0
	43-60	4.0-13	7.4-8.4	0	0	0	0
130:							
Sasabe	0-7	2.0-13	7.4-8.4	0	0	0	0
	7-10	2.0-12	7.4-8.4	0	0	0	0
	10-20	16-37	7.4-8.4	0	0	0	0
	20-30	10-22	7.4-8.4	0-5	0	0	0
	30-60	10-22	7.4-8.4	0-15	0	0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
131:							
Sasabe	0-7	2.0-13	7.4-8.4	0	0-4	0.0-4.0	0-13
	7-10	2.0-12	7.4-9.0	0	0-4	4.0-20.0	13-40
	10-20	16-37	8.0-11.0	0	0-4	4.0-20.0	13-40
	20-30	10-22	8.0-11.0	0-5	0-4	4.0-20.0	13-40
	30-60	10-22	8.0-11.0	0-15	0-4	4.0-20.0	13-40
132:							
Schiefflin	0-6	2.0-12	6.1-7.3	0	0	0	0
	6-18	2.0-10	5.6-6.5	0	0	0	0
	18-60	---	---	---	---	---	---
133:							
Stronghold	0-2	4.0-13	7.4-8.4	5-15	0	0.0-2.0	0
	2-9	4.0-13	7.4-8.4	15-40	0	0.0-4.0	0
	9-49	3.0-11	7.4-8.4	15-40	0	0.0-8.0	0-8
	49-54	3.0-10	7.9-8.4	15-40	0-2	0.0-8.0	0-8
	54-60	3.0-10	7.9-8.4	14-40	0-2	0.0-8.0	0-8
134:							
Stronghold	0-8	4.0-12	7.4-8.4	5-15	0	0	0
	8-20	4.0-12	7.4-8.4	14-40	0	0	0
	20-60	2.0-9.0	7.9-8.4	14-40	0	0	0
Bernardino	0-2	4.0-12	6.6-7.3	0	0	0	0
	2-15	14-30	6.6-7.8	5-15	0	0	0
	15-18	12-24	7.9-8.4	15-40	0	0	0
	18-60	2.0-12	7.9-8.4	10-35	0	0	0
135:							
Surge	0-2	3.0-13	7.4-8.4	0-5	0	0	0
	2-7	6.0-16	7.4-8.4	1-10	0	0.0-2.0	0-2
	7-60	---	---	---	---	---	---
Rock outcrop	0-60	---	---	---	---	---	---
136:							
Sutherland	0-1	3.0-15	7.4-8.4	5-20	0	0.0-2.0	0
	1-18	2.0-14	7.4-8.4	40-60	0	0.0-2.0	0
	18-42	---	---	---	---	---	---
	42-60	2.0-12	7.4-8.4	45-55	0	0.0-2.0	0
Mule	0-2	4.0-15	7.4-8.4	30-45	0	0.0-2.0	0
	2-10	4.0-18	7.4-8.4	40-70	0	0.0-2.0	0
	10-60	2.0-12	7.4-8.4	40-70	0	0.0-2.0	0
137:							
Swisshelm	0-12	4.0-15	6.6-8.4	0-4	0	0	0
	12-22	4.0-14	7.4-9.0	1-5	0	0	0
	22-42	3.0-13	7.4-9.0	1-5	0-2	0.0-2.0	0-8
	42-60	12-23	7.4-9.0	1-5	0-2	0.0-2.0	0-8
138:							
Swisshelm	0-12	4.0-15	7.4-8.4	0-4	0-4	0.0-4.0	0-13
	12-22	4.0-14	8.4-9.0	1-5	0-4	0.0-4.0	0-13
	22-42	3.0-13	8.4-11.0	1-5	0-4	4.0-20.0	13-40
	42-60	12-23	8.4-11.0	1-5	0-4	4.0-20.0	13-40

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
139:							
Tenneco	0-2	5.0-14	7.4-8.4	0-3	0	0.0-2.0	0
	2-11	9.0-23	7.4-8.4	0-3	0	0.0-2.0	0
	11-41	8.0-19	7.4-8.4	3-15	0	0.0-2.0	0
	41-60	4.0-13	7.4-8.4	3-15	0	0.0-2.0	0
140:							
Terrarossa sandy loam	0-2	5.0-15	5.6-7.3	0	0	0	0
	2-9	5.0-15	5.6-7.3	0	0	0	0
	9-27	15-30	5.6-7.3	0	0	0	0
	27-60	15-30	5.6-7.3	0	0	0	0
Terrarossa gravelly loam	0-4	5.0-20	5.6-7.3	0	0	0	0
	4-8	5.0-20	5.6-7.3	0	0	0	0
	8-46	15-30	5.6-7.3	0	0	0	0
	46-60	15-30	5.6-7.3	0	0	0	0
Terrarossa very gravelly sandy loam	0-3	5.0-15	5.6-7.3	0	0	0	0
	3-10	15-30	5.6-7.3	0	0	0	0
	10-27	15-30	5.6-7.3	0	0	0	0
	27-60	15-30	5.6-7.3	0	0	0	0
141:							
Terrarossa	0-9	5.0-20	5.6-7.3	0	0	0	0
	9-30	15-30	5.6-7.3	0	0	0	0
	30-60	15-30	5.6-7.3	0	0	0	0
Blacktail	0-3	5.0-15	7.4-8.4	0	0	0	0
	3-7	10-25	7.4-8.4	0-5	0	0	0
	7-23	15-30	7.4-8.4	15-40	0	0	0
	23-32	0.0-10	7.4-8.4	30-60	0	0	0
	32-60	0.0-10	7.4-8.4	30-45	0	0	0
Pyeatt	0-9	4.0-10	7.4-8.4	0-10	0	0	0
	9-35	2.0-10	7.4-8.4	10-25	0	0	0
	35-41	2.0-10	7.4-8.4	10-30	0	0	0
	41-60	2.0-10	7.4-8.4	15-30	0	0	0
142:							
Tombstone	0-1	4.0-6.0	7.9-8.4	5-15	0	0	0
	1-5	4.0-9.0	7.9-8.4	10-20	0	0	0
	5-13	4.0-9.0	7.9-8.4	15-30	0	0	0
	13-60	4.0-9.0	7.9-8.4	5-25	0	0	0
143:							
Turquoise	0-1	2.0-7.0	6.1-6.5	0	0	0	0
	1-5	2.0-15	6.1-7.3	0	0	0	0
	5-22	---	---	---	---	---	---
	22-60	---	---	---	---	---	---
Nugget	0-1	3.0-15	6.1-6.5	0	0	0	0
	1-5	5.0-17	6.1-7.3	0	0	0	0
	5-12	14-28	6.1-7.3	0	0	0	0
	12-24	---	---	---	---	---	---
	24-60	---	---	---	---	---	---
144:							
Ubik silt loam	0-10	2.0-15	6.6-7.8	0-5	0	0	0-13
	10-32	4.0-10	6.6-7.8	0-5	0-2	0	0-13
	32-60	2.0-15	6.6-7.8	0-5	0-3	0	0-13

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
144:							
Ubik fine sandy loam	0-8	2.0-15	6.6-7.8	0-5	0	0	0-13
	8-30	2.0-15	6.6-7.8	0-5	0	0	0-13
	30-60	2.0-15	6.6-7.8	0-5	0-3	0	0-13
145:							
Ubik----------	0-7	4.0-14	7.4-8.4	0-5	0	0.0-4.0	0-13
	7-16	3.0-13	7.4-8.4	0-5	0-2	0.0-4.0	0-13
	16-36	2.0-12	7.4-8.4	1-5	0-2	0.0-8.0	0-13
	36-55	3.0-13	7.4-8.4	1-5	0-3	0.0-8.0	0-13
	55-63	2.0-13	7.4-8.4	1-5	0-3	0.0-8.0	0-13
146:							
Ubik----------	0-7	4.0-14	7.4-8.4	0-5	0-4	0.0-4.0	0-13
	7-16	3.0-13	7.4-9.0	0-5	0-4	0.0-4.0	0-13
	16-36	2.0-12	8.4-11.0	1-5	0-4	4.0-20.0	13-40
	36-55	3.0-13	8.4-11.0	1-5	0-4	4.0-20.0	13-40
	55-63	2.0-13	8.4-11.0	1-5	0-4	4.0-20.0	13-40
147:							
Ubik----------	0-7	3.0-13	7.4-8.4	0-5	0	0.0-4.0	0-13
	7-16	3.0-13	7.4-8.4	0-5	0-2	0.0-4.0	0-13
	16-36	2.0-12	7.4-8.4	1-5	0-2	0.0-8.0	0-13
	36-55	3.0-13	7.4-8.4	1-5	0-2	0.0-8.0	0-13
	55-63	2.0-13	7.4-8.4	1-5	0-2	0.0-8.0	0-13
148:							
Ubik----------	0-7	3.0-13	7.4-8.4	0-5	0	0.0-4.0	0-13
	7-16	3.0-13	7.4-9.0	0-5	0-4	0.0-4.0	0-13
	16-36	2.0-12	8.4-11.0	1-5	0-4	4.0-20.0	13-40
	36-55	3.0-13	8.4-11.0	1-5	0-4	4.0-20.0	13-40
	55-63	2.0-13	8.4-11.0	1-5	0-4	4.0-20.0	13-40
149:							
Vana----------	0-1	5.0-16	7.4-8.4	0-5	0-2	0.0-2.0	0
	1-8	5.0-14	7.4-8.4	0-10	0-5	0.0-2.0	0
	8-14	8.0-19	7.4-8.4	0-10	0-5	0.0-2.0	0
	14-24	---	---	---	---	---	---
	24-60	4.0-12	7.4-8.4	40-70	5-15	0.0-2.0	0
150:							
Vana----------	0-2	3.0-16	7.4-8.4	0-5	0-2	0.0-2.0	0
	2-8	9.0-20	7.4-8.4	0-10	0-5	0.0-2.0	0
	8-13	13-23	7.4-8.4	0-10	0-5	0.0-2.0	0
	13-18	---	---	---	---	---	---
	18-60	5.0-15	7.4-8.4	40-70	5-15	0.0-2.0	0
Moco----------	0-1	5.0-20	7.4-8.4	0-5	0-1	0.0-2.0	0
	1-10	13-23	7.4-8.4	5-15	1-5	0.0-2.0	0
	10-20	8.0-22	7.4-8.4	15-30	5-20	0.0-2.0	0
	20-60	8.0-22	7.4-8.4	30-55	5-20	0.0-2.0	0
151:							
White House gravelly loam----------	0-2	5.0-20	5.6-6.5	0	0	0	0
	2-18	15-30	5.6-6.5	0	0	0	0
	18-29	10-25	6.6-7.3	0	0	0	0
	29-33	0.0-5.0	6.6-8.4	0-5	0	0	0
	33-60	10-25	6.6-8.4	0-10	0	0	0

Table 15.--Chemical Properties of the Soils--Continued

Map symbol and soil name	Depth	Cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorp-tion ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
151:							
White House gravelly sandy loam----------	0-5	5.0-20	5.6-6.5	0	0	0	0
	5-25	15-30	5.6-6.5	0	0	0	0
	25-45	10-25	6.6-7.3	0	0	0	0
	45-60	10-25	6.6-8.4	0-10	0	0	0
152:							
Yarbam----------	0-2	5.0-20	7.4-8.4	10-40	0	0.0-2.0	0
	2-9	5.0-15	7.4-8.4	20-40	0	0.0-2.0	0
	9-60	---	---	---	---	---	---
Rock outcrop---------	0-60	---	---	---	---	---	---

Table 16.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer		Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Initial	Total		Uncoated steel	Concrete
		In	In	In			
1:							
Altar	---	---	0	---	None	High	Moderate
Mallet	---	---	0	---	None	High	Moderate
2:							
Anthony	---	---	0	---	None	High	Low
Maricopa	---	---	0	---	None	High	Low
3:							
Arizo family	---	---	0	---	None	High	Low
Riverwash	---	---	0	---	None	---	---
4:							
Ashcreek	---	---	0	---	Low	High	Moderate
Stanford	---	---	0	---	Low	High	Moderate
5:							
Baboquivari	---	---	0	---	None	Moderate	Low
Combate	---	---	0	---	None	Moderate	Low
6:							
Banshee	---	---	0	---	None	High	Moderate
Banshee, thick surface	---	---	0	---	None	High	Moderate
7:							
Bella	Petrocalcic	10-20	0	---	None	High	High
8:							
Blakeney	Petrocalcic	6-20	0	---	None	High	Low
Luckyhills	---	---	0	---	None	High	Low
9:							
Bodecker	---	---	0	---	None	High	Low
Comoro	---	---	0	---	None	High	Low
10:							
Bodecker	---	---	0	---	None	High	Low
11:							
Bodecker	---	---	0	---	None	High	High
12:							
Bonita	---	---	0	---	None	High	Low
13:							
Bonita	---	---	0	---	None	High	Moderate
Forrest	---	---	0	---	None	High	Moderate
14:							
Borderland	---	---	0	---	Low	High	Low

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In	In			
15:							
Borderline	---	---	0	---	None	High	High
16:							
Boss	Bedrock (lithic)	5-20	0	---	None	High	Low
Krentz	---	---	0	---	None	High	Low
Paramore	Bedrock (lithic)	20-45	0	---	None	High	Low
Rock outcrop	Bedrock (lithic)	---	0	---	None	---	---
17:							
Brookline	---	---	0	---	None	High	Moderate
Fluvaquents	---	---	0	---	None	Moderate	Low
Riverwash	---	---	0	---	None	---	---
18:							
Brunkcow	Bedrock (lithic)	5-20	0	---	None	Moderate	Low
Chiricahua	Bedrock (paralithic)	10-20	0	---	None	Moderate	Low
	Bedrock (lithic)	20-30					
Andrada	Bedrock (paralithic)	6-20	0	---	None	High	Low
19:							
Brunkcow	Bedrock (lithic)	5-20	0	---	None	Moderate	Low
Chiricahua	Bedrock (paralithic)	10-20	0	---	None	Moderate	Low
	Bedrock (lithic)	20-30					
Lampshire	Bedrock (lithic)	4-20	0	---	None	Moderate	Low
20:							
Budlamp	Bedrock (lithic)	5-20	0	---	None	High	Moderate
Woodcutter	Bedrock (lithic)	5-20	0	---	None	High	Moderate
21:							
Buntline	Petrocalcic	5-15	0	---	None	High	Low
22:							
Caralampi	---	---	0	---	None	Moderate	Moderate
23:							
Caralampi	---	---	0	---	None	Moderate	Moderate
24:							
Carbine	Petrocalcic	5-20	0	---	Low	High	Low
25:							
Carbine	Petrocalcic	5-20	0	---	Low	High	Low
Hathaway	---	---	0	---	Low	High	Low
26:							
Cazador	---	---	0	---	Low	High	Low

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In	In			
26:							
Lesliecreek	---	---	0	---	Low	High	Low
27:							
Cherrycow	Bedrock (lithic)	10-40	0	---	Low	High	Moderate
Blacktail	---	---	0	---	Low	High	Moderate
28:							
Cherrycow	Bedrock (lithic)	10-40	0	---	Low	High	Moderate
Magoffin	Bedrock (lithic)	5-20	0	---	Low	High	Moderate
Rock outcrop	Bedrock (lithic)	---	0	---	Low	---	---
29:							
Chorro	---	---	0	---	None	High	High
Doubleadobe	---	---	0	---	None	High	High
Gothard	---	---	0	---	None	High	High
30:							
Chorro	---	---	0	---	None	High	High
Guest	---	---	0	---	None	High	Moderate
31:							
Cogswell	---	---	0	---	None	High	High
32:							
Combate	---	---	0	---	None	Moderate	Low
33:							
Comoro	---	---	0	---	None	High	Low
34:							
Comoro	---	---	0	---	None	High	High
35:							
Contention	---	---	0	---	None	High	High
Crystalgyp	Bedrock (paralithic)	30-40	0	---	None	High	High
Monzingo	---	---	0	---	None	High	High
Redington	---	---	0	---	None	High	High
36:							
Contention	---	---	0	---	None	High	High
Ugyp	---	---	0	---	None	High	High
Ugyp	---	---	0	---	None	High	High
37:							
Courtland	---	---	0	---	None	Moderate	Low
38:							
Courtland	---	---	0	---	None	High	High

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In	In			
39:							
Courtland	---	---	0	---	None	Moderate	Low
Diaspar	---	---	0	---	None	High	Low
40:							
Courtland	---	---	0	---	None	Moderate	Low
Sasabe	---	---	0	---	None	High	Low
Diaspar	---	---	0	---	None	High	Low
41:							
Crowbar	---	---	0	---	Low	High	Moderate
Brunopeak	---	---	0	---	Low	High	Moderate
42:							
Deloro	Bedrock (lithic)	10-20	0	---	None	Moderate	Low
Leyte	Bedrock (lithic)	5-20	0	---	None	Moderate	Low
Lampshire	Bedrock (lithic)	4-20	0	---	None	Moderate	Low
43:							
Denab	Bedrock (paralithic)	5-30	0	---	Low	High	Low
	Bedrock (lithic)	20-40					
Castledome	Bedrock (paralithic)	7-20	0	---	Low	High	Low
	Bedrock (lithic)	25-40					
44:							
Denied Access.							
45:							
Diaspar	---	---	0	---	None	High	Low
46:							
Diaspar	---	---	0	---	None	High	High
47:							
Dona Ana	---	---	0	---	None	High	Low
Mohave	---	---	0	---	None	High	Low
48:							
Doubleadobe	---	---	0	---	None	High	High
49:							
Durazo	---	---	0	---	None	High	Moderate
50:							
Durazo	---	---	0	---	None	High	High
51:							
Durazo	---	---	0	---	None	High	High
Gothard	---	---	0	---	None	High	High

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In	In			
52:							
Durazo	---	---	0	---	None	High	Moderate
Courtland	---	---	0	---	None	Moderate	Low
53:							
Durazo	---	---	0	---	None	High	Moderate
McAllister	---	---	0	---	None	High	Moderate
54:							
Elfrida	---	---	0	0	None	High	Moderate
55:							
Elfrida	---	---	0	0	None	High	High
56:							
Elgin	---	---	0	---	None	High	Low
McAllister	---	---	0	---	None	High	Low
Stronghold	---	---	0	---	None	High	Low
57:							
Elgin	---	---	0	---	None	High	Low
Outlaw	---	---	0	---	None	High	Low
58:							
Elgin	---	---	0	---	None	High	Low
Stronghold	---	---	0	---	None	High	Low
59:							
Eloma	---	---	0	---	None	High	Low
60:							
Eloma	---	---	0	---	None	High	Moderate
Caralampi	---	---	0	---	None	Moderate	Moderate
White House	---	---	0	---	None	High	Moderate
61:							
Epitaph	Petrocalcic	20-40	0	---	None	High	Low
	Bedrock (lithic)	25-40					
62:							
Far	Bedrock (lithic)	5-20	0	---	Low	High	Moderate
Hogris	---	---	0	---	Low	High	Moderate
63:							
Far	Bedrock (lithic)	5-20	0	---	Moderate	High	Moderate
Huachuca	Bedrock (lithic)	5-20	0	---	Low	Moderate	Low
Hogris	---	---	0	---	Low	High	Moderate
64:							
Far	Bedrock (lithic)	5-20	0	---	Moderate	High	Moderate

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In	In			
64:							
Huachuca	Bedrock (lithic)	5-20	0	---	Low	Moderate	Low
Hogris	---	---	0	---	Low	High	Moderate
65:							
Forrest	---	---	0	---	None	High	Moderate
66:							
Forrest	---	---	0	---	None	High	High
67:							
Forrest	---	---	0	---	None	High	Moderate
68:							
Forrest	---	---	0	---	None	High	Moderate
69:							
Forrest	---	---	0	---	None	High	High
70:							
Forrest	---	---	0	---	None	High	Low
Bonita	---	---	0	---	None	High	Moderate
71:							
Gardencan	---	---	0	---	None	High	Moderate
Lanque	---	---	0	---	None	High	Moderate
72:							
Glendale	---	---	0	---	None	High	Low
73:							
Gothard	---	---	0	---	None	High	High
74:							
Gothard	---	---	0	---	None	High	High
75:							
Graham	Bedrock (lithic)	8-20	0	---	None	High	Low
Lampshire	Bedrock (lithic)	4-20	0	---	None	Moderate	Low
76:							
Graveyard	---	---	0	---	None	Moderate	High
Sierravista	---	---	0	---	None	High	Low
77:							
Grizzle	Bedrock (paralithic)	20-40	0	---	None	High	Low
	Bedrock (lithic)	25-60					
78:							
Guest	---	---	0	---	None	High	Moderate
79:							
Guest	---	---	0	---	None	High	Moderate
80:							
Guest	---	---	0	---	None	High	High

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In	In			
81:							
Guest	---	---	0	---	None	High	Moderate
82:							
Guest	---	---	0	---	None	High	High
83:							
Guest	---	---	0	---	None	High	High
Cogswell	---	---	0	---	None	High	High
84:							
Guest	---	---	0	---	None	High	Moderate
Riveroad	---	---	0	---	None	High	Moderate
85:							
Hantz	---	---	0	---	None	High	High
86:							
Haplustolls	---	---	0	---	Low	Moderate	Moderate
Fluvaquents	---	---	0	---	Low	Moderate	Moderate
87:							
Haplustolls	---	---	0	---	None	Moderate	Moderate
Fluvaquents	---	---	0	---	None	Moderate	Moderate
88:							
Hayhollow	---	---	0	---	Low	High	Moderate
Rafter	---	---	0	---	Low	High	Moderate
Riverwash	---	---	0	---	Low	---	---
89:							
Kaboom	Bedrock (lithic)	5-20	0	---	None	Moderate	High
Reeup	Bedrock (lithic)	25-40	0	---	None	Moderate	High
90:							
Kahn fine sandy loam	---	---	0	---	None	High	Moderate
Kahn silt loam	---	---	0	---	None	High	Moderate
91:							
Kahn	---	---	0	---	None	High	High
Zapolote	---	---	0	---	None	Moderate	High
92:							
Karro	---	---	0	---	None	High	Moderate
93:							
Karro	---	---	0	---	None	High	High
94:							
Keysto	---	---	0	---	None	High	Moderate
Riverwash	---	---	0	---	None	---	---

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In	In			
95:							
Kuykendall	Bedrock (lithic)	5-20	0	---	Low	High	Moderate
Rock outcrop	Bedrock (lithic)	---	0	---	Low	---	---
96:							
Lanque	---	---	0	---	Low	High	Moderate
Stanford	---	---	0	---	Low	High	Moderate
97:							
Libby	---	---	12-24	18	None	Moderate	Moderate
Gulch	---	---	12-24	18	None	Moderate	Moderate
98:							
Luckyhills	---	---	0	---	None	High	Low
99:							
Luckyhills	---	---	0	---	None	High	Low
McNeal	---	---	0	---	None	High	Low
100:							
Lutzcan	Bedrock (paralithic)	14-20	0	---	None	High	Low
Yarbam	Bedrock (lithic)	6-20	0	---	None	High	Low
101:							
Mabray	Bedrock (lithic)	4-20	0	---	None	High	Low
Chiricahua	Bedrock (paralithic)	10-20	0	---	None	High	Low
	Bedrock (lithic)	20-30					
Rock outcrop	Bedrock (lithic)	---	0	---	None	---	---
102:							
Mabray	Bedrock (lithic)	4-20	0	---	None	High	Low
Rock outcrop	Bedrock (lithic)	---	0	---	None	---	---
103:							
Magoffin	Bedrock (lithic)	5-20	0	---	Low	High	Moderate
Rock outcrop	Bedrock (lithic)	---	0	---	Low	---	---
Cherrycow	Bedrock (lithic)	20-40	0	---	Low	High	Moderate
104:							
Major fine sandy loam	---	---	12-24	18	None	Moderate	High
Major silt loam	---	---	12-24	18	None	Moderate	High
105:							
Mallet	---	---	0	---	None	High	Moderate
Hooks	---	---	0	---	None	High	Moderate
106:							
Marsh	---	---	0	---	None	---	---

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In	In			
107:							
McAllister	---	---	0	---	None	High	Moderate
108:							
McAllister	---	---	0	---	None	High	Low
Stronghold	---	---	0	---	None	High	Low
109:							
McNeal	---	---	0	---	None	High	Low
110:							
McNeal	---	---	0	---	None	High	High
111:							
Monzingo	---	---	0	---	None	High	High
Ugyp	---	---	0	---	None	High	High
Ugyp	---	---	0	---	None	High	High
112:							
Naco	---	---	0	---	None	High	Low
Ruins, thick surface	---	---	0	---	None	High	Low
Ruins	---	---	0	---	None	High	Low
113:							
Nolam	---	---	0	---	None	High	Low
Libby	---	---	0	---	None	Moderate	Moderate
Buntline	Petrocalcic	5-15	0	---	None	High	Low
114:							
Outlaw	---	---	0	---	None	High	Low
Epitaph	Petrocalcic Bedrock (lithic)	20-40 25-40	0	---	None	High	Low
Paramore	Bedrock (lithic)	20-45	0	---	None	High	Low
115:							
Oversight	---	---	0	---	Low	High	Moderate
116:							
Oversight	---	---	0	---	Low	High	Low
117:							
Oversight	---	---	0	---	Low	High	Low
Lanque	---	---	0	---	None	High	Moderate
118:							
Pedregosa	Petrocalcic	5-20	0	---	None	High	Low
119:							
Pedregosa	Petrocalcic	5-20	0	---	None	High	Low
Tombstone	---	---	0	---	None	High	Low

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In	In			
120:							
Perilla	---	---	0	---	None	High	Moderate
Durazo	---	---	0	---	None	High	Moderate
121:							
Pits.							
122:							
Pits.							
Dumps.							
123:							
Quiburi	---	---	0	---	None	High	Moderate
Fluvaquents	---	---	0	---	None	Moderate	Low
Riverwash	---	---	0	---	None	---	---
124:							
Rafter	---	---	0	---	Low	High	Moderate
Lanque	---	---	0	---	Low	High	Moderate
125:							
Riveroad	---	---	0	---	None	High	Moderate
Ubik	---	---	0	---	None	High	Moderate
126:							
Riverwash	---	---	0	---	Low	---	---
127:							
Riverwash	---	---	0	---	None	---	---
Bodecker	---	---	0	---	None	High	Low
128:							
Rock outcrop	Bedrock (lithic)	---	0	---	Low	---	---
Magoffin	Bedrock (lithic)	5-20	0	---	Low	High	Moderate
129:							
Sasabe sandy loam	---	---	0	---	None	High	Low
Sasabe silt loam	---	---	0	---	None	High	Low
130:							
Sasabe	---	---	0	---	None	High	Low
131:							
Sasabe	---	---	0	---	None	High	High
132:							
Schiefflin	Bedrock (lithic)	5-20	0	---	None	Moderate	Moderate
133:							
Stronghold	---	---	0	---	None	High	Moderate
134:							
Stronghold	---	---	0	---	None	High	Low

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Subsidence: Initial	Subsidence: Total	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In	In	In			
134:							
Bernardino	---	---	0	---	None	High	Low
135:							
Surge	Bedrock (lithic)	5-15	0	---	None	High	Low
Rock outcrop	Bedrock (lithic)	---	0	---	None	---	---
136:							
Sutherland	Petrocalcic	5-20	0	---	None	High	Low
Mule	---	---	0	---	None	High	Low
137:							
Swisshelm	---	---	0	---	None	High	Low
138:							
Swisshelm	---	---	0	---	None	High	High
139:							
Tenneco	---	---	0	---	None	High	Low
140:							
Terrarossa sandy loam	---	---	0	---	None	High	Moderate
Terrarossa gravelly loam	---	---	0	---	None	High	Moderate
Terrarossa very gravelly sandy loam	---	---	0	---	None	High	Moderate
141:							
Terrarossa	---	---	0	---	None	High	Moderate
Blacktail	---	---	0	---	None	Moderate	Moderate
Pyeatt	---	---	0	---	None	Moderate	Low
142:							
Tombstone	---	---	0	---	None	High	Low
143:							
Turquoise	Bedrock (paralithic)	5-30	0	---	Low	Moderate	Low
	Bedrock (lithic)	20-40					
Nugget	Bedrock (paralithic)	10-30	0	---	Low	Moderate	Low
	Bedrock (lithic)	20-40					
144:							
Ubik silt loam	---	---	0	---	None	High	Moderate
Ubik fine sandy loam	---	---	0	---	None	High	Moderate
145:							
Ubik	---	---	0	---	None	High	Moderate
146:							
Ubik	---	---	0	---	None	High	High
147:							
Ubik	---	---	0	---	None	High	Moderate

Table 16.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Initial	Total		Uncoated steel	Concrete
		In	In	In			
148:							
Ubik	---	---	0	---	None	High	High
149:							
Vana	Petrocalcic	8-20	0	---	None	High	High
150:							
Vana	Petrocalcic	10-20	0	---	None	High	High
Moco	---	---	0	---	None	High	High
151:							
White House gravelly loam	---	---	0	---	None	High	Moderate
White House gravelly sandy loam	---	---	0	---	None	High	Moderate
152:							
Yarbam	Bedrock (lithic)	6-20	0	---	Low	High	Low
Rock outcrop	Bedrock (lithic)	---	0	---	Low	---	---

Table 17.--Water Features

(See text for definitions of terms used in this table. Estimates of the frequency of flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
1:						
Altar	B	Jan-Dec	---	---	---	None
Mallet	B	Jan-Dec	---	---	---	None
2:						
Anthony	B	Jan-Dec	---	---	---	None
Maricopa	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
3:						
Arizo family	A					
		July	---	---	Brief	Occasional
		August	---	---	Brief	Occasional
		September	---	---	Brief	Occasional
Riverwash	---					
		January	---	---	Brief	Common
		February	---	---	Brief	Common
		March	---	---	Brief	Common
		April	---	---	Brief	Common
		June	---	---	---	Rare
		July	---	---	Brief	Common
		August	---	---	Brief	Common
		September	---	---	Brief	Common
		October	---	---	Brief	Common
		November	---	---	Brief	Common
		December	---	---	Brief	Common
4:						
Ashcreek	D					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
		December	---	---	---	Rare
Stanford	B					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
		December	---	---	---	Rare
5:						
Baboquivari	B	Jan-Dec	---	---	---	None
Combate	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
6:						
Banshee	D	Jan-Dec	---	---	---	None
Banshee, thick surface	B	Jan-Dec	---	---	---	None
7:						
Bella	D	Jan-Dec	---	---	---	None
8:						
Blakeney	D	Jan-Dec	---	---	---	None
Luckyhills	B	Jan-Dec	---	---	---	None
9:						
Bodecker	A	Jan-Dec	---	---	---	None
Comoro	B	Jan-Dec	---	---	---	None
10:						
Bodecker	A					
		July	---	---	Brief	Occasional
		August	---	---	Brief	Occasional
		September	---	---	Brief	Occasional
11:						
Bodecker	A					
		July	---	---	Brief	Occasional
		August	---	---	Brief	Occasional
		September	---	---	Brief	Occasional
12:						
Bonita	D					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional
		December	---	---	---	Rare
13:						
Bonita	D	Jan-Dec	---	---	---	None
Forrest	C	Jan-Dec	---	---	---	None
14:						
Borderland	D	Jan-Dec	---	---	---	None
15:						
Borderline	B	Jan-Dec	---	---	---	None
16:						
Boss	D	Jan-Dec	---	---	---	None
Krentz	A	Jan-Dec	---	---	---	None
Paramore	D	Jan-Dec	---	---	---	None

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
17:						
Brookline	D					
		January	2.0-5.0	>6.0	---	None
		February	2.0-5.0	>6.0	---	None
		March	2.0-5.0	>6.0	---	None
		April	2.0-5.0	>6.0	---	None
		May	2.0-5.0	>6.0	---	None
		June	2.0-5.0	>6.0	---	None
		July	2.0-5.0	>6.0	Brief	Common
		August	2.0-5.0	>6.0	Brief	Common
		September	2.0-5.0	>6.0	Brief	Common
		October	2.0-5.0	>6.0	---	None
		November	2.0-5.0	>6.0	---	None
		December	2.0-5.0	>6.0	---	None
Fluvaquents	D					
		January	0.5-5.0	>6.0	Very long	Frequent
		February	0.5-5.0	>6.0	Very long	Frequent
		March	0.5-5.0	>6.0	Very long	Frequent
		April	0.5-5.0	>6.0	Very long	Frequent
		July	---	---	Long	Frequent
		August	0.5-5.0	>6.0	Very long	Frequent
		September	0.5-5.0	>6.0	Very long	Frequent
		October	0.5-5.0	>6.0	Very long	Frequent
		November	0.5-5.0	>6.0	Very long	Frequent
		December	0.5-5.0	>6.0	Very long	Frequent
Riverwash	---					
		January	0.5-5.0	>6.0	Very long	Frequent
		February	0.5-5.0	>6.0	Very long	Frequent
		March	0.5-5.0	>6.0	Very long	Frequent
		April	0.5-5.0	>6.0	---	None
		June	---	---	Very long	Frequent
		July	---	---	Very long	Frequent
		August	0.5-5.0	>6.0	Very long	Frequent
		September	0.5-5.0	>6.0	Very long	Frequent
		October	0.5-5.0	>6.0	Very long	Frequent
		November	0.5-5.0	>6.0	Very long	Frequent
		December	0.5-5.0	>6.0	Very long	Frequent
18:						
Brunkcow	D	Jan-Dec	---	---	---	None
Chiricahua	C	Jan-Dec	---	---	---	None
Andrada	C	Jan-Dec	---	---	---	None
19:						
Brunkcow	D	Jan-Dec	---	---	---	None
Chiricahua	C	Jan-Dec	---	---	---	None
Lampshire	D	Jan-Dec	---	---	---	None
20:						
Budlamp	D	Jan-Dec	---	---	---	None
Woodcutter	D	Jan-Dec	---	---	---	None
21:						
Buntline	D	Jan-Dec	---	---	---	None

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
22:						
Caralampi	B	Jan-Dec	---	---	---	None
23:						
Caralampi	B	Jan-Dec	---	---	---	None
24:						
Carbine	D	Jan-Dec	---	---	---	None
25:						
Carbine	D	Jan-Dec	---	---	---	None
Hathaway	B	Jan-Dec	---	---	---	None
26:						
Cazador	D					
		January	---	---	Long	Frequent
		February	---	---	Long	Frequent
		July	---	---	Long	Frequent
		August	---	---	Long	Frequent
		September	---	---	Long	Frequent
		December	---	---	Long	Frequent
Lesliecreek	B					
		January	---	---	Long	Frequent
		February	---	---	Long	Frequent
		July	---	---	Long	Frequent
		August	---	---	Long	Frequent
		September	---	---	Long	Frequent
		December	---	---	Long	Frequent
27:						
Cherrycow	D	Jan-Dec	---	---	---	None
Blacktail	C	Jan-Dec	---	---	---	None
28:						
Cherrycow	D	Jan-Dec	---	---	---	None
Magoffin	D	Jan-Dec	---	---	---	None
Rock outcrop	---	Jan-Dec	---	---	---	None
29:						
Chorro	B					
		January	---	---	Long	Frequent
		February	---	---	Long	Frequent
		July	---	---	Long	Frequent
		August	---	---	Long	Frequent
		September	---	---	Long	Frequent
		December	---	---	Long	Frequent
Doubleadobe	C					
		January	---	---	Long	Frequent
		February	---	---	Long	Frequent
		July	---	---	Long	Frequent
		August	---	---	Long	Frequent
		September	---	---	Long	Frequent
		December	---	---	Long	Frequent

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
29:						
Gothard	B					
		January	---	---	Long	Frequent
		February	---	---	Long	Frequent
		July	---	---	Long	Frequent
		August	---	---	Long	Frequent
		September	---	---	Long	Frequent
		December	---	---	Long	Frequent
30:						
Chorro	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
Guest	C					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
31:						
Cogswell	C					
		January	---	---	Long	Frequent
		February	---	---	Long	Frequent
		July	---	---	Long	Frequent
		August	---	---	Long	Frequent
		September	---	---	Long	Frequent
		December	---	---	Long	Frequent
32:						
Combate	B	Jan-Dec	---	---	---	None
33:						
Comoro	B	Jan-Dec	---	---	---	None
34:						
Comoro	B	Jan-Dec	---	---	---	None
35:						
Contention	D	Jan-Dec	---	---	---	None
Crystalgyp	C	Jan-Dec	---	---	---	None
Monzingo	B	Jan-Dec	---	---	---	None
Redington	B	Jan-Dec	---	---	---	None
36:						
Contention	D	Jan-Dec	---	---	---	None
Ugyp	B					
		July	---	---	Brief	Occasional
		August	---	---	Brief	Occasional
		September	---	---	Brief	Occasional
Ugyp	B					
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
37:						
Courtland	B	Jan-Dec	---	---	---	None
38:						
Courtland	B	Jan-Dec	---	---	---	None
39:						
Courtland	B	Jan-Dec	---	---	---	None
Diaspar	B	Jan-Dec	---	---	---	None
40:						
Courtland	B	Jan-Dec	---	---	---	None
Sasabe	B	Jan-Dec	---	---	---	None
Diaspar	B	Jan-Dec	---	---	---	None
41:						
Crowbar	B	Jan-Dec	---	---	---	None
Brunopeak	C	Jan-Dec	---	---	---	None
42:						
Deloro	D	Jan-Dec	---	---	---	None
Leyte	D	Jan-Dec	---	---	---	None
Lampshire	D	Jan-Dec	---	---	---	None
43:						
Denab	D	Jan-Dec	---	---	---	None
Castledome	D	Jan-Dec	---	---	---	None
45:						
Diaspar	B	Jan-Dec	---	---	---	None
46:						
Diaspar	B	Jan-Dec	---	---	---	None
47:						
Dona Ana	B	Jan-Dec	---	---	---	None
Mohave	B	Jan-Dec	---	---	---	None
48:						
Doubleadobe	C					
		January	---	---	Long	Frequent
		February	---	---	Long	Frequent
		July	---	---	Long	Frequent
		August	---	---	Long	Frequent
		September	---	---	Long	Frequent
		December	---	---	Long	Frequent
49:						
Durazo	A	Jan-Dec	---	---	---	None
50:						
Durazo	A	Jan-Dec	---	---	---	None

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
51:						
Durazo	A	Jan-Dec	---	---	---	None
Gothard	B					
		January	---	---	Brief	Occasional
		February	---	---	Brief	Occasional
		July	---	---	Brief	Occasional
		August	---	---	Brief	Occasional
		September	---	---	Brief	Occasional
		December	---	---	Brief	Occasional
52:						
Durazo	A	Jan-Dec	---	---	---	None
Courtland	B	Jan-Dec	---	---	---	None
53:						
Durazo	A	Jan-Dec	---	---	---	None
McAllister	B	Jan-Dec	---	---	---	None
54:						
Elfrida	B					
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional
55:						
Elfrida	B					
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional
56:						
Elgin	C	Jan-Dec	---	---	---	None
McAllister	B	Jan-Dec	---	---	---	None
Stronghold	B	Jan-Dec	---	---	---	None
57:						
Elgin	C	Jan-Dec	---	---	---	None
Outlaw	D	Jan-Dec	---	---	---	None
58:						
Elgin	C	Jan-Dec	---	---	---	None
Stronghold	B	Jan-Dec	---	---	---	None
59:						
Eloma	C	Jan-Dec	---	---	---	None
60:						
Eloma	C	Jan-Dec	---	---	---	None
Caralampi	B	Jan-Dec	---	---	---	None
White House	C	Jan-Dec	---	---	---	None

Table 17.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
61:						
Epitaph	D	Jan-Dec	---	---	---	None
62:						
Far	D	Jan-Dec	---	---	---	None
Hogris	B	Jan-Dec	---	---	---	None
63:						
Far	D	Jan-Dec	---	---	---	None
Huachuca	D	Jan-Dec	---	---	---	None
Hogris	B	Jan-Dec	---	---	---	None
64:						
Far	D	Jan-Dec	---	---	---	None
Huachuca	D	Jan-Dec	---	---	---	None
Hogris	B	Jan-Dec	---	---	---	None
65:						
Forrest	C	Jan-Dec	---	---	---	None
66:						
Forrest	C	Jan-Dec	---	---	---	None
67:						
Forrest	C	Jan-Dec	---	---	---	None
68:						
Forrest	C	Jan-Dec	---	---	---	None
69:						
Forrest	C	Jan-Dec	---	---	---	None
70:						
Forrest	C	Jan-Dec	---	---	---	None
Bonita	D					
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional
71:						
Gardencan	B	Jan-Dec	---	---	---	None
Lanque	B	Jan-Dec	---	---	---	None
72:						
Glendale	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
73:						
Gothard	B					
		January	---	---	Long	Frequent
		February	---	---	Long	Frequent
		July	---	---	Long	Frequent
		August	---	---	Long	Frequent
		September	---	---	Long	Frequent
		December	---	---	Long	Frequent
74:						
Gothard	B					
		January	---	---	Long	Frequent
		February	---	---	Long	Frequent
		July	---	---	Long	Frequent
		August	---	---	Long	Frequent
		September	---	---	Long	Frequent
		December	---	---	Long	Frequent
75:						
Graham	D	Jan-Dec	---	---	---	None
Lampshire	D	Jan-Dec	---	---	---	None
76:						
Graveyard	B	Jan-Dec	---	---	---	None
Sierravista	B	Jan-Dec	---	---	---	None
77:						
Grizzle	D	Jan-Dec	---	---	---	None
78:						
Guest	C					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	Brief	Occasional
		August	---	---	Brief	Occasional
		September	---	---	Brief	Occasional
		December	---	---	---	Rare
79:						
Guest	C					
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional
80:						
Guest	C					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	Brief	Occasional
		August	---	---	Brief	Occasional
		September	---	---	Brief	Occasional
		December	---	---	---	Rare

Table 17.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
81:						
Guest	C					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional
		December	---	---	---	Rare
82:						
Guest	C					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional
		December	---	---	---	Rare
83:						
Guest	C					
		January	---	---	Long	Frequent
		February	---	---	Long	Frequent
		July	---	---	Long	Frequent
		August	---	---	Long	Frequent
		September	---	---	Long	Frequent
		December	---	---	Long	Frequent
Cogswell	C					
		January	---	---	Long	Frequent
		February	---	---	Long	Frequent
		July	---	---	Long	Frequent
		August	---	---	Long	Frequent
		September	---	---	Long	Frequent
		December	---	---	Long	Frequent
84:						
Guest	C					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
Riveroad	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
85:						
Hantz	C					
		July	---	---	Brief	Occasional
		August	---	---	Brief	Occasional
		September	---	---	Brief	Occasional

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
86:						
Haplustolls	B					
		January	6.0-9.0	>6.0	Brief	Occasional
		February	6.0-9.0	>6.0	Brief	Occasional
		March	6.0-9.0	>6.0	Brief	Occasional
		April	6.0-9.0	>6.0	Brief	Occasional
		July	---	---	---	Rare
		August	6.0-9.0	>6.0	Brief	Occasional
		September	6.0-9.0	>6.0	Brief	Occasional
		October	6.0-9.0	>6.0	Brief	Occasional
		November	6.0-9.0	>6.0	Brief	Occasional
		December	6.0-9.0	>6.0	Brief	Occasional
Fluvaquents	D					
		January	1.0-2.0	>6.0	Very long	Frequent
		February	1.0-2.0	>6.0	Very long	Frequent
		March	1.0-2.0	>6.0	Very long	Frequent
		April	1.0-2.0	>6.0	Very long	Frequent
		May	1.0-2.0	>6.0	---	None
		July	---	---	Very long	Occasional
		August	1.0-2.0	>6.0	Very long	Frequent
		September	1.0-2.0	>6.0	Very long	Frequent
		October	1.0-2.0	>6.0	Very long	Frequent
		November	1.0-2.0	>6.0	Very long	Frequent
		December	1.0-2.0	>6.0	Very long	Frequent
87:						
Haplustolls	A					
		January	6.0-9.0	>6.0	Brief	Occasional
		February	6.0-9.0	>6.0	Brief	Occasional
		March	---	---	Brief	Occasional
		April	6.0-9.0	>6.0	Brief	Occasional
		July	---	---	---	Rare
		August	---	---	Brief	Occasional
		September	6.0-9.0	>6.0	Brief	Occasional
		October	6.0-9.0	>6.0	Brief	Occasional
		November	6.0-9.0	>6.0	Brief	Occasional
		December	---	---	Brief	Occasional
Fluvaquents	D					
		January	1.0-3.0	>6.0	Very long	Frequent
		February	1.0-3.0	>6.0	Very long	Frequent
		March	1.0-3.0	>6.0	Very long	Frequent
		April	1.0-3.0	>6.0	Very long	Frequent
		July	---	---	Very long	Occasional
		August	1.0-3.0	>6.0	Very long	Frequent
		September	1.0-3.0	>6.0	Very long	Frequent
		October	1.0-3.0	>6.0	Very long	Frequent
		November	1.0-3.0	>6.0	Very long	Frequent
		December	1.0-3.0	>6.0	Very long	Frequent
88:						
Hayhollow	B					
		January	---	---	Brief	Common
		February	---	---	Brief	Common
		July	---	---	Brief	Common
		August	---	---	Brief	Common
		September	---	---	Brief	Common
		December	---	---	Brief	Common

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
88:						
Rafter	B					
		January	---	---	Brief	Common
		February	---	---	Brief	Common
		July	---	---	Brief	Common
		August	---	---	Brief	Common
		September	---	---	Brief	Common
		December	---	---	Brief	Common
Riverwash	---					
		January	0.5-5.0	>6.0	Long	Frequent
		February	0.5-5.0	>6.0	Long	Frequent
		March	0.5-5.0	>6.0	Long	Frequent
		April	0.5-5.0	>6.0	Long	Frequent
		July	---	---	Long	Common
		August	0.5-5.0	>6.0	Long	Frequent
		September	0.5-5.0	>6.0	Long	Frequent
		October	0.5-5.0	>6.0	Long	Frequent
		November	0.5-5.0	>6.0	Long	Frequent
		December	0.5-5.0	>6.0	Long	Frequent
89:						
Kaboom	D	Jan-Dec	---	---	---	None
Reeup	C	Jan-Dec	---	---	---	None
90:						
Kahn fine sandy loam	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
Kahn silt loam	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
91:						
Kahn	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
Zapolote	D					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
92:						
Karro	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
93:						
Karro	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
94:						
Keysto	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
Riverwash	---					
		January	---	---	Brief	Common
		February	---	---	Brief	Common
		March	---	---	Brief	Common
		June	---	---	Brief	Common
		July	---	---	Brief	Common
		August	---	---	Brief	Common
		September	---	---	Brief	Common
		October	---	---	Brief	Common
		November	---	---	Brief	Common
		December	---	---	Brief	Common
95:						
Kuykendall	D	Jan-Dec	---	---	---	None
Rock outcrop	---	Jan-Dec	---	---	---	None
96:						
Lanque	B					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
		December	---	---	---	Rare
Stanford	B					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
		December	---	---	---	Rare
97:						
Libby	C	Jan-Dec	---	---	---	None
Gulch	B	Jan-Dec	---	---	---	None
98:						
Luckyhills	B	Jan-Dec	---	---	---	None
99:						
Luckyhills	B	Jan-Dec	---	---	---	None
McNeal	B	Jan-Dec	---	---	---	None
100:						
Lutzcan	D	Jan-Dec	---	---	---	None
Yarbam	D	Jan-Dec	---	---	---	None
101:						
Mabray	D	Jan-Dec	---	---	---	None

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
101:						
Chiricahua	C	Jan-Dec	---	---	---	None
Rock outcrop	---	Jan-Dec	---	---	---	None
102:						
Mabray	D	Jan-Dec	---	---	---	None
Rock outcrop	---	Jan-Dec	---	---	---	None
103:						
Magoffin	D	Jan-Dec	---	---	---	None
Rock outcrop	---	Jan-Dec	---	---	---	None
Cherrycow	D	Jan-Dec	---	---	---	None
104:						
Major fine sandy loam	B	Jan-Dec	---	---	---	None
Major silt loam	B					
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional
105:						
Mallet	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
Hooks	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
106:						
Marsh	---					
		January	0.0-1.0	>6.0	---	None
		February	0.0-1.0	>6.0	---	None
		March	0.0-1.0	>6.0	---	None
		April	0.0-1.0	>6.0	---	None
		May	0.0-1.0	>6.0	---	None
		June	0.0-1.0	>6.0	---	None
		July	0.0-1.0	>6.0	---	None
		August	0.0-1.0	>6.0	---	None
		September	0.0-1.0	>6.0	---	None
		October	0.0-1.0	>6.0	---	None
		November	0.0-1.0	>6.0	---	None
		December	0.0-1.0	>6.0	---	None
107:						
McAllister	B	Jan-Dec	---	---	---	None
108:						
McAllister	B	Jan-Dec	---	---	---	None
Stronghold	B	Jan-Dec	---	---	---	None
109:						
McNeal	B	Jan-Dec	---	---	---	None

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
110:						
McNeal	B	Jan-Dec	---	---	---	None
111:						
Monzingo	B	Jan-Dec	---	---	---	None
Ugyp	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
Ugyp	B					
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional
112:						
Naco	D	Jan-Dec	---	---	---	None
Ruins, thick surface	A	Jan-Dec	---	---	---	None
Ruins	D	Jan-Dec	---	---	---	None
113:						
Nolam	B	Jan-Dec	---	---	---	None
Libby	C	Jan-Dec	---	---	---	None
Buntline	D	Jan-Dec	---	---	---	None
114:						
Outlaw	D	Jan-Dec	---	---	---	None
Epitaph	D	Jan-Dec	---	---	---	None
Paramore	D	Jan-Dec	---	---	---	None
115:						
Oversight	B	Jan-Dec	---	---	---	None
116:						
Oversight	B	Jan-Dec	---	---	---	None
117:						
Oversight	B	Jan-Dec	---	---	---	None
Lanque	B	Jan-Dec	---	---	---	None
118:						
Pedregosa	D	Jan-Dec	---	---	---	None
119:						
Pedregosa	D	Jan-Dec	---	---	---	None
Tombstone	B	Jan-Dec	---	---	---	None
120:						
Perilla	B	Jan-Dec	---	---	---	None
Durazo	A	Jan-Dec	---	---	---	None

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
121:						
Pits	---	Jan-Dec	---	---	---	None
122:						
Pits	---	Jan-Dec	---	---	---	None
Dumps	---	Jan-Dec	---	---	---	None
123:						
Quiburi	D					
		January	3.0-6.0	>6.0	---	None
		February	3.0-6.0	>6.0	---	None
		March	3.0-6.0	>6.0	---	None
		April	3.0-6.0	>6.0	---	None
		July	---	---	Brief	Occasional
		August	3.0-6.0	>6.0	Brief	Occasional
		September	3.0-6.0	>6.0	Brief	Occasional
		October	3.0-6.0	>6.0	---	None
		November	3.0-6.0	>6.0	---	None
		December	3.0-6.0	>6.0	---	None
Fluvaquents	D					
		January	0.5-5.0	>6.0	Very long	Frequent
		February	0.5-5.0	>6.0	Very long	Frequent
		March	0.5-5.0	>6.0	Very long	Frequent
		April	0.5-5.0	>6.0	Very long	Frequent
		July	---	---	Very long	Occasional
		August	0.5-5.0	>6.0	Very long	Frequent
		September	0.5-5.0	>6.0	Very long	Frequent
		October	0.5-5.0	>6.0	Very long	Frequent
		November	0.5-5.0	>6.0	Very long	Frequent
		December	0.5-5.0	>6.0	Very long	Frequent
Riverwash	---					
		January	0.5-5.0	>6.0	Very long	Frequent
		February	0.5-5.0	>6.0	Very long	Frequent
		March	0.5-5.0	>6.0	Very long	Frequent
		April	0.5-5.0	>6.0	---	None
		June	---	---	Very long	Frequent
		July	---	---	Very long	Frequent
		August	0.5-5.0	>6.0	Very long	Frequent
		September	0.5-5.0	>6.0	Very long	Frequent
		October	0.5-5.0	>6.0	Very long	Frequent
		November	0.5-5.0	>6.0	Very long	Frequent
		December	0.5-5.0	>6.0	Very long	Frequent
124:						
Rafter	B					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
		December	---	---	---	Rare
Lanque	B					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
		December	---	---	---	Rare

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
125:						
Riveroad	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
Ubik	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
126:						
Riverwash	---					
		January	0.5-5.0	>6.0	Very long	Frequent
		February	0.5-5.0	>6.0	Very long	Frequent
		March	0.5-5.0	>6.0	Very long	Frequent
		April	0.5-5.0	>6.0	Very long	Frequent
		July	---	---	Long	Frequent
		August	0.5-5.0	>6.0	Very long	Frequent
		September	0.5-5.0	>6.0	Very long	Frequent
		October	0.5-5.0	>6.0	Very long	Frequent
		November	0.5-5.0	>6.0	Very long	Frequent
		December	0.5-5.0	>6.0	Very long	Frequent
127:						
Riverwash	---					
		January	---	---	Brief	Common
		February	---	---	Brief	Common
		March	---	---	Brief	Common
		June	---	---	Brief	Common
		July	---	---	Brief	Common
		August	---	---	Brief	Common
		September	---	---	Brief	Common
		October	---	---	Brief	Common
		November	---	---	Brief	Common
		December	---	---	Brief	Common
Bodecker	A					
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional
		October	---	---	Very brief	Occasional
128:						
Rock outcrop	---	Jan-Dec	---	---	---	None
Magoffin	D	Jan-Dec	---	---	---	None
129:						
Sasabe sandy loam	C	Jan-Dec	---	---	---	None
Sasabe silt loam	C					
		July	---	---	Brief	Frequent
		August	---	---	Brief	Frequent
		September	---	---	Brief	Frequent
130:						
Sasabe	C	Jan-Dec	---	---	---	None
131:						
Sasabe	C	Jan-Dec	---	---	---	None

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
132:						
Schiefflin	D	Jan-Dec	---	---	---	None
133:						
Stronghold	B	Jan-Dec	---	---	---	None
134:						
Stronghold	B	Jan-Dec	---	---	---	None
Bernardino	C	Jan-Dec	---	---	---	None
135:						
Surge	D	Jan-Dec	---	---	---	None
Rock outcrop	---	Jan-Dec	---	---	---	None
136:						
Sutherland	D	Jan-Dec	---	---	---	None
Mule	B	Jan-Dec	---	---	---	None
137:						
Swisshelm	B	Jan-Dec	---	---	---	None
138:						
Swisshelm	B	Jan-Dec	---	---	---	None
139:						
Tenneco	B					
		July	---	---	---	Rare
		August	---	---	---	Rare
		September	---	---	---	Rare
140:						
Terrarossa sandy loam	C	Jan-Dec	---	---	---	None
Terrarossa gravelly loam	C	Jan-Dec	---	---	---	None
Terrarossa very gravelly sandy loam	C	Jan-Dec	---	---	---	None
141:						
Terrarossa	C	Jan-Dec	---	---	---	None
Blacktail	C	Jan-Dec	---	---	---	None
Pyeatt	B	Jan-Dec	---	---	---	None
142:						
Tombstone	B	Jan-Dec	---	---	---	None
143:						
Turquoise	C	Jan-Dec	---	---	---	None
Nugget	C	Jan-Dec	---	---	---	None
144:						
Ubik silt loam	B					
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional

Table 17.--Water Features--Continued

Map symbol and soil name	Hydrologic group	Month	Water table: Upper limit	Water table: Lower limit	Flooding: Duration	Flooding: Frequency
			Ft	Ft		
144:						
Ubik	B					
		July	---	---	Very brief	Occasional
		August	---	---	Very brief	Occasional
		September	---	---	Very brief	Occasional
145:						
Ubik	B					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	Brief	Occasional
		August	---	---	Brief	Occasional
		September	---	---	Brief	Occasional
		December	---	---	---	Rare
146:						
Ubik	B					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	Brief	Occasional
		August	---	---	Brief	Occasional
		September	---	---	Brief	Occasional
		December	---	---	---	Rare
147:						
Ubik	B					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	Brief	Occasional
		August	---	---	Brief	Occasional
		September	---	---	Brief	Occasional
		December	---	---	---	Rare
148:						
Ubik	B					
		January	---	---	---	Rare
		February	---	---	---	Rare
		July	---	---	Brief	Occasional
		August	---	---	Brief	Occasional
		September	---	---	Brief	Occasional
		December	---	---	---	Rare
149:						
Vana	D	Jan-Dec	---	---	---	None
150:						
Vana	D	Jan-Dec	---	---	---	None
Moco	B	Jan-Dec	---	---	---	None
151:						
White House gravelly loam	C	Jan-Dec	---	---	---	None
White House gravelly sandy loam	C	Jan-Dec	---	---	---	None
152:						
Yarbam	D	Jan-Dec	---	---	---	None
Rock outcrop	---	Jan-Dec	---	---	---	None

Table 18.--Classification of the Soils

Soil name	Family or higher taxonomic class
Altar	Loamy-skeletal, mixed, superactive, thermic Ustic Haplocambids
Andrada	Loamy-skeletal over fragmental, mixed, superactive, thermic Ustic Haplocalcids
Anthony	Coarse-loamy, mixed, superactive, calcareous, thermic Typic Torrifluvents
Arizo family	Sandy-skeletal, mixed, thermic Typic Torriorthents
Ashcreek	Fine, smectitic, thermic Torrertic Haplustolls
Baboquivari	Fine-loamy, mixed, superactive, thermic Ustic Haplargids
Banshee	Fine, mixed, active, thermic Vertic Paleargids
Bella	Loamy, mixed, superactive, thermic, shallow Calcic Petrocalcids
Bernardino	Fine, mixed, superactive, thermic Ustic Calciargids
Blacktail	Fine, mixed, superactive, thermic Calcidic Argiustolls
Blakeney	Loamy, mixed, superactive, thermic, shallow Ustic Petrocalcids
Bodecker	Sandy-skeletal, mixed, thermic Ustic Torriorthents
Bonita	Fine, smectitic, thermic Typic Haplotorrerts
Borderland	Clayey over loamy, smectitic over mixed, superactive, thermic Aridic Calciusterts
Borderline	Coarse-loamy, mixed, superactive, thermic Typic Calcigypsids
Boss	Clayey, mixed, superactive, thermic Lithic Ustic Haplargids
Brookline	Sandy, mixed, thermic Aquic Torrifluvents
Brunkcow	Loamy, mixed, superactive, thermic, shallow Ustic Haplargids
Brunopeak	Clayey-skeletal, mixed, superactive, thermic Aridic Paleustolls
Budlamp	Loamy-skeletal, mixed, superactive, thermic Lithic Haplustolls
Buntline	Loamy, mixed, superactive, thermic, shallow Ustalfic Petrocalcids
Caralampi	Loamy-skeletal, mixed, superactive, thermic Ustic Haplargids
Carbine	Loamy, mixed, superactive, thermic, shallow Petrocalcic Calciustolls
Castledome	Clayey, mixed, superactive, thermic, shallow Aridic Haplustalfs
Cazador	Fine, smectitic, thermic Torrertic Haplustolls
Cherrycow	Fine, smectitic, thermic Aridic Argiustolls
Chiricahua	Clayey, mixed, superactive, thermic, shallow Ustic Haplargids
Chorro	Fine-loamy, mixed, active, thermic Sodic Ustic Haplocalcids
Cogswell	Fine, mixed, superactive, thermic Ustic Haplocalcids
Combate	Coarse-loamy, mixed, superactive, nonacid, thermic Ustic Torrifluvents
Comoro	Coarse-loamy, mixed, superactive, calcareous, thermic Ustic Torrifluvents
Contention	Fine, smectitic, thermic Typic Gypsitorrerts
Courtland	Fine-loamy, mixed, superactive, thermic Ustic Haplargids
Crowbar	Loamy-skeletal, mixed, superactive, thermic Aridic Haplustalfs
Crystalgyp	Coarse-loamy, gypsic, thermic Typic Haplogypsids
Deloro	Clayey-skeletal, mixed, superactive, thermic, shallow Ustic Haplargids
Denab	Loamy, mixed, superactive, thermic, shallow Aridic Calciustolls
Diaspar	Coarse-loamy, mixed, superactive, thermic Ustic Haplargids
Dona Ana	Fine-loamy, mixed, superactive, thermic Typic Calciargids
Doubleadobe	Fine, mixed, active, thermic Petronodic Natrargids
Durazo	Mixed, thermic Ustic Torripsamments
Elfrida	Fine-loamy, mixed, superactive, thermic Ustic Haplocalcids
Elgin	Fine, mixed, superactive, thermic Calcic Paleargids
Eloma	Clayey-skeletal, mixed, superactive, thermic Ustic Haplargids
Epitaph	Fine, smectitic, thermic Petrocalcic Calcitorrerts
Far	Loamy-skeletal, mixed, superactive, mesic Lithic Haplustolls
Fluvaquents	Fluvaquents
Forrest	Fine, mixed, superactive, thermic Ustic Calciargids
Gardencan	Fine-loamy, mixed, superactive, thermic Aridic Haplustalfs
Glendale	Fine-silty, mixed, superactive, calcareous, thermic Typic Torrifluvents
Gothard	Fine-loamy, mixed, superactive, thermic Ustic Natrargids
Graham	Clayey, smectitic, thermic Lithic Ustic Haplargids
Graveyard	Loamy-skeletal, mixed, superactive, thermic Petronodic Haplocalcids
Grizzle	Fine-loamy, mixed, superactive, thermic Ustic Calciargids
Guest	Fine, mixed, superactive, calcareous, thermic Ustertic Torrifluvents
Gulch	Fine-loamy, mixed, superactive, thermic Ustic Calciargids
Hantz	Fine, mixed, superactive, calcareous, thermic Vertic Torrifluvents
Haplustolls	Haplustolls
Hathaway	Loamy-skeletal, mixed, superactive, thermic Aridic Calciustolls
Hayhollow	Coarse-loamy, mixed, superactive, nonacid, thermic Aridic Ustifluvents
Hogris	Loamy-skeletal, mixed, superactive, nonacid, mesic Typic Ustorthents
Hooks	Fine-loamy, mixed, superactive, thermic Ustic Haplocambids
Huachuca	Loamy-skeletal, mixed, superactive, mesic Lithic Haplustolls
Kaboom	Loamy, mixed, superactive, thermic Lithic Calcigypsids

Table 18.--Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
Kahn	Fine-loamy, mixed, superactive, thermic Ustic Haplocalcids
Karro	Fine-loamy, carbonatic, thermic Ustic Haplocalcids
Keysto	Loamy-skeletal, mixed, superactive, nonacid, thermic Ustic Torrifluvents
Krentz	Loamy-skeletal over cindery, mixed, superactive, thermic Vitrandic Haplocambids
Kuykendall	Clayey, smectitic, thermic Aridic Lithic Argiustolls
Lampshire	Loamy-skeletal, mixed, superactive, nonacid, thermic Lithic Ustic Torriorthents
Lanque	Coarse-loamy, mixed, superactive, thermic Pachic Haplustolls
Lesliecreek	Fine-loamy, mixed, superactive, thermic Torrifluventic Haplustolls
Leyte	Clayey, mixed, superactive, thermic Lithic Ustic Haplargids
Libby	Fine, mixed, superactive, thermic Petronodic Paleargids
Luckyhills	Coarse-loamy, mixed, superactive, thermic Ustic Haplocalcids
Lutzcan	Loamy-skeletal, mixed, superactive, thermic, shallow Aridic Argiustolls
Mabray	Loamy-skeletal, carbonatic, thermic Lithic Ustic Torriorthents
Magoffin	Loamy, mixed, superactive, thermic Lithic Haplustolls
Major	Fine-loamy, carbonatic, thermic Petronodic Calcigypsids
Mallet	Coarse-loamy, mixed, superactive, thermic Ustic Haplocambids
Maricopa	Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, calcareous, thermic Typic Torrifluvents
McAllister	Fine-loamy, mixed, superactive, thermic Ustic Calciargids
McNeal	Fine-loamy, mixed, superactive, thermic Ustic Calciargids
Moco	Fine-loamy, gypsic, thermic Calcic Argigypsids
Mohave	Fine-loamy, mixed, superactive, thermic Typic Calciargids
Monzingo	Coarse-loamy, mixed, superactive, thermic Typic Calcigypsids
Mule	Loamy-skeletal, carbonatic, thermic Ustic Haplocalcids
Naco	Clayey-skeletal, smectitic, thermic Vertic Paleargids
Nolam	Loamy-skeletal, mixed, superactive, thermic Ustic Calciargids
Nugget	Loamy, mixed, superactive, thermic, shallow Aridic Argiustolls
Outlaw	Fine, smectitic, thermic Typic Calcitorrerts
Oversight	Loamy-skeletal, mixed, superactive, thermic Aridic Haplustepts
Paramore	Fine, smectitic, thermic Leptic Haplotorrerts
Pedregosa	Loamy-skeletal, mixed, superactive, thermic, shallow Ustic Petrocalcids
Perilla	Coarse-loamy, mixed, superactive, thermic Ustic Haplocambids
Pyeatt	Coarse-loamy, mixed, superactive, thermic Aridic Calciustolls
Quiburi	Coarse-loamy, mixed, superactive, calcareous, thermic Aquic Torrifluvents
Rafter	Loamy-skeletal, mixed, superactive, thermic Cumulic Haplustolls
Redington	Sandy, mixed, thermic Typic Torriorthents
Reeup	Fine, mixed, superactive, thermic Leptic Haplogypsids
Riveroad	Fine-silty, mixed, superactive, calcareous, thermic Ustic Torrifluvents
Ruins	Fine, smectitic, thermic Vertic Paleargids
Sasabe	Fine, mixed, superactive, thermic Ustic Paleargids
Schiefflin	Mixed, thermic Lithic Torripsamments
Sierravista	Loamy-skeletal, mixed, superactive, thermic Petronodic Calciargids
Stanford	Fine-loamy, mixed, superactive, thermic Cumulic Haplustolls
Stronghold	Coarse-loamy, mixed, superactive, thermic Ustic Haplocalcids
Surge	Loamy, mixed, superactive, calcareous, thermic Lithic Ustic Torriorthents
Sutherland	Loamy-skeletal, carbonatic, thermic, shallow Calcic Petrocalcids
Swisshelm	Coarse-loamy, mixed, superactive, thermic Ustifluventic Haplocambids
Tenneco	Fine-loamy, mixed, superactive, thermic Ustic Haplocambids
Terrarossa	Fine, mixed, superactive, thermic Aridic Paleustalfs
Tombstone	Loamy-skeletal, mixed, superactive, thermic Ustic Haplocalcids
Turquoise	Loamy, mixed, superactive, nonacid, thermic, shallow Aridic Ustorthents
Ubik	Coarse-loamy, mixed, superactive, calcareous, thermic Ustic Torrifluvents
Ugyp	Coarse-loamy, mixed, superactive, thermic Typic Calcigypsids
Vana	Loamy, mixed, superactive, thermic, shallow Ustalfic Petrocalcids
White House	Fine, mixed, superactive, thermic Ustic Haplargids
Woodcutter	Loamy-skeletal, mixed, superactive, thermic Aridic Lithic Argiustolls
Yarbam	Loamy-skeletal, mixed, superactive, thermic Lithic Haplustolls
Zapolote	Fine, smectitic, thermic Ustertic Calciargids