United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Colusa County Resource
Conservation District; State of
California, Department of
Conservation; Regents of the
University of California; United
States Department of
Agriculture, Forest Service;
and United States Department
of the Interior, Bureau of Land
Management and Fish and
Wildlife Service

Soil Survey of Colusa County, California

How To Use This Soil Survey

General Soil Map

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

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

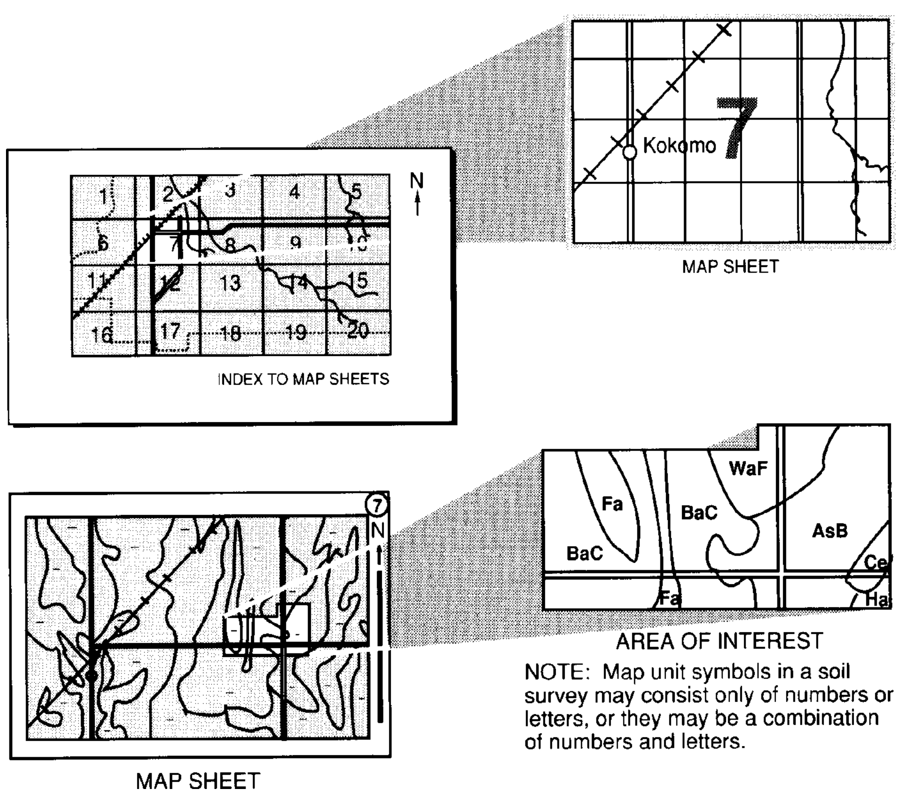
Detailed Soil Maps

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

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

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

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



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

Major fieldwork for this soil survey was completed in 1996. Soil names and descriptions were approved in 1999. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1998. This survey was made cooperatively by the Natural Resources Conservation Service and the Colusa County Resource Conservation District; State of California, Department of Conservation; Regents of the University of California; United States Department of Agriculture, Forest Service; and United States Department of the Interior, Bureau of Land Management and Fish and Wildlife Service. The survey is part of the technical assistance furnished to the Colusa County Resource Conservation District.

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

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Cover: Davis Ranch House, which was built by Howell and Sebina Davis. The building was completed in 1893. It was constructed with bricks made from the Vina soils on the property.

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

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Foreword

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

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

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

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

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

Charles W. Bell
State Conservationist
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Soil Survey of
Colusa County, California

By William R. Reed, Natural Resources Conservation Service

Fieldwork by William D. Broderson, Karen Colby, Robert G. Kurowski, Paul N. Lake, William R. Reed, Ken Simeral, Michael L. Whiting, and Jack Wright, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
Colusa County Resource Conservation District; State of California, Department of Conservation; Regents of the University of California; United States Department of Agriculture, Forest Service; and United States Department of the Interior, Bureau of Land Management and Fish and Wildlife Service

COLUSA COUNTY has a total area of 737,920 acres, or approximately 1,149 square miles. It is bounded by Glenn County on the north, Yolo County on the south, Butte and Sutter Counties on the east, and Lake County on the west (figure 1).

Elevation ranges from 7,056 feet at Snow Mountain, on the western boundary, to 35 feet at the Sacramento River, on the eastern boundary. Most of the soils in the Sacramento Valley are used for agriculture. Most of the soils in the foothills are used for livestock grazing, and the far western part of the county is in the Mendocino National Forest.

Three older soil surveys covering all or parts of this survey area were published in 1909, 1915, and 1948 (USDA, BoS,1909 and 1915; UC, 1948). This survey has larger, more detailed maps and provides more information about the soils.

General Nature of the County

This section gives general information about the survey area. It describes history and development; water supply; physiography, relief, and drainage; flooding; agriculture; and climate.

History and Development

Prior to its settlement by Europeans in the 1850s, Colusa County was home to several American Indian Tribes. As many as 15,000 American Indians lived in this part of the Sacramento Valley at the time of John Bidwell's expedition in 1843. One of the largest towns in the valley was Coru, which was the capital of the

Figure 1.—Location of Colusa County in California.

now extinct Colus Indian Nation and is the site of the present-day city of Colusa. The Colus, who numbered about 1,000 in 1850, subsisted on the lush native vegetation and fish of the area and resided in rancherias of 100 to 400 people. Two main American Indian Tribes lived in the vicinity of Stonyford and Lodoga. These were the Pomo and the Wintun. Several Pomo settlements were near Stonyford. They were surrounded by the larger, more dominant Wintun settlements on three sides.

Development patterns reflect the county's long-time reliance on agriculture and ties to the river and railroad for shipping agricultural goods. The first towns to develop in the county were Colusa, Grimes, and Princeton. These towns were loading points for barges carrying wheat downriver and overnight stops for stages making their way along the river road. Much of the county's early history is centered on Colusa, which was contained within a Mexican land grant deeded to an American settler named John Bidwell. By the end of 1850, Colusa consisted of a small wood-frame bar and store, with a half-story hotel overhead.

Colusa's future depended on its designation as the county seat and its establishment as the head of the navigable Sacramento River. It succeeded on the first count in 1853, when local voters chose Colusa over Monroeville (33 miles upriver) as their government seat. The city achieved its second objective during 1851 and 1852, when Colusa became the river terminus during the biggest gold-producing years in California history.

However, success was short lived. When the river was deepened as far north as Red Bluff in 1853, businesses failed and merchants tore down their shops to sell the lumber. With the advent of agriculture in the valley and the end of the mining boom, Colusa regained its prominence as a shipping center. It was the effective head of navigation for wheat barges during the 1860s and 1870s.

Colusa was incorporated in 1868. Much of the town was settled during the last decades of the 1800s. Elm, eucalyptus, walnut, and orange trees were planted between 1875 and 1880. Today, many of those saplings have become towering shade trees. They provide Colusa with an amenity found in few other communities in the region. By 1900, the city had become the trade center for much of north Sacramento Valley. Construction of the Southern Pacific Railroad diminished the reliance on the river for commerce but did not reduce Colusa's importance as a processing and shipping point for grain. The economic base of the town is still tied to agriculture, particularly rice and prunes.

Colusa County originally included the area that is now known as Glenn County, which was formed in 1906. Colusa contains a wealth of historic buildings, including the county courthouse, which was built in 1861 and is the second oldest courthouse still in active use in California. The courthouse's Greek Revival architecture reflects the heritage of the county's first settlers, who came to Colusa from the Deep South prior to the Civil War. Other buildings of historical importance include the old Colusa Grammar School (now City Hall) and the old Colusa High School (now the Community Theater). Both are on the National Register of Historic Places.

Grimes was located on an island bounded by Sycamore Slough and the Sacramento River. Cleaton Grimes, who built a cabin on the present townsite in 1851, settled the town. Grimes became the center of the county's first major farming area during the early 1850s. The community grew because its river landing was an important point for loading river steamboats and barges. Railroad service was later provided to the community, serving the town's large grain drying and storage facility. By the turn of the century, Grimes had become a small village, with stores, a public hall, and a grain warehouse.

Princeton was founded by Dr. A. Lull in 1850. The town was laid out in the early 1850s on the site of the Sixteen-Mile House, a roadside inn that served wagon traffic on the road to the northern mines. Princeton became a major steamboat landing on the Sacramento River during the late 1850s and the 1860s and was later served by the Southern Pacific Railroad. The community was also the site of a ferry crossing to Marysville Road. The ferry became California's first electrically powered river ferry in 1932.

In the late 1870s, Arbuckle was one of three towns in the county that were founded during the northern extension of the Southern Pacific Railroad. When College City turned down the opportunity for a rail depot in 1875, a Missouri farmer named Tacitus Arbuckle invited the railroad to his 7,320-acre farm 3 miles to the west. Arbuckle donated the land for the depot and sidings, laid out a townsite, and began selling 25- by 115-foot lots for $25 to $50 each. By 1876, the community had 300 residents. Around town, landowners offered farmers up to 5 years free use of their land as an incentive to clear the land of chamise brush and render it suitable for crop production. Arbuckle became a lively commercial center by the turn of the 19th century. The business district served wheat, sorghum, hay, bean, and barley farmers from the surrounding area, as well as wildcatters drilling for oil in the nearby foothills. During the early 1900s, most of the cropland around Arbuckle was used for almond orchards. The acreage of these orchards increased from only 150 acres in 1911 to about 11,000 acres in 1933.

When pioneer sheep farmer Andrew Pierce died in 1871, all of his land and possessions were left to the Christian Church. The proceeds from his estate sale were used to establish Pierce Christian College on a 9-acre plot 3 miles east of Arbuckle. By the time classes began in 1874, the community of College City was established around the campus. Enrollment dropped through the 1880s, and the college was closed in 1894. The property was sold to the county and was used as a high school from 1897 to 1936. Enrollment had reached 162 pupils by the time the school was replaced by Pierce High School in Arbuckle.

Williams was established in 1876, when landowner W.H. Williams drew up plans for a town at the proposed Northern Railway depot some 10 miles north of Arbuckle. By the time the tracks reached Williams in the early summer of 1877, the town was well on its way to becoming a major agricultural processing and distribution center. In his history of Colusa County (Rogers, 1891), Justus Rogers notes that the first buildings in Williams were “rude and hastily constructed.” However, Rogers goes on to note that by the 1890s, the town sported handsome dwellings and substantial brick buildings.

The decline of river traffic on the Sacramento River along with construction of the railroad and the partitioning of Glenn County made Williams the county’s transportation hub and geographic center. The town’s early success was built on the railroad and the grain products grown in the surrounding farm areas. Rice and tomatoes became the predominant farm crops during the early 1900s. With the decline of rail traffic in recent years, the town has remained a transportation hub by virtue of its location at the crossroads of Interstate 5 and State Highway 20.

Maxwell was the last of the Central Pacific-Southern Pacific Railway towns to be settled in Colusa County. W.S. McCoy, landowner and constable of the area, decided to emulate Tacitus Arbuckle by developing a townsite adjacent to the route of the proposed Northern Railway. The town plat, which was drawn freehand, was recorded at the courthouse in Colusa in 1877. During the same year, a general store, a hotel, a post office, a saloon, a blacksmith and wagon shop, and several residences were built. The town was originally called Occident but was renamed in honor of George Maxwell, the town’s postmaster, after he donated his land to the railroad for construction of its depot.

The tracks were laid in 1878. A construction boom ensued in the new town of Maxwell. Most of the townsite was sold to the railroad’s development subsidiary, the Western Development Company, for $1 a lot. Grain warehouses and livery stables were built as new settlers arrived and stagecoach connections were established between Maxwell and Colusa. By 1891, the community had grown to about 400 people. Dryland barley and wheat were grown on the surrounding farms, and cattle and sheep grazed the foothills to the west. Businesses in the community were entirely dependent on the farmers, and the farmers depended on the businesses for all goods and services.

Fouts Springs, Cooks Springs, and Wilbur Springs were hot spring health resorts in the late 1800s and early 1900s. Wilbur Springs is still in operation. Visitors traveled by railroad to Sites and then by stage to the resorts. The ailments treated at the springs included rheumatism and skin, kidney, and liver diseases.

The Indian Valley around Stonyford and Lodoga was initially settled in the 1850s. It was not until 1863 that the valley’s first town was developed. John L. Smith founded the community of Smithville at the junction of Little Stony and Stony Creeks. The community featured a three-story hotel and a flour mill powered by water diverted from one of the creeks. In 1890, the Stony Creek Improvement Company bought the landholdings and moved the buildings to a gravelly ridge one-half mile to the southeast. The higher ground was above the flood plain and was better situated for development of a town.

Stonyford’s early growth was spurred on by mining in the nearby mountains and by ranching and farming in the surrounding countryside. By 1900, the little town consisted of three hotels, two gambling houses, a saloon, a seed mill, a general store, a dance hall, and a creamery. In 1908, Stony Creek was diverted and dammed, and East Park Reservoir, the first Federal reclamation project in California, was created. Orland obtained the water rights to Stony Creek, placing a burden on dairy and alfalfa farmers in the Indian Valley and ultimately constraining growth in Stonyford. Farming in the area was further affected by erosion problems that resulted from overgrazing by sheep and cattle.

Sites was initially developed to serve a nearby stone quarry and was the terminus of a rail line from Colusa from 1886 to 1916. The railroad was never completed to Clear Lake as planned, and the hotel and school in Sites were eventually abandoned. Today, the town has about 10 homes and a town park. Similarly, Delevan now consists of a rice dryer and grain warehouse and less than a dozen homes.

Leesville was once a stage stop on the steep road between Williams and the health resorts of western Colusa County. The Leesville Hotel, built in 1878 and now a private residence, is all that remains of the town.

Water Supply

Plans to use Sacramento River water for irrigation date back to 1860, when pioneer Will Green proposed that a canal be built from Hamilton City south into Colusa County. It was not until 1889 that ground breaking on the canal began, following a long legal battle with opposing landowners. Legal obstacles continued to plague the canal as it moved south, ultimately halting construction near Maxwell in 1891. Because the diversion facilities had yet to be built and gaps along the route were incomplete, landowners ready to receive water could not do so. The Central Canal and Irrigation Company continued the project in 1904-5 and then abandoned it because of a lack of interest on the part of the landowners. The canal was subsequently acquired by the Sacramento Valley Land Company, which used it as part of its nationwide campaign to sell 20- and 40-acre farms in Glenn and Colusa Counties. By 1913, this scheme too had failed and the canal was purchased by the bondholders. By this time, water was being delivered at $7 an acre for rice and $2 an acre for all other crops. With the soaring demand for rice after World War I, the canal was expanded and operation passed into the hands of the Glenn-Colusa Irrigation District.

State water rights on the Sacramento River were complicated when the Federal government completed Shasta Dam in 1937. This dam added another level of flood protection to the towns on the flood plains along the Sacramento River.

The Tehema-Colusa Canal provides irrigation water to lands west of Maxwell, Williams, and Arbuckle. The canal was authorized as a Federal project in 1950. Construction began near Red Bluff in 1962. By 1980, the canal had reached Dunnigan, directly south of the Colusa County line. The canal has enabled a large area formerly used for dryland farming to be converted to orchards and row crops. It has dramatically increased the yields per acre on the west side of the valley.

Another source of irrigation water is the Colusa basin drain canal. The canal was constructed during the 1920s, when a ditch was extended from Willow Creek south to the Colusa Basin. Since 1953, individual irrigation districts have agreed to maintain the portion of the canal within their boundaries. In return, they are permitted to divert drain water for farming. In all, the county uses a total of 968,000 acre-feet of water a year, of which 815,000 acre-feet is provided by irrigation canals. The balance is extracted from shallow wells that tap a large ground-water basin.

Efforts to control floodwater along the Sacramento River date back to the early 1900s. Winter flooding was a recurring problem on the valley floor because of the county's flat terrain and flood volumes that are exceeded by only three other rivers in the United States. After attempts to build levees along the river failed during the early 1900s, the State adopted the Sacramento River Flood Control Project and created the State Reclamation Board to administer the project.

Sacramento River floodwater is diverted through Colusa, Moulton, and Tisdale Weirs into the Sutter Bypass. The bypass drains south 40 miles to Knights Landing, where the water is diverted to the west side of the river, into the Yolo Bypass, and eventually to the Sacramento River Delta. While the State project effectively contained the water of the Sacramento River, it did not address winter flooding of the Colusa Basin, a low area parallel to and several miles west of the river. During the 1910s, Reclamation District 108 and other entities built a levee through the basin to divert floodwater from the west side of the basin between Colusa and Knights Landing. Most of the Colusa Basin is still subject to flooding.

Physiography, Relief, and Drainage

Colusa County has three physiographic regions. The Sacramento Valley occupies the eastern part and makes up about 47 percent of the county. The Coast Range foothills occupy the central to southwestern part and make up about 44 percent of the county (figure 2). The Coast Range mountains occupy the northwestern part and make up about 9 percent of the county.

The Sacramento Valley has several parts and ranges in elevation from about 25 to 200 feet. The following paragraphs describe the landforms in the valley from east to west, beginning with Butte Sink (figure 3).

Butte Sink is a depressional area between the flood plains along the Sacramento River and Sutter Buttes. Annual flooding from the Sacramento River and Butte Creek have deposited clayey sediments throughout the basin. Flooding is not controlled today as high Sacramento River flows frequently flood the area from the Moulton and Colusa Weirs. Floodwater also enters Butte Sink from Glenn and Butte Counties.

The flood plains along both sides of the Sacramento River extend west of Butte Sink. These flood plains slope gently away from the Sacramento

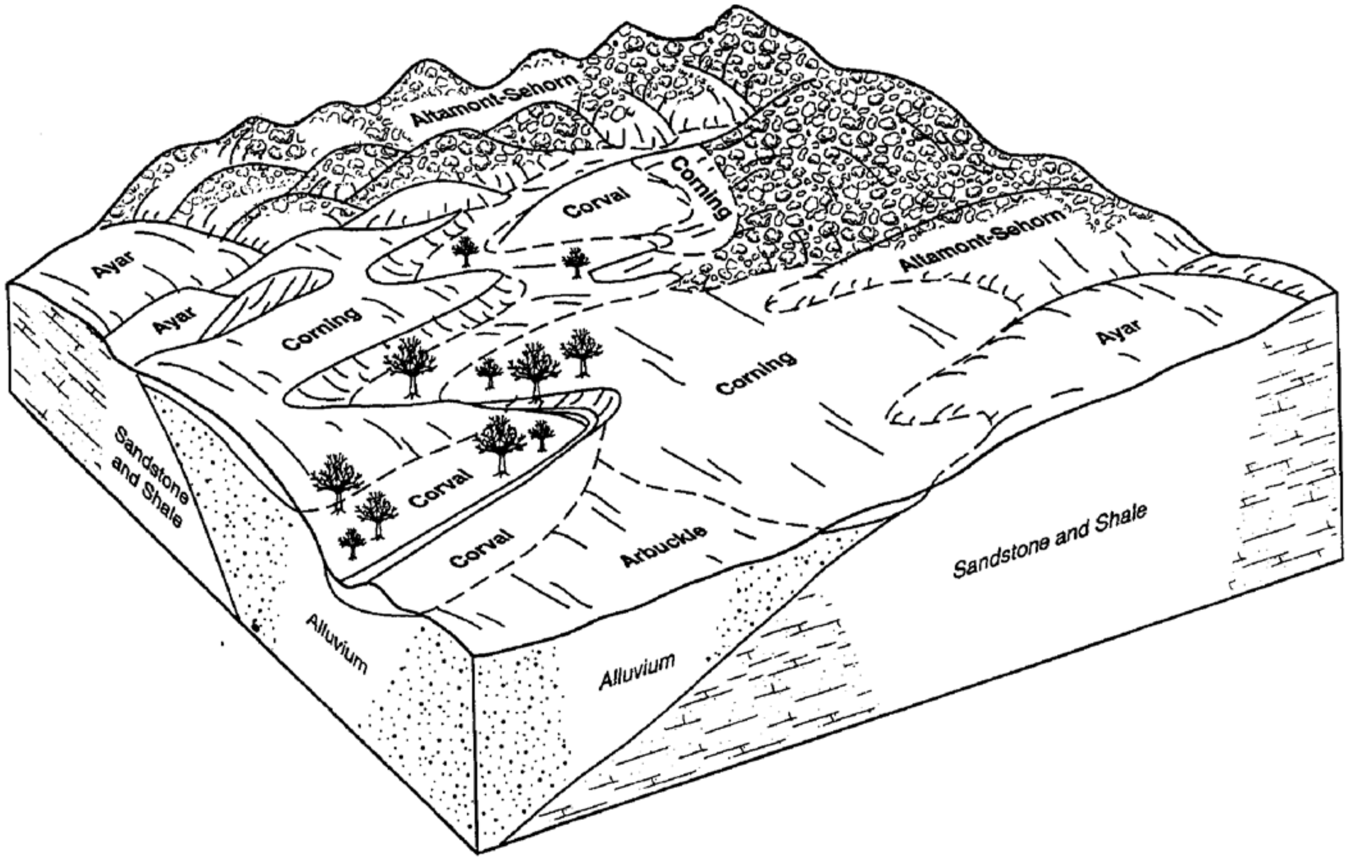

Figure 2.—Typical pattern of soils on the western edge of the Sacramento Valley and on the Coast Range foohills.

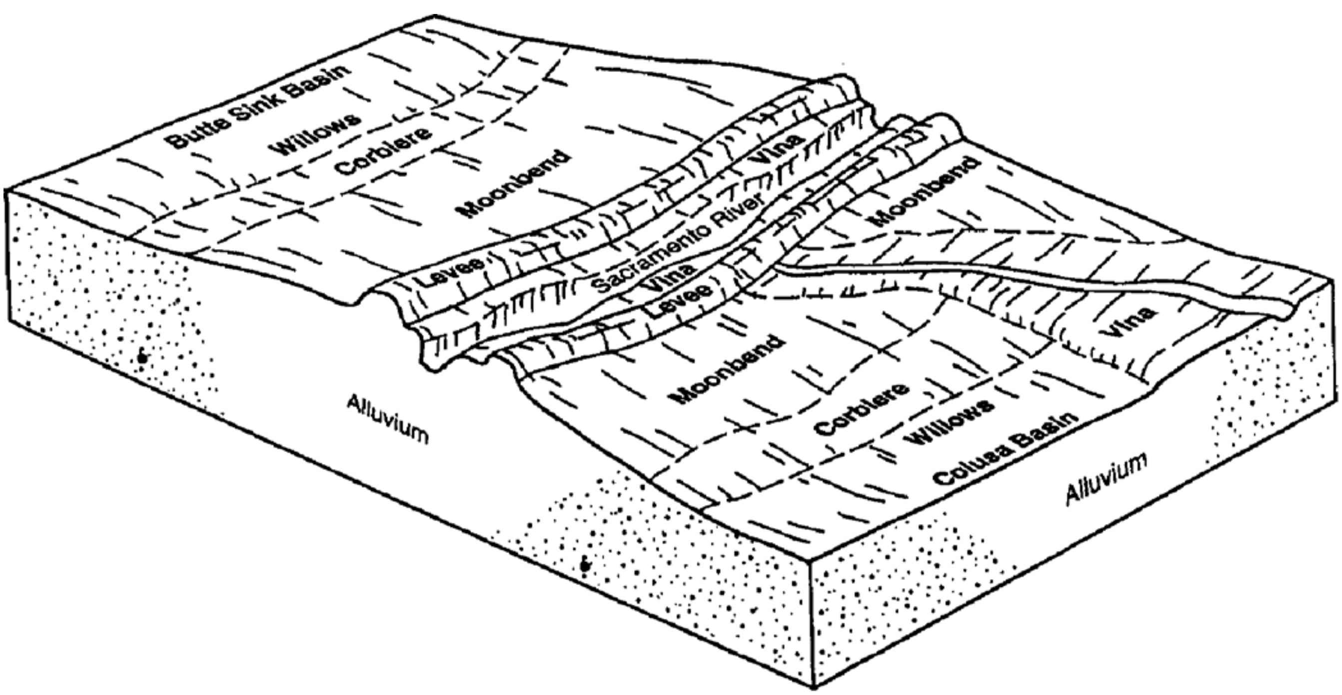

Figure 3.—Typical pattern of soils along the Sacramento River, near the city of Colusa.

River to the Butte Sink and Colusa Basins. Frequent overflows under natural conditions have deposited loamy soils high in content of silt and fine sand. A levee system combined with Shasta Reservoir upstream helps to control Sacramento River waters, so that the flood plains are no longer flooded on a regular basis.

The soils on the flood plains along the Sacramento River are very fertile and are among the best soils in the county. More information about the geomorphic surfaces on the flood plains is available in the section “Formation of the Soils.” Several sloughs originally disseminated from the Sacramento River into the Butte Sink and Colusa Basins. Waterflow was stopped by construction of levees on the Sacramento River. These sloughs, particularly the Sycamore Slough, carried river sediments several miles from the river, creating the very productive Vina soils.

West from the flood plains along the Sacramento River, the Colusa Basin runs the length of the county north and south. Overflows containing clayey sediments from the Sacramento River and foothill streams regularly filled the Colusa Basin. Because of the construction of levees on the Sacramento River, only sediments from the foothill streams now reach the basin. The basin is mostly leveled for rice production and has little relief. Salts in the clayey sediments from the foothill streams were deposited in the basin soils, particularly Willows soils, and reclamation of the soils has been ongoing since early in the 20th century. Most basin soils have been reclaimed to several feet. The very deep clay deposits that are characterized by extremely slow permeability and a water table hamper further reclamation.

Alluvial fans are along the west side of the Sacramento Valley. They originate at the base of the foothills, at elevations of 200 to 400 feet, and gently descend to the east for several miles to the Colusa Basin. Under natural conditions, streams from the foothills flooded these alluvial fans, depositing loamy soils high in fertility. Many of the streams have been diverted from their natural channels, and levees have been constructed in some areas to control flooding. Several geomorphic surfaces and terraces associated with these alluvial fans and with the adjacent areas are described in the section “Formation of the Soils.”

Most of the foothill region is drained by streams flowing east to the Sacramento Valley. These streams occasionally carry heavy volumes from high rainfall events and cause flooding in the Sacramento Valley, along the west-side alluvial fans and in the Colusa Basin. Increased runoff has scoured and lowered the stream channels of many foothill streams. Some streams have been diverted or channelized in the Sacramento Valley. Diversion and channelization of these streams help to protect farmland, towns, and roads. The foothill streams eventually find their way to the Colusa Basin and to the Colusa Basin Drain. Occasionally, the flow volumes exceed the capacity of the south-flowing Colusa Basin Drain and widespread flooding occurs in the basin.

The Coast Range foothills range from about 200 to 2,500 feet in elevation. The lower foothills have rolling slopes in many areas and have clayey soils and very few oak trees. In most foothill areas the soils are strongly sloping and are shallow or moderately deep over sandstone and shale of the Great Valley Formation. Most small valleys in the foothills have gently sloping, clayey soils and some areas of loamy soils. A larger valley runs south from Stonyford through Indian Valley and down into Bear Valley at elevations of 1,200 to 1,500 feet. Slopes are gentle to rolling, and there is a variety of soils. Several geomorphic surfaces occur in the valleys near Stonyford and in Indian Valley. These surfaces are described in the section “Formation of the Soils.” Bear Valley has unique soils that formed in alluvium derived mostly from areas of serpentinite rock on the Coast Range.

The Coast Range Mountains range in elevation from about 1,200 feet west of Stonyford to 7,056 feet at the summit of Snow Mountain. The soils become colder and moister with increasing elevation and precipitation. Typically, the soils in the mountains are steep, are shallow or moderately deep, and formed in material weathered from schist rocks of the Franciscan Formation. Commercial coniferous forests grow above about 3,000 feet. Below about 3,000 feet, the mountains are dominated by brush, the soils become shallow, and there are large areas where the soils are underlain by serpentinite rocks, have excessive amounts of magnesium, and are deficient in calcium.

Streams flowing east from the Coast Range summits in the western and northwestern parts of the county flow to the Stonyford Valley area and then flow north, following the valley into Glenn County, where they eventually join the Sacramento River. These streams can carry large volumes during heavy rainfall and snowmelt events. Streams flowing east in the southwestern part of the Coast Range flow into Bear Valley and then flow south and eventually join Cache Creek in Yolo County.

Flooding

Flooding determinations were made for all of the map units in the Sacramento Valley and the upland valleys in this survey area. Flooding frequency is described as frequent, occasional, rare, and none. *Frequent* means that flooding 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); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 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); and *none* that it is not probable (the chance of flooding is nearly 0 percent; flooding occurs less than 1 time in 500 years).

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.

The *frequently flooded* area of the Colusa Basin was estimated from aerial photographs of a small flood event on January 24, 1978. The extent of the frequently flooded area was delineated. Water enters the basin from Willow Creek to the north and from numerous creeks to the west. Corps of Engineers project levees protect the Colusa Basin from the floodwater of the Sacramento River. Flooding in the Colusa Basin begins when the flow at the Highway 20 gauging station on the Colusa Basin Drain exceeds 2,100 cubic feet per second. The flood on January 24, 1978, produced a reading of 4,020 cubic feet per second at the Highway 20 gauging station. This flood was of long duration. Data from the California Department of Water Resources indicate that flows of approximately 2,000 to 4,000 cubic feet per second occur in about 50 percent of the years recorded in the Colusa Basin.

Butte Sink receives water from Butte Creek and the Sacramento River to the north, beyond the project levees. Most small flood events consist of overflows of Butte Creek. As the Sacramento River keeps rising, the Colusa Weir flows into the Butte Sink. At the higher river stages, the Moulton Weir spills water into the Butte Sink and finally, during large events, the Sacramento River overflows upstream in Glenn and Tehama Counties and the water travels south on the east side of the Sacramento River to Butte Sink. On the basis of data from both weirs, areas in and downstream from the Colusa and Moulton Weirs are considered to be frequently flooded. Frequently flooded areas of the Butte Sink were estimated from aerial photographs of the extent of the flood on January 24, 1978, which was a small event typical of what occurs on average every other year.

The *occasionally flooded* area of the Butte Sink and the Colusa Basin was estimated on the basis of larger flood events on March 4 and March 8, 1988. Lines from aerial photographs traced the extent of the flood. The events of March 4 and March 8 produced a reading of 5,720 cubic feet per second at the Highway 20 gauging station. Data from the California Department of Water Resources indicate that a flow of 5,720 cubic feet per second at Highway 20 occurs in about 20 percent of the years recorded.

The *rarely flooded* areas of the valley were estimated by several methods. National Flood Insurance Program Rate Maps (FIRM) from a 1958 flood were used for many areas. The high water lines from a large flood in February 1986 also were used. Some of this information was obtained from landowner interviews, elevation analysis, and soil morphology.

Data from the Colusa and Moulton Weirs taken since 1943, when Shasta Reservoir went into operation, indicate that both weirs flow on a frequent basis. Careful study of flow data at the Colusa and Moulton Weirs showed that the more elevated areas of the flood plain inside the Sacramento River levees are occasionally flooded for brief periods. Most of these areas are used for orchards and consist of Vina or Moonbend soils. All other areas inside the levees are frequently flooded for long periods.

The hazard of flooding has been reduced in protected areas. Reclamation District 108 maintains a levee on the east side of the main Colusa Basin Drain. Because of this levee, the hazard of flooding is only rare in the areas east of the drain. Levees in the Butte Sink south of Gridley Road protect the area from most overflows of Butte Creek but not from the larger overflows of the Sacramento River. Information gathered indicates that the area has been flooded at least 6 times in the last 30 years, so the area was designated as occasionally flooded.

Data from gauging stations indicate that upland streams entering the west side of the Sacramento Valley carry water in their immediate channels just slightly more than every other year on long-term average. The immediate stream channels are generally minor components on the soil maps and are considered to be frequently flooded. Areas on alluvial fans adjacent to the stream channels are considered to be occasionally flooded unless they are protected by levees or stream channel diversions. Some streams have low levees on one or both sides. These levees protect areas near the edge of the Colusa Basin.

Agriculture

Agriculture developed quickly in the county as swamps were drained and reclaimed, native grasslands were plowed, and woodlands were cleared.

The basic crop was initially dryland wheat or barley. Some fairly extensive orchards were established.

Early dryland wheat farming was quite profitable in the late 1800s, before natural soil fertility was reduced and yields dropped. In 1889, Colusa County had the highest per capita income of any county in the United States. As a history of the county indicates, “The farming community in this vicinity is in a flourishing condition, good houses, good barns and good fences, with the greatest average number of wealthy men of any vicinity in the valley” (Green, 1880).

Cropland makes up about 235,000 acres, or approximately one-third of the county’s total land area. Nearly all of the cultivated land is in the Sacramento Valley, but some farming also takes place in the upland Indian, Antelope, and Bear Valleys.

Colusa County remains a major agricultural area. Its agricultural products were worth $322,922,000 in 1997.

In 1978, the average farm size in the county was 748 acres. This figure is a bit misleading, since it includes very large ranches in the hills. Some cattle and sheep ranches are larger than 10,000 acres. About 70 percent of the farms were actually smaller than 500 acres. About 175 farms consisting of orchards southwest of Arbuckle and along the river are smaller than 50 acres. In 1978, families or partnerships operated more than 90 percent of the farms in the county.

Rice is the dominant crop in the county. It is grown on about 100,000 acres in the Colusa and Sutter Basins. Tomatoes, wheat, beans, vine seed crops, and orchard crops are grown on flood plains and alluvial fans.

Sheep were the primary grazers in the western foothills at first but have been steadily replaced by cattle during the past 75 years, in line with national trends. Recently, year-round resident cattle operations have been increasingly replaced by operations in which winter and spring grazing land is leased to northern cattle operators and cattle are transported north during the summer and early fall months.

Livestock is the greatest consumer of land resources in the county. More than 200,000 acres is used for grazing, but this acreage accounts for just under 5 percent of the county’s agricultural income. Most of the livestock is raised in the foothills and mountains.

The dominant agricultural enterprises in the county are farming in the Sacramento Valley and in the smaller upland valleys and cattle or sheep grazing in the foothills. The 235,000 acres of active farmland and 200,000 acres of rangeland make up about 60 percent of the land area in the county.

Climate

The climate of Colusa County is characterized by warm, dry summers. Winters are cool and moist in the Sacramento Valley and cold and wet on the Coast Range. The climate varies widely because of variations in the topography of the county.

Table 1 gives data on temperatures and precipitation for the survey area as recorded at Colusa and East Park Reservoir in 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 length of the growing season.

The Coast Range receives abundant precipitation. The higher elevations receive more than 50 inches per year. The Coast Range shields the Sacramento Valley from excessive precipitation. Pacific storms generally enter the county from the west, and precipitation diminishes as elevations drop from the crest of the Coast Range to the Sacramento Valley in a rain-shadow effect. Pacific storms are generally mild. Occasionally, a strong, warm, persistent storm generated to the southwest in the north-central Pacific drops a large amount of rainfall that causes widespread flooding along streams and in the Colusa Basin and in Butte Sink.

Most precipitation falls during a pronounced rainy season from November through March. Colusa receives more than 81 percent of its average annual precipitation during this season. Little, if any, precipitation usually falls in the period June through August. On the average, less than 1 inch of precipitation falls at Colusa from May through September. Thunderstorms occur on only 5 days of the year, on average, at Colusa and are not severe. They are more frequent on the Coast Range.

Temperatures vary with elevation across the county. Sacramento Valley is the warmest part of the county. It has summer afternoon temperatures in the upper 90s. The Coast Range, above an elevation of 5,000 feet, has summer afternoon temperatures in the 70s. At Colusa, average winter temperatures are 49.8 degrees F and average summer temperatures are 74.6 degrees F. Cool south winds, of coastal marine origin, flow through the Carquinez Straits and cool the Sacramento Valley in the summer months. Occasional heat waves with temperatures over 100 degrees F occur when an air-pressure pattern with resultant north winds cuts off the flow of cool marine air into the Sacramento Valley from the San Francisco Bay area. Winter temperatures are moderated by the relative proximity of the county to the Pacific Ocean and to the Sierra Nevada Mountains to the east, which deflect cold continental air. Temperatures below freezing generally occur from November to March and become more frequent with increasing elevation.

Snowfall is very rare in the Sacramento Valley and increases in amount with elevation through the foothills and into the Coast Range. The greatest snow depth recorded at Colusa was 8 inches on January 8, 1973. Snowfall occurs occasionally in the foothills below 2,000 feet and may accumulate to depths of a few inches. On the Coast Range snow can accumulate to depths of 5 or 6 feet at elevations above 5,000 feet. Snow is usually evident on Snow Mountain from November to May.

Prevailing winds are from the southwest and are generally light throughout the survey area, except for exposed ridgetops on the Coast Range and open areas of the Sacramento Valley. Strong winds are rare. Thunderstorms are uncommon and are not severe, and tornadoes are almost unknown.

Cloud cover is considerable in the winter months and averages 52 percent at Colusa. Radiational cooling fog, forming in late night and early morning hours, is common in December and January. Under stagnant weather conditions, this fog can persist for many days. Clear skies are typical in late spring, summer, and early fall. At Colusa the sun shines an average of 96 percent of the time possible during the summer months.

Relative humidity is very low on summer afternoons, making the summer heat more tolerable. Humidity is high throughout the rainy season (November through March).

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 soil profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

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

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

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

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

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

The descriptions, names, and delineations of the soils in this survey area do not fully agree with those of the soils in the survey of Glenn County (published in 1968) or in the survey of Yolo County (published in 1972). Differences are the result of soil reclamation, land leveling, and drainage; modifications in the series and map unit concepts; or variations in the intensity and scale of mapping or in the extent of the soils in the survey areas. Updating of the Glenn and Yolo surveys is needed.

Table 1.--Temperature and Precipitation

(Recorded in the period 1961 to 1990 at Colusa and at East Park Reservoir)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than–	More than–	Average number of days with 0.10 inch or more	Average snowfall
	^oF	^oF	^oF	^oF	^oF	*Units*	*In*	*In*	*In*	*Days*	*In*
Station: Colusa 2 SSW											
January-----	53.8	36.4	45.1	70	23	172	3.15	0.92	4.95	5	0.0
February----	61.0	39.9	50.5	75	28	297	2.54	0.72	4.16	5	0.0
March-------	65.9	41.9	53.9	82	28	430	2.18	0.98	3.21	5	0.0
April-------	73.4	44.5	59.0	91	32	570	0.88	0.16	1.44	2	0.0
May---------	82.4	51.4	66.9	99	38	834	0.32	0.08	0.80	0	0.0
June--------	90.4	56.4	73.4	106	45	1,001	0.22	0.07	0.59	0	0.0
July--------	95.5	58.6	77.1	108	48	1,149	0.04	0.01	0.27	0	0.0
August------	94.1	57.3	75.7	107	47	1,105	0.07	0.05	0.43	0	0.0
September---	88.8	53.7	71.2	103	42	937	0.34	0.07	0.83	0	0.0
October-----	78.6	47.6	63.1	96	35	715	1.04	0.28	1.92	2	0.0
November----	63.2	41.1	52.2	80	27	365	2.51	0.67	3.98	5	0.0
December----	53.8	36.6	45.2	69	22	178	2.47	1.27	3.68	5	0.1
Yearly:											
Average---	75.1	47.1	61.1	---	---	---	---	---	---	---	---
Extreme---	113	15	---	109	21	---	---	---	---	---	---
Total-----	---	---	---	---	---	7,752	15.76	10.65	20.04	29	0.1
Station: East Park Reservoir											
January-----	54.5	31.5	43.0	71	18	130	4.50	1.77	6.80	7	0.0
February----	58.6	35.0	46.8	74	22	198	3.48	0.87	5.89	5	0.0
March-------	61.2	37.2	49.2	79	24	290	2.44	0.73	3.95	5	0.0
April-------	68.1	40.5	54.3	87	28	429	1.13	0.37	1.92	3	0.0
May---------	77.7	47.0	62.4	97	32	693	0.39	0.11	0.78	1	0.0
June--------	86.7	54.3	70.5	105	40	893	0.27	0.10	0.73	0	0.0
July--------	93.7	58.8	76.2	107	47	1,117	0.04	0.06	0.32	0	0.0
August------	92.1	57.0	74.5	106	46	1,070	0.15	0.07	0.51	0	0.0
September---	87.2	52.2	69.7	104	40	890	0.26	0.09	0.63	0	0.0
October-----	76.9	45.2	61.0	96	31	665	1.10	0.28	2.12	2	0.0
November----	64.0	37.3	50.6	83	23	320	2.62	0.58	4.34	4	0.0
December----	56.1	32.4	44.3	72	19	155	3.79	1.28	6.03	6	0.0
Yearly:											
Average---	73.1	44.0	58.6	---	---	---	---	---	---	---	---
Extreme---	113	10	---	109	16	---	---	---	---	---	---
Total-----	---	---	---	---	---	6,851	20.18	10.62	26.93	33	0.0

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1961-90)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than-----	January 22	March 16	April 16
2 years in 10 later than-----	January 12	February 28	April 1
5 years in 10 later than-----	December 12	January 27	March 2
First freezing temperature in fall:			
1 year in 10 earlier than---	December 1	November 16	November 1
2 years in 10 earlier than---	December 14	November 24	November 9
5 years in 10 earlier than---	January 18	December 9	November 24

Table 3.--Growing Season

(Recorded for the period 1961-90 at Colusa)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	*Days*	*Days*
9 years in 10	338	258	208
8 years in 10	>365	276	228
5 years in 10	>365	312	266
2 years in 10	>365	>365	304
1 year in 10	>365	>365	324

General Soil Map Units

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

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

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

1. Vina-Moonbend-Scribner Association

Very deep, nearly level, moderately well drained, well drained, and poorly drained soils formed in alluvium derived from mixed rock sources; on flood plains along the Sacramento River (figure 4) and west-side streams

Setting

Landform: Flood plains
Slope range: 0 to 2 percent

Composition

Extent of the association: 12 percent of the survey area
Extent of the soils in the association:
Vina soils—32 percent
Moonbend soils—27 percent
Scribner soils—27 percent
Minor components—14 percent

Soil Properties and Qualities

Vina

Depth class: Very deep
Drainage class: Well drained
Landform: Flood plains
Parent material: Alluvium
Texture of the surface layer: Loam
Slope: Nearly level

Moonbend

Depth class: Very deep
Drainage class: Moderately well drained
Landform: Flood plains
Parent material: Alluvium
Texture of the surface layer: Silt loam
Slope: Nearly level

Scribner

Depth class: Very deep
Drainage class: Poorly drained
Landform: Flood plains
Parent material: Alluvium
Texture of the surface layer: Silt loam
Slope: Nearly level

Minor Components

• Columbia, Colusa, Grandbend, Holillipah, and Tujunga soils and Riverwash on flood plains

Use and Management

Major Use: Irrigated crops

Management concerns: Water table and flooding
Management measures: Drainage systems and flood-protection structures

2. Willows-Clear Lake-Capay Association

Very deep, nearly level, poorly drained and moderately well drained soils formed in fine textured alluvium derived from mixed rock sources; in the Colusa Basin and Butte Sink

Setting

Landform: Basins
Slope range: 0 to 2 percent

Composition

Extent of the association: 26 percent of the survey area

Extent of the soils in the association:
Willows soils—64 percent
Clear Lake soils—12 percent
Capay soils—12 percent
Minor soils—12 percent

Soil Properties and Qualities

Willows

Depth class: Very deep
Drainage class: Poorly drained
Landform: Basins
Parent material: Alluvium
Texture of the surface layer: Silty clay
Slope: Nearly level

Clear Lake

Depth class: Very deep
Drainage class: Poorly drained
Landform: Basins
Parent material: Alluvium
Texture of the surface layer: Clay
Slope: Nearly level

Capay

Depth class: Very deep
Drainage class: Moderately well drained
Landform: Basins
Parent material: Alluvium
Texture of the surface layer: Clay loam
Slope: Nearly level

Minor Soils

- Alcapay and Myers soils in basins
- Corbiere soils on the rims of basins

Use and Management

Major Use: Irrigated crops

Management concerns: Water table, flooding, and fine textures
Management measures: Drainage systems, flood-protection structures, and cropping and tillage operations that are adapted to the fine textures

3. Westfan-Mallard Association

Very deep, nearly level, well drained and somewhat poorly drained soils formed in alluvium derived from mixed rock sources; on alluvial fans on the west side of the Sacramento Valley

Setting

Landform: Alluvial fans
Slope range: 0 to 2 percent

Composition

Extent of the association: 7 percent of the survey area
Extent of the soils in the association:
Westfan soils—64 percent
Mallard soils—34 percent
Minor soils—2 percent

Soil Properties and Qualities

Westfan

Depth class: Very deep
Drainage class: Well drained
Landform: Alluvial fans
Parent material: Alluvium
Texture of the surface layer: Loam
Slope: Nearly level

Mallard

Depth class: Very deep
Drainage class: Somewhat poorly drained
Landform: Alluvial fans
Parent material: Alluvium
Texture of the surface layer: Clay loam
Slope: Nearly level

Minor Soils

- Hustabel soils on alluvial fans

Use and Management

Major Use: Irrigated crops

Management concerns: Water table, flooding, and restricted permeability
Management measures: Drainage systems, flood-protection structures, and irrigation water management that prevents a perched water table

4. Hillgate-Arbuckle-Corval-Corning Association

Very deep, nearly level to moderately sloping, well drained soils formed in alluvium derived from mixed rock sources; on terraces, flood plains, and alluvial fans along the west side of the Sacramento Valley

Setting

Landform: Terraces
Slope range: 0 to 9 percent

Composition

Extent of the association: 9 percent of the survey area
Extent of the soils in the association:
Hillgate soils—34 percent
Arbuckle soils—29 percent

Corval soils—18 percent
Corning soils—14 percent
Minor soils—5 percent

Soil Properties and Qualities

Hillgate

Depth class: Very deep
Drainage class: Well drained
Landform: Terraces
Parent material: Alluvium
Texture of the surface layer: Loam
Slope: Nearly level to moderately sloping

Arbuckle

Depth class: Very deep
Drainage class: Well drained
Landform: Terraces
Parent material: Alluvium
Texture of the surface layer: Loam
Slope: Nearly level to gently sloping

Corval

Depth class: Very deep
Drainage class: Well drained
Landform: Flood plains and alluvial fans
Parent material: Alluvium
Texture of the surface layer: Loam
Slope: Nearly level to gently sloping

Corning

Depth class: Very deep
Drainage class: Well drained
Landform: Terraces
Parent material: Alluvium
Texture of the surface layer: Loam
Slope: Nearly level to gently sloping

Minor Soils

- Arand soils on flood plains and alluvial fans

Use and Management

Major Use: Irrigated crops

Management concerns: Restricted permeability
Management measures: Irrigation water management that prevents a perched water table

5. Altamont-Ayar-Sehorn Association

Very deep and moderately deep, gently sloping to steep, well drained soils formed in residuum derived from sandstone, siltstone, and shale; on foothills of the Coast Range

Setting

Landform: Hills
Slope range: 5 to 50 percent

Composition

Extent of the association: 5 percent of the survey area
Extent of the soils in the association:
Altamont soils—63 percent
Ayar soils—25 percent
Sehorn soils—5 percent
Minor soils—7 percent

Soil Properties and Qualities

Altamont

Depth class: Very deep
Drainage class: Well drained
Landform: Hills
Parent material: Residuum derived from sandstone and shale
Texture of the surface layer: Silty clay
Slope: Moderately sloping to steep

Ayar

Depth class: Very deep
Drainage class: Well drained
Landform: Hills
Parent material: Residuum derived from sandstone, siltstone, and shale
Texture of the surface layer: Clay
Slope: Gentlly sloping to steep

Sehorn

Depth class: Moderately deep
Drainage class: Well drained
Landform: Hills
Parent material: Residuum derived from sandstone and shale
Texture of the surface layer: Silty clay
Slope: Strongly sloping to steep

Minor Soils

- Balcom soils on hills

Use and Management

Major Use: Livestock grazing

Management concerns: Slow permeability, fine textures, and slope
Management measures: Prescribed grazing management, which helps to control erosion and compaction and helps to maintain riparian areas

6. Millsholm-Goldeagle-Contra Costa Association

Deep, moderately deep, and shallow, gently sloping to very steep, well drained soils formed in residuum derived from sandstone, siltstone, and shale; on foothills of the Coast Range

Setting

Landform: Hills
Slope range: 3 to 75 percent

Composition

Extent of the association: 21 percent of the survey area
Extent of the soils in the association:
Millsholm soils—56 percent
Goldeagle soils—19 percent
Contra Costa soils—15 percent
Minor soils—10 percent

Soil Properties and Qualities

Millsholm

Depth class: Shallow
Drainage class: Well drained
Landform: Hills
Parent material: Residuum derived from sandstone and shale
Texture of the surface layer: Loam
Slope: Strongly sloping to very steep

Goldeagle

Depth class: Deep
Drainage class: Well drained
Landform: Foothills
Parent material: Residuum derived from sandstone, siltstone, and shale
Texture of the surface layer: Sandy clay loam
Slope: Moderately steep to very steep

Contra Costa

Depth class: Moderately deep
Drainage class: Well drained
Landform: Hills
Parent material: Residuum derived from sandstone and shale
Texture of the surface layer: Loam
Slope: Gently sloping to very steep

Minor Soils

- Positas soils on dissected terraces
- Skyhigh and Sleeper soils on hills
- Livermore soils on alluvial fans
- Butte soils on mountains

Use and Management

Major Use: Livestock grazing

Management concerns: Slow permeability, shallow soil depth, and slope
Management measures: Prescribed grazing management, which helps to control erosion and compaction and helps to maintain riparian areas

7. Capay-Hillgate-Saltcanyon Association

Very deep, nearly level to moderately sloping, moderately well drained and well drained soils formed in alluvium derived from mixed rock sources; on alluvial fans and terraces and in basins in Coast Range valleys

Setting

Landform: Alluvial fans and basins
Slope range: 0 to 9 percent

Composition

Extent of the association: 3 percent of the survey area
Extent of the soils in the association:
Capay soils—44 percent
Hillgate soils—24 percent
Saltcanyon soils—12 percent
Minor soils—20 percent

Soil Properties and Qualities

Capay

Depth class: Very deep
Drainage class: Moderately well drained
Landform: Basins
Parent material: Alluvium
Texture of the surface layer: Clay
Slope: Nearly level to moderately sloping

Hillgate

Depth class: Very deep
Drainage class: Well drained
Landform: Terraces
Parent material: Alluvium
Texture of the surface layer: Loam
Slope: Nearly level to moderately sloping

Saltcanyon

Depth class: Very deep
Drainage class: Well drained
Landform: Alluvial fans
Parent material: Alluvium
Texture of the surface layer: Loam
Slope: Nearly level to moderately sloping

Minor Soils

- Arand and Mallard soils on alluvial fans
- Arbuckle soils on terraces
- Clear Lake soils in basins
- Maywood soils on flood plains

Use and Management

Major Use: Livestock grazing

Management concerns: Slow permeability and fine textures
Management measures: Prescribed grazing management, which helps to control compaction and streambank erosion

8. Venado-Leesville Association

Very deep, nearly level to gently sloping, poorly drained and well drained soils formed in alluvium derived from peridotite rock sources; on alluvial fans and in basins in Bear Valley (figure 5) on the Coast Range

Setting

Landform: Alluvial fans and basins
Slope range: 0 to 5 percent

Composition

Extent of the association: 1 percent of the survey area
Extent of the soils in the association:
Venado soils—47 percent
Leesville soils—44 percent
Minor soils—9 percent

Soil Properties and Qualities

Venado

Depth class: Very deep
Drainage class: Poorly drained
Landform: Basins
Parent material: Alluvium derived from peridotite
Texture of the surface layer: Clay
Slope: Nearly level

Leesville

Depth class: Very deep
Drainage class: Well drained
Landform: Alluvial fans
Parent material: Alluvium derived from peridotite
Texture of the surface layer: Clay loam
Slope: Nearly level to gently sloping

Minor Soils

- Eastpark soils on terraces
- Bearvalley soils on alluvial fans

Use and Management

Major Use: Livestock grazing

Management concerns: Slow permeability, fine textures, poor drainage, and streambank erosion
Management measures: Prescribed grazing management, which helps to control streambank erosion and compaction

9. Okiota-Henneke Association

Moderately deep and shallow, strongly sloping to very steep, well drained soils formed in residuum derived from peridotite rock; on Coast Range mountains

Setting

Landform: Mountains
Slope range: 15 to 75 percent

Composition

Extent of the association: 6 percent of the survey area
Extent of the soils in the association:
Okiota and Henneke soils—99 percent
Minor soils—1 percent

Soil Properties and Qualities

Okiota

Depth class: Moderately deep
Drainage class: Well drained
Landform: Mountains
Parent material: Residuum derived from peridotite
Texture of the surface layer: Loam
Slope: Strongly sloping to very steep

Henneke

Depth class: Shallow
Drainage class: Well drained
Landform: Mountains
Parent material: Alluvium derived from peridotite
Texture of the surface layer: Sandy loam
Slope: Strongly sloping to very steep

Minor Soils

- Haploxererts on mountains

Use and Management

Major Uses: Wildlife habitat, recreation, and watershed

Management concerns: Slow permeability, shallow soil depth, and slope
Management measures: Erosion-control structures on sites for roads

10. Maymen-Etsel Association

Shallow, moderately steep and steep, well drained soils formed in residuum derived from sandstone and shale rock sources; on Coast Range mountains (figure 6)

Setting

Landform: Mountains
Slope range: 30 to 50 percent

Composition

Extent of the association: 4 percent of the survey area
Extent of the soils in the association:
Maymen and Etsel soils—79 percent
Minor soils—21 percent

Soil Properties and Qualities

Maymen

Depth class: Shallow
Drainage class: Somewhat excessively drained
Landform: Mountains
Parent material: Residuum derived from sandstone and shale
Texture of the surface layer: Sandy loam
Slope: Moderately steep and steep

Etsel

Depth class: Shallow
Drainage class: Somewhat excessively drained
Landform: Mountains
Parent material: Residuum derived from sandstone and shale
Texture of the surface layer: Gravelly sandy loam
Slope: Moderately steep and steep

Minor Soils

- Guenoc and Stonyford soils on mountains

Use and Management

Major Uses: Wildlife habitat, recreation, and watershed

Management concerns: Shallow soil depth and slope
Management measures: Erosion-control structures on sites for roads

11. Neuns-Goulding Association

Moderately deep and shallow, moderately steep to very steep, well drained soils formed in residuum derived from metamorphic rocks; on the Coast Range mountains

Setting

Landform: Mountains
Slope range: 30 to 75 percent

Composition

Extent of the association: 5 percent of the survey area
Extent of the soils in the association:
Neuns and Goulding soils—90 percent
Minor soils—10 percent

Soil Properties and Qualities

Neuns

Depth class: Moderately deep
Drainage class: Well drained
Landform: Mountains
Parent material: Residuum derived from schist
Texture of the surface layer: Very gravelly loam
Slope: Moderately steep to very steep

Goulding

Depth class: Shallow
Drainage class: Well drained
Landform: Mountains
Parent material: Residuum derived from schist
Texture of the surface layer: Gravelly loam
Slope: Moderately steep to very steep

Minor Soils

- Bamtush, Fouts, Squawrock, and Yorkville soils on mountains
- Endoaquolls in mountain valleys

Use and Management

Major Uses: Wildlife habitat, recreation, watershed, and timber production

Management concerns: Shallow soil depth and slope
Management measures: Erosion-control structures on sites for roads, skid trails, and log landings

12. Freezeout-Yollabolly Association

Moderately deep and shallow, moderately steep and steep, well drained and excessively drained, frigid soils formed in residuum derived from metamorphic rocks; on the higher mountains of the Coast Range from Goat Rock to Snow Mountain (figure 7)

Setting

Landform: Mountains
Slope range: 30 to 50 percent

Composition

Extent of the association: 1 percent of the survey area
Extent of the soils in the association:
Freezeout and Yollabolly soils—100 percent
Minor soils—0 percent

Soil Properties and Qualities

Freezeout

Depth class: Moderately deep
Drainage class: Well drained
Landform: Mountains
Parent material: Residuum derived from schist
Texture of the surface layer: Very gravelly sandy loam
Slope: Moderately steep and steep

Yollabolly

Depth class: Shallow
Drainage class: Excessively drained
Landform: Mountains
Parent material: Residuum derived from schist
Texture of the surface layer: Very gravelly loam
Slope: Moderately steep and steep

Use and Management

Major Uses: Wildlife habitat, recreation, watershed, and timber production

Management concerns: Shallow soil depth and slope
Management measures: Erosion-control structures on sites for roads, skid trails, and log landings

Figure 4.—The Sacramento River, north of Colusa. Riverwash is in the foreground.

Figure 5.—Wild flowers on Venado soils in the Bear Valley.

Figure 6.—A chamise-covered area of the Maymen-Etsel association.

Figure 7.—An area of Snow Mountain in the Mendocino National Forest.

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 minor components that belong to taxonomic classes other than those of the major soils.

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

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

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

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, 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, Willows silty clay, 0 to 1 percent slopes, frequently flooded, is a phase of the Willows series.

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

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. Altamont-Sehorn complex, 15 to 30 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. Freezeout-Yollabolly association, 50 to 75 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Riverwash 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 tables in the section “Soil Properties” give information about the major soils in the detailed map units, including data on the physical and chemical properties of the soil horizons. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Acres	Percent
100	Capay clay loam, 0 to 1 percent slopes, occasionally flooded	556	*
101	Capay silty clay, 0 to 2 percent slopes, frequently flooded	65	*
102	Capay clay loam, 0 to 1 percent slopes	25,805	3.5
103	Capay clay loam, 0 to 1 percent slopes, frequently flooded	265	*
104	Willows silty clay, 0 to 1 percent slopes, frequently flooded	32,630	4.4
105	Willows silty clay, 0 to 1 percent slopes, occasionally flooded	53,615	7.3
106	Willows silty clay, 0 to 1 percent slopes	35,116	4.8
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded	2,858	0.4
108	Scribner silt loam, 0 to 1 percent slopes	19,757	2.7
109	Scribner silt loam, 0 to 1 percent slopes, frequently flooded	860	0.1
110	Hustabel sandy loam, 0 to 1 percent slopes	1,414	0.2
112	Westfan loam, 0 to 2 percent slopes	24,013	3.3
113	Westfan loam, sodic, 0 to 2 percent slopes	310	*
114	Westfan clay loam, 0 to 1 percent slopes	1,257	0.2
115	Clear Lake clay, 0 to 1 percent slopes, occasionally flooded	18,810	2.5
116	Clear Lake clay, calcareous, 0 to 2 percent slopes, occasionally flooded	1,518	0.2
117	Clear Lake clay, calcareous, 0 to 1 percent slopes, frequently flooded	656	*
118	Clear Lake clay, 0 to 2 percent slopes, frequently flooded	1,447	0.2
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded	6,843	0.9
125	Moonbend silt loam, 0 to 2 percent slopes	13,986	1.9
126	Moonbend silt loam, 0 to 2 percent slopes, frequently flooded	2,967	0.4
127	Mallard clay loam, 0 to 1 percent slopes	14,734	2.0
128	Mallard loam, 0 to 1 percent slopes	2,858	0.4
129	Mallard clay loam, 0 to 1 percent slopes, occasionally flooded	589	*
130	Corbiere silt loam, 0 to 1 percent slopes	3,153	0.4
131	Corbiere silt loam, 0 to 2 percent slopes, frequently flooded	3,749	0.5
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded	3,768	0.5
136	Colusa loam, 0 to 2 percent slopes	2,599	0.4
141	Myers clay, 0 to 2 percent slopes	4,163	0.6
144	Hillgate clay loam, 0 to 2 percent slopes	15,093	2.0
145	Hillgate loam, 0 to 2 percent slopes	4,611	0.6
147	Hillgate loam, 1 to 5 percent slopes	2,250	0.3
150	Arbuckle sandy loam, 1 to 5 percent slopes	7,228	1.0
151	Arbuckle-Hillgate complex, 1 to 5 percent slopes	8,713	1.2
152	Arbuckle gravelly loam, 1 to 5 percent slopes	1,029	0.1
155	Alcapay clay, 0 to 1 percent slopes	8,954	1.2
160	Grandbend loam, 0 to 2 percent slopes	6,522	0.9
170	Vina loam, 0 to 2 percent slopes, frequently flooded	4,320	0.6
171	Vina loam, 0 to 2 percent slopes	19,422	2.6
172	Vina fine sandy loam, 0 to 2 percent slopes, frequently flooded	2,000	0.3
174	Vina loam, 0 to 2 percent slopes, occasionally flooded	1,686	0.2
175	Tujunga loam, overwash, 0 to 2 percent slopes, frequently flooded	773	0.1
176	Columbia fine sandy loam, 0 to 2 percent slopes, frequently flooded	52	*
177	Holillipah loamy sand, channeled, 0 to 2 percent slopes	17	*
185	Riverwash	2,036	0.3
187	Westfan loam, 0 to 2 percent slopes, occasionally flooded	427	*
188	Westfan loam, clay substratum, 0 to 2 percent slopes	2,252	0.3
189	Arand very gravelly sandy loam, 0 to 2 percent slopes	3,192	0.4
190	Arand very gravelly loam, 0 to 2 percent slopes	918	0.1
193	Westfan gravelly loam, 0 to 2 percent slopes	6,318	0.9

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
200	Clear Lake clay, 0 to 2 percent slopes, occasionally flooded	1,069	0.1
204	Capay clay, 0 to 3 percent slopes, occasionally flooded	881	0.1
205	Capay clay, 0 to 3 percent slopes	4,603	0.6
206	Capay clay, 5 to 9 percent slopes	5,317	0.7
210	Corval loam, 0 to 3 percent slopes	6,469	0.9
211	Corval clay loam, 0 to 3 percent slopes	4,997	0.7
212	Ayar clay, 5 to 15 percent slopes	4,151	0.6
213	Ayar clay, 15 to 30 percent slopes	5,547	0.8
215	Altamont-Sehorn complex, 15 to 30 percent slopes	5,354	0.7
216	Altamont-Sehorn complex, 9 to 15 percent slopes	3,819	0.5
218	Sehorn-Altamont complex, 30 to 50 percent slopes	12,171	1.6
220	Altamont silty clay, 5 to 9 percent slopes	2,920	0.4
221	Altamont silty clay, 9 to 15 percent slopes	667	*
230	Corning clay loam, 1 to 5 percent slopes	9,176	1.2
232	Maywood gravelly loam, 0 to 2 percent slopes, occasionally flooded	71	*
233	Eastpark clay loam, 0 to 2 percent slopes	186	*
241	Contra Costa-Altamont association, 30 to 50 percent slopes	706	*
253	Millsholm-Altamont-Rock outcrop complex, 5 to 15 percent slopes	3,370	0.5
255	Millsholm-Rock outcrop complex, 9 to 30 percent slopes	2,537	0.3
257	Millsholm-Capay complex, 3 to 9 percent slopes	1,240	0.2
261	Millsholm-Altamont complex, 15 to 30 percent slopes	128	*
270	Balcom-Ayar complex, 15 to 30 percent slopes	875	0.1
271	Balcom-Ayar complex, 30 to 50 percent slopes	1,797	0.2
275	Goldeagle-Positas-Balcom complex, 30 to 75 percent slopes	30,257	4.1
276	Positas gravelly sandy loam, 30 to 50 percent slopes	3,729	0.5
280	Skyhigh-Millsholm complex, 15 to 50 percent slopes	4,932	0.7
300	Contra Costa-Millsholm complex, 50 to 75 percent slopes	14,462	2.0
305	Contra Costa loam, 50 to 75 percent slopes	7,389	1.0
311	Contra Costa loam, 9 to 15 percent slopes	1,257	0.2
312	Saltcanyon loam, 1 to 5 percent slopes	2,266	0.3
313	Saltcanyon loam, 5 to 9 percent slopes	731	*
315	Mallard clay loam, 2 to 5 percent slopes	1,346	0.2
316	Hillgate loam, 5 to 9 percent slopes	5,918	0.8
320	Millsholm loam, 5 to 30 percent slopes	4,889	0.7
329	Sehorn-Millsholm-Altamont complex, 15 to 30 percent slopes	233	*
330	Millsholm-Contra Costa complex, 15 to 30 percent slopes	2,741	0.4
331	Sehorn-Millsholm-Rock outcrop complex, 30 to 50 percent slopes	1,608	0.2
332	Millsholm-Rock outcrop association, 30 to 75 percent slopes	16,660	2.3
334	Millsholm-Contra Costa association, 30 to 75 percent slopes	54,890	7.4
337	Millsholm-Saltcanyon association, 5 to 15 percent slopes	2,701	0.4
345	Skyhigh-Sleeper-Millsholm association, 15 to 30 percent slopes	2,518	0.3
346	Skyhigh-Millsholm-Sleeper association, 30 to 50 percent slopes	545	*
347	Boar-Sleeper complex, 15 to 30 percent slopes	322	*
348	Boar-Sleeper complex, 30 to 50 percent slopes	728	*
350	Haploxererts, 30 to 50 percent slopes	354	*
355	Venado clay, 0 to 2 percent slopes	3,966	0.5
360	Bearvalley gravelly sandy loam, 2 to 5 percent slopes	581	*
365	Leesville clay loam, 2 to 5 percent slopes	3,561	0.5
366	Leesville clay loam, 0 to 2 percent slopes	145	*
370	Livermore very gravelly loam, 5 to 9 percent slopes	827	0.1
371	Buttes-Millsholm complex, 30 to 50 percent slopes	1,559	0.2
519	Stonyford-Guenoc complex, 5 to 15 percent slopes	206	*
520	Stonyford-Guenoc complex, 15 to 30 percent slopes	1,971	0.3
521	Stonyford-Guenoc complex, 30 to 50 percent slopes	3,233	0.4
524	Arand-Riverwash complex, 0 to 2 percent slopes, frequently flooded	664	*
526	Etsel-Maymen-Marpa association, 30 to 50 percent slopes	17,783	2.4
527	Maymen-Etsel-Speaker association, 30 to 50 percent slopes	76	*
528	Maymen-Etsel-Snook complex, 30 to 75 percent slopes	1,939	0.3
529	Maymen-Etsel-Mayacama complex, 30 to 75 percent slopes	804	0.1
542	Okiota-Dubakella-Henneke complex, 15 to 50 percent slopes	793	0.1
545	Henneke-Montara-Rock outcrop complex, 15 to 50 percent slopes	20,975	2.8
548	Henneke-Okiota complex, 30 to 50 percent slopes	7,520	1.0

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Acres	Percent
549	Henneke-Okiota complex, 50 to 75 percent slopes	14,344	1.9
557	Neuns-Bamtush-Speaker complex, 30 to 50 percent slopes	582	*
564	Fouts-Yorkville-Squawrock association, 15 to 50 percent slopes	973	0.1
570	Endoaquolls, 0 to 2 percent slopes, frequently ponded	58	*
590	Neuns-Marpa-Goulding complex, 30 to 50 percent slopes	12,441	1.7
591	Neuns-Sheetiron-Goulding complex, 30 to 50 percent slopes	881	0.1
592	Neuns-Goulding-Sheetiron complex, 50 to 75 percent slopes	52	*
596	Yollabolly-Rock outcrop-Freezeout complex, 50 to 75 percent slopes	557	*
597	Yollabolly-Freezeout complex, 30 to 50 percent slopes	2,056	0.3
599	Freezeout-Yollabolly complex, 30 to 50 percent slopes	2,919	0.4
600	Freezeout-Yollabolly association, 50 to 75 percent slopes	457	*
610	Neuns-Bamtush-Goulding association, 30 to 50 percent slopes	16,244	2.2
650	Bamtush-Marpa complex, 15 to 30 percent slopes	626	*
651	Bamtush-Marpa complex, 30 to 50 percent slopes	1,789	0.2
652	Water	637	*
	Total	737,920	100.0

* Less than 0.1 percent.

A typical profile and range in characteristics of the soils identified in the names of the detailed map units are described in the section “Classification of the Soils.”

100—Capay clay loam, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

General location: West side of the Colusa Basin, near the towns of Williams and Maxwell
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 35 to 45 feet (12 to 15 meters)
Mean annual precipitation: 14 to 16 inches (355 to 406 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Capay clay loam, occasionally flooded—90 percent
Minor components—10 percent

Major Component Description

Capay clay loam, occasionally flooded

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Very slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.9 inches (high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: Present
Natural drainage class: Moderately well drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables. The soil was rarely or occasionally flooded under natural conditions. There are no soil redoximorphic features within a depth of 36 inches.

Land capability classification

Irrigated: 2w-5
Nonirrigated: 4w-5

Typical profile

Ap—0 to 15 inches; clay loam
A—15 to 33 inches; clay loam

Bss1—33 to 39 inches; clay
Bss2—39 to 46 inches; clay
Bssk—46 to 64 inches; clay

Minor Components

Capay clay, occasionally flooded, and similar soils

Composition: 0 to 4 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Willows silty clay, occasionally flooded, and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Arbuckle sandy loam, occasionally flooded, and similar soils

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Terraces

Westfan loam, occasionally flooded, and similar soils

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Fans

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

101—Capay silty clay, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

General location: Along Butte Creek, in the Sutter Basins
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 145 to 180 feet (45 to 55 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Capay silty clay, frequently flooded—90 percent
Minor components—10 percent

Major Component Description

Capay silty clay, frequently flooded

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.3 inches (high)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: Present
Natural drainage class: Moderately well drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables. Flooding is restricted in other areas, resulting in frequent flooding in this map unit. Under natural conditions, the Capay soil in this map unit would be flooded less frequently.

Land capability classification

Irrigated: 4w-2
Nonirrigated: 4w-2

Typical profile

Ap—0 to 8 inches; silty clay
Bss1—8 to 21 inches; silty clay
Bss2—21 to 36 inches; silty clay
Ck1—36 to 48 inches; clay loam
Ck2—48 to 58 inches; clay loam

Minor Components

Willows silty clay, frequently flooded, and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent

Geomorphic setting: Basin floors

Vina loam, frequently flooded, and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major uses: Irrigated cropland
For information about management, see the "Use and Management" section of this publication.

102—Capay clay loam, 0 to 1 percent slopes

Map Unit Setting

General location: On the west side of the Colusa Basin, near the towns of Williams and Maxwell
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 25 to 140 feet (9 to 43 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Capay clay loam—90 percent
Minor components—10 percent

Major Component Description

Capay clay loam

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Very slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.9 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: Present
Natural drainage class: Moderately well drained
Altered hydrology: Water tables have been lowered by drainage ditches used in the production of rice. Most areas were rarely or occasionally flooded under natural conditions. No redoximorphic features are within a depth of 36 inches.

Land capability classification

Irrigated: 2s-5
Nonirrigated: 4s-5

Typical profile

Ap—0 to 15 inches; clay loam
A—15 to 33 inches; clay loam
Bss1—33 to 39 inches; clay
Bss2—39 to 46 inches; clay
Bssk—46 to 64 inches; clay

Minor Components

Capay clay and similar soils

Composition: 0 to 5 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Capay clay loam, occasionally flooded, and similar soils

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Westfan loam and similar soils

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Fans

Willows silty clay and similar soils

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

103—Capay clay loam, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

General location: Small areas within the Colusa National Wildlife Refuge
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 35 to 45 feet (11 to 15 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Capay clay loam, frequently flooded—90 percent
Minor components—10 percent

Major Component Description

Capay clay loam, frequently flooded

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Very slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.9 inches (high)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: Present
Natural drainage class: Moderately well drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables. Flooding is restricted in other areas, resulting in frequent flooding in this map unit. Under natural conditions, the Capay soil in this map unit would be flooded less frequently.

Land capability classification

Irrigated: 4w-2
Nonirrigated: 4w-2

Typical profile

Ap—0 to 15 inches; clay loam
A—15 to 33 inches; clay loam
Bss1—33 to 39 inches; clay
Bss2—39 to 46 inches; clay
Bssk—46 to 64 inches; clay

Minor Components

Capay clay, frequently flooded, and similar soils

Composition: 0 to 4 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Capay clay loam, occasionally flooded, and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Willows silty clay, frequently flooded, and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

104—Willows silty clay, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

General location: The lowest areas of the Colusa Basin and Butte Sink
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 35 to 110 feet (12 to 35 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Willows silty clay, frequently flooded—90 percent

Minor components—10 percent

Major Component Description

Willows silty clay, frequently flooded

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Very slow
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables. Accumulations of salts at the surface may have been removed through reclamation efforts or ponding for rice production. The soil is frequently flooded for long periods.

Land capability classification

Irrigated: 4w-2
Nonirrigated: 4w-2

Typical profile

Ap1—0 to 5 inches; silty clay
Ap2—5 to 13 inches; silty clay
Bw—13 to 20 inches; silty clay
Bssy1—20 to 39 inches; silty clay
Bssy2—39 to 51 inches; silty clay
Bssy3—51 to 59 inches; silty clay
Bssy4—59 to 72 inches; clay
Bssy5—72 to 80 inches; silty clay
Bkssy—80 to 87 inches; clay

Minor Components

Capay clay loam, frequently flooded, and similar soils

Composition: 0 to 5 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Willows silty clay, occasionally flooded, and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Scribner silt loam, frequently flooded, and similar soils

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Flood plains

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

105—Willows silty clay, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

General location: In the Colusa Basin and Butte Sink
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 35 to 110 feet (12 to 35 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Willows silty clay, occasionally flooded—90 percent
Minor components—10 percent

Major Component Description

Willows silty clay, occasionally flooded

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Low

Percentage of the surface covered by rock fragments: None
Slowest permeability class: Very slow
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and have lowered water tables. Drainage ditches used in the production of rice have lowered water tables. Accumulations of salts at the surface have been removed through reclamation efforts or ponding for rice production. The soil formed under saturated and frequently flooded conditions.

Land capability classification

Irrigated: 3w-2
Nonirrigated: 4w-2

Typical profile

Ap1—0 to 5 inches; silty clay
Ap2—5 to 13 inches; silty clay
Bw—13 to 20 inches; silty clay
Bssy1—20 to 39 inches; silty clay
Bssy2—39 to 51 inches; silty clay
Bssy3—51 to 59 inches; silty clay
Bssy4—59 to 72 inches; clay
Bssy5—72 to 80 inches; silty clay
Bkssy—80 to 87 inches; clay

Minor Components

Capay clay loam, occasionally flooded, and similar soils

Composition: 0 to 5 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Willows silty clay, frequently flooded, and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Scribner silt loam, occasionally flooded, and similar soils

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Flood plains

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

106—Willows silty clay, 0 to 1 percent slopes

Map Unit Setting

General location: On the western margins of the Colusa Basin, near Williams and Maxwell
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 35 to 110 feet (12 to 35 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Willows silty clay—90 percent
Minor components—10 percent

Major Component Description

Willows silty clay

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Very slow
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: Present

Natural drainage class: Poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables. Accumulations of salts at the surface have been removed through reclamation or ponding for rice production. The soil formed under saturated and frequently flooded conditions.

Land capability classification

Irrigated: 3w-2
Nonirrigated: 4w-2

Typical profile

Ap1—0 to 5 inches; silty clay
Ap2—5 to 13 inches; silty clay
Bw—13 to 20 inches; silty clay
Bssy1—20 to 39 inches; silty clay
Bssy2—39 to 51 inches; silty clay
Bssy3—51 to 59 inches; silty clay
Bssy4—59 to 72 inches; clay
Bssy5—72 to 80 inches; silty clay
Bkssy—80 to 87 inches; clay

Minor Components

Capay clay loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Willows silty clay, occasionally flooded, and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Scribner silt loam and similar soils

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Flood plains

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

107—Scribner silt loam, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

General location: The lowest areas on the flood plains along the Sacramento River
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 45 to 65 feet (15 to 20 meters)
Mean annual precipitation: 14 to 16 inches (355 to 406 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Scribner silt loam, occasionally flooded—80 percent
Minor components—20 percent

Major Component Description

Scribner silt loam, occasionally flooded

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 10.0 inches (high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables. Under natural conditions, the soil was saturated near the surface and was frequently flooded.

Land capability classification

Irrigated: 3w-2
Nonirrigated: 4w-2

Typical profile

Ap—0 to 6 inches; silt loam
A—6 to 12 inches; clay loam
Ab1—12 to 20 inches; clay loam
Ab2—20 to 33 inches; loam
Ab3—33 to 41 inches; loam
C—41 to 60 inches; loam

Minor Components

Vina loam, occasionally flooded, and similar soils

Composition: 0 to 10 percent
Slope: 0 to 1 percent
Geomorphic setting: Flood plains

Corbiere silt loam, occasionally flooded, and similar soils

Composition: 0 to 8 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

108—Scribner silt loam, 0 to 1 percent slopes

Map Unit Setting

General location: On the flood plains along the Sacramento River
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 25 to 75 feet (9 to 23 meters)
Mean annual precipitation: 14 to 16 inches (355 to 406 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Scribner silt loam—80 percent
Minor components—20 percent

Major Component Description

Scribner silt loam

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff: Negligible
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 10.0 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables. Under natural conditions, the soil was saturated near the surface and was frequently flooded.

Land capability classification

Irrigated: 3w-2
Nonirrigated: 4w-2

Typical profile

Ap—0 to 6 inches; silt loam
A—6 to 12 inches; clay loam
Ab1—12 to 20 inches; clay loam
Ab2—20 to 33 inches; loam
Ab3—33 to 41 inches; loam
C—41 to 60 inches; loam

Minor Components

Vina loam and similar soils

Composition: 0 to 10 percent
Slope: 0 to 1 percent
Geomorphic setting: Flood plains

Corbiere silt loam and similar soils

Composition: 0 to 8 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

109—Scribner silt loam, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

General location: West of the Sacramento River, near the Colusa Basin
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 25 to 35 feet (9 to 11 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Scribner silt loam, frequently flooded—80 percent
Minor components—20 percent

Major Component Description

Scribner silt loam, frequently flooded

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff: Negligible
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 10.0 inches (high)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables. Under natural conditions, the soil was saturated near the surface and was frequently flooded.

Land capability classification

Irrigated: 4w-2
Nonirrigated: 4w-2

Typical profile

Ap—0 to 6 inches; silt loam
A—6 to 12 inches; clay loam
Ab1—12 to 20 inches; clay loam
Ab2—20 to 33 inches; loam
Ab3—33 to 41 inches; loam
C—41 to 60 inches; loam

Minor Components

Willows silty clay, frequently flooded, and similar soils

Composition: 0 to 10 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Vina loam, frequently flooded, and similar soils

Composition: 0 to 8 percent
Slope: 0 to 1 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

110—Hustabel sandy loam, 0 to 1 percent slopes

Map Unit Setting

General location: Along streams near Williams
MLRA: 17
Geomorphic setting: Alluvial fans
Elevation: 95 to 150 feet (29 to 46 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Hustabel sandy loam—80 percent
Minor components—20 percent

Major Component Description

Hustabel sandy loam

Geomorphic setting: Alluvial fans
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff: Negligible
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 8.3 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: Present
Natural drainage class: Moderately well drained

Land capability classification

Irrigated: 1
Nonirrigated: 4s

Typical profile

Ap1—0 to 3 inches; sandy loam
Ap2—3 to 13 inches; sandy loam
A1—13 to 20 inches; sandy loam
A2—20 to 31 inches; sandy loam
C1—31 to 35 inches; silt loam
C2—35 to 40 inches; loam
C3—40 to 48 inches; silty clay loam
2Ab1—48 to 52 inches; clay loam
2Ab2—52 to 61 inches; sandy clay loam

Minor Components

Westfan loam and similar soils

Composition: 0 to 10 percent
Slope: 0 to 1 percent
Geomorphic setting: Fans

Westfan gravelly loam and similar soils

Composition: 0 to 7 percent
Slope: 0 to 1 percent
Geomorphic setting: Fans

Mallard clay loam and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: The lower alluvial fans

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

112—Westfan loam, 0 to 2 percent slopes

Map Unit Setting

General location: Near Williams and Arbuckle
MLRA: 17
Geomorphic setting: Alluvial fans
Elevation: 65 to 150 feet (20 to 46 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Westfan loam—80 percent
Minor components—20 percent

Major Component Description

Westfan loam

Geomorphic setting: Alluvial fans
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Sodic within a depth of 40 inches
Available water capacity: About 8.8 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 1

Nonirrigated: 4s

Typical profile

Ap1—0 to 4 inches; loam
Ap2—4 to 14 inches; loam
ABt—14 to 24 inches; loam
Btk—24 to 33 inches; fine sandy loam
Ck1—33 to 43 inches; fine sandy loam
Ck2—43 to 56 inches; fine sandy loam
C1—56 to 69 inches; fine sandy loam
C2—69 to 93 inches; loam
2C—93 to 98 inches; silty clay loam

Minor Components

Mallard clay loam and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: The lower alluvial fans

Hustabel sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 1 percent
Geomorphic setting: Fans

Westfan gravelly loam and similar soils

Composition: 0 to 4 percent
Slope: 0 to 2 percent
Geomorphic setting: Fans

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

113—Westfan loam, sodic, 0 to 2 percent slopes

Map Unit Setting

General location: Small area north of Maxwell
MLRA: 17
Geomorphic setting: Alluvial fans
Elevation: 75 to 85 feet (23 to 27 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Westfan loam, sodic—85 percent
Minor components—15 percent

Major Component Description

Westfan loam, sodic

Geomorphic setting: Alluvial fans
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Sodic within a depth of 40 inches
Available water capacity: About 8.8 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2s-6
Nonirrigated: 4s-6

Typical profile

Ap1—0 to 4 inches; loam
Ap2—4 to 14 inches; loam
ABt—14 to 24 inches; loam
Btk—24 to 33 inches; fine sandy loam
Ck1—33 to 43 inches; fine sandy loam
Ck2—43 to 56 inches; fine sandy loam
C1—56 to 69 inches; fine sandy loam
C2—69 to 93 inches; loam
2C—93 to 98 inches; silty clay loam

Minor Components

Westfan loam and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Fans

Mallard clay loam and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: The lower alluvial fans

Willows silty clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

114—Westfan clay loam, 0 to 1 percent slopes

Map Unit Setting

General location: Small area west and south of Williams
MLRA: 17
Geomorphic setting: Alluvial fans
Elevation: 110 to 130 feet (35 to 41 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Westfan clay loam—80 percent
Minor components—20 percent

Major Component Description

Westfan clay loam

Geomorphic setting: Alluvial fans
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Sodic within a depth of 40 inches
Available water capacity: About 11.0 inches (very high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 1
Nonirrigated: 4s

Typical profile

Ap—0 to 25 inches; clay loam
Bt1—25 to 44 inches; clay loam
Bt2—44 to 60 inches; clay loam

Minor Components

Westfan loam and similar soils

Composition: 0 to 10 percent
Slope: 0 to 1 percent
Geomorphic setting: Fans

Capay clay loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Mallard clay loam and similar soils

Composition: 0 to 4 percent
Slope: 0 to 1 percent
Geomorphic setting: The lower alluvial fans

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

115—Clear Lake clay, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

General location: South end of the Colusa Basin
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 25 to 55 feet (8 to 17 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Clear Lake clay, occasionally flooded—90 percent
Minor components—10 percent

Major Component Description

Clear Lake clay, occasionally flooded

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables.

Land capability classification

Irrigated: 3w-5
Nonirrigated: 4w-5

Typical profile

Ap1—0 to 4 inches; clay
Ap2—4 to 10 inches; clay
Bss1—10 to 20 inches; clay
Bss2—20 to 34 inches; clay
Bss3—34 to 47 inches; clay
Bssk1—47 to 59 inches; clay
Bssk2—59 to 79 inches; clay

Minor Components

Capay clay loam, occasionally flooded, and similar soils

Composition: 0 to 3 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Corbiere silt loam, occasionally flooded, and similar soils

Composition: 0 to 3 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Clear Lake clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

116—Clear Lake clay, calcareous, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

General location: East of the town of Arbuckle and west of the Colusa Basin Drain
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 25 to 45 feet (9 to 14 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Clear Lake clay, calcareous, occasionally flooded—90 percent
Minor components—10 percent

Major Component Description

Clear Lake clay, calcareous, occasionally flooded

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent

Runoff rate: Low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables.

Land capability classification

Irrigated: 3w-5
Nonirrigated: 4w-5

Typical profile

Ap1—0 to 4 inches; clay
Ap2—4 to 10 inches; clay
Bss1—10 to 20 inches; clay
Bss2—20 to 34 inches; clay
Bss3—34 to 47 inches; clay
Bssk1—47 to 59 inches; clay
Bssk2—59 to 79 inches; clay

Minor Components

Willows silty clay, occasionally flooded, and similar soils

Composition: 0 to 8 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

117—Clear Lake clay, calcareous, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

General location: East of Arbuckle and along the Colusa Basin Drain
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 25 to 45 feet (9 to 14 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Clear Lake clay, calcareous, frequently flooded—90 percent
Minor components—10 percent

Major Component Description

Clear Lake clay, calcareous, frequently flooded

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables.

Land capability classification

Irrigated: 4w-2
Nonirrigated: 4w-2

Typical profile

Ap1—0 to 4 inches; clay
Ap2—4 to 10 inches; clay
Bss1—10 to 20 inches; clay
Bss2—20 to 34 inches; clay
Bss3—34 to 47 inches; clay
Bssk1—47 to 59 inches; clay
Bssk2—59 to 79 inches; clay

Minor Components

Willows silty clay, frequently flooded, and similar soils

Composition: 0 to 4 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Mallard clay loam, frequently flooded, and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: The lower alluvial fans

Scribner silt loam, frequently flooded, and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

118—Clear Lake clay, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

General location: Small areas along the Colusa Basin Drain
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 25 to 55 feet (8 to 17 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Clear Lake clay, frequently flooded—90 percent
Minor components—10 percent

Major Component Description

Clear Lake clay, frequently flooded

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables.

Land capability classification

Irrigated: 4w-2
Nonirrigated: 4w-2

Typical profile

Ap1—0 to 4 inches; clay
Ap2—4 to 10 inches; clay
Bss1—10 to 20 inches; clay
Bss2—20 to 34 inches; clay
Bss3—34 to 47 inches; clay
Bssk1—47 to 59 inches; clay
Bssk2—59 to 79 inches; clay

Minor Components

Willows silty clay, frequently flooded, and similar soils

Composition: 0 to 6 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Clear Lake clay, occasionally flooded, and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

124—Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

General location: Low areas along the Sacramento River
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 45 to 55 feet (14 to 17 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Moonbend silt loam, occasionally flooded—80 percent
Minor components—20 percent

Major Component Description

Moonbend silt loam, occasionally flooded

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 10.5 inches (very high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: None noted
Natural drainage class: Moderately well drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration.

Land capability classification

Irrigated: 2w-2
Nonirrigated: 4w-2

Typical profile

Ap—0 to 8 inches; silt loam
Bw1—8 to 19 inches; silty clay loam
Bw2—19 to 33 inches; silty clay loam
Bw3—33 to 41 inches; loam
BC—41 to 51 inches; silt loam
C—51 to 63 inches; silt loam
Ab—63 to 75 inches; silt loam
C´—75 to 85 inches; loam

Minor Components

Corbiere silt loam, occasionally flooded, and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Willows silty clay, occasionally flooded, and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Scribner silt loam, occasionally flooded, and similar soils

Composition: 0 to 4 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

125—Moonbend silt loam, 0 to 2 percent slopes

Map Unit Setting

General location: Along the Sacramento River
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 45 to 55 feet (14 to 18 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Moonbend silt loam—80 percent
Minor components—20 percent

Major Component Description

Moonbend silt loam

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 10.5 inches (very high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Moderately well drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration.

Land capability classification

Irrigated: 1
Nonirrigated: 4s

Typical profile

Ap—0 to 8 inches; silt loam
Bw1—8 to 19 inches; silty clay loam
Bw2—19 to 33 inches; silty clay loam
Bw3—33 to 41 inches; loam
BC—41 to 51 inches; silt loam
C—51 to 63 inches; silt loam
Ab—63 to 75 inches; silt loam
C´—75 to 85 inches; loam

Minor Components

Vina loam and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Scribner silt loam and similar soils

Composition: 0 to 6 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Willows silty clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Colusa loam and similar soils

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

126—Moonbend silt loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

General location: Small areas along the Sacramento River, near the Colusa Basin
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 45 to 55 feet (14 to 18 meters)

Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Moonbend silt loam, frequently flooded—80 percent
Minor components—20 percent

Major Component Description

Moonbend silt loam, frequently flooded

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 10.5 inches (very high)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: None noted
Natural drainage class: Moderately well drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration. Under natural conditions, the soil was frequently flooded for short periods and was not saturated for long periods. Presently, it is frequently flooded for long periods because of its location inside river levees or along the rim of the Colusa Basin, where the soil receives additional floodwater.

Land capability classification

Irrigated: 4w-2
Nonirrigated: 4w-2

Typical profile

Ap—0 to 8 inches; silt loam
Bw1—8 to 19 inches; silty clay loam
Bw2—19 to 33 inches; silty clay loam
Bw3—33 to 41 inches; loam
BC—41 to 51 inches; silt loam
C—51 to 63 inches; silt loam
Ab—63 to 75 inches; silt loam
C´—75 to 85 inches; loam

Minor Components

Vina loam, frequently flooded, and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Riverwash

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Tujunga loam, frequently flooded, and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

127—Mallard clay loam, 0 to 1 percent slopes

Map Unit Setting

General location: Near the towns of Arbuckle and Williams
MLRA: 17
Geomorphic setting: Alluvial fans
Elevation: 45 to 140 feet (15 to 43 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Mallard clay loam—85 percent
Minor components—15 percent

Major Component Description

Mallard clay loam

Geomorphic setting: The lower alluvial fans
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low

Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 10.4 inches (very high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: Present
Natural drainage class: Somewhat poorly drained
Altered hydrology: Water tables have been lowered by drainage ditches used in the production of rice.

Land capability classification

Irrigated: 2w-3
Nonirrigated: 4w-3

Typical profile

Ap—0 to 3 inches; clay loam
Bt1—3 to 8 inches; clay loam
Bt2—8 to 15 inches; clay
Bt3—15 to 28 inches; clay
C1—28 to 44 inches; clay loam
C2—44 to 60 inches; clay loam

Minor Components

Capay clay loam and similar soils

Composition: 0 to 7 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Westfan loam and similar soils

Composition: 0 to 7 percent
Slope: 0 to 1 percent
Geomorphic setting: Fans

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

128—Mallard loam, 0 to 1 percent slopes

Map Unit Setting

General location: Near the towns of Arbuckle and Williams
MLRA: 17
Geomorphic setting: Alluvial fans
Elevation: 45 to 100 feet (15 to 31 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Mallard loam—85 percent
Minor components—15 percent

Major Component Description

Mallard loam

Geomorphic setting: The lower alluvial fans
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.8 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: Present
Natural drainage class: Somewhat poorly drained
Altered hydrology: Water tables have been lowered by drainage ditches used in the production of rice.

Land capability classification

Irrigated: 2w-3
Nonirrigated: 4w-3

Typical profile

A1—0 to 8 inches; loam
A2—8 to 25 inches; loam
BAt—25 to 39 inches; clay loam
Bt1—39 to 55 inches; clay
Bt2—55 to 60 inches; clay loam

Minor Components

Westfan loam and similar soils

Composition: 0 to 10 percent
Slope: 0 to 1 percent
Geomorphic setting: Fans

Capay clay loam and similar soils

Composition: 0 to 4 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

129—Mallard clay loam, 0 to 1 percent slopes, occasionally flooded

Map Unit Setting

General location: Near the towns of Arbuckle and Williams
MLRA: 17
Geomorphic setting: Alluvial fans
Elevation: 25 to 35 feet (9 to 12 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Mallard clay loam, occasionally flooded—85 percent
Minor components—15 percent

Major Component Description

Mallard clay loam, occasionally flooded

Geomorphic setting: The lower alluvial fans
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 10.4 inches (very high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: Present
Natural drainage class: Somewhat poorly drained
Altered hydrology: Water tables have been lowered by drainage ditches used in the production of rice.

Land capability classification

Irrigated: 2w-3
Nonirrigated: 4w-3

Typical profile

Ap—0 to 3 inches; clay loam
Bt1—3 to 8 inches; clay loam
Bt2—8 to 15 inches; clay
Bt3—15 to 28 inches; clay
C1—28 to 44 inches; clay loam
C2—44 to 60 inches; clay loam

Minor Components

Westfan loam, occasionally flooded, and similar soils

Composition: 0 to 10 percent
Slope: 0 to 1 percent
Geomorphic setting: Fans

Capay clay loam, occasionally flooded, and similar soils

Composition: 0 to 4 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

130—Corbiere silt loam, 0 to 1 percent slopes

Map Unit Setting

General location: Along the margins of the Colusa Basin and Butte Sink
MLRA: 17
Geomorphic setting: Rims of basin floors
Elevation: 25 to 45 feet (9 to 14 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)

Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Corbiere silt loam—85 percent
Minor components—15 percent

Major Component Description

Corbiere silt loam

Geomorphic setting: Rims of basin floors
Parent material: Alluvium
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 10.1 inches (very high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: Present
Natural drainage class: Somewhat poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and have lowered water tables. Drainage ditches used in the production of rice have lowered water tables. It is assumed that under natural conditions the soil was not saturated near the surface.

Land capability classification

Irrigated: 2w-3
Nonirrigated: 4w-3

Typical profile

Ap—0 to 6 inches; silt loam
Bw1—6 to 13 inches; silt loam
Bw2—13 to 21 inches; silty clay loam
2Bw—21 to 33 inches; silty clay
3Ab—33 to 46 inches; silty clay
3Bssb1—46 to 59 inches; silty clay
3Bssb2—59 to 73 inches; silty clay
3C1—73 to 94 inches; clay
3C2—94 to 114 inches; clay

Minor Components

Moonbend silt loam and similar soils

Composition: 0 to 8 percent
Slope: 0 to 1 percent
Geomorphic setting: Flood plains

Willows silty clay and similar soils

Composition: 0 to 5 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

131—Corbiere silt loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

General location: Low areas along the margins of the Colusa Basin and Butte Sink
MLRA: 17
Geomorphic setting: Rims of basin floors
Elevation: 25 to 45 feet (9 to 14 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Corbiere silt loam, frequently flooded—85 percent
Minor components—15 percent

Major Component Description

Corbiere silt loam, frequently flooded

Geomorphic setting: Rims of basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low

Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 10.1 inches (very high)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: Present
Natural drainage class: Somewhat poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables. It is assumed that under natural conditions the soil was not saturated near the surface. Flooding frequency has been increased by changes in local hydrology.

Land capability classification

Irrigated: 4w-3
Nonirrigated: 4w-3

Typical profile

Ap—0 to 6 inches; silt loam
Bw1—6 to 13 inches; silt loam
Bw2—13 to 21 inches; silty clay loam
2Bw—21 to 33 inches; silty clay
3Ab—33 to 46 inches; silty clay
3Bssb1—46 to 59 inches; silty clay
3Bssb2—59 to 73 inches; silty clay
3C1—73 to 94 inches; clay
3C2—94 to 114 inches; clay

Minor Components

Moonbend silt loam, frequently flooded, and similar soils

Composition: 0 to 8 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Willows silty clay, frequently flooded, and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

133—Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

General location: Along the margins of the Colusa Basin and Butte Sink
MLRA: 17
Geomorphic setting: Rims of basin floors
Elevation: 45 to 65 feet (15 to 21 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Corbiere silt loam, occasionally flooded—85 percent
Minor components—15 percent

Major Component Description

Corbiere silt loam, occasionally flooded

Geomorphic setting: Rims of basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 10.1 inches (very high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: Present
Natural drainage class: Somewhat poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. Drainage ditches used in the production of rice have lowered water tables. It is assumed that under natural conditions the soil was not saturated near the surface.

Land capability classification

Irrigated: 2w-3
Nonirrigated: 4w-3

Typical profile

Ap—0 to 6 inches; silt loam
Bw1—6 to 13 inches; silt loam
Bw2—13 to 21 inches; silty clay loam
2Bw—21 to 33 inches; silty clay
3Ab—33 to 46 inches; silty clay
3Bssb1—46 to 59 inches; silty clay
3Bssb2—59 to 73 inches; silty clay
3C1—73 to 94 inches; clay
3C2—94 to 114 inches; clay

Minor Components

Moonbend silt loam, occasionally flooded, and similar soils

Composition: 0 to 8 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Willows silty clay, occasionally flooded, and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

136—Colusa loam, 0 to 2 percent slopes

Map Unit Setting

General location: South of Colusa and north of Grimes
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 35 to 55 feet (11 to 18 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Colusa loam—85 percent
Minor components—15 percent

Major Component Description

Colusa loam

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Natric—2 to 15 inches
Slowest permeability class: Moderate
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity: About 9.3 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: Present
Natural drainage class: Somewhat poorly drained
Altered hydrology: Drainage ditches have lowered water tables. Under natural conditions the soil has high accumulations of salts at the surface that were deposited by water.

Land capability classification

Irrigated: 4s-6
Nonirrigated: 4s-6

Typical profile

A—0 to 2 inches; loam
Btn1—2 to 9 inches; loam
Btn2—9 to 19 inches; loam
Btn3—19 to 25 inches; loam
Btn4—25 to 35 inches; loam
Btn5—35 to 52 inches; loam
Bn1—52 to 64 inches; fine sandy loam
Bn2—64 to 79 inches; fine sandy loam

Minor Components

Moonbend silt loam and similar soils

Composition: 0 to 6 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Vina loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Corbiere silt loam and similar soils

Composition: 0 to 3 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

141—Myers clay, 0 to 2 percent slopes

Map Unit Setting

General location: South and west of the town of Williams
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 120 to 180 feet (37 to 55 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Myers clay—90 percent
Minor components—10 percent

Major Component Description

Myers clay

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2s-5
Nonirrigated: 4s-5

Typical profile

Ap—0 to 3 inches; clay
Bss1—3 to 25 inches; clay
Bss2—25 to 43 inches; clay
Bss3—43 to 56 inches; clay
B—56 to 71 inches; clay loam

Minor Components

Capay clay loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Arbuckle sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Terraces

Westfan loam and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Fans

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

144—Hillgate clay loam, 0 to 2 percent slopes

Map Unit Setting

General location: Western margins of the Sacramento Valley, west of Williams and north to the Glenn County boundary

MLRA: 17
Geomorphic setting: Terraces
Elevation: 130 to 450 feet (40 to 138 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Hillgate clay loam—85 percent
Minor components—15 percent

Major Component Description

Hillgate clay loam

Geomorphic setting: Terraces
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Abrupt textural change—19 inches
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.6 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2s-3
Nonirrigated: 4s-3

Typical profile

A—0 to 10 inches; clay loam
ABt—10 to 19 inches; clay loam
Bt—19 to 50 inches; clay
C—50 to 60 inches; clay loam

Minor Components

Capay clay loam and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Arand very gravelly sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Riverwash

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

145—Hillgate loam, 0 to 2 percent slopes

Map Unit Setting

General location: West of Williams and Maxwell, in the Sacramento Valley and in the foothill valleys
MLRA: 17
Geomorphic setting: Terraces
Elevation: 130 to 450 feet (40 to 138 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Hillgate loam—90 percent
Minor components—10 percent

Major Component Description

Hillgate loam

Geomorphic setting: Terraces
Parent material: Alluvium
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Abrupt textural change—19 inches

Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.0 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2s-3
Nonirrigated: 4s-3

Typical profile

A1—0 to 3 inches; loam
A2—3 to 11 inches; loam
A3—11 to 19 inches; loam
2Bt1—19 to 37 inches; clay
2Bt2—37 to 52 inches; clay loam
2Bt3—52 to 62 inches; clay loam
2Bt4—62 to 72 inches; clay loam

Minor Components

Capay clay loam and similar soils

Composition: 0 to 3 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Altamont silty clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Ayar clay and similar soils

Composition: 0 to 2 percent
Slope: 5 to 9 percent
Geomorphic setting: Side slopes of hills

Arand very gravelly sandy loam and similar soils

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Riverwash

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major uses: Irrigated crops, nonirrigated crops, and livestock grazing

For information about management, see the “Use and Management” section of this publication.

147—Hillgate loam, 1 to 5 percent slopes

Map Unit Setting

General location: West of Arbuckle and foothill valleys
MLRA: 17
Geomorphic setting: Terraces
Elevation: 95 to 400 feet (30 to 123 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Hillgate loam—90 percent
Minor components—10 percent

Major Component Description

Hillgate loam

Geomorphic setting: Terraces
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 1 to 5 percent
Runoff rate: Low
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Abrupt textural change—19 inches
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.0 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2e-3

Nonirrigated: 4e-3

Typical profile

A1—0 to 3 inches; loam
A2—3 to 11 inches; loam
A3—11 to 19 inches; loam
2Bt1—19 to 37 inches; clay
2Bt2—37 to 52 inches; clay loam
2Bt3—52 to 62 inches; clay loam
2Bt4—62 to 72 inches; clay loam

Minor Components

Arbuckle sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 1 to 5 percent
Geomorphic setting: Terraces

Arand very gravelly sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 1 to 5 percent
Geomorphic setting: Flood plains

Westfan loam and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Fans

Unnamed

Composition: 0 to 1 percent
Slope: 1 to 5 percent
Geomorphic setting: Channels

Use and Management

Major uses: Irrigated crops and livestock grazing
For information about management, see the "Use and Management" section of this publication.

150—Arbuckle sandy loam, 1 to 5 percent slopes

Map Unit Setting

General location: Small areas west of the towns of Williams and Arbuckle and along streams in the lower foothills
MLRA: 17
Geomorphic setting: Terraces
Elevation: 95 to 400 feet (30 to 123 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Arbuckle sandy loam—85 percent
Minor components—15 percent

Major Component Description

Arbuckle sandy loam

Geomorphic setting: Terraces
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 1 to 5 percent
Runoff rate: Low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 6.0 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2e-4
Nonirrigated: 4e-4

Typical profile

A1—0 to 4 inches; sandy loam
A2—4 to 10 inches; sandy loam
A3—10 to 17 inches; sandy loam
Bt1—17 to 26 inches; gravelly sandy loam
Bt2—26 to 34 inches; gravelly sandy clay loam
Bt3—34 to 44 inches; gravelly loam
BC—44 to 68 inches; very gravelly sandy clay loam

Minor Components

Westfan loam and similar soils

Composition: 0 to 9 percent
Slope: 0 to 2 percent
Geomorphic setting: Fans

Arand very gravelly sandy loam and similar soils

Composition: 0 to 4 percent
Slope: 1 to 5 percent
Geomorphic setting: Flood plains

Riverwash

Composition: 0 to 1 percent
Slope: 0 to 2 percent

Geomorphic setting: Channels

Unnamed

Composition: 0 to 1 percent
Slope: 1 to 5 percent
Geomorphic setting: Channels

Use and Management

Major uses: Irrigated crops and livestock grazing
For information about management, see the "Use and Management" section of this publication.

151—Arbuckle-Hillgate complex, 1 to 5 percent slopes

Map Unit Setting

General location: West of Arbuckle
MLRA: 17
Geomorphic setting: Terraces
Elevation: 95 to 400 feet (30 to 123 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Arbuckle sandy loam—50 percent
Hillgate loam—40 percent
Minor components—10 percent

Major Component Description

Arbuckle sandy loam

Geomorphic setting: Terraces
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 1 to 5 percent
Runoff rate: Low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 6.0 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2e-4
Nonirrigated: 4e-4

Typical profile

A1—0 to 4 inches; sandy loam
A2—4 to 10 inches; sandy loam
A3—10 to 17 inches; sandy loam
Bt1—17 to 26 inches; gravelly sandy loam
Bt2—26 to 34 inches; gravelly sandy clay loam
Bt3—34 to 44 inches; gravelly loam
BC—44 to 68 inches; very gravelly sandy clay loam

Hillgate loam

Geomorphic setting: Terraces
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 1 to 5 percent
Runoff rate: Low
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Abrupt textural change—19 inches
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.0 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2e-3
Nonirrigated: 4e-3

Typical profile

A1—0 to 3 inches; loam
A2—3 to 11 inches; loam
A3—11 to 19 inches; loam
2Bt1—19 to 37 inches; clay
2Bt2—37 to 52 inches; clay loam
2Bt3—52 to 62 inches; clay loam
2Bt4—62 to 72 inches; clay loam

Minor Components

Westfan loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent

Geomorphic setting: Fans

Arand very gravelly sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 1 to 5 percent
Geomorphic setting: Flood plains

Riverwash

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Unnamed

Composition: 0 to 1 percent
Slope: 1 to 5 percent
Geomorphic setting: Channels

Use and Management

Major uses: Irrigated crops and livestock grazing
For information about management, see the "Use and Management" section of this publication.

152—Arbuckle gravelly loam, 1 to 5 percent slopes

Map Unit Setting

General location: South of Stonyford, in Indian Valley
MLRA: 17
Geomorphic setting: Terraces
Elevation: 1,170 to 1,310 feet (357 to 400 meters)
Mean annual precipitation: 19 to 21 inches (483 to 533 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Arbuckle gravelly loam—85 percent
Minor components—15 percent

Major Component Description

Arbuckle gravelly loam

Geomorphic setting: Terraces
Parent material: Alluvium
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 1 to 5 percent
Runoff rate: Low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.3 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2e-4
Nonirrigated: 4e-4

Typical profile

A—0 to 8 inches; gravelly loam
Bt1—8 to 29 inches; gravelly clay loam
Bt2—29 to 51 inches; gravelly clay loam
BC—51 to 60 inches; very gravelly clay loam

Minor Components

Hillgate loam and similar soils

Composition: 0 to 7 percent
Slope: 1 to 5 percent
Geomorphic setting: Terraces

Arand very gravelly sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 1 to 5 percent
Geomorphic setting: Flood plains

Arbuckle sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 1 to 5 percent
Geomorphic setting: Terraces

Riverwash

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Unnamed

Composition: 0 to 1 percent
Slope: 1 to 5 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, nonirrigated crops, and irrigated pasture
For information about management, see the "Use and Management" section of this publication.

155—Alcapay clay, 0 to 1 percent slopes

Map Unit Setting

General location: North of Maxwell, near Bagley Road and east of Williams
MLRA: 17
Geomorphic setting: Basin floors
Elevation: 45 to 110 feet (14 to 35 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Alcapay clay—90 percent
Minor components—10 percent

Major Component Description

Alcapay clay

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 1 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Saline within a depth of 40 inches
Sodicity: Sodic within a depth of 40 inches
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: Present
Natural drainage class: Somewhat poorly drained
Altered hydrology: Water tables have been lowered by drainage ditches used in the production of rice.

Land capability classification

Irrigated: 3w-5
Nonirrigated: 4w-5

Typical profile

Ap1—0 to 5 inches; clay
Ap2—5 to 10 inches; clay
Bw—10 to 24 inches; clay
Bssz—24 to 35 inches; clay
Bnz1—35 to 53 inches; clay
Bnz2—53 to 64 inches; clay

Minor Components

Capay clay loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Alcapay clay, occasionally flooded, and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Basin floors

Hillgate clay loam and similar soils

Composition: 0 to 2 percent
Slope: 0 to 1 percent
Geomorphic setting: Terraces

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

160—Grandbend loam, 0 to 2 percent slopes

Map Unit Setting

General location: South of Grimes, along the Sacramento River
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 25 to 55 feet (8 to 17 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Grandbend loam—80 percent
Minor components—20 percent

Major Component Description

Grandbend loam

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.2 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: Present
Natural drainage class: Somewhat poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration.

Land capability classification

Irrigated: 2w-2
Nonirrigated: 4w-2

Typical profile

Ap—0 to 16 inches; loam
C1—16 to 27 inches; loam
C2—27 to 44 inches; sandy loam
C3—44 to 54 inches; silt loam
2Ab—54 to 64 inches; silty clay loam
2Bb—64 to 67 inches; silty clay loam

Minor Components

Vina loam and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Corbiere silt loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Moonbend silt loam and similar soils

Composition: 0 to 4 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

170—Vina loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

General location: Small areas along the Sacramento River, inside the levees and in Moulton Weir
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 45 to 75 feet (14 to 23 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Vina loam, frequently flooded—80 percent
Minor components—20 percent

Major Component Description

Vina loam, frequently flooded

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.5 inches (high)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 4w-2
Nonirrigated: 4w-2

Typical profile

Ap—0 to 8 inches; loam
A1—8 to 14 inches; loam
A2—14 to 21 inches; loam
A3—21 to 26 inches; fine sandy loam
AC—26 to 46 inches; loam
C1—46 to 48 inches; silt loam
C2—48 to 60 inches; silt loam

Minor Components

Tujunga loam, frequently flooded, and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Moonbend silt loam, frequently flooded, and similar soils

Composition: 0 to 8 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

171—Vina loam, 0 to 2 percent slopes

Map Unit Setting

General location: Along the Sacramento River, in Sycamore Slough and south of Grimes
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 25 to 75 feet (9 to 23 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Vina loam—85 percent
Minor components—15 percent

Major Component Description

Vina loam

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.5 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 1
Nonirrigated: 4s

Typical profile

Ap—0 to 8 inches; loam
A1—8 to 14 inches; loam
A2—14 to 21 inches; loam
A3—21 to 26 inches; fine sandy loam
AC—26 to 46 inches; loam
C1—46 to 48 inches; silt loam
C2—48 to 60 inches; silt loam

Minor Components

Moonbend silt loam and similar soils

Composition: 0 to 8 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Scribner silt loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Tujunga loam and similar soils

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

172—Vina fine sandy loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

General location: Near the Colusa Weir
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 45 to 55 feet (14 to 17 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Vina fine sandy loam, frequently flooded—80 percent
Minor components—20 percent

Major Component Description

Vina fine sandy loam, frequently flooded

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.5 inches (high)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 4w-2
Nonirrigated: 4w-2

Typical profile

A1—0 to 15 inches; fine sandy loam
A2—15 to 25 inches; fine sandy loam
AC—25 to 42 inches; fine sandy loam
C1—42 to 52 inches; silt loam
C2—52 to 60 inches; silt loam

Minor Components

Tujunga loam, frequently flooded, and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Moonbend silt loam, frequently flooded, and similar soils

Composition: 0 to 6 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Corbiere silt loam, frequently flooded, and similar soils

Composition: 0 to 3 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

174—Vina loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

General location: Along the Sacramento River and west of Butte Sink
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 45 to 75 feet (15 to 23 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Vina loam, occasionally flooded—85 percent
Minor components—20 percent

Major Component Description

Vina loam, occasionally flooded

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.5 inches (high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2w-2
Nonirrigated: 4w-2

Typical profile

Ap—0 to 8 inches; loam
A1—8 to 14 inches; loam
A2—14 to 21 inches; loam
A3—21 to 26 inches; fine sandy loam
AC—26 to 46 inches; loam
C1—46 to 48 inches; silt loam
C2—48 to 60 inches; silt loam

Minor Components

Tujunga loam, occasionally flooded, and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Moonbend silt loam, occasionally flooded, and similar soils

Composition: 0 to 6 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Corbiere silt loam, occasionally flooded, and similar soils

Composition: 0 to 3 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops

For information about management, see the “Use and Management” section of this publication.

175—Tujunga loam, overwash, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

General location: Small areas along the Sacramento River, north of Colusa and inside the levees near the Colusa Weir
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 45 to 65 feet (15 to 20 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Tujunga loam, overwash, frequently flooded—85 percent
Minor components—15 percent

Major Component Description

Tujunga loam, overwash, frequently flooded

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Willows, cottonwoods, annual grasses, and forbs

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderate

Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.1 inches (low)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: 4w-2
Nonirrigated: 6w

Typical profile

Ap—0 to 10 inches; loam
C1—10 to 17 inches; fine sand
C2—17 to 37 inches; fine sand
C3—37 to 62 inches; fine sand

Minor Components

Riverwash

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Unnamed

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat
For information about management, see the "Use and Management" section of this publication.

176—Columbia fine sandy loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

General location: Along Butte Creek, in the Sutter Basins
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 145 to 180 feet (45 to 55 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Columbia fine sandy loam, frequently flooded—80 percent
Minor components—20 percent

Major Component Description

Columbia fine sandy loam, frequently flooded

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.0 inches (high)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 4w-2
Nonirrigated: 4w-2

Typical profile

Ap—0 to 10 inches; fine sandy loam
A—10 to 14 inches; fine sandy loam
C1—14 to 19 inches; fine sandy loam
C2—19 to 33 inches; fine sandy loam
C3—33 to 38 inches; fine sandy loam
C4—38 to 68 inches; very fine sandy loam

Minor Components

Holillipah loamy sand, channeled, and similar soils

Composition: 0 to 14 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 14 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major uses: Irrigated cropland

For information about management, see the "Use and Management" section of this publication.

177—Holillipah loamy sand, channeled, 0 to 2 percent slopes

Map Unit Setting

General location: Along Butte Creek, in the Sutter Basins
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 145 to 180 feet (45 to 55 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Holillipah loamy sand, channeled—80 percent
Minor components—20 percent

Major Component Description

Holillipah loamy sand, channeled

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Willows, cottonwoods, annual grasses, and forbs

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately rapid
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.4 inches (low)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: 4w-2
Nonirrigated: 4w-2

Typical profile

A—0 to 8 inches; loamy sand
C1—8 to 32 inches; sand
C2—32 to 35 inches; loamy sand
C3—35 to 47 inches; fine sandy loam
C4—47 to 61 inches; loamy fine sand

Minor Components

Columbia fine sandy loam, frequently flooded, and similar soils

Composition: 0 to 14 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 14 percent
Slope: 0 to 1 percent
Geomorphic setting: Channels

Use and Management

Major uses: Irrigated cropland

For information about management, see the "Use and Management" section of this publication.

185—Riverwash

Map Unit Setting

General location: Small areas along streams throughout the county
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 35 to 1,765 feet (12 to 538 meters)
Mean annual precipitation: 14 to 35 inches (355 to 889 millimeters)
Mean annual air temperature: 54 to 63 degrees F (12 to 17 degrees C)
Frost-free period: 150 to 250 days

Composition

Riverwash—95 percent
Minor components—5 percent

Major Component Description

Riverwash

Geomorphic setting: Channels
Kind of material: Alluvium
Typical vegetation: Sparse vegetation; scattered willows, annual grasses, and forbs in some areas

Properties and qualities

Slope: 0 to 2 percent

Runoff: Negligible
Percentage of the surface covered by rock fragments: 10 to 80 percent (coarse, well rounded pebbles)
Slowest permeability class: Moderately rapid
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.9 inches (low)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 8

Typical profile

C1—0 to 3 inches; sandy loam
C2—3 to 60 inches; stratified gravelly coarse sand to loam

Minor Components

Tujunga loam, frequently flooded, and similar soils

Composition: 0 to 5 percent
Slope: 1 to 5 percent
Geomorphic setting: Flood plains

Use and Management

Major uses: Wildlife habitat and recreation
For information about management, see the “Use and Management” section of this publication.

187—Westfan loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

General location: Near Williams and Arbuckle
MLRA: 17
Geomorphic setting: Alluvial fans
Elevation: 25 to 35 feet (9 to 12 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Westfan loam, occasionally flooded—85 percent
Minor components—15 percent

Major Component Description

Westfan loam, occasionally flooded

Geomorphic setting: Alluvial fans
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Sodic within a depth of 40 inches
Available water capacity: About 8.8 inches (high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2w-2
Nonirrigated: 4w-2

Typical profile

Ap1—0 to 4 inches; loam
Ap2—4 to 14 inches; loam
ABt—14 to 24 inches; loam
Btk—24 to 33 inches; fine sandy loam
Ck1—33 to 43 inches; fine sandy loam
Ck2—43 to 56 inches; fine sandy loam
C1—56 to 69 inches; fine sandy loam
C2—69 to 93 inches; loam
2C—93 to 98 inches; silty clay loam

Minor Components

Capay clay loam, occasionally flooded, and similar soils

Composition: 0 to 7 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Westfan loam and similar soils

Composition: 0 to 7 percent
Slope: 0 to 2 percent
Geomorphic setting: Fans

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent

Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops

For information about management, see the “Use and Management” section of this publication.

188—Westfan loam, clay substratum, 0 to 2 percent slopes

Map Unit Setting

General location: Between the towns of Williams and Arbuckle, on the western margin of the Sacramento Valley
MLRA: 17
Geomorphic setting: Alluvial fans
Elevation: 75 to 150 feet (23 to 46 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Westfan loam, clay substratum—80 percent
Minor components—20 percent

Major Component Description

Westfan loam, clay substratum

Geomorphic setting: Alluvial fans
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.6 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2s-3
Nonirrigated: 4s-3

Typical profile

Ap—0 to 15 inches; loam
Bt1—15 to 41 inches; clay loam
2Bt2—41 to 60 inches; clay

Minor Components

Westfan loam and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Fans

Westfan gravelly loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Fans

Arand very gravelly sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Mallard clay loam and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: The lower alluvial fans

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops

For information about management, see the “Use and Management” section of this publication.

189—Arand very gravelly sandy loam, 0 to 2 percent slopes

Map Unit Setting

General location: Near Sand Creek and Cortina Creek, north of Arbuckle
MLRA: 17
Geomorphic setting: Alluvial fans and flood plains
Elevation: 45 to 605 feet (15 to 185 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Arand very gravelly sandy loam—85 percent
Minor components—15 percent

Major Component Description

Arand very gravelly sandy loam

Geomorphic setting: Alluvial fans and flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff: Negligible
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately rapid
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.0 inches (low)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: 4s-4
Nonirrigated: 4s-4

Typical profile

A—0 to 8 inches; very gravelly sandy loam
C1—8 to 18 inches; very gravelly sandy loam
C2—18 to 24 inches; very gravelly sandy loam
C3—24 to 65 inches; very gravelly sand

Minor Components

Westfan gravelly loam and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Fans

Arbuckle sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Terraces

Riverwash

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the “Use and Management” section of this publication.

190—Arand very gravelly loam, 0 to 2 percent slopes

Map Unit Setting

General location: Fouts Springs and Indian Valley, near Stonyford
MLRA: 17
Geomorphic setting: Flood plains
Elevation: 1,535 to 1,735 feet (468 to 529 meters)
Mean annual precipitation: 19 to 21 inches (483 to 533 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)
Frost-free period: 185 to 210 days

Composition

Arand very gravelly loam—85 percent
Minor components—15 percent

Major Component Description

Arand very gravelly loam

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 0 to 2 percent
Runoff: Negligible
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.9 inches (low)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: 4s-4
Nonirrigated: 4s-4

Typical profile

A—0 to 10 inches; very gravelly loam
C1—10 to 32 inches; extremely gravelly loam
C2—32 to 60 inches; extremely gravelly loamy sand

Minor Components

Arbuckle gravelly loam and similar soils

Composition: 0 to 12 percent
Slope: 1 to 3 percent
Geomorphic setting: Terraces

Riverwash

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing and irrigated crops
For information about management, see the “Use and Management” section of this publication.

193—Westfan gravelly loam, 0 to 2 percent slopes

Map Unit Setting

General location: Between Arbuckle and Williams
MLRA: 17
Geomorphic setting: Alluvial fans
Elevation: 75 to 295 feet (23 to 91 meters)
Mean annual precipitation: 14 to 16 inches (355 to 405 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Westfan gravelly loam—80 percent
Minor components—20 percent

Major Component Description

Westfan gravelly loam

Geomorphic setting: Alluvial fans
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.7 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2s-4
Nonirrigated: 4s-4

Typical profile

Ap—0 to 4 inches; gravelly loam
A1—4 to 20 inches; gravelly loam
A2—20 to 30 inches; gravelly loam
Bw—30 to 60 inches; gravelly loam

Minor Components

Arand very gravelly sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Westfan loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Fans

Westfan loam, clay substratum, and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Fans

Mallard clay loam and similar soils

Composition: 0 to 4 percent
Slope: 0 to 2 percent
Geomorphic setting: The lower alluvial fans

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent

Geomorphic setting: Channels

Use and Management

Major use: Irrigated crops
For information about management, see the "Use and Management" section of this publication.

200—Clear Lake clay, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

General location: Small areas in foothill basins
MLRA: 15
Geomorphic setting: Basins
Elevation: 175 to 1,360 feet (54 to 415 meters)
Mean annual precipitation: 14 to 20 inches (355 to 510 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)
Frost-free period: 185 to 250 days

Composition

Clear Lake clay, occasionally flooded—90 percent
Minor components—10 percent

Major Component Description

Clear Lake clay, occasionally flooded

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained
Altered hydrology: Flood-control structures on the Sacramento River have changed flooding frequency and duration and lowered water tables. The soil has been drained by stream incisement.

Land capability classification

Irrigated: 3w-5
Nonirrigated: 4w-5

Typical profile

Ap1—0 to 4 inches; clay
Ap2—4 to 10 inches; clay
Bss1—10 to 20 inches; clay
Bss2—20 to 34 inches; clay
Bss3—34 to 47 inches; clay
Bssk1—47 to 59 inches; clay
Bssk2—59 to 79 inches; clay

Minor Components

Capay clay loam, occasionally flooded, and similar soils

Composition: 0 to 7 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Altamont silty clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

204—Capay clay, 0 to 3 percent slopes, occasionally flooded

Map Unit Setting

General location: Small areas in foothill basins
MLRA: 15
Geomorphic setting: Basins
Elevation: 175 to 350 feet (54 to 107 meters)
Mean annual precipitation: 16 to 22 inches (405 to 560 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 225 to 250 days

Composition

Capay clay, occasionally flooded—90 percent
Minor components—10 percent

Major Component Description

Capay clay, occasionally flooded

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 0 to 3 percent
Runoff rate: High
Surface features: Polygonal surface cracking; polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Very slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: Present
Natural drainage class: Moderately well drained

Land capability classification

Irrigated: 2w-5
Nonirrigated: 4w-5

Typical profile

A1—0 to 4 inches; clay
A2—4 to 11 inches; clay
Bss1—11 to 23 inches; clay
Bss2—23 to 30 inches; clay
Bss3—30 to 43 inches; clay
Bss4—43 to 58 inches; clay
Bss5—58 to 74 inches; clay
Bss6—74 to 90 inches; clay
Bss7—90 to 102 inches; clay

Minor Components

Capay clay and similar soils

Composition: 0 to 5 percent
Slope: 0 to 3 percent
Geomorphic setting: Basin floors

Altamont silty clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 3 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Clear Lake clay, occasionally flooded, and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 3 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

205—Capay clay, 0 to 3 percent slopes

Map Unit Setting

General location: Foothill basins
MLRA: 15
Geomorphic setting: Basins
Elevation: 175 to 1,200 feet (54 to 366 meters)
Mean annual precipitation: 16 to 28 inches (405 to 710 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 225 to 250 days

Composition

Capay clay—90 percent
Minor components—10 percent

Major Component Description

Capay clay

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 0 to 3 percent
Runoff rate: High
Surface features: Polygonal surface cracking; polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Very slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: Present
Natural drainage class: Moderately well drained

Land capability classification

Irrigated: 2s-5
Nonirrigated: 4s-5

Typical profile

A1—0 to 4 inches; clay
A2—4 to 11 inches; clay
Bss1—11 to 23 inches; clay
Bss2—23 to 30 inches; clay
Bss3—30 to 43 inches; clay
Bss4—43 to 58 inches; clay
Bss5—58 to 74 inches; clay
Bss6—74 to 90 inches; clay
Bss7—90 to 102 inches; clay

Minor Components

Capay clay, occasionally flooded, and similar soils

Composition: 0 to 5 percent
Slope: 0 to 3 percent
Geomorphic setting: Basin floors

Altamont silty clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 3 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Clear Lake clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 3 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 3 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing

For information about management, see the "Use and Management" section of this publication.

206—Capay clay, 5 to 9 percent slopes

Map Unit Setting

General location: Foothill basins
MLRA: 15
Geomorphic setting: Basins
Elevation: 175 to 400 feet (54 to 122 meters)
Mean annual precipitation: 16 to 22 inches (405 to 560 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 225 to 250 days

Composition

Capay clay—90 percent
Minor components—10 percent

Major Component Description

Capay clay

Geomorphic setting: Toeslopes
Parent material: Alluvium
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 5 to 9 percent
Runoff rate: Very low
Surface features: Polygonal surface cracking; polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Very slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 8.9 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: Present
Natural drainage class: Moderately well drained

Land capability classification

Irrigated: 2s-5
Nonirrigated: 4s-5

Typical profile

A1—0 to 4 inches; clay
A2—4 to 11 inches; clay
Bss1—11 to 23 inches; clay
Bss2—23 to 30 inches; clay
Bss3—30 to 43 inches; clay
Bss4—43 to 58 inches; clay
Bss5—58 to 74 inches; clay
Bss6—74 to 90 inches; clay
Bss7—90 to 102 inches; clay

Minor Components

Capay clay, occasionally flooded, and similar soils

Composition: 0 to 5 percent
Slope: 0 to 3 percent
Geomorphic setting: Basin floors

Altamont silty clay and similar soils

Composition: 0 to 2 percent
Slope: 5 to 9 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Clear Lake clay and similar soils

Composition: 0 to 2 percent
Slope: 5 to 9 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 5 to 9 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

210—Corval loam, 0 to 3 percent slopes

Map Unit Setting

General location: None noted
MLRA: 15
Geomorphic setting: Flood plains and alluvial fans
Elevation: 200 to 1,400 feet (61 to 427 meters)
Mean annual precipitation: 14 to 22 inches (355 to 560 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)
Frost-free period: 185 to 250 days

Composition

Corval loam—85 percent
Minor components—15 percent

Major Component Description

Corval loam

Geomorphic setting: Flood plains and alluvial fans
Parent material: Alluvium
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 0 to 3 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 11.0 inches (very high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 1
Nonirrigated: 4s

Typical profile

A—0 to 8 inches; loam
Bw1—8 to 24 inches; clay loam
Bw2—24 to 36 inches; clay loam
Bw3—36 to 46 inches; clay loam
Bw4—46 to 60 inches; silty clay loam
Bw5—60 to 70 inches; clay loam

Minor Components

Vina loam and similar soils

Composition: 0 to 9 percent
Slope: 0 to 3 percent
Geomorphic setting: Flood plains

Arand very gravelly sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 0 to 3 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 3 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

211—Corval clay loam, 0 to 3 percent slopes

Map Unit Setting

General location: West of Maxwell and foothill valleys

MLRA: 17
Geomorphic setting: Flood plains and alluvial fans
Elevation: 85 to 1,400 feet (27 to 427 meters)
Mean annual precipitation: 14 to 22 inches (355 to 560 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)
Frost-free period: 185 to 250 days

Composition

Corval clay loam—85 percent
Minor components—15 percent

Major Component Description

Corval clay loam

Geomorphic setting: Alluvial fans and flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 3 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 11.2 inches (very high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 1
Nonirrigated: 4s

Typical profile

Ap—0 to 10 inches; clay loam
A—10 to 50 inches; clay loam
Bw—50 to 60 inches; clay loam

Minor Components

Mallard clay loam and similar soils

Composition: 0 to 8 percent
Slope: 0 to 3 percent
Geomorphic setting: The lower alluvial fans

Vina loam and similar soils

Composition: 0 to 6 percent
Slope: 0 to 3 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 3 percent
Geomorphic setting: Channels

Use and Management

Major uses: Irrigated crops and livestock grazing
For information about management, see the “Use and Management” section of this publication.

212—Ayar clay, 5 to 15 percent slopes

Map Unit Setting

General location: West of Maxwell, in the lower foothills and near Spring Valley
MLRA: 15
Geomorphic setting: Hills
Elevation: 150 to 505 feet (46 to 154 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Ayar clay—85 percent
Minor components—15 percent

Major Component Description

Ayar clay

Geomorphic setting: Side slopes of hills
Parent material: Calcareous residuum weathered from sandstone
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 5 to 15 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—60 to 80 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.4 inches (high)

Hydrologic properties

Present flooding: None

Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 3e-5
Nonirrigated: 4e-5

Typical profile

A1—0 to 9 inches; clay
A2—9 to 25 inches; clay
Bss1—25 to 36 inches; clay
Bss2—36 to 46 inches; clay
Bw—46 to 58 inches; clay
C—58 to 72 inches; clay loam
Cr—72 inches; soft or weathered bedrock

Minor Components

Altamont silty clay and similar soils

Composition: 0 to 5 percent
Slope: 5 to 15 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Capay clay and similar soils

Composition: 0 to 4 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Balcom silt loam and similar soils

Composition: 0 to 2 percent
Slope: 5 to 15 percent
Geomorphic setting: Side slopes of hills

Millsholm loam and similar soils

Composition: 0 to 2 percent
Slope: 5 to 15 percent
Geomorphic setting: Side slopes of hills

Hillgate clay loam and similar soils

Composition: 0 to 1 percent
Slope: 5 to 15 percent
Geomorphic setting: Terraces

Unnamed

Composition: 0 to 1 percent
Slope: 5 to 15 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

213—Ayar clay, 15 to 30 percent slopes

Map Unit Setting

General location: West of Maxwell, in the lower foothills and near Spring Valley
MLRA: 15
Geomorphic setting: Hills
Elevation: 150 to 505 feet (46 to 154 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Ayar clay—85 percent
Minor components—15 percent

Major Component Description

Ayar clay

Geomorphic setting: Side slopes of hills
Parent material: Calcareous residuum weathered from sandstone
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—60 to 80 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.4 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 4e-5
Nonirrigated: 4e-5

Typical profile

A1—0 to 9 inches; clay
A2—9 to 25 inches; clay
Bss1—25 to 36 inches; clay

Bss2—36 to 46 inches; clay
Bw—46 to 58 inches; clay
C—58 to 72 inches; clay loam
Cr—72 inches; soft or weathered bedrock

Minor Components

Altamont silty clay and similar soils

Composition: 0 to 4 percent
Slope: 15 to 30 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Balcom silt loam and similar soils

Composition: 0 to 3 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of hills

Capay clay and similar soils

Composition: 0 to 3 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Millsholm loam and similar soils

Composition: 0 to 3 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of hills

Hillgate clay loam and similar soils

Composition: 0 to 1 percent
Slope: 3 to 9 percent
Geomorphic setting: Terraces

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 30 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

215—Altamont-Sehorn complex, 15 to 30 percent slopes

Map Unit Setting

General location: The lower Coast Range foothills on steep ridges
MLRA: 15
Geomorphic setting: Hills
Elevation: 200 to 800 feet (61 to 244 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Altamont silty clay—45 percent
Sehorn silty clay—35 percent
Minor components—20 percent

Major Component Description

Altamont silty clay

Geomorphic setting: The lower side slopes and north-facing slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered blue oak

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.9 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e-5

Typical profile

A—0 to 3 inches; silty clay
Bw—3 to 9 inches; silty clay
Bss1—9 to 23 inches; silty clay
Bss2—23 to 35 inches; silty clay
BC1—35 to 43 inches; very gravelly silty clay
BC2—43 to 49 inches; silty clay
Cr—49 inches; soft or weathered bedrock

Sehorn silty clay

Geomorphic setting: Side slopes of hills

Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.5 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e-5

Typical profile

A—0 to 5 inches; silty clay
Bw—5 to 9 inches; silty clay
Bss1—9 to 19 inches; silty clay
Bss2—19 to 26 inches; gravelly silty clay
BC—26 to 35 inches; extremely gravelly silty clay
R—35 inches; unweathered bedrock

Minor Components

Contra Costa loam and similar soils

Composition: 0 to 7 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of hills

Ayar clay and similar soils

Composition: 0 to 4 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of hills

Capay clay and similar soils

Composition: 0 to 3 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Balcom silt loam and similar soils

Composition: 0 to 2 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of hills

Millsholm loam and similar soils

Composition: 0 to 2 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of hills

Rock outcrop

Composition: 0 to 1 percent
Slope: 15 to 30 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 30 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

216—Altamont-Sehorn complex, 9 to 15 percent slopes

Map Unit Setting

General location: The lower Coast Range foothills on steep ridges
MLRA: 15
Geomorphic setting: Hills
Elevation: 200 to 800 feet (61 to 244 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Altamont silty clay—45 percent
Sehorn silty clay—35 percent
Minor components—20 percent

Major Component Description

Altamont silty clay

Geomorphic setting: The lower side slopes and north-facing slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered blue oak

Properties and qualities

Slope: 9 to 15 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.9 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 3e-5
Nonirrigated: 4e-5

Typical profile

A—0 to 3 inches; silty clay
Bw—3 to 9 inches; silty clay
Bss1—9 to 23 inches; silty clay
Bss2—23 to 35 inches; silty clay
BC1—35 to 43 inches; very gravelly silty clay
BC2—43 to 49 inches; silty clay
Cr—49 inches; soft or weathered bedrock

Sehorn silty clay

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 9 to 15 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.5 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 3e-5
Nonirrigated: 4e-5

Typical profile

A—0 to 5 inches; silty clay
Bw—5 to 9 inches; silty clay
Bss1—9 to 19 inches; silty clay
Bss2—19 to 26 inches; gravelly silty clay
BC—26 to 35 inches; extremely gravelly silty clay
R—35 inches; unweathered bedrock

Minor Components

Contra Costa loam and similar soils

Composition: 0 to 7 percent
Slope: 9 to 15 percent
Geomorphic setting: Side slopes of hills

Ayar clay and similar soils

Composition: 0 to 4 percent
Slope: 9 to 15 percent
Geomorphic setting: Side slopes of hills

Capay clay and similar soils

Composition: 0 to 3 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Balcom silt loam and similar soils

Composition: 0 to 2 percent
Slope: 9 to 15 percent
Geomorphic setting: Side slopes of hills

Millsholm loam and similar soils

Composition: 0 to 2 percent
Slope: 9 to 15 percent
Geomorphic setting: Side slopes of hills

Rock outcrop

Composition: 0 to 1 percent
Slope: 9 to 15 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 9 to 15 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

218—Sehorn-Altamont complex, 30 to 50 percent slopes

Map Unit Setting

General location: The lower Coast Range foothills on steep ridges
MLRA: 15
Geomorphic setting: Hills
Elevation: 200 to 800 feet (61 to 244 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Sehorn silty clay—45 percent
Altamont silty clay—35 percent
Minor components—20 percent

Major Component Description

Sehorn silty clay

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.5 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 5 inches; silty clay
Bw—5 to 9 inches; silty clay
Bss1—9 to 19 inches; silty clay
Bss2—19 to 26 inches; gravelly silty clay
BC—26 to 35 inches; extremely gravelly silty clay
R—35 inches; unweathered bedrock

Altamont silty clay

Geomorphic setting: The lower side slopes and north-facing slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered blue oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.9 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 3 inches; silty clay
Bw—3 to 9 inches; silty clay
Bss1—9 to 23 inches; silty clay
Bss2—23 to 35 inches; silty clay
BC1—35 to 43 inches; very gravelly silty clay
BC2—43 to 49 inches; silty clay
Cr—49 inches; soft or weathered bedrock

Minor Components

Contra Costa loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of hills

Millsholm loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of hills

Balcom silt loam and similar soils

Composition: 0 to 4 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of hills

Rock outcrop

Composition: 0 to 3 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Ayar clay and similar soils

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of hills

Capay clay and similar soils

Composition: 0 to 1 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

220—Altamont silty clay, 5 to 9 percent slopes

Map Unit Setting

General location: West of Maxwell, in the lower foothills and Spring Valley
MLRA: 15
Geomorphic setting: Hills
Elevation: 200 to 800 feet (61 to 244 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Altamont silty clay—85 percent
Minor components—15 percent

Major Component Description

Altamont silty clay

Geomorphic setting: The lower side slopes and north-facing slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered blue oak

Properties and qualities

Slope: 5 to 9 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.9 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2e-5
Nonirrigated: 4e-5

Typical profile

A—0 to 3 inches; silty clay
Bw—3 to 9 inches; silty clay
Bss1—9 to 23 inches; silty clay
Bss2—23 to 35 inches; silty clay
BC1—35 to 43 inches; very gravelly silty clay
BC2—43 to 49 inches; silty clay
Cr—49 inches; soft or weathered bedrock

Minor Components

Ayar clay and similar soils

Composition: 0 to 5 percent

Slope: 5 to 9 percent
Geomorphic setting: Side slopes of hills

Sehorn silty clay and similar soils

Composition: 0 to 5 percent
Slope: 5 to 9 percent
Geomorphic setting: Side slopes of hills

Capay clay and similar soils

Composition: 0 to 3 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Millsholm loam and similar soils

Composition: 0 to 1 percent
Slope: 5 to 9 percent
Geomorphic setting: Side slopes of hills

Unnamed

Composition: 0 to 1 percent
Slope: 5 to 9 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

221—Altamont silty clay, 9 to 15 percent slopes

Map Unit Setting

General location: West of Maxwell, in the lower foothills and Spring Valley
MLRA: 15
Geomorphic setting: Hills
Elevation: 200 to 800 feet (61 to 244 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Altamont silty clay—85 percent
Minor components—15 percent

Major Component Description

Altamont silty clay

Geomorphic setting: The lower side slopes and north-facing slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered blue oak

Properties and qualities

Slope: 9 to 15 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.9 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 3e-5
Nonirrigated: 4e-5

Typical profile

A—0 to 3 inches; silty clay
Bw—3 to 9 inches; silty clay
Bss1—9 to 23 inches; silty clay
Bss2—23 to 35 inches; silty clay
BC1—35 to 43 inches; very gravelly silty clay
BC2—43 to 49 inches; silty clay
Cr—49 inches; soft or weathered bedrock

Minor Components

Ayar clay and similar soils

Composition: 0 to 5 percent
Slope: 9 to 15 percent
Geomorphic setting: Side slopes of hills

Sehorn silty clay and similar soils

Composition: 0 to 5 percent
Slope: 9 to 15 percent
Geomorphic setting: Side slopes of hills

Capay clay and similar soils

Composition: 0 to 4 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent

Slope: 9 to 15 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

230—Corning clay loam, 1 to 5 percent slopes

Map Unit Setting

General location: Small scattered areas throughout the foothills
MLRA: 14
Geomorphic setting: Terraces
Elevation: 150 to 1,295 feet (46 to 396 meters)
Mean annual precipitation: 14 to 22 inches (355 to 560 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Corning clay loam—90 percent
Minor components—10 percent

Major Component Description

Corning clay loam

Geomorphic setting: Terraces
Parent material: Alluvium
Typical vegetation: Annual grasses and scattered blue oak

Properties and qualities

Slope: 1 to 5 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Abrupt textural change—9 inches
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.7 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 3e-5
Nonirrigated: 4e-5

Typical profile

A1—0 to 4 inches; clay loam
A2—4 to 9 inches; clay loam
Bt1—9 to 20 inches; clay
Bt2—20 to 31 inches; gravelly clay
2BC1—31 to 39 inches; gravelly clay loam
2BC2—39 to 52 inches; very cobbly sandy clay loam
3BC3—52 to 60 inches; very gravelly sandy loam

Minor Components

Arbuckle sandy loam and similar soils

Composition: 0 to 6 percent
Slope: 1 to 5 percent
Geomorphic setting: Terraces

Ayar clay and similar soils

Composition: 0 to 3 percent
Slope: 5 to 9 percent
Geomorphic setting: Side slopes of hills

Unnamed

Composition: 0 to 1 percent
Slope: 1 to 5 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

232—Maywood gravelly loam, 0 to 2 percent slopes, occasionally flooded

Map Unit Setting

General location: Small areas along Stony Creek
MLRA: 14
Geomorphic setting: Flood plains
Elevation: 1,115 to 1,245 feet (341 to 381 meters)
Mean annual precipitation: 19 to 22 inches (483 to 559 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Maywood gravelly loam, occasionally flooded—85 percent

Minor components—15 percent

Major Component Description

Maywood gravelly loam, occasionally flooded

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Irrigated crops

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.2 inches (high)

Hydrologic properties

Present flooding: Occasional
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2s-2
Nonirrigated: 4e-2

Typical profile

A—0 to 16 inches; gravelly loam
C1—16 to 22 inches; loam
C2—22 to 41 inches; loam
C3—41 to 57 inches; silt loam
2Ab—57 to 60 inches; fine sandy loam

Minor Components

Arand very gravelly loam and similar soils

Composition: 0 to 9 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Arbuckle gravelly loam and similar soils

Composition: 0 to 3 percent
Slope: 1 to 3 percent
Geomorphic setting: Terraces

Unnamed

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Riverwash

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing and irrigated crops

For information about management, see the "Use and Management" section of this publication.

233—Eastpark clay loam, 0 to 2 percent slopes

Map Unit Setting

General location: Indian Valley, south of Stonyford
MLRA: 14
Geomorphic setting: Terraces
Elevation: 600 to 1,275 feet (183 to 390 meters)
Mean annual precipitation: 14 to 24 inches (355 to 610 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)
Frost-free period: 185 to 250 days

Composition

Eastpark clay loam—95 percent
Minor components—5 percent

Major Component Description

Eastpark clay loam

Geomorphic setting: Terraces
Parent material: Alluvium derived from serpentinite
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 6.7 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2s-9
Nonirrigated: 4s-9

Typical profile

A—0 to 7 inches; clay loam
Bt—7 to 15 inches; gravelly clay loam
BCt—15 to 26 inches; very gravelly clay
2C1—26 to 45 inches; extremely gravelly clay loam
3C2—45 to 54 inches; loam
3C3—54 to 60 inches; extremely gravelly sandy clay loam

Minor Components

Venado clay and similar soils

Composition: 0 to 4 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, nonirrigated crops, and irrigated pasture

For information about management, see the “Use and Management” section of this publication.

241—Contra Costa-Altamont association, 30 to 50 percent slopes

Map Unit Setting

General location: South of Sites, near Antelope Valley
MLRA: 15
Geomorphic setting: Hills
Elevation: 600 to 950 feet (183 to 290 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Contra Costa loam—55 percent
Altamont silty clay—35 percent
Minor components—10 percent

Major Component Description

Contra Costa loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.8 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 3 inches; loam
Bt1—3 to 8 inches; clay loam
Bt2—8 to 16 inches; clay loam
Bt3—16 to 28 inches; clay
Bt4—28 to 35 inches; very gravelly clay loam
R—35 inches; unweathered bedrock

Altamont silty clay

Geomorphic setting: The lower side slopes and north-facing slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered blue oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.9 inches (high)

Hydrologic properties

Present flooding: None

Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 3 inches; silty clay
Bw—3 to 9 inches; silty clay
Bss1—9 to 23 inches; silty clay
Bss2—23 to 35 inches; silty clay
BC1—35 to 43 inches; very gravelly silty clay
BC2—43 to 49 inches; silty clay
Cr—49 inches; soft or weathered bedrock

Minor Components

Millsholm loam and similar soils

Composition: 0 to 4 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of hills

Rock outcrop

Composition: 0 to 3 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Capay clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

253—Millsholm-Altamont-Rock outcrop complex, 5 to 15 percent slopes

Map Unit Setting

General location: The lower Coast Range foothills
MLRA: 15
Geomorphic setting: Hills
Elevation: 180 to 350 feet (55 to 107 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Millsholm loam—55 percent
Altamont silty clay—20 percent
Rock outcrop—15 percent
Minor components—10 percent

Major Component Description

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 5 to 15 percent
Runoff rate: Low
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Altamont silty clay

Geomorphic setting: The lower side slopes and north-facing slopes of hills
Parent material: Residuum weathered from sandstone and shale

Typical vegetation: Annual grasses and scattered blue oak

Properties and qualities

Slope: 5 to 15 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.9 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 3e-8
Nonirrigated: 4e-8

Typical profile

A—0 to 3 inches; silty clay
Bw—3 to 9 inches; silty clay
Bss1—9 to 23 inches; silty clay
Bss2—23 to 35 inches; silty clay
BC1—35 to 43 inches; very gravelly silty clay
BC2—43 to 49 inches; silty clay
Cr—49 inches; soft or weathered bedrock

Rock outcrop

Geomorphic setting: Hills
Kind of rock: Sandstone and shale
Typical vegetation: Most areas are barren, but some areas have a few grasses.

Properties and qualities

Slope: 5 to 15 percent
Runoff rate: Very high
Surface features: Hard, exposed bedrock

Land capability classification

Irrigated: Not calculated
Nonirrigated: 8

Minor Components

Capay clay and similar soils

Composition: 0 to 5 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Contra Costa loam and similar soils

Composition: 0 to 4 percent
Slope: 5 to 15 percent
Geomorphic setting: Side slopes of hills

Unnamed

Composition: 0 to 1 percent
Slope: 5 to 15 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing

For information about management, see the “Use and Management” section of this publication.

255—Millsholm-Rock outcrop complex, 9 to 30 percent slopes

Map Unit Setting

General location: The lower Coast Range foothills
MLRA: 15
Geomorphic setting: Hills
Elevation: 200 to 400 feet (61 to 122 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Millsholm loam—55 percent
Rock outcrop—35 percent
Minor components—10 percent

Major Component Description

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 9 to 30 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock

Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 6e
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Rock outcrop

Geomorphic setting: Hills
Kind of rock: Sandstone and shale
Typical vegetation: Most areas are barren, but some areas have a few grasses.

Properties and qualities

Slope: 9 to 30 percent
Runoff rate: Very high
Surface features: Hard, exposed bedrock

Land capability classification

Irrigated: Not calculated
Nonirrigated: 8

Minor Components

Contra Costa loam and similar soils

Composition: 0 to 5 percent
Slope: 9 to 30 percent
Geomorphic setting: Side slopes of hills

Capay clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Sehorn silty clay and similar soils

Composition: 0 to 2 percent
Slope: 9 to 30 percent
Geomorphic setting: Side slopes of hills

Unnamed

Composition: 0 to 1 percent
Slope: 9 to 30 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing

For information about management, see the "Use and Management" section of this publication.

257—Millsholm-Capay complex, 3 to 9 percent slopes

Map Unit Setting

General location: The lower Coast Range foothills
MLRA: 14 and 15
Geomorphic setting: Hills
Elevation: 25 to 400 feet (9 to 122 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Millsholm loam—50 percent
Capay clay—35 percent
Minor components—15 percent

Major Component Description

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 3 to 9 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 6e
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Capay clay

Geomorphic setting: Basin floors
Parent material: Alluvium
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 3 to 9 percent
Runoff rate: Very low
Surface features: Polygonal surface cracking; polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Very slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 11.2 inches (very high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: Present
Natural drainage class: Moderately well drained

Land capability classification

Irrigated: 2s-5
Nonirrigated: 4s-5

Typical profile

A1—0 to 4 inches; clay
A2—4 to 11 inches; clay
Bss1—11 to 23 inches; clay
Bss2—23 to 30 inches; clay
Bss3—30 to 43 inches; clay
Bss4—43 to 58 inches; clay
Bss5—58 to 74 inches; clay
Bss6—74 to 90 inches; clay
Bss7—90 to 102 inches; clay

Minor Components

Contra Costa loam and similar soils

Composition: 0 to 6 percent
Slope: 3 to 9 percent
Geomorphic setting: Side slopes of hills

Sehorn silty clay and similar soils

Composition: 0 to 5 percent
Slope: 3 to 9 percent
Geomorphic setting: Side slopes of hills

Rock outcrop

Composition: 0 to 3 percent
Slope: 3 to 9 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 3 to 9 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

261—Millsholm-Altamont complex, 15 to 30 percent slopes

Map Unit Setting

General location: The lower Coast Range foothills
MLRA: 15
Geomorphic setting: Hills
Elevation: 400 to 600 feet (122 to 183 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Millsholm loam—60 percent
Altamont silty clay—25 percent
Minor components—15 percent

Major Component Description

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium

Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Altamont silty clay

Geomorphic setting: The lower side slopes and north-facing slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered blue oak

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.9 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 4e-5
Nonirrigated: 4e-5

Typical profile

A—0 to 3 inches; silty clay
Bw—3 to 9 inches; silty clay
Bss1—9 to 23 inches; silty clay
Bss2—23 to 35 inches; silty clay
BC1—35 to 43 inches; very gravelly silty clay
BC2—43 to 49 inches; silty clay
Cr—49 inches; soft or weathered bedrock

Minor Components

Contra Costa loam and similar soils

Composition: 0 to 8 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of hills

Sehorn silty clay and similar soils

Composition: 0 to 4 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of hills

Capay clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 30 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

270—Balcom-Ayar complex, 15 to 30 percent slopes

Map Unit Setting

General location: The lower foothills west of Maxwell and near Spring Valley
MLRA: 15
Geomorphic setting: Hills
Elevation: 200 to 500 feet (61 to 153 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)

Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Balcom silt loam—55 percent
Ayar clay—30 percent
Minor components—15 percent

Major Component Description

Balcom silt loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—26 to 40 inches
Slowest permeability class: Moderately slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 5.7 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e-3

Typical profile

A1—0 to 2 inches; silt loam
A2—2 to 11 inches; silt loam
Bk1—11 to 18 inches; silty clay loam
Bk2—18 to 33 inches; silt loam
Cr—33 inches; soft or weathered bedrock

Ayar clay

Geomorphic setting: Side slopes of hills
Parent material: Calcareous residuum weathered from sandstone
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—60 to 80 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.4 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e-5

Typical profile

A1—0 to 9 inches; clay
A2—9 to 25 inches; clay
Bss1—25 to 36 inches; clay
Bss2—36 to 46 inches; clay
Bw—46 to 58 inches; clay
C—58 to 72 inches; clay loam
Cr—72 inches; soft or weathered bedrock

Minor Components

Altamont silty clay and similar soils

Composition: 0 to 6 percent
Slope: 15 to 30 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Hillgate clay loam and similar soils

Composition: 0 to 3 percent
Slope: 3 to 9 percent
Geomorphic setting: Terraces

Capay clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Clear Lake clay and similar soils

Composition: 0 to 2 percent
Slope: 15 to 30 percent
Geomorphic setting: Basin floors

Millsholm loam and similar soils

Composition: 0 to 1 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of hills

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 30 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

271—Balcom-Ayar complex, 30 to 50 percent slopes

Map Unit Setting

General location: The lower foothills west of Maxwell and near Spring Valley
MLRA: 15
Geomorphic setting: Hills
Elevation: 200 to 500 feet (61 to 153 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Balcom silt loam—55 percent
Ayar clay—30 percent
Minor components—15 percent

Major Component Description

Balcom silt loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—26 to 40 inches
Slowest permeability class: Moderately slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 5.7 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A1—0 to 2 inches; silt loam
A2—2 to 11 inches; silt loam
Bk1—11 to 18 inches; silty clay loam
Bk2—18 to 33 inches; silt loam
Cr—33 inches; soft or weathered bedrock

Ayar clay

Geomorphic setting: Side slopes of hills
Parent material: Calcareous residuum weathered from sandstone
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—60 to 80 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.4 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A1—0 to 9 inches; clay
A2—9 to 25 inches; clay
Bss1—25 to 36 inches; clay

Bss2—36 to 46 inches; clay
Bw—46 to 58 inches; clay
C—58 to 72 inches; clay loam
Cr—72 inches; soft or weathered bedrock

Minor Components

Altamont silty clay and similar soils

Composition: 0 to 8 percent
Slope: 30 to 50 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Hillgate clay loam and similar soils

Composition: 0 to 3 percent
Slope: 3 to 9 percent
Geomorphic setting: Terraces

Capay clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Millsholm loam and similar soils

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of hills

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

275—Goldeagle-Positas-Balcom complex, 30 to 75 percent slopes

Map Unit Setting

General location: Coast Range foothills west of Arbuckle
MLRA: 15
Geomorphic setting: Dissected terraces
Elevation: 350 to 1,000 feet (107 to 305 meters)
Mean annual precipitation: 16 to 18 inches (405 to 458 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Goldeagle clay loam—45 percent
Positas gravelly sandy loam—25 percent
Balcom silt loam—15 percent
Minor components—15 percent

Major Component Description

Goldeagle clay loam

Geomorphic setting: Side slopes of terraces
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak, annual grasses, foothill pine, and ceanothus

Properties and qualities

Slope: 30 to 75 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—40 to 80 inches
Slowest permeability class: Moderately slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.1 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A—0 to 3 inches; sandy clay loam
Bt1—3 to 9 inches; clay loam
Bt2—9 to 25 inches; clay loam
Btk—25 to 33 inches; clay loam
2Ck1—33 to 49 inches; sandy loam
2Ck2—49 to 59 inches; loam
2Cr—59 inches; weathered bedrock

Positas gravelly sandy loam

Geomorphic setting: Side slopes of dissected terraces
Parent material: Alluvium
Typical vegetation: Blue oak, annual grasses, foothill pine, and ceanothus

Properties and qualities

Slope: 30 to 75 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 0 to 20 percent (medium, well rounded pebbles)
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 5.1 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A1—0 to 2 inches; gravelly sandy loam
A2—2 to 9 inches; gravelly sandy loam
A3—9 to 21 inches; gravelly sandy loam
2Bt1—21 to 34 inches; gravelly clay
2Bt2—34 to 50 inches; very gravelly clay
2Bt3—50 to 62 inches; very gravelly clay
2Bt4—62 to 80 inches; very gravelly clay

Balcom silt loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 30 to 75 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—26 to 40 inches
Slowest permeability class: Moderately slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 5.7 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A1—0 to 2 inches; silt loam
A2—2 to 11 inches; silt loam
Bk1—11 to 18 inches; silty clay loam
Bk2—18 to 33 inches; silt loam
Cr—33 inches; soft or weathered bedrock

Minor Components

Contra Costa loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 75 percent
Geomorphic setting: Side slopes of hills

Ayar clay and similar soils

Composition: 0 to 3 percent
Slope: 30 to 75 percent
Geomorphic setting: Side slopes of hills

Altamont silty clay and similar soils

Composition: 0 to 2 percent
Slope: 30 to 50 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Corning clay loam and similar soils

Composition: 0 to 2 percent
Slope: 1 to 5 percent
Geomorphic setting: Terraces

Hillgate loam and similar soils

Composition: 0 to 2 percent
Slope: 1 to 5 percent
Geomorphic setting: Terraces

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 75 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, wildlife habitat, and watershed

For information about management, see the “Use and Management” section of this publication.

276—Positas gravelly sandy loam, 30 to 50 percent slopes

Map Unit Setting

General location: Foothills west of Arbuckle, southern end of Sand Creek, near Yolo County boundary
MLRA: 15
Geomorphic setting: Dissected terraces
Elevation: 520 to 1,600 feet (159 to 488 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Positas gravelly sandy loam—90 percent
Minor components—10 percent

Major Component Description

Positas gravelly sandy loam

Geomorphic setting: Side slopes on dissected terraces
Parent material: Alluvium
Typical vegetation: Shrubs with widely scattered hardwoods and annual grasses

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 0 to 20 percent (medium, well rounded pebbles)
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 5.1 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A1—0 to 2 inches; gravelly sandy loam
A2—2 to 9 inches; gravelly sandy loam
A3—9 to 21 inches; gravelly sandy loam
2Bt1—21 to 34 inches; gravelly clay
2Bt2—34 to 50 inches; very gravelly clay
2Bt3—50 to 62 inches; very gravelly clay
2Bt4—62 to 80 inches; very gravelly clay

Minor Components

Balcom silt loam and similar soils

Composition: 0 to 6 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of hills

Corval loam and similar soils

Composition: 0 to 3 percent
Slope: 0 to 3 percent
Geomorphic setting: Flood plains and fans

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, wildlife habitat, and watershed

For information about management, see the “Use and Management” section of this publication.

280—Skyhigh-Millsholm complex, 15 to 50 percent slopes

Map Unit Setting

General location: Along Walker Ridge, near the Lake County boundary, south of Bear Valley, and near Cache Creek
MLRA: 15
Geomorphic setting: Hills
Elevation: 1,600 to 2,795 feet (488 to 853 meters)
Mean annual precipitation: 22 to 28 inches (558 to 711 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Skyhigh gravelly clay loam—45 percent
Millsholm loam—30 percent
Minor components—25 percent

Major Component Description

Skyhigh gravelly clay loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale

Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 15 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 0 to 30 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.8 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 3 inches; loam
Bt1—3 to 8 inches; gravelly clay loam
Bt2—8 to 25 inches; gravelly clay
Bt3—25 to 37 inches; gravelly sandy clay loam
R—37 inches; unweathered bedrock

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 15 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Minor Components

Etsel gravelly sandy loam and similar soils

Composition: 0 to 10 percent
Slope: 15 to 50 percent
Geomorphic setting: Side slopes of mountains

Maymen sandy loam and similar soils

Composition: 0 to 10 percent
Slope: 15 to 50 percent
Geomorphic setting: Side slopes of mountains

Rock outcrop

Composition: 0 to 4 percent
Slope: 15 to 50 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, wildlife habitat, recreation, and watershed

For information about management, see the “Use and Management” section of this publication.

300—Contra Costa-Millsholm complex, 50 to 75 percent slopes

Map Unit Setting

General location: Foothill ridges east of Indian Valley
MLRA: 15
Geomorphic setting: Hills
Elevation: 1,300 to 2,450 feet (397 to 748 meters)
Mean annual precipitation: 20 to 26 inches (508 to 660 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)

Frost-free period: 185 to 210 days

Composition

Contra Costa loam—50 percent
Millsholm loam—40 percent
Minor components—10 percent

Major Component Description

Contra Costa loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Shrubs, mainly chamise

Properties and qualities

Slope: 50 to 75 percent, northeast to northwest aspects
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.8 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A—0 to 3 inches; loam
Bt1—3 to 8 inches; clay loam
Bt2—8 to 16 inches; clay loam
Bt3—16 to 28 inches; clay
Bt4—28 to 35 inches; very gravelly clay loam
R—35 inches; unweathered bedrock

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 50 to 75 percent, southeast to west aspects
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 9 percent
Slope: 50 to 75 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 50 to 75 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the “Use and Management” section of this publication.

305—Contra Costa loam, 50 to 75 percent slopes

Map Unit Setting

General location: Foothill ridges east of Indian Valley
MLRA: 15
Geomorphic setting: Hills
Elevation: 1,300 to 2,450 feet (397 to 748 meters)

Mean annual precipitation: 20 to 26 inches (508 to 660 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)
Frost-free period: 185 to 210 days

Composition

Contra Costa loam—85 percent
Minor components—15 percent

Major Component Description

Contra Costa loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Shrubs with scrub oak, poison oak, blue oak, and annual grasses

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.8 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A—0 to 3 inches; loam
Bt1—3 to 8 inches; clay loam
Bt2—8 to 16 inches; clay loam
Bt3—16 to 28 inches; clay
Bt4—28 to 35 inches; very gravelly clay loam
R—35 inches; unweathered bedrock

Minor Components

Millsholm loam and similar soils

Composition: 0 to 10 percent
Slope: 50 to 75 percent
Geomorphic setting: Side slopes of hills

Rock outcrop

Composition: 0 to 4 percent
Slope: 50 to 75 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 50 to 75 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the “Use and Management” section of this publication.

311—Contra Costa loam, 9 to 15 percent slopes

Map Unit Setting

General location: Indian Valley, south of Stonyford
MLRA: 15
Geomorphic setting: Hills
Elevation: 1,200 to 1,275 feet (366 to 390 meters)
Mean annual precipitation: 19 to 21 inches (483 to 533 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Contra Costa loam—85 percent
Minor components—15 percent

Major Component Description

Contra Costa loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 9 to 15 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.8 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 3e-5
Nonirrigated: 4e-5

Typical profile

A—0 to 3 inches; loam
Bt1—3 to 8 inches; clay loam
Bt2—8 to 16 inches; clay loam
Bt3—16 to 28 inches; clay
Bt4—28 to 35 inches; very gravelly clay loam
R—35 inches; unweathered bedrock

Minor Components

Altamont silty clay and similar soils

Composition: 0 to 6 percent
Slope: 9 to 15 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Millsholm loam and similar soils

Composition: 0 to 6 percent
Slope: 9 to 15 percent
Geomorphic setting: Side slopes of hills

Rock outcrop

Composition: 0 to 2 percent
Slope: 9 to 15 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 9 to 15 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

312—Saltcanyon loam, 1 to 5 percent slopes

Map Unit Setting

General location: Antelope Valley and Bear Valley
MLRA: 14
Geomorphic setting: Alluvial fans
Elevation: 600 to 1,450 feet (183 to 442 meters)
Mean annual precipitation: 18 to 20 inches (458 to 510 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 210 to 225 days

Composition

Saltcanyon loam—90 percent
Minor components—10 percent

Major Component Description

Saltcanyon loam

Geomorphic setting: Alluvial fans
Parent material: Alluvium
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 1 to 5 percent
Runoff rate: Low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.8 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2e-1
Nonirrigated: 4e-1

Typical profile

A—0 to 13 inches; loam
Bt1—13 to 25 inches; clay loam
Bt2—25 to 43 inches; clay loam
Bt3—43 to 61 inches; clay loam

Minor Components

Arand very gravelly sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 1 to 5 percent
Geomorphic setting: Flood plains

Hillgate loam and similar soils

Composition: 0 to 3 percent
Slope: 1 to 5 percent
Geomorphic setting: Terraces

Capay clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 1 to 5 percent
Geomorphic setting: Channels

Westfan gravelly loam and similar soils

Composition: 0 to 1 percent
Slope: 1 to 5 percent
Geomorphic setting: Fans

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

313—Saltcanyon loam, 5 to 9 percent slopes

Map Unit Setting

General location: Along the eastern edge of Bear Valley
MLRA: 14
Geomorphic setting: Alluvial fans
Elevation: 600 to 1,450 feet (183 to 442 meters)
Mean annual precipitation: 18 to 20 inches (458 to 510 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 210 to 225 days

Composition

Saltcanyon loam—90 percent
Minor components—10 percent

Major Component Description

Saltcanyon loam

Geomorphic setting: Alluvial fans
Parent material: Alluvium
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 5 to 9 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.8 inches (high)

Hydrologic properties

Present flooding: Rare
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2e-1
Nonirrigated: 4e-1

Typical profile

A—0 to 13 inches; loam
Bt1—13 to 25 inches; clay loam
Bt2—25 to 43 inches; clay loam
Bt3—43 to 61 inches; clay loam

Minor Components

Westfan gravelly loam and similar soils

Composition: 0 to 4 percent
Slope: 1 to 5 percent
Geomorphic setting: Fans

Arand very gravelly sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 5 to 9 percent
Geomorphic setting: Flood plains

Hillgate loam and similar soils

Composition: 0 to 2 percent
Slope: 5 to 9 percent
Geomorphic setting: Terraces

Capay clay and similar soils

Composition: 0 to 1 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 5 to 9 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

315—Mallard clay loam, 2 to 5 percent slopes

Map Unit Setting

General location: Indian Valley
MLRA: 14
Geomorphic setting: Alluvial fans
Elevation: 1,240 to 1,295 feet (378 to 396 meters)
Mean annual precipitation: 18 to 22 inches (458 to 560 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Mallard clay loam—90 percent
Minor components—10 percent

Major Component Description

Mallard clay loam

Geomorphic setting: The lower alluvial fans
Parent material: Alluvium
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 2 to 5 percent
Runoff rate: Low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 10.4 inches (very high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Moderately well drained
Altered hydrology: Water tables have been lowered by stream channel entrenchment.

Land capability classification

Irrigated: 2e-3
Nonirrigated: 4e-3

Typical profile

Ap—0 to 3 inches; clay loam
Bt1—3 to 8 inches; clay loam
Bt2—8 to 15 inches; clay
Bt3—15 to 28 inches; clay
C1—28 to 44 inches; clay loam
C2—44 to 60 inches; clay loam

Minor Components

Hillgate loam and similar soils

Composition: 0 to 4 percent
Slope: 2 to 5 percent
Geomorphic setting: Terraces

Saltcanyon loam and similar soils

Composition: 0 to 3 percent
Slope: 2 to 5 percent
Geomorphic setting: Alluvial fans

Arand very gravelly sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 2 to 5 percent
Geomorphic setting: Flood plains

Unnamed

Composition: 0 to 1 percent
Slope: 2 to 5 percent
Geomorphic setting: Channels

Use and Management

Major uses: Irrigated crops and livestock grazing
For information about management, see the “Use and Management” section of this publication.

316—Hillgate loam, 5 to 9 percent slopes

Map Unit Setting

General location: Small areas in foothill valleys
MLRA: 14
Geomorphic setting: Terraces
Elevation: 400 to 1,500 feet (122 to 458 meters)
Mean annual precipitation: 16 to 22 inches (405 to 560 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Hillgate loam—90 percent
Minor components—10 percent

Major Component Description

Hillgate loam

Geomorphic setting: Terraces
Parent material: Alluvium
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 5 to 9 percent

Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Abrupt textural change—19 inches
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.0 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e-3

Typical profile

A1—0 to 3 inches; loam
A2—3 to 11 inches; loam
A3—11 to 19 inches; loam
2Bt1—19 to 37 inches; clay
2Bt2—37 to 52 inches; clay loam
2Bt3—52 to 62 inches; clay loam
2Bt4—62 to 72 inches; clay loam

Minor Components

Capay clay and similar soils

Composition: 0 to 4 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Corval loam and similar soils

Composition: 0 to 3 percent
Slope: 5 to 9 percent
Geomorphic setting: Flood plains and fans

Contra Costa loam and similar soils

Composition: 0 to 1 percent
Slope: 5 to 9 percent
Geomorphic setting: Side slopes of hills

Millsholm loam and similar soils

Composition: 0 to 1 percent
Slope: 5 to 9 percent
Geomorphic setting: Side slopes of hills

Unnamed

Composition: 0 to 1 percent
Slope: 5 to 9 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

320—Millsholm loam, 5 to 30 percent slopes

Map Unit Setting

General location: In Indian Valley and east of Highway 16, near the Yolo County boundary
MLRA: 15
Geomorphic setting: Hills
Elevation: 1,240 to 2,600 feet (378 to 793 meters)
Mean annual precipitation: 18 to 24 inches (458 to 610 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)
Frost-free period: 185 to 210 days

Composition

Millsholm loam—85 percent
Minor components—15 percent

Major Component Description

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 5 to 30 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Minor Components

Contra Costa loam and similar soils

Composition: 0 to 10 percent
Slope: 5 to 30 percent
Geomorphic setting: Side slopes of hills

Rock outcrop

Composition: 0 to 4 percent
Slope: 5 to 30 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 5 to 30 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

329—Sehorn-Millsholm-Altamont complex, 15 to 30 percent slopes

Map Unit Setting

General location: Coast Range foothills near the Glenn County boundary
MLRA: 15
Geomorphic setting: Hills
Elevation: 360 to 435 feet (110 to 134 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Sehorn silty clay—40 percent
Millsholm loam—30 percent
Altamont silty clay—15 percent
Minor components—15 percent

Major Component Description

Sehorn silty clay

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.5 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e-5

Typical profile

A—0 to 5 inches; silty clay
Bw—5 to 9 inches; silty clay
Bss1—9 to 19 inches; silty clay
Bss2—19 to 26 inches; gravelly silty clay
BC—26 to 35 inches; extremely gravelly silty clay
R—35 inches; unweathered bedrock

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None

Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Altamont silty clay

Geomorphic setting: The lower side slopes and north-facing slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered blue oak

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.9 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e-5

Typical profile

A—0 to 3 inches; silty clay
Bw—3 to 9 inches; silty clay
Bss1—9 to 23 inches; silty clay
Bss2—23 to 35 inches; silty clay
BC1—35 to 43 inches; very gravelly silty clay
BC2—43 to 49 inches; silty clay
Cr—49 inches; soft or weathered bedrock

Minor Components

Contra Costa loam and similar soils

Composition: 0 to 8 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of hills

Rock outcrop

Composition: 0 to 4 percent
Slope: 15 to 30 percent
Geomorphic setting: Mountains and hills

Capay clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 30 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

330—Millsholm-Contra Costa complex, 15 to 30 percent slopes

Map Unit Setting

General location: Foothills near East Park Reservoir and south of Spring Valley
MLRA: 15
Geomorphic setting: Alluvial fans
Elevation: 1,200 to 1,400 feet (366 to 427 meters)
Mean annual precipitation: 19 to 21 inches (483 to 533 millimeters)

Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Millsholm loam—60 percent
Contra Costa loam—25 percent
Minor components—15 percent

Major Component Description

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Contra Costa loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.8 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e-8

Typical profile

A—0 to 3 inches; loam
Bt1—3 to 8 inches; clay loam
Bt2—8 to 16 inches; clay loam
Bt3—16 to 28 inches; clay
Bt4—28 to 35 inches; very gravelly clay loam
R—35 inches; unweathered bedrock

Minor Components

Sehorn silty clay and similar soils

Composition: 0 to 5 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of hills

Saltcanyon loam and similar soils

Composition: 0 to 4 percent
Slope: 2 to 9 percent
Geomorphic setting: Alluvial fans

Altamont silty clay and similar soils

Composition: 0 to 3 percent
Slope: 15 to 30 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Capay clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 30 percent

Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

331—Sehorn-Millsholm-Rock outcrop complex, 30 to 50 percent slopes

Map Unit Setting

General location: Foothills near the Glenn County boundary
MLRA: 15
Geomorphic setting: Alluvial fans
Elevation: 360 to 475 feet (110 to 146 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Sehorn silty clay—35 percent
Millsholm loam—30 percent
Rock outcrop—20 percent
Minor components—15 percent

Major Component Description

Sehorn silty clay

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.5 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 5 inches; silty clay
Bw—5 to 9 inches; silty clay
Bss1—9 to 19 inches; silty clay
Bss2—19 to 26 inches; gravelly silty clay
BC—26 to 35 inches; extremely gravelly silty clay
R—35 inches; unweathered bedrock

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Rock outcrop

Geomorphic setting: Hills
Kind of rock: Sandstone and shale

Typical vegetation: Most areas are barren, but some areas have a few grasses.

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Very high
Surface features: Hard, exposed bedrock

Land capability classification

Irrigated: Not calculated
Nonirrigated: 8

Minor Components

Altamont silty clay and similar soils

Composition: 0 to 6 percent
Slope: 30 to 50 percent
Geomorphic setting: The lower side slopes and north-facing slopes of hills

Contra Costa loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of hills

Saltcanyon loam and similar soils

Composition: 0 to 2 percent
Slope: 2 to 9 percent
Geomorphic setting: Alluvial fans

Capay clay and similar soils

Composition: 0 to 1 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

332—Millsholm-Rock outcrop association, 30 to 75 percent slopes

Map Unit Setting

General location: Foothills east of East Park Reservoir and foothills near the Glenn County boundary
MLRA: 15
Geomorphic setting: Alluvial fans
Elevation: 400 to 600 feet (122 to 183 meters)
Mean annual precipitation: 14 to 18 inches (355 to 458 millimeters)
Mean annual air temperature: 61 to 63 degrees F (16 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Millsholm loam—50 percent
Rock outcrop—40 percent
Minor components—10 percent

Major Component Description

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 30 to 75 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Rock outcrop

Geomorphic setting: Hills
Kind of rock: Sandstone and shale

Typical vegetation: Most areas are barren, but some areas have a few grasses.

Properties and qualities

Slope: 30 to 75 percent
Runoff rate: Very high
Surface features: Hard, exposed bedrock

Land capability classification

Irrigated: Not calculated
Nonirrigated: 8

Minor Components

Contra Costa loam and similar soils

Composition: 0 to 8 percent
Slope: 30 to 75 percent
Geomorphic setting: Side slopes of hills

Saltcanyon loam and similar soils

Composition: 0 to 1 percent
Slope: 2 to 9 percent
Geomorphic setting: Alluvial fans

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 75 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing

For information about management, see the "Use and Management" section of this publication.

334—Millsholm-Contra Costa association, 30 to 75 percent slopes

Map Unit Setting

General location: Foothill ridges
MLRA: 15
Geomorphic setting: Hills
Elevation: 275 to 1,750 feet (85 to 534 meters)
Mean annual precipitation: 14 to 24 inches (355 to 610 millimeters)
Mean annual air temperature: 57 to 63 degrees F (14 to 17 degrees C)
Frost-free period: 225 to 250 days

Composition

Millsholm loam—70 percent
Contra Costa loam—15 percent
Minor components—15 percent

Major Component Description

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 30 to 75 percent, southeast to west aspects
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Contra Costa loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 30 to 75 percent, northeast to northwest aspects
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline

Sodicity: Not sodic
Available water capacity: About 4.8 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A—0 to 3 inches; loam
Bt1—3 to 8 inches; clay loam
Bt2—8 to 16 inches; clay loam
Bt3—16 to 28 inches; clay
Bt4—28 to 35 inches; very gravelly clay loam
R—35 inches; unweathered bedrock

Minor Components

Sehorn silty clay and similar soils

Composition: 0 to 10 percent
Slope: 30 to 75 percent
Geomorphic setting: Side slopes of hills

Rock outcrop

Composition: 0 to 4 percent
Slope: 30 to 75 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 75 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

337—Millsholm-Saltcanyon association, 5 to 15 percent slopes

Map Unit Setting

General location: Foothills near Rail Canyon
MLRA: 14 and 15
Geomorphic setting: Alluvial fans
Elevation: 1,155 to 1,400 feet (353 to 427 meters)
Mean annual precipitation: 19 to 21 inches (483 to 533 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Millsholm loam—50 percent
Saltcanyon loam—35 percent
Minor components—15 percent

Major Component Description

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 5 to 15 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Saltcanyon loam

Geomorphic setting: Alluvial fans
Parent material: Alluvium
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 5 to 15 percent
Runoff rate: Medium

Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.8 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2e-1
Nonirrigated: 4e-1

Typical profile

A—0 to 13 inches; loam
Bt1—13 to 25 inches; clay loam
Bt2—25 to 43 inches; clay loam
Bt3—43 to 61 inches; clay loam

Minor Components

Contra Costa loam and similar soils

Composition: 0 to 5 percent
Slope: 5 to 15 percent
Geomorphic setting: Side slopes of hills

Westfan gravelly loam and similar soils

Composition: 0 to 4 percent
Slope: 1 to 5 percent
Geomorphic setting: Fans

Hillgate loam and similar soils

Composition: 0 to 3 percent
Slope: 5 to 15 percent
Geomorphic setting: Terraces

Capay clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 5 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 5 to 15 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

345—Skyhigh-Sleeper-Millsholm association, 15 to 30 percent slopes

Map Unit Setting

General location: Southwest corner of the county, between Highway 20 and Highway 16
MLRA: 15
Geomorphic setting: Hills and mountains
Elevation: 1,100 to 2,160 feet (336 to 659 meters)
Mean annual precipitation: 18 to 22 inches (458 to 560 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Skyhigh gravelly clay loam—40 percent
Sleeper clay loam—30 percent
Millsholm loam—15 percent
Minor components—15 percent

Major Component Description

Skyhigh gravelly clay loam

Geomorphic setting: Mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 0 to 30 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.8 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e-8

Typical profile

A—0 to 3 inches; loam

Bt1—3 to 8 inches; gravelly clay loam
Bt2—8 to 25 inches; gravelly clay
Bt3—25 to 37 inches; gravelly sandy clay loam
R—37 inches; unweathered bedrock

Sleeper clay loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak, annual grasses, foothill pine, and ceanothus

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.7 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e-8

Typical profile

A1—0 to 5 inches; clay loam
A2—5 to 9 inches; clay loam
Bt1—9 to 19 inches; clay
Bt2—19 to 35 inches; clay
Bt3—35 to 53 inches; clay loam
R—53 inches; unweathered bedrock

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Minor Components

Boar loam and similar soils

Composition: 0 to 10 percent
Slope: 15 to 30 percent
Geomorphic setting: Toeslopes of hills

Rock outcrop

Composition: 0 to 4 percent
Slope: 15 to 30 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 30 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, wildlife habitat, and watershed

For information about management, see the “Use and Management” section of this publication.

346—Skyhigh-Millsholm-Sleeper association, 30 to 50 percent slopes

Map Unit Setting

General location: Southwest corner of the county, between Highway 20 and Highway 16

MLRA: 15
Geomorphic setting: Hills and mountains
Elevation: 800 to 2,160 feet (244 to 659 meters)
Mean annual precipitation: 18 to 22 inches (458 to 560 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Skyhigh gravelly clay loam—45 percent
Millsholm loam—20 percent
Sleeper clay loam—20 percent
Minor components—15 percent

Major Component Description

Skyhigh gravelly clay loam

Geomorphic setting: Mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 0 to 30 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.8 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 3 inches; loam
Bt1—3 to 8 inches; gravelly clay loam
Bt2—8 to 25 inches; gravelly clay
Bt3—25 to 37 inches; gravelly sandy clay loam
R—37 inches; unweathered bedrock

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Sleeper clay loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak, annual grasses, foothill pine, and ceanothus

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.7 inches (high)

Hydrologic properties

Present flooding: None

Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A1—0 to 5 inches; clay loam
A2—5 to 9 inches; clay loam
Bt1—9 to 19 inches; clay
Bt2—19 to 35 inches; clay
Bt3—35 to 53 inches; clay loam
R—53 inches; unweathered bedrock

Minor Components

Boar loam and similar soils

Composition: 0 to 10 percent
Slope: 30 to 50 percent
Geomorphic setting: Toeslopes of hills

Rock outcrop

Composition: 0 to 4 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, wildlife habitat, and watershed

For information about management, see the “Use and Management” section of this publication.

347—Boar-Sleeper complex, 15 to 30 percent slopes

Map Unit Setting

General location: Southwest corner of the county, between Highway 20 and Highway 16
MLRA: 15
Geomorphic setting: Hills
Elevation: 1,315 to 2,160 feet (402 to 659 meters)
Mean annual precipitation: 18 to 22 inches (458 to 560 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Boar loam—45 percent
Sleeper clay loam—40 percent
Minor components—15 percent

Major Component Description

Boar loam

Geomorphic setting: Toeslopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—60 to 80 inches
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.9 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e-3

Typical profile

A1—0 to 5 inches; loam
A2—5 to 12 inches; loam
Bt1—12 to 20 inches; clay loam
Bt2—20 to 37 inches; clay loam
Bt3—37 to 56 inches; clay
Btk—56 to 75 inches; clay loam

Sleeper clay loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak, annual grasses, foothill pine, and ceanothus

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.7 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e-3

Typical profile

A1—0 to 5 inches; clay loam
A2—5 to 9 inches; clay loam
Bt1—9 to 19 inches; clay
Bt2—19 to 35 inches; clay
Bt3—35 to 53 inches; clay loam
R—53 inches; unweathered bedrock

Minor Components

Millsholm loam and similar soils

Composition: 0 to 10 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of hills

Rock outcrop

Composition: 0 to 4 percent
Slope: 15 to 30 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 30 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, wildlife habitat, and watershed

For information about management, see the “Use and Management” section of this publication.

348—Boar-Sleeper complex, 30 to 50 percent slopes

Map Unit Setting

General location: Southwest corner of the county, between Highway 20 and Highway 16
MLRA: 15
Geomorphic setting: Hills
Elevation: 1,400 to 2,160 feet (427 to 659 meters)
Mean annual precipitation: 18 to 22 inches (458 to 560 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Boar loam—45 percent
Sleeper clay loam—40 percent
Minor components—15 percent

Major Component Description

Boar loam

Geomorphic setting: Toeslopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak and annual grasses

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—60 to 80 inches
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.9 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A1—0 to 5 inches; loam

A2—5 to 12 inches; loam
Bt1—12 to 20 inches; clay loam
Bt2—20 to 37 inches; clay loam
Bt3—37 to 56 inches; clay
Btk—56 to 75 inches; clay loam

Sleeper clay loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Blue oak, annual grasses, foothill pine, and ceanothus

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—40 to 60 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.7 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A1—0 to 5 inches; clay loam
A2—5 to 9 inches; clay loam
Bt1—9 to 19 inches; clay
Bt2—19 to 35 inches; clay
Bt3—35 to 53 inches; clay loam
R—53 inches; unweathered bedrock

Minor Components

Millsholm loam and similar soils

Composition: 0 to 10 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of hills

Rock outcrop

Composition: 0 to 4 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, wildlife habitat, and watershed

For information about management, see the “Use and Management” section of this publication.

350—Haploxererts, 30 to 50 percent slopes

Map Unit Setting

General location: Along Highway 20, west of its intersection with Highway 16
MLRA: 15
Geomorphic setting: Mountains
Elevation: 1,120 to 1,800 feet (342 to 549 meters)
Mean annual precipitation: 18 to 22 inches (458 to 559 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Haploxererts—80 percent
Minor components—20 percent

Major Component Description

Haploxererts

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from serpentinite
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 15 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 7.0 inches (moderate)

Hydrologic properties

Present flooding: None

Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A1—0 to 5 inches; clay loam
A2—5 to 15 inches; gravelly clay loam
Bss—15 to 28 inches; clay
C1—28 to 39 inches; gravelly clay loam
C2—39 to 52 inches; very gravelly loam
Cr—52 inches; soft or unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 10 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Okiota loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Henneke sandy loam and similar soils

Composition: 0 to 4 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, wildlife habitat, and watershed

For information about management, see the “Use and Management” section of this publication.

355—Venado clay, 0 to 2 percent slopes

Map Unit Setting

General location: Lowest areas in Bear Valley and west of Stonyford in Indian Valley
MLRA: 14
Geomorphic setting: Basin floors
Elevation: 1,075 to 1,450 feet (328 to 442 meters)
Mean annual precipitation: 18 to 20 inches (458 to 510 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Venado clay—80 percent
Minor components—20 percent

Major Component Description

Venado clay

Geomorphic setting: Basin floors
Parent material: Alluvium derived from serpentinite
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Surface features: Polygonal cracking pattern; the polygons are approximately 24 inches in diameter.
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.6 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained
Altered hydrology: Water tables have been lowered by stream channel entrenchment. Prior to 1900, dynamite was used to remove rock restrictions in the lower part of Bear Valley along Bear Creek, resulting in downcutting of Bear Creek and feeder streams as the bed level changed.

Land capability classification

Irrigated: 3w-9
Nonirrigated: 4w-9

Typical profile

Ap—0 to 3 inches; clay
A—3 to 13 inches; clay
Bss—13 to 30 inches; clay
Btk1—30 to 38 inches; silty clay

Btk2—38 to 53 inches; silty clay loam
BCtk—53 to 61 inches; clay loam
Ab—61 to 69 inches; clay

Minor Components

Venado clay, wet, and similar soils

Composition: 0 to 14 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Capay clay and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Leesville clay loam and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Alluvial fans

Bearvalley gravelly sandy loam and similar soils

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Alluvial fans

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, nonirrigated crops, and irrigated pasture

For information about management, see the “Use and Management” section of this publication.

360—Bearvalley gravelly sandy loam, 2 to 5 percent slopes

Map Unit Setting

General location: South end of Bear Valley
MLRA: 14
Geomorphic setting: Alluvial fans
Elevation: 1,300 to 1,450 feet (397 to 442 meters)
Mean annual precipitation: 18 to 20 inches (458 to 510 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Bearvalley gravelly sandy loam—85 percent
Minor components—15 percent

Major Component Description

Bearvalley gravelly sandy loam

Geomorphic setting: Alluvial fans
Parent material: Alluvium derived from serpentinite
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 2 to 5 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately rapid
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.1 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: 4e-9
Nonirrigated: 4e-9

Typical profile

A1—0 to 5 inches; gravelly sandy loam
A2—5 to 20 inches; very gravelly sandy loam
A3—20 to 34 inches; very gravelly sandy loam
2C1—34 to 60 inches; very gravelly loamy sand
2C2—60 to 75 inches; extremely gravelly loamy sand

Minor Components

Venado clay and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Leesville clay loam and similar soils

Composition: 0 to 4 percent
Slope: 2 to 5 percent
Geomorphic setting: Alluvial fans

Unnamed

Composition: 0 to 1 percent
Slope: 2 to 5 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, irrigated pasture, and nonirrigated crops

For information about management, see the “Use and Management” section of this publication.

365—Leesville clay loam, 2 to 5 percent slopes

Map Unit Setting

General location: West side of Bear Valley
MLRA: 14
Geomorphic setting: Alluvial fans
Elevation: 1,075 to 1,500 feet (328 to 458 meters)
Mean annual precipitation: 18 to 20 inches (458 to 510 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Leesville clay loam—85 percent
Minor components—15 percent

Major Component Description

Leesville clay loam

Geomorphic setting: Alluvial fans
Parent material: Alluvium derived from serpentinite
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 2 to 5 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 5.0 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2e-9
Nonirrigated: 4e-9

Typical profile

A1—0 to 3 inches; clay loam
A2—3 to 16 inches; clay loam
A3—16 to 21 inches; clay loam
2C1—21 to 30 inches; gravelly sandy loam
3C2—30 to 46 inches; very gravelly loamy sand
3C3—46 to 60 inches; extremely gravelly loamy sand

Minor Components

Bearvalley gravelly sandy loam and similar soils

Composition: 0 to 8 percent
Slope: 2 to 5 percent
Geomorphic setting: Alluvial fans

Venado clay and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 2 to 5 percent
Geomorphic setting: Channels

Venado clay, wet, and similar soils

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Use and Management

Major uses: Livestock grazing, irrigated pasture, and nonirrigated crops

For information about management, see the “Use and Management” section of this publication.

366—Leesville clay loam, 0 to 2 percent slopes

Map Unit Setting

General location: West side of Bear Valley
MLRA: 14
Geomorphic setting: Alluvial fans
Elevation: 1,075 to 1,500 feet (328 to 458 meters)
Mean annual precipitation: 18 to 20 inches (458 to 510 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Leesville clay loam—85 percent
Minor components—15 percent

Major Component Description

Leesville clay loam

Geomorphic setting: Alluvial fans
Parent material: Alluvium derived from serpentinite
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 0 to 2 percent
Runoff rate: Very low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 5.0 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: 2s-9
Nonirrigated: 4s-9

Typical profile

A1—0 to 3 inches; clay loam
A2—3 to 16 inches; clay loam
A3—16 to 21 inches; clay loam
2C1—21 to 30 inches; gravelly sandy loam
3C2—30 to 46 inches; very gravelly loamy sand
3C3—46 to 60 inches; extremely gravelly loamy sand

Minor Components

Bearvalley gravelly sandy loam and similar soils

Composition: 0 to 8 percent
Slope: 0 to 2 percent
Geomorphic setting: Alluvial fans

Venado clay and similar soils

Composition: 0 to 5 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Channels

Venado clay, wet, and similar soils

Composition: 0 to 1 percent
Slope: 0 to 2 percent
Geomorphic setting: Basin floors

Use and Management

Major uses: Livestock grazing, irrigated pasture, and nonirrigated crops

For information about management, see the “Use and Management” section of this publication.

370—Livermore very gravelly loam, 5 to 9 percent slopes

Map Unit Setting

General location: North end of Bear Valley, west of Leesville
MLRA: 14
Geomorphic setting: Alluvial fans
Elevation: 1,300 to 1,500 feet (397 to 458 meters)
Mean annual precipitation: 19 to 21 inches (483 to 533 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Livermore very gravelly loam—90 percent
Minor components—10 percent

Major Component Description

Livermore very gravelly loam

Geomorphic setting: Alluvial fans
Parent material: Alluvium
Typical vegetation: Blue oak and annual grasses with foothill pine and ceanothus

Properties and qualities

Slope: 5 to 9 percent
Runoff rate: Low
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.1 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted

Natural drainage class: Well drained

Land capability classification

Irrigated: 4s-4
Nonirrigated: 4s-4

Typical profile

Ap—0 to 7 inches; very gravelly loam
Bw1—7 to 19 inches; very gravelly loam
Bw2—19 to 41 inches; very gravelly sandy clay loam
C—41 to 63 inches; very gravelly sandy loam

Minor Components

Saltcanyon loam and similar soils

Composition: 0 to 7 percent
Slope: 5 to 9 percent
Geomorphic setting: Alluvial fans

Capay clay and similar soils

Composition: 0 to 2 percent
Slope: 5 to 9 percent
Geomorphic setting: Basin floors

Unnamed

Composition: 0 to 1 percent
Slope: 5 to 9 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the “Use and Management” section of this publication.

371—Buttes-Millsholm complex, 30 to 50 percent slopes

Map Unit Setting

General location: The Bear Valley Buttes
MLRA: 15
Geomorphic setting: Mountains
Elevation: 1,300 to 2,200 feet (397 to 671 meters)
Mean annual precipitation: 19 to 22 inches (483 to 559 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 210 days

Composition

Buttes gravelly sandy loam—50 percent
Millsholm loam—35 percent
Minor components—15 percent

Major Component Description

Buttes gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Conglomerate
Typical vegetation: Blue oak and annual grasses with foothill pine and ceanothus

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 0 to 20 percent (medium, well rounded pebbles)
Depth to restrictive feature: Bedrock (paralithic)—20 to 40 inches
Slowest permeability class: Moderately slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.7 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A1—0 to 2 inches; gravelly sandy loam
A2—2 to 7 inches; gravelly sandy clay loam
Bt—7 to 12 inches; very gravelly sandy clay loam
BCt—12 to 19 inches; very gravelly sandy clay loam
C—19 to 24 inches; very gravelly sandy loam
Cr—24 inches; soft or weathered bedrock

Millsholm loam

Geomorphic setting: Side slopes of hills
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Annual grasses and scattered oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock

Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.1 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; loam
Bw1—2 to 8 inches; loam
Bw2—8 to 14 inches; gravelly sandy clay loam
R—14 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 10 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Contra Costa loam and similar soils

Composition: 0 to 4 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of hills

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major use: Livestock grazing
For information about management, see the "Use and Management" section of this publication.

519—Stonyford-Guenoc complex, 5 to 15 percent slopes

Map Unit Setting

General location: The lower Coast Range, west of Stonyford
MLRA: 15
Geomorphic setting: Mountains
Elevation: 1,120 to 2,795 feet (342 to 853 meters)
Mean annual precipitation: 18 to 28 inches (458 to 711 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 225 days

Composition

Stonyford gravelly loam—50 percent
Guenoc loam—30 percent
Minor components—20 percent

Major Component Description

Stonyford gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from basalt
Typical vegetation: Shrubs, mainly chamise

Properties and qualities

Slope: 5 to 15 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 10 to 40 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderately slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.8 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e

Typical profile

A—0 to 3 inches; gravelly loam
Bt1—3 to 7 inches; gravelly clay loam
Bt2—7 to 14 inches; gravelly clay loam
R—14 inches; unweathered bedrock

Guenoc loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from basalt
Typical vegetation: Shrubs, mainly chamise

Properties and qualities

Slope: 5 to 15 percent
Runoff rate: High

Percentage of the surface covered by rock fragments: 10 to 40 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.9 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 3e-8

Typical profile

A1—0 to 4 inches; loam
A2—4 to 9 inches; loam
Bt1—9 to 18 inches; clay loam
Bt2—18 to 31 inches; clay
R—31 inches; unweathered bedrock

Minor Components

Etsel gravelly sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 5 to 15 percent
Geomorphic setting: Side slopes of mountains

Marpa very gravelly sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 5 to 15 percent
Geomorphic setting: Side slopes of mountains

Henneke sandy loam and similar soils

Composition: 0 to 4 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Maymen sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 15 to 50 percent
Geomorphic setting: Side slopes of mountains

Montara gravelly sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 5 to 15 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 5 to 15 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the “Use and Management” section of this publication.

520—Stonyford-Guenoc complex, 15 to 30 percent slopes

Map Unit Setting

General location: The lower Coast Range, west of Stonyford
MLRA: 15
Geomorphic setting: Mountains
Elevation: 1,120 to 2,795 feet (342 to 853 meters)
Mean annual precipitation: 18 to 28 inches (458 to 711 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 225 days

Composition

Stonyford gravelly loam—65 percent
Guenoc loam—15 percent
Minor components—20 percent

Major Component Description

Stonyford gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from basalt
Typical vegetation: Shrubs, mainly chamise

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 10 to 40 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderately slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.8 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e

Typical profile

A—0 to 3 inches; gravelly loam
Bt1—3 to 7 inches; gravelly clay loam
Bt2—7 to 14 inches; gravelly clay loam
R—14 inches; unweathered bedrock

Guenoc loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from basalt
Typical vegetation: Shrubs, mainly chamise

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 10 to 40 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.9 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 3e-8

Typical profile

A1—0 to 4 inches; loam
A2—4 to 9 inches; loam
Bt1—9 to 18 inches; clay loam
Bt2—18 to 31 inches; clay
R—31 inches; unweathered bedrock

Minor Components

Etsel gravelly sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of mountains

Marpa very gravelly sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of mountains

Henneke sandy loam and similar soils

Composition: 0 to 4 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Maymen sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 15 to 50 percent
Geomorphic setting: Side slopes of mountains

Montara gravelly sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 30 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the “Use and Management” section of this publication.

521—Stonyford-Guenoc complex, 30 to 50 percent slopes

Map Unit Setting

General location: The lower Coast Range, west of Stonyford
MLRA: 15
Geomorphic setting: Mountains
Elevation: 1,120 to 2,795 feet (342 to 853 meters)
Mean annual precipitation: 18 to 28 inches (458 to 711 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 225 days

Composition

Stonyford gravelly loam—65 percent
Guenoc loam—15 percent
Minor components—20 percent

Major Component Description

Stonyford gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from basalt
Typical vegetation: Shrubs, mainly chamise

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 10 to 40 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderately slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.8 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e

Typical profile

A—0 to 3 inches; gravelly loam
Bt1—3 to 7 inches; gravelly clay loam
Bt2—7 to 14 inches; gravelly clay loam
R—14 inches; unweathered bedrock

Guenoc loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from basalt
Typical vegetation: Shrubs, mainly chamise

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 10 to 40 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.9 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 3e-8

Typical profile

A1—0 to 4 inches; loam
A2—4 to 9 inches; loam
Bt1—9 to 18 inches; clay loam
Bt2—18 to 31 inches; clay
R—31 inches; unweathered bedrock

Minor Components

Etsel gravelly sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Marpa very gravelly sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Henneke sandy loam and similar soils

Composition: 0 to 4 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Maymen sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 15 to 50 percent
Geomorphic setting: Side slopes of mountains

Montara gravelly sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the "Use and Management" section of this publication.

524—Arand-Riverwash complex, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

General location: Along creeks in the lower Coast Range and in Indian Valley
MLRA: 14
Geomorphic setting: Flood plains
Elevation: 1,245 to 2,000 feet (381 to 610 meters)
Mean annual precipitation: 19 to 28 inches (485 to 710 millimeters)
Mean annual air temperature: 57 to 61 degrees F (14 to 16 degrees C)
Frost-free period: 185 to 225 days

Composition

Arand very gravelly sandy loam, frequently flooded—65 percent
Riverwash—25 percent
Minor components—10 percent

Major Component Description

Arand very gravelly sandy loam, frequently flooded

Geomorphic setting: Flood plains
Parent material: Alluvium
Typical vegetation: Sparse vegetation; scattered willows, annual grasses, and forbs in some areas

Properties and qualities

Slope: 0 to 2 percent
Runoff: Negligible
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately rapid
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.0 inches (low)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6w

Typical profile

A—0 to 8 inches; very gravelly sandy loam
C1—8 to 18 inches; very gravelly sandy loam
C2—18 to 24 inches; very gravelly sandy loam
C3—24 to 65 inches; very gravelly sand

Riverwash

Geomorphic setting: Channels
Kind of material: Alluvium
Typical vegetation: Sparse vegetation; scattered willows, annual grasses, and forbs in some areas

Properties and qualities

Slope: 0 to 2 percent
Runoff: Negligible
Percentage of the surface covered by rock fragments: 10 to 80 percent (coarse, well rounded pebbles)
Slowest permeability class: Moderately rapid
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.9 inches (low)

Hydrologic properties

Present flooding: Frequent
Present ponding: None
Current water table: Present
Natural drainage class: Poorly drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 8

Minor Components

Maywood gravelly loam, occasionally flooded, and similar soils

Composition: 0 to 6 percent
Slope: 0 to 2 percent
Geomorphic setting: Flood plains

Arbuckle sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 0 to 2 percent
Geomorphic setting: Terraces

Unnamed

Composition: 0 to 2 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the “Use and Management” section of this publication.

526—Etsel-Maymen-Marpa association, 30 to 50 percent slopes

Map Unit Setting

General location: The lower Coast Range
MLRA: 15
Geomorphic setting: Mountains
Elevation: 1,695 to 3,500 feet (518 to 1,067 meters)
Mean annual precipitation: 30 to 40 inches (765 to 1,015 millimeters)
Mean annual air temperature: 54 to 57 degrees F (12 to 14 degrees C)
Frost-free period: 150 to 210 days

Composition

Etsel gravelly sandy loam—30 percent
Maymen sandy loam—30 percent
Marpa very gravelly sandy loam—20 percent
Minor components—20 percent

Major Component Description

Etsel gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Shrubs, mainly chamise

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 10 to 50 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—4 to 10 inches
Slowest permeability class: Moderately rapid above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 0.5 inch (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A1—0 to 3 inches; gravelly sandy loam
A2—3 to 10 inches; very gravelly sandy loam
R—10 inches; unweathered bedrock

Maymen sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Shrubs with scrub oak, poison oak, buckbrush, and annual grasses

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 10 to 50 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 18 inches
Slowest permeability class: Moderately rapid above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.3 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A—0 to 3 inches; sandy loam
Bw—3 to 16 inches; gravelly sandy loam
R—16 inches; unweathered bedrock

Marpa very gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderately slow

Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.7 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oe—0 to 2 inches; moderately decomposed plant material
A—2 to 5 inches; very gravelly sandy loam
Bt1—5 to 14 inches; very gravelly sandy clay loam
Bt2—14 to 25 inches; very gravelly sandy clay loam
R—25 inches; unweathered bedrock

Minor Components

Henneke sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Okiota loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Rock outcrop

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Goulding gravelly loam and similar soils

Composition: 0 to 2 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Neuns very gravelly loam and similar soils

Composition: 0 to 2 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the “Use and Management” section of this publication.

527—Maymen-Etsel-Speaker association, 30 to 50 percent slopes

Map Unit Setting

General location: On Walker Ridge, along the Lake County boundary
MLRA: 15
Geomorphic setting: Mountains
Elevation: 2,000 to 4,000 feet (610 to 1,220 meters)
Mean annual precipitation: 35 to 50 inches (890 to 1,270 millimeters)
Mean annual air temperature: 52 to 55 degrees F (11 to 13 degrees C)
Frost-free period: 130 to 180 days

Composition

Maymen sandy loam—35 percent
Etsel gravelly sandy loam—30 percent
Speaker gravelly loam—20 percent
Minor components—15 percent

Major Component Description

Maymen sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Shrubs with scrub oak, poison oak, buckbrush, and annual grasses

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 10 to 50 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 18 inches
Slowest permeability class: Moderately rapid above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.3 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None

Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A—0 to 3 inches; sandy loam
Bw—3 to 16 inches; gravelly sandy loam
R—16 inches; unweathered bedrock

Etsel gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Shrubs, mainly chamise

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 10 to 50 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—4 to 10 inches
Slowest permeability class: Moderately rapid above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 0.5 inch (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A1—0 to 3 inches; gravelly sandy loam
A2—3 to 10 inches; very gravelly sandy loam
R—10 inches; unweathered bedrock

Speaker gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Shrubs with some mixed conifers and hardwoods on north-facing slopes

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—20 to 40 inches
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.7 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oi—0 inches; slightly decomposed plant material
A—0 to 10 inches; gravelly loam
Bt1—10 to 17 inches; gravelly clay loam
Bt2—17 to 26 inches; gravelly clay loam
Cr—26 inches; soft or weathered bedrock

Minor Components

Goulding gravelly loam and similar soils

Composition: 0 to 6 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Rock outcrop

Composition: 0 to 6 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Neuns very gravelly loam and similar soils

Composition: 0 to 2 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, watershed, and timber production

For information about management, see the “Use and Management” section of this publication.

528—Maymen-Etsel-Snook complex, 30 to 75 percent slopes

Map Unit Setting

General location: Walker Ridge area
MLRA: 15
Geomorphic setting: Mountains
Elevation: 1,495 to 4,000 feet (457 to 1,220 meters)
Mean annual precipitation: 30 to 50 inches (765 to 1,270 millimeters)
Mean annual air temperature: 52 to 57 degrees F (11 to 14 degrees C)
Frost-free period: 135 to 185 days

Composition

Maymen sandy loam—35 percent
Etsel gravelly sandy loam—25 percent
Snook gravelly sandy loam—25 percent
Minor components—15 percent

Major Component Description

Maymen sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Shrubs with scrub oak, poison oak, buckbrush, and annual grasses

Properties and qualities

Slope: 30 to 75 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 10 to 50 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 18 inches
Slowest permeability class: Moderately rapid above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.3 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A—0 to 3 inches; sandy loam
Bw—3 to 16 inches; gravelly sandy loam
R—16 inches; unweathered bedrock

Etsel gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Shrubs, mainly chamise

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 10 to 50 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—4 to 10 inches
Slowest permeability class: Moderately rapid above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 0.5 inch (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A1—0 to 3 inches; gravelly sandy loam
A2—3 to 10 inches; very gravelly sandy loam
R—10 inches; unweathered bedrock

Snook gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Shrubs with widely scattered hardwoods and annual grasses

Properties and qualities

Slope: 30 to 75 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 20 to 80 percent (coarse, angular pebbles)

Depth to restrictive feature: Bedrock (lithic)—4 to 10 inches
Slowest permeability class: Moderately rapid above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 0.6 inch (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A1—0 to 1 inch; gravelly sandy loam
A2—1 to 8 inches; gravelly sandy loam
R—8 inches; unweathered bedrock

Minor Components

Mayacama gravelly coarse sandy loam and similar soils

Composition: 0 to 6 percent
Slope: 30 to 75 percent
Geomorphic setting: Mountains

Henneke sandy loam and similar soils

Composition: 0 to 4 percent
Slope: 30 to 75 percent
Geomorphic setting: Side slopes of mountains

Okiota loam and similar soils

Composition: 0 to 4 percent
Slope: 30 to 75 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 75 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the “Use and Management” section of this publication.

529—Maymen-Etsel-Mayacama complex, 30 to 75 percent slopes

Map Unit Setting

General location: Walker Ridge area
MLRA: 15
Geomorphic setting: Mountains
Elevation: 1,495 to 4,000 feet (457 to 1,220 meters)
Mean annual precipitation: 30 to 50 inches (765 to 1,270 millimeters)
Mean annual air temperature: 54 to 57 degrees F (12 to 14 degrees C)
Frost-free period: 135 to 180 days

Composition

Maymen sandy loam—35 percent
Etsel gravelly sandy loam—30 percent
Mayacama gravelly coarse sandy loam—20 percent
Minor components—15 percent

Major Component Description

Maymen sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Shrubs with scrub oak, poison oak, buckbrush, and annual grasses

Properties and qualities

Slope: 30 to 75 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 10 to 50 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 18 inches
Slowest permeability class: Moderately rapid above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.3 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A—0 to 3 inches; sandy loam
Bw—3 to 16 inches; gravelly sandy loam
R—16 inches; unweathered bedrock

Etsel gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Shrubs, mainly chamise

Properties and qualities

Slope: 30 to 75 percent, east to west aspects
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 10 to 50 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—4 to 10 inches
Slowest permeability class: Moderately rapid above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 0.5 inch (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A1—0 to 3 inches; gravelly sandy loam
A2—3 to 10 inches; very gravelly sandy loam
R—10 inches; unweathered bedrock

Mayacama gravelly coarse sandy loam

Geomorphic setting: Mountains
Parent material: Residuum weathered from schist
Typical vegetation: Shrubs with some mixed conifers and hardwoods on north-facing slopes

Properties and qualities

Slope: 30 to 75 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 10 to 40 percent (coarse, angular pebbles)
Depth to restrictive feature: Dense material—30 inches; bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderately slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.1 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 10 inches; gravelly coarse sandy loam
Bw1—10 to 21 inches; gravelly sandy clay loam
Bw2—21 to 30 inches; very gravelly sandy clay loam
Cd—30 to 37 inches; very gravelly sandy loam
R—37 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 5 percent
Slope: 30 to 75 percent
Geomorphic setting: Side slopes of mountains and hills

Snook gravelly sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 75 percent
Geomorphic setting: Side slopes of mountains

Henneke sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 30 to 75 percent
Geomorphic setting: Side slopes of mountains

Montara gravelly sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 30 to 75 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 75 percent
Geomorphic setting: Side slopes of channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the “Use and Management” section of this publication.

542—Okiota-Dubakella-Henneke complex, 15 to 50 percent slopes

Map Unit Setting

General location: Walker Ridge area, on the Lake County boundary
MLRA: 15
Geomorphic setting: Mountains
Elevation: 2,200 to 4,000 feet (671 to 1,220 meters)
Mean annual precipitation: 35 to 50 inches (890 to 1,270 millimeters)
Mean annual air temperature: 48 to 59 degrees F (9 to 15 degrees C)
Frost-free period: 160 to 185 days

Composition

Okiota loam—35 percent
Dubakella gravelly clay loam—25 percent
Henneke sandy loam—25 percent
Minor components—15 percent

Major Component Description

Okiota loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from serpentinite
Typical vegetation: Shrubs, mainly manzanita, with leather oak, MacNab cypress, and foothill pine

Properties and qualities

Slope: 15 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 10 to 40 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.8 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A—0 to 5 inches; loam
Bt1—5 to 8 inches; clay loam
Bt2—8 to 15 inches; clay
R—15 inches; bedrock

Dubakella gravelly clay loam

Geomorphic setting: North-facing side slopes of mountains
Parent material: Residuum weathered from serpentinite
Typical vegetation: Shrubs, mainly manzanita, with leather oak, MacNab cypress, and foothill pine

Properties and qualities

Slope: 15 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 20 to 80 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.0 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 3 inches; gravelly clay loam
Bt—3 to 10 inches; very gravelly clay
Btss1—10 to 16 inches; very gravelly clay
Btss2—16 to 26 inches; very gravelly clay
R—26 inches; unweathered bedrock

Henneke sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from serpentinite
Typical vegetation: Shrubs, mainly manzanita, with leather oak, MacNab cypress, and foothill pine

Properties and qualities

Slope: 15 to 50 percent
Runoff rate: High

Percentage of the surface covered by rock fragments: 20 to 80 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.0 inch (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 inches; slightly decomposed plant material
A—0 to 4 inches; sandy loam
Bt1—4 to 7 inches; extremely gravelly clay loam
Bt2—7 to 16 inches; extremely gravelly clay
R—16 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 10 percent
Slope: 15 to 50 percent
Geomorphic setting: Mountains and hills

Montara gravelly sandy loam and similar soils

Composition: 0 to 4 percent
Slope: 15 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the “Use and Management” section of this publication.

545—Henneke-Montara-Rock outcrop complex, 15 to 50 percent slopes

Map Unit Setting

General location: The lower Coast Range, south of Stonyford
MLRA: 15
Geomorphic setting: Mountains
Elevation: 900 to 4,000 feet (275 to 1,220 meters)
Mean annual precipitation: 18 to 50 inches (458 to 1,270 millimeters)
Mean annual air temperature: 48 to 61 degrees F (9 to 16 degrees C)
Frost-free period: 160 to 210 days

Composition

Henneke sandy loam—40 percent
Montara gravelly sandy loam—30 percent
Rock outcrop—15 percent
Minor components—15 percent

Major Component Description

Henneke sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from serpentinite
Typical vegetation: Shrubs, mainly manzanita, with leather oak, MacNab cypress, and foothill pine

Properties and qualities

Slope: 15 to 50 percent
Runoff rate: Very high
Percentage of the surface covered by rock fragments: 20 to 80 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.0 inch (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 inches; slightly decomposed plant material
A—0 to 4 inches; sandy loam
Bt1—4 to 7 inches; extremely gravelly clay loam
Bt2—7 to 16 inches; extremely gravelly clay
R—16 inches; unweathered bedrock

Montara gravelly sandy loam

Geomorphic setting: Side slopes of mountains

Parent material: Residuum weathered from serpentinite
Typical vegetation: Shrubs, mainly manzanita, with leather oak, MacNab cypress, and foothill pine

Properties and qualities

Slope: 15 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderately rapid above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 0.9 inch (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A1—0 to 6 inches; gravelly sandy loam
A2—6 to 10 inches; gravelly sandy loam
R—10 inches; unweathered bedrock

Rock outcrop

Geomorphic setting: Mountains
Kind of rock: Serpentinite
Typical vegetation: Mostly barren; a few shrubs

Properties and qualities

Slope: 15 to 50 percent
Runoff rate: High

Land capability classification

Irrigated: Not calculated
Nonirrigated: 8

Minor Components

Okiota loam and similar soils

Composition: 0 to 12 percent
Slope: 15 to 50 percent
Geomorphic setting: Side slopes of mountains

Dubakella gravelly clay loam and similar soils

Composition: 0 to 2 percent
Slope: 15 to 50 percent
Geomorphic setting: North-facing side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the “Use and Management” section of this publication.

548—Henneke-Okiota complex, 30 to 50 percent slopes

Map Unit Setting

General location: East side of Walker Ridge
MLRA: 15
Geomorphic setting: Mountains
Elevation: 1,400 to 3,000 feet (427 to 915 meters)
Mean annual precipitation: 24 to 32 inches (610 to 813 millimeters)
Mean annual air temperature: 55 to 61 degrees F (13 to 16 degrees C)
Frost-free period: 180 to 200 days

Composition

Henneke sandy loam—45 percent
Okiota loam—35 percent
Minor components—20 percent

Major Component Description

Henneke sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from serpentinite
Typical vegetation: Shrubs, mainly manzanita, with leather oak, MacNab cypress, and foothill pine

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 20 to 80 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.0 inch (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 inches; slightly decomposed plant material
A—0 to 4 inches; sandy loam
Bt1—4 to 7 inches; extremely gravelly clay loam
Bt2—7 to 16 inches; extremely gravelly clay
R—16 inches; unweathered bedrock

Okiota loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from serpentinite
Typical vegetation: Shrubs, mainly manzanita, with leather oak, MacNab cypress, and foothill pine

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 10 to 40 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.8 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 inches; slightly decomposed plant material
A—0 to 10 inches; gravelly loam
Bt1—10 to 17 inches; gravelly clay loam
Bt2—17 to 26 inches; gravelly clay loam
Cr—26 inches; soft or weathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 9 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains

Dubakella gravelly clay loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: North-facing side slopes of mountains

Montara gravelly sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the "Use and Management" section of this publication.

549—Henneke-Okiota complex, 50 to 75 percent slopes

Map Unit Setting

General location: East side of Walker Ridge
MLRA: 15
Geomorphic setting: Mountains
Elevation: 1,600 to 3,300 feet (488 to 1,007 meters)
Mean annual precipitation: 25 to 34 inches (635 to 864 millimeters)
Mean annual air temperature: 55 to 61 degrees F (13 to 16 degrees C)
Frost-free period: 180 to 210 days

Composition

Henneke sandy loam—45 percent
Okiota loam—35 percent
Minor components—20 percent

Major Component Description

Henneke sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from serpentinite

Typical vegetation: Shrubs, mainly manzanita, with leather oak, MacNab cypress, and foothill pine

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: Very high
Percentage of the surface covered by rock fragments: 20 to 80 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.0 inch (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 inches; slightly decomposed plant material
A—0 to 4 inches; sandy loam
Bt1—4 to 7 inches; extremely gravelly clay loam
Bt2—7 to 16 inches; extremely gravelly clay
R—16 inches; unweathered bedrock

Okiota loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from serpentinite
Typical vegetation: Shrubs, mainly manzanita, with leather oak, MacNab cypress, and foothill pine

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: Very high
Percentage of the surface covered by rock fragments: 10 to 40 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderately slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.8 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 inches; slightly decomposed plant material
A—0 to 10 inches; gravelly loam
Bt1—10 to 17 inches; gravelly clay loam
Bt2—17 to 26 inches; gravelly clay loam
Cr—26 inches; soft or weathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 9 percent
Slope: 50 to 75 percent
Geomorphic setting: Mountains

Dubakella gravelly clay loam and similar soils

Composition: 0 to 5 percent
Slope: 50 to 75 percent
Geomorphic setting: North-facing side slopes of mountains

Montara gravelly sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 50 to 75 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 50 to 75 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and watershed

For information about management, see the “Use and Management” section of this publication.

557—Neuns-Bamtush-Speaker complex, 30 to 50 percent slopes

Map Unit Setting

General location: Pine Ridge area, southeast of Letts Lake
MLRA: 5
Geomorphic setting: Mountains
Elevation: 2,200 to 3,500 feet (671 to 1,068 meters)
Mean annual precipitation: 35 to 50 inches (889 to 1,270 millimeters)

Mean annual air temperature: 50 to 54 degrees F (10 to 12 degrees C)
Frost-free period: 130 to 160 days

Composition

Neuns very gravelly loam—35 percent
Bamtush very gravelly loam—30 percent
Speaker gravelly loam—20 percent
Minor components—15 percent

Major Component Description

Neuns very gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.7 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oe—0 to 2 inches; moderately decomposed plant material
A—2 to 7 inches; very gravelly loam
Bt—7 to 15 inches; very gravelly loam
BC—15 to 29 inches; extremely gravelly loam
R—29 inches; unweathered bedrock

Bamtush very gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—60 to 80 inches
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 5.2 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 9 inches; very gravelly loam
AB—9 to 25 inches; very gravelly loam
Bt1—25 to 39 inches; very gravelly clay loam
Bt2—39 to 49 inches; very gravelly sandy clay loam
Bw—49 to 61 inches; very gravelly sandy clay loam
2Bt—61 to 68 inches; gravelly clay loam

Speaker gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from sandstone and shale
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—20 to 40 inches
Slowest permeability class: Moderately slow above the bedrock

Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 3.7 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oi—0 inches; slightly decomposed plant material
A—0 to 10 inches; gravelly loam
Bt1—10 to 17 inches; gravelly clay loam
Bt2—17 to 26 inches; gravelly clay loam
Cr—26 inches; soft or weathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains

Etsel gravelly sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Marpa very gravelly sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Maymen sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, watershed, and timber production

For information about management, see the "Use and Management" section of this publication.

564—Fouts-Yorkville-Squawrock association, 15 to 50 percent slopes

Map Unit Setting

General location: North side of Stony Creek, near Fouts Springs
MLRA: 5
Geomorphic setting: Mountains
Elevation: 2,000 to 4,595 feet (610 to 1,402 meters)
Mean annual precipitation: 25 to 45 inches (635 to 1,143 millimeters)
Mean annual air temperature: 54 to 59 degrees F (12 to 15 degrees C)
Frost-free period: 130 to 180 days

Composition

Fouts gravelly loam—35 percent
Yorkville clay loam—35 percent
Squawrock gravelly loam—15 percent
Minor components—15 percent

Major Component Description

Fouts gravelly loam

Geomorphic setting: Convex side slopes on south aspects of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 15 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 4.0 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 6 inches; gravelly loam

Bt1—6 to 12 inches; very gravelly clay
Bt2—12 to 18 inches; very gravelly clay
Bt3—18 to 26 inches; very gravelly clay
R—26 inches; unweathered bedrock

Yorkville clay loam

Geomorphic setting: Landslides and the lower side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 15 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (paralithic)—60 to 80 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.0 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; clay loam
Bt1—2 to 15 inches; clay loam
Bt2—15 to 40 inches; clay
Bt3—40 to 55 inches; clay loam
BC—55 to 60 inches; clay loam
Cr—60 inches; soft or weathered bedrock

Squawrock gravelly loam

Geomorphic setting: Side slopes on south aspects of mountains
Parent material: Residuum weathered from sandstone
Typical vegetation: Annual grasses and forbs

Properties and qualities

Slope: 15 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 0 to 15 percent (coarse, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Slow above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.6 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

A—0 to 2 inches; gravelly loam
Bt1—2 to 9 inches; very gravelly clay loam
Bt2—9 to 18 inches; very gravelly clay loam
Bt3—18 to 23 inches; gravelly clay
C—23 to 26 inches; gravelly clay
R—26 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 10 percent
Slope: 15 to 50 percent
Geomorphic setting: Mountains

Etsel gravelly sandy loam and similar soils

Composition: 0 to 4 percent
Slope: 15 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Livestock grazing, wildlife habitat, and watershed

For information about management, see the “Use and Management” section of this publication.

570—Endoaquolls, 0 to 2 percent slopes, frequently ponded

Map Unit Setting

General location: The lower Letts Valley and Summit Valley
MLRA: 5

Geomorphic setting: Mountain valleys
Elevation: 4,035 to 5,320 feet (1,231 to 1,622 meters)
Mean annual precipitation: 45 to 50 inches (1,143 to 1,270 millimeters)
Mean annual air temperature: 46 to 50 degrees F (8 to 10 degrees C)
Frost-free period: 110 to 160 days

Composition

Endoaquolls, frequently ponded—90 percent
Minor components—10 percent

Major Component Description

Endoaquolls, frequently ponded

Geomorphic setting: Meadows in mountain valleys
Parent material: Alluvium
Typical vegetation: Hydrophytic species with perennial grasses

Properties and qualities

Slope: 0 to 2 percent
Runoff: Negligible
Percentage of the surface covered by rock fragments: None
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 9.7 inches (high)

Hydrologic properties

Present flooding: None
Present ponding: Frequent
Current water table: Present
Natural drainage class: Very poorly drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 5w

Typical profile

A1—0 to 4 inches; silt loam
A2—4 to 15 inches; loam
2Bw1—15 to 24 inches; silty clay loam
2Bw2—24 to 40 inches; clay loam
3C1—40 to 55 inches; gravelly loam
3C2—55 to 60 inches; gravelly loam

Minor Components

Bamtush very gravelly loam and similar soils

Composition: 0 to 10 percent
Slope: 0 to 2 percent
Geomorphic setting: Side slopes of mountains

Use and Management

Major uses: Wildlife habitat, recreation, livestock grazing, and watershed

For information about management, see the "Use and Management" section of this publication.

590—Neuns-Marpa-Goulding complex, 30 to 50 percent slopes

Map Unit Setting

General location: High elevations on the Coast Range
MLRA: 5
Geomorphic setting: Mountains
Elevation: 3,200 to 5,000 feet (976 to 1,525 meters)
Mean annual precipitation: 38 to 60 inches (976 to 1,525 millimeters)
Mean annual air temperature: 46 to 54 degrees F (8 to 12 degrees C)
Frost-free period: 110 to 160 days

Composition

Neuns very gravelly loam—35 percent
Marpa very gravelly sandy loam—30 percent
Goulding gravelly loam—20 percent
Minor components—15 percent

Major Component Description

Neuns very gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.7 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oe—0 to 2 inches; moderately decomposed plant material
A—2 to 7 inches; very gravelly loam
Bt—7 to 15 inches; very gravelly loam
BC—15 to 29 inches; extremely gravelly loam
R—29 inches; unweathered bedrock

Marpa very gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.7 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oe—0 to 2 inches; moderately decomposed plant material
A—2 to 5 inches; very gravelly sandy loam
Bt1—5 to 14 inches; very gravelly sandy clay loam
Bt2—14 to 25 inches; very gravelly sandy clay loam
R—25 inches; unweathered bedrock

Goulding gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Ceanothus and live oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.3 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 inches; slightly decomposed plant material
A—0 to 4 inches; gravelly loam
Bw1—4 to 8 inches; very gravelly loam
Bw2—8 to 13 inches; very gravelly loam
R—13 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Bamtush very gravelly loam and similar soils

Composition: 0 to 3 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Etsel gravelly sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Maymen sandy loam and similar soils

Composition: 0 to 2 percent
Slope: 30 to 50 percent

Geomorphic setting: Side slopes of mountains

Speaker gravelly loam and similar soils

Composition: 0 to 2 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, watershed, and timber production

For information about management, see the "Use and Management" section of this publication.

591—Neuns-Sheetiron-Goulding complex, 30 to 50 percent slopes

Map Unit Setting

General location: Along the western boundary of Colusa County, adjacent to Lake County, near Goat Mountains
MLRA: 5
Geomorphic setting: Mountains
Elevation: 3,200 to 5,000 feet (976 to 1,525 meters)
Mean annual precipitation: 40 to 60 inches (1,016 to 1,524 millimeters)
Mean annual air temperature: 46 to 54 degrees F (8 to 12 degrees C)
Frost-free period: 110 to 160 days

Composition

Neuns very gravelly loam—35 percent
Sheetiron gravelly sandy loam—30 percent
Goulding gravelly loam—20 percent
Minor components—15 percent

Major Component Description

Neuns very gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.7 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oe—0 to 2 inches; moderately decomposed plant material
A—2 to 7 inches; very gravelly loam
Bt—7 to 15 inches; very gravelly loam
BC—15 to 29 inches; extremely gravelly loam
R—29 inches; unweathered bedrock

Sheetiron gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from mica schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderately rapid
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.8 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oe—0 to 1 inch; moderately decomposed plant material
A1—1 to 4 inches; gravelly sandy loam
A2—4 to 9 inches; very gravelly sandy loam
Bw1—9 to 18 inches; very gravelly sandy loam
Bw2—18 to 30 inches; extremely gravelly sandy loam
R—30 inches; unweathered bedrock

Goulding gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Ceanothus and live oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.3 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oi—0 inches; slightly decomposed plant material
A—0 to 4 inches; gravelly loam
Bw1—4 to 8 inches; very gravelly loam
Bw2—8 to 13 inches; very gravelly loam
R—13 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 8 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Bamtush very gravelly loam and similar soils

Composition: 0 to 3 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Marpa very gravelly sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, watershed, and timber production

For information about management, see the “Use and Management” section of this publication.

592—Neuns-Goulding-Sheetiron complex, 50 to 75 percent slopes

Map Unit Setting

General location: Along the Lake County boundary, south of Snow Mountains
MLRA: 5
Geomorphic setting: Mountains
Elevation: 3,200 to 5,000 feet (976 to 1,525 meters)
Mean annual precipitation: 40 to 60 inches (1,016 to 1,524 millimeters)
Mean annual air temperature: 46 to 54 degrees F (8 to 12 degrees C)
Frost-free period: 110 to 160 days

Composition

Neuns very gravelly loam—35 percent
Goulding gravelly loam—25 percent
Sheetiron gravelly sandy loam—25 percent
Minor components—15 percent

Major Component Description

Neuns very gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None

Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.7 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oe—0 to 2 inches; moderately decomposed plant material
A—2 to 7 inches; very gravelly loam
Bt—7 to 15 inches; very gravelly loam
BC—15 to 29 inches; extremely gravelly loam
R—29 inches; unweathered bedrock

Goulding gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Ceanothus and live oak

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.3 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 inches; slightly decomposed plant material
A—0 to 4 inches; gravelly loam
Bw1—4 to 8 inches; very gravelly loam
Bw2—8 to 13 inches; very gravelly loam
R—13 inches; unweathered bedrock

Sheetiron gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from mica schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderately rapid
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.8 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oe—0 to 1 inch; moderately decomposed plant material
A1—1 to 4 inches; gravelly sandy loam
A2—4 to 9 inches; very gravelly sandy loam
Bw1—9 to 18 inches; very gravelly sandy loam
Bw2—18 to 30 inches; extremely gravelly sandy loam
R—30 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 8 percent
Slope: 50 to 75 percent
Geomorphic setting: Mountains and hills

Bamtush very gravelly loam and similar soils

Composition: 0 to 3 percent
Slope: 50 to 75 percent
Geomorphic setting: Side slopes of mountains

Marpa very gravelly sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 50 to 75 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 50 to 75 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, watershed, and timber production

For information about management, see the "Use and Management" section of this publication.

596—Yollabolly-Rock outcrop-Freezeout complex, 50 to 75 percent slopes

Map Unit Setting

General location: Coast Range crest, along the boundaries of Lake and Glenn Counties
MLRA: 5
Geomorphic setting: Mountains
Elevation: 4,995 to 7,060 feet (1,524 to 2,152 meters)
Mean annual precipitation: 50 to 70 inches (1,270 to 1,778 millimeters)
Mean annual air temperature: 43 to 48 degrees F (6 to 9 degrees C)
Frost-free period: 90 to 130 days

Composition

Yollabolly very gravelly loam—40 percent
Rock outcrop—35 percent
Freezeout very gravelly sandy loam—20 percent
Minor components—5 percent

Major Component Description

Yollabolly very gravelly loam

Geomorphic setting: The upper side slopes and ridgetops of mountains
Parent material: Residuum weathered from schist
Typical vegetation: White fir and red fir

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: 10 to 40 percent (coarse pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.2 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A1—0 to 2 inches; very gravelly loam
A2—2 to 6 inches; very gravelly loam
C—6 to 17 inches; very gravelly loam
R—17 inches; unweathered bedrock

Rock outcrop

Geomorphic setting: Mountains
Kind of rock: Schist
Typical vegetation: Most areas are barren with a few scattered shrubs or grasses.

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None

Land capability classification

Irrigated: Not calculated
Nonirrigated: 8

Freezeout very gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: White fir and red fir

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches

Slowest permeability class: Moderately rapid
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.9 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 6 inches; very gravelly sandy loam
Bw1—6 to 17 inches; very gravelly sandy loam
Bw2—17 to 26 inches; very gravelly sandy loam
R—26 inches; unweathered bedrock

Minor Components

Bamtush very gravelly loam and similar soils

Composition: 0 to 4 percent
Slope: 50 to 75 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 50 to 75 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, watershed, and timber production

For information about management, see the "Use and Management" section of this publication.

597—Yollabolly-Freezeout complex, 30 to 50 percent slopes

Map Unit Setting

General location: Coast Range crest, along the boundaries of Lake and Glenn Counties
MLRA: 5
Geomorphic setting: Mountains
Elevation: 4,995 to 7,060 feet (1,524 to 2,152 meters)
Mean annual precipitation: 50 to 70 inches (1,270 to 1,778 millimeters)
Mean annual air temperature: 43 to 48 degrees F (6 to 9 degrees C)
Frost-free period: 90 to 130 days

Composition

Yollabolly very gravelly loam—55 percent
Freezeout very gravelly sandy loam—30 percent
Minor components—15 percent

Major Component Description

Yollabolly very gravelly loam

Geomorphic setting: The upper side slopes and ridgetops of mountains
Parent material: Residuum weathered from schist
Typical vegetation: White fir and red fir

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 10 to 40 percent (fine, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.2 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A1—0 to 2 inches; very gravelly loam
A2—2 to 6 inches; very gravelly loam
C—6 to 17 inches; very gravelly loam
R—17 inches; unweathered bedrock

Freezeout very gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: White fir and red fir

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches

Slowest permeability class: Moderately rapid above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.9 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 6 inches; very gravelly sandy loam
Bw1—6 to 17 inches; very gravelly sandy loam
Bw2—17 to 26 inches; very gravelly sandy loam
R—26 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 9 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Bamtush very gravelly loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, watershed, and timber production

For information about management, see the "Use and Management" section of this publication.

599—Freezeout-Yollabolly complex, 30 to 50 percent slopes

Map Unit Setting

General location: Coast Range crest, along the boundaries of Lake and Glenn Counties
MLRA: 5
Geomorphic setting: Mountains
Elevation: 4,995 to 7,060 feet (1,524 to 2,152 meters)
Mean annual precipitation: 50 to 70 inches (1,270 to 1,778 millimeters)
Mean annual air temperature: 43 to 48 degrees F (6 to 9 degrees C)
Frost-free period: 90 to 130 days

Composition

Freezeout very gravelly sandy loam—55 percent
Yollabolly very gravelly loam—30 percent
Minor components—15 percent

Major Component Description

Freezeout very gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: White fir and red fir

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: High
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderately rapid
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.9 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 6 inches; very gravelly sandy loam
Bw1—6 to 17 inches; very gravelly sandy loam
Bw2—17 to 26 inches; very gravelly sandy loam
R—26 inches; unweathered bedrock

Yollabolly very gravelly loam

Geomorphic setting: The upper side slopes and ridgetops of mountains

Parent material: Residuum weathered from schist
Typical vegetation: White fir and red fir

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Percentage of the surface covered by rock fragments: 10 to 40 percent (fine, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.2 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A1—0 to 2 inches; very gravelly loam
A2—2 to 6 inches; very gravelly loam
C—6 to 17 inches; very gravelly loam
R—17 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 9 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Bamtush very gravelly loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, watershed, and timber production

For information about management, see the "Use and Management" section of this publication.

600—Freezeout-Yollabolly association, 50 to 75 percent slopes

Map Unit Setting

General location: Coast Range crest, along the boundaries of Lake and Glenn Counties
MLRA: 5
Geomorphic setting: Mountains
Elevation: 4,995 to 7,060 feet (1,524 to 2,152 meters)
Mean annual precipitation: 50 to 70 inches (1,270 to 1,778 millimeters)
Mean annual air temperature: 43 to 48 degrees F (6 to 9 degrees C)
Frost-free period: 90 to 130 days

Composition

Freezeout very gravelly sandy loam—50 percent
Yollabolly very gravelly loam—35 percent
Minor components—15 percent

Major Component Description

Freezeout very gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: White fir and red fir

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: High
Surface features: None noted
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderately rapid
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.9 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 6 inches; very gravelly sandy loam
Bw1—6 to 17 inches; very gravelly sandy loam

Bw2—17 to 26 inches; very gravelly sandy loam
R—26 inches; unweathered bedrock

Yollabolly very gravelly loam

Geomorphic setting: The upper side slopes and ridgetops of mountains
Parent material: Residuum weathered from schist
Typical vegetation: White fir and red fir

Properties and qualities

Slope: 50 to 75 percent
Runoff rate: High
Surface features: None noted
Percentage of the surface covered by rock fragments: 10 to 40 percent (fine, angular pebbles)
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate above the bedrock
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.2 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

A1—0 to 2 inches; very gravelly loam
A2—2 to 6 inches; very gravelly loam
C—6 to 17 inches; very gravelly loam
R—17 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 9 percent
Slope: 50 to 75 percent
Geomorphic setting: Mountains and hills

Bamtush very gravelly loam and similar soils

Composition: 0 to 5 percent
Slope: 50 to 75 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 50 to 75 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, watershed, and timber production

For information about management, see the "Use and Management" section of this publication.

610—Neuns-Bamtush-Goulding association, 30 to 50 percent slopes

Map Unit Setting

General location: High elevations on the Coast Range
MLRA: 5
Geomorphic setting: Mountains
Elevation: 3,000 to 5,000 feet (915 to 1,525 meters)
Mean annual precipitation: 40 to 50 inches (1,016 to 1,270 millimeters)
Mean annual air temperature: 46 to 54 degrees F (8 to 12 degrees C)
Frost-free period: 125 to 180 days

Composition

Neuns very gravelly loam—40 percent
Bamtush very gravelly loam—25 percent
Goulding gravelly loam—20 percent
Minor components—15 percent

Major Component Description

Neuns very gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Surface features: None noted
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.7 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oe—0 to 2 inches; moderately decomposed plant material
A—2 to 7 inches; very gravelly loam
Bt—7 to 15 inches; very gravelly loam
BC—15 to 29 inches; extremely gravelly loam
R—29 inches; unweathered bedrock

Bamtush very gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Surface features: None noted
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—60 to 80 inches
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 5.2 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 9 inches; very gravelly loam
AB—9 to 25 inches; very gravelly loam
Bt1—25 to 39 inches; very gravelly clay loam
Bt2—39 to 49 inches; very gravelly sandy clay loam
Bw—49 to 61 inches; very gravelly sandy clay loam
2Bt—61 to 68 inches; gravelly clay loam

Goulding gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Ceanothus and live oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: Medium
Surface features: None noted
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—10 to 20 inches
Slowest permeability class: Moderate
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 1.3 inches (very low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Somewhat excessively drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 7e

Typical profile

Oi—0 inches; slightly decomposed plant material
A—0 to 4 inches; gravelly loam
Bw1—4 to 8 inches; very gravelly loam
Bw2—8 to 13 inches; very gravelly loam
R—13 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 6 percent
Slope: 30 to 50 percent
Geomorphic setting: Mountains and hills

Marpa very gravelly sandy loam and similar soils

Composition: 0 to 5 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Maymen sandy loam and similar soils

Composition: 0 to 3 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, watershed, and timber production

For information about management, see the "Use and Management" section of this publication.

650—Bamtush-Marpa complex, 15 to 30 percent slopes

Map Unit Setting

General location: East of Letts Lake, near the Trough Springs Ridge area
MLRA: 5
Geomorphic setting: Mountains
Elevation: 1,695 to 5,000 feet (518 to 1,525 meters)
Mean annual precipitation: 30 to 50 inches (765 to 1,270 millimeters)
Mean annual air temperature: 54 to 57 degrees F (12 to 14 degrees C)
Frost-free period: 125 to 210 days

Composition

Bamtush very gravelly loam—55 percent
Marpa very gravelly sandy loam—30 percent
Minor components—15 percent

Major Component Description

Bamtush very gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Surface features: None noted
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—60 to 80 inches
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 5.2 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e

Typical profile

Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 9 inches; very gravelly loam
AB—9 to 25 inches; very gravelly loam
Bt1—25 to 39 inches; very gravelly clay loam
Bt2—39 to 49 inches; very gravelly sandy clay loam
Bw—49 to 61 inches; very gravelly sandy clay loam
2Bt—61 to 68 inches; gravelly clay loam

Marpa very gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 15 to 30 percent
Runoff rate: Medium
Surface features: None noted
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.7 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 4e

Typical profile

Oe—0 to 2 inches; moderately decomposed plant material
A—2 to 5 inches; very gravelly sandy loam
Bt1—5 to 14 inches; very gravelly sandy clay loam
Bt2—14 to 25 inches; very gravelly sandy clay loam

R—25 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 8 percent
Slope: 15 to 30 percent
Geomorphic setting: Mountains and hills

Goulding gravelly loam and similar soils

Composition: 0 to 3 percent
Slope: 15 to 30 percent
Geomorphic setting: Side slopes of mountains

Neuns very gravelly loam and similar soils

Composition: 0 to 3 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 15 to 30 percent
Geomorphic setting: Channels

Use and Management

Major uses: Wildlife habitat, recreation, and timber production

For information about management, see the "Use and Management" section of this publication.

651—Bamtush-Marpa complex, 30 to 50 percent slopes

Map Unit Setting

General location: East of Letts Lake, near the Trough Springs Ridge area
MLRA: 5
Geomorphic setting: Mountains
Elevation: 1,695 to 5,000 feet (518 to 1,525 meters)
Mean annual precipitation: 30 to 50 inches (765 to 1,270 millimeters)
Mean annual air temperature: 54 to 57 degrees F (12 to 14 degrees C)
Frost-free period: 125 to 210 days

Composition

Bamtush very gravelly loam—55 percent
Marpa very gravelly sandy loam—30 percent
Minor components—15 percent

Major Component Description

Bamtush very gravelly loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Surface features: None noted
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—60 to 80 inches
Slowest permeability class: Moderately slow
Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 5.2 inches (moderate)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oi—0 to 1 inch; slightly decomposed plant material
A—1 to 9 inches; very gravelly loam
AB—9 to 25 inches; very gravelly loam
Bt1—25 to 39 inches; very gravelly clay loam
Bt2—39 to 49 inches; very gravelly sandy clay loam
Bw—49 to 61 inches; very gravelly sandy clay loam
2Bt—61 to 68 inches; gravelly clay loam

Marpa very gravelly sandy loam

Geomorphic setting: Side slopes of mountains
Parent material: Residuum weathered from schist
Typical vegetation: Mixed conifers, including Douglas-fir, ponderosa pine, sugar pine, incense cedar, and California black oak

Properties and qualities

Slope: 30 to 50 percent
Runoff rate: High
Surface features: None noted
Percentage of the surface covered by rock fragments: None
Depth to restrictive feature: Bedrock (lithic)—20 to 40 inches
Slowest permeability class: Moderately slow above the bedrock

Salinity: Not saline
Sodicity: Not sodic
Available water capacity: About 2.7 inches (low)

Hydrologic properties

Present flooding: None
Present ponding: None
Current water table: None noted
Natural drainage class: Well drained

Land capability classification

Irrigated: Not calculated
Nonirrigated: 6e

Typical profile

Oe—0 to 2 inches; moderately decomposed plant material
A—2 to 5 inches; very gravelly sandy loam
Bt1—5 to 14 inches; very gravelly sandy clay loam
Bt2—14 to 25 inches; very gravelly sandy clay loam
R—25 inches; unweathered bedrock

Minor Components

Rock outcrop

Composition: 0 to 8 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains and hills

Goulding gravelly loam and similar soils

Composition: 0 to 3 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Neuns very gravelly loam and similar soils

Composition: 0 to 3 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of mountains

Unnamed

Composition: 0 to 1 percent
Slope: 30 to 50 percent
Geomorphic setting: Side slopes of channels

Use and Management

Major uses: Wildlife habitat, recreation, and timber production

For information about management, see the “Use and Management” section of this publication.

652—Water

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the 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 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 as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities. 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.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops are listed for each soil, 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 soil properties given in the description of each soil under the heading "Detailed Soil Map Units." General management factors and considerations are identified in this section. Specific information about soils and technical information can be obtained from the Colusa Resource Conservation District, the Natural Resources Conservation Service, or the University of California Cooperative Extension Service.

Major Management Factors

The management concerns affecting the use of the detailed map units in this survey area for irrigated crops are shown in table 5. The main concerns in managing irrigated cropland are conserving moisture, controlling wind erosion and water erosion, and maintaining soil fertility.

Soil moisture is conserved primarily by reducing the evaporation and runoff rates and increasing the water intake rate. Applying conservation tillage and conservation cropping systems, farming on the contour, stripcropping, establishing field windbreaks, and leaving crop residue on the surface conserve moisture.

Generally, a combination of several practices is needed to control wind erosion and water erosion. Conservation tillage, stripcropping, field windbreaks, tall grass barriers, contour farming, conservation cropping systems, crop residue management, diversions, and grassed waterways help to prevent excessive soil loss.

Measures that are effective in maintaining soil fertility include applying fertilizer, both organic and inorganic, including manure; incorporating crop residue or green manure crops into the soil; and using proper crop rotations. Erosion control helps to prevent the loss of organic matter and plant nutrients and thus helps to maintain productivity, although the level of fertility can be reduced even in areas where erosion is controlled. All of the soils used for nonirrigated crops in this survey area respond well to applications of fertilizer.

Some of the limitations and hazards shown in table 5 cannot be easily overcome. These are channels, flooding, depth to bedrock, ponding, gullies, and lack of timely precipitation.

Additional limitations and hazards are as follows:

Abrupt textural change.—The soil has a loamy or coarser surface layer underlain by a clayey subsoil within a depth of 20 inches.
- Downward water movement and root growth are restricted by an abrupt textural change interface.
- Intensive irrigation management, crop selection, and nutrient management are needed for acceptable crop performance in the upper part of the soil.
- In areas where the water table is below a depth of 24 inches during the growing season, slip ploughing can invert the soil profile and thus interrupt the abrupt textural change interface.

Available water capacity.—The soil holds too little water for normal crop growth. The available water capacity is low or very low.
- Because the soil is droughty, applications of irrigation water should be light and frequent.
- Water should be applied in amounts that are sufficient to wet the root zone but are small enough to minimize the leaching of plant nutrients.

Calcium carbonate.—Excess calcium carbonate, generally more than 15 percent in the soil, restricts the growth of most plants.
- Applications of acidifying amendments lower pH and increase the availability of micronutrients in calcareous soils.

Cation-exchange capacity.—The cation-exchange capacity, generally 10 to 20 meq/100gm, is low enough to restrict the growth of plants.
- The supply of available nutrients needed for acceptable plant performance can be enhanced by applications of fertilizer and/or soil amendments on soils with a low cation-exchange capacity.

Channeled.—The map unit has more than 5 percent channels.
- Leveling the channeled landscape may require deep cuts that will expose highly variable stratified substrata.

Clayey.—The soil surface is slippery and sticky when wet and is slow to dry.
- The soil can be easily cultivated only within a narrow range of moisture content.
- Soil crusting and cracking may damage emerging crops.

Compaction.—A process in which the rearrangement of soil grains decreases void space and brings the grains into closer contact with one another, thereby increasing the bulk density.
- Soil compaction can result from repeated equipment traffic. It reduces the rate of permeability and impairs root penetration.
- Ripping may be necessary to break up compaction pans.

Depth to bedrock.—The depth to bedrock is 20 inches or less.
- The depth to bedrock affects the suitability of deep-rooted crops.
- If the bedrock is soft, deep ripping of this restrictive layer (where feasible) helps to overcome this limitation.

Depth to cemented pan.—Restrictive, dense, hard, somewhat impervious cemented soil material is near the surface, generally at a depth of 20 inches or less.
- The hardpan reduces the yield of deep-rooted crops.
- Where feasible, deep ripping of this restrictive layer can help to overcome this limitation.
- A tillage pan forms easily if the soil is tilled when wet.
- Chiseling or subsoiling breaks up the tillage pan.

Erosion, water.—The soil is easily eroded by water. See *Slope* for major management considerations.

Erosion, wind.—The soil is easily eroded by the wind.
- When the wind velocity is high in spring, the hazard of wind erosion can be reduced by using all crop residue to protect the surface and by minimizing tillage.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides
- The risk of flooding can be reduced by levees and diversions.
- Most climatically adapted crops can be grown if the soil is protected from flooding late in spring and if a drainage system is installed.

Permeability, excessive.—The fast movement (in general, moderately rapid or faster) of water through the soil adversely affects the crop.
- Close management of irrigation water, plant nutrients, and agricultural chemicals helps to prevent

the nutrient loss caused by leaching and the contamination ground water.

Permeability, restricted.—The slow movement of water through the soil adversely affects the crop.
- Most climatically adapted crops can be grown if the soil is protected from flooding late in spring and if a drainage system is installed.
- Water applications should be regulated so that the water does not stand on the surface and damage the crops.

Rock fragments.—The soil profile has enough rock fragments, generally 15 percent or more, to adversely affect the use of soil.
- The high percentage of rock fragments reduces the amount of moisture available for plant growth.
- Rock fragments on the surface cause rapid wear of tillage equipment.

Sandy.—The soil is soft and loose, droughty, and low in fertility or is too fine for use as gravel.
- Because the soil is droughty, applications of irrigation water should be light and frequent.
- Water should be applied in amounts that are sufficient to wet the root zone but are small enough to minimize the leaching of plant nutrients.
- The soil is subject to lateral seepage in wet years, when the water level is high.

Shrink-swell.—The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage plant roots.
- Irrigating after the crop is harvested helps to maintain adequate soil moisture until the fall rains begin and thus helps to prevent the formation of soil cracks and the damage to perennial roots caused by shrinking and swelling of the soil.

Slope.—The slope is steep enough (generally more than 2 percent) for special practices to be needed to ensure satisfactory performance of the soil.
- Sprinkler and drip irrigation systems are suitable. They permit the even, controlled application of water and reduce the runoff rate and the risk of erosion.
- All tillage should be on the contour or across the slope.
- If the soil is plowed in the fall, the hazards of runoff and erosion can be reduced by applying fertilizer and seeding a cover crop.
- Annual cultivation should be avoided on slopes of more than 15 percent.

Sodicity.—Excess exchangeable sodium, generally with an SAR of 6 or greater. The exchangeable sodium imparts poor physical properties that restrict the growth of plants.
- The content of toxic salts can be reduced by leaching, applying the proper amount of soil amendments, and returning crop residue to the soil.
- Intensive management is required to reduce the content of salts and maintain soil productivity.

Wetness.—The soil is wet, generally within a depth of 20 inches, during the period of desired use.
- Carefully appling irrigation water helps to prevent the buildup of a water table.
- Tile drainage can lower the water table if a suitable outlet is available.
- Deep-rooted crops are suitable in areas where natural drainage is adequate or a drainage system has been installed.

Major Management Measures

The soils in Colusa County that are suitable for irrigated crops, nonirrigated crops, and pasture can have a variety of limitations resulting from soil characteristics. Cultural and management practices can overcome most cropping limitations. They can minimize soil erosion, promote soil tilth, allow the efficient use of irrigation water, protect surface and ground water, and manage soil salts. Good farmland management can ensure sustained optimum productivity by maintaining favorable soil characteristics and soil fertility and by assisting in pest management.

Some of the more common farming practices and management techniques are chiseling and subsoiling, a conservation cropping sequence, conservation tillage, crop residue management, removal of excess water, control of surface water, toxic salt reduction, erosion control, irrigation water management, pasture management, and hayland management. Use of these and other applicable practices depends upon land use goals, soil characteristics or limitations, crop suitability, and economics. Some soil limitations cannot be mitigated or economically corrected; therefore, land use planning is essential for profitable land use and prevention of soil degradation.

Chiseling and subsoiling can improve or open dense or compacted soil layers, which are commonly caused by equipment use. Dense or compacted soil layers limit the effective rooting depth and affect soil water characteristics. Chiseling (less than 16 inches deep) and subsoiling (deeper than 16 inches) increase the pore space in the dense soil layers. They increase root penetration, enhance permeability and internal drainage, and prevent a perched water table. The soils most susceptible to compaction are Moonbend, Vina, and Westfan soils. Most of the soils used as cropland can develop tillage compaction layers through cultivation and/or tillage operations during periods when the susceptibility to compaction is high. Cultivation should be avoided when the soils are excessively wet. If the soil moisture is near or above field capacity, soil strength is reduced and the soil is too wet for cultivation. Timing farming operations so that the soil is worked during periods of favorable soil moisture can minimize not only the formation of compaction layers but also the formation of clods. Because of intensive cultural practices and management requirements, some crops are more susceptible to soil compaction than others. In areas of the more susceptible crops, chiseling the field before planting the next crop could be advantageous.

Hillgate, Mallard, and Corbiere are examples of soils in which soil aeration and permeability can be temporarily improved by chiseling or subsoiling a clayey subsoil. The benefits are temporary because the clays eventually reform with less pore space when wet.

A conservation cropping system helps to maintain favorable soil conditions for good crop performance and sustained production. This approach involves consideration of all tillage practices, fertilizer programs, pest-control programs, and crop rotations. All inputs are evaluated and managed for optimum production with minimum soil degradation. Economic benefits are realized through reduced farming expenses and machinery costs. Intensive tillage practices reduce the amount of organic matter and destroy soil structure. A low content of organic matter and poor soil structure result in poor soil tilth, a reduced rate of water infiltration, the loss of plant nutrients, and increased susceptibility to erosion, all of which seriously affect crop performance and productivity.

A good cropping sequence includes cultural practices and crop rotations that offset the harmful effects of continuous single cropping. The selection of crops for inclusion in the rotation is an important consideration. Some crops and their production practices are naturally deleterious to soils. Other crops are soil enhancing. Legumes, such as alfalfa hay, are soil enhancing because of the fixation of nitrogen, reduced tillage, and permanent root systems. When properly managed, grasses for hay or pasture build soil structure and increase the amount of organic matter. A good croping sequence offsets most of the soil degradation resulting from cropping. A well designed cropping sequence also keeps erosion at an acceptable level by maintaining vegetation or crop residue on the soil during periods of wind and rain. Incorporating crop residue or green manure crops into the soil helps to maintain the content of organic matter. Soil structure, the soil water reservoir, and the nutrient-supplying capacity are all affected by the content of organic matter.

A planned cropping system assists in weed and pest control and maximizes the benefits of fertilizers and other chemical inputs. Benefits are accrued by interrupting host-pest relationships and creating more on-farm diversity. Additionally, subsequent crops utilize nutrient carryovers. Soil nutrients that are leached below the root zone of the crop can be intercepted and stored by deep-rooted cover and green manure crops and returned to the soil for subsequent crop use.

Conservation tillage is the reduction of conventional tillage operations to the level essential to control weeds, incorporate crop residue into the soil, modify the soil for favorable air and water movement, and prepare a favorable seedbed. Conservation tillage can range from a no-till operation to something less than conventional tillage. Crop residue management is a very important component that maintains a ground cover of 30 percent after planting, a level that greatly reduces the hazard of erosion.

Crop residue management is important no matter what type of tillage program is used. Crop residues help to maintain soil tilth, the content of organic matter, and soil structure. They also reduce the hazard of water erosion. Including high-residue crops, such as rice and wheat, in the crop rotation can make up for low-residue crops, such as beans. When possible, incorporation of grasses into the cropping sequence and green manure crops are excellent soil-enhancing practices. Crop residue management can benefit all of the cropland in the survey area.

Removal of excess water, including surface and subsurface water, helps to prevent or divert accumulations from rainfall, runoff, seepage, or irrigation. Water removal minimizes cropping limitations in areas of water-sensitive crops, such as alfalfa hay and walnuts, and can increase the yields of other crops. Accumulations of excess water can result from rainfall, from overirrigation, or from runoff into low areas or swales where surplus surface water collects. Capay, Clear Lake, Corbiere, Mallard, Scribner, and Willows soils have early season water tables. Surplus water should be a consideration when water-sensitive crops are grown on these soils. The water table varies from year to year, so the problems are not always present. The high water table can severely affect an alfalfa stand or orchard if the roots are in water during the growing season.

Control of surface water can help to minimize the limitations caused by runoff accumulations in low areas or tailwater at the lower end of irrigated fields. Excess surface waters affect crop performance and provide a habitat for weeds and mosquitoes. Land grading, tailwater recovery systems, and good irrigation water management can solve surface water problems. These problems are associated mostly with the more heavily textured soils with slow infiltration rates, such as Capay, Clear Lake, Myers, and Willows soils. Low areas require diversions, dikes, or ditches to divert and control floodwater and other surface waters.

Toxic salt reduction can significantly improve crop performance. Salts in the soil limit crop performance by reducing the availability of water or decreasing the rate of water infiltration. Some soils, such as Scribner, may be excessively saline. Other soils, such as Alcapay and Willows, are excessively sodic. Colusa soils are characrteized by excessive salinity and sodicity. Infiltration problems are caused by excessive sodium in the soil. The sodium disperses the soil aggregates and destroys soil structure. Reduced water infiltration causes irrigation efficiency problems and difficulty in filling the soil profile with water.

Nonsaline sodic conditions can be controlled by applying soil amendments. Soil reclamation can be limited by technical problems (methods of removing the salts) or by financial and/or water resources. Reclamation of sodic soils requires the addition of soil amendments to free the sodium so that it can be leached below the root zone. Mechanical treatments are sometimes necessary to facilitate mixing of the amendment in the topsoil and thus increase the effectiveness of the amendment. Problems arise in areas where there is a high water table coupled with a high clay content. In these areas the leachate (water with the leached sodium) cannot be removed from the soil. Partially reclaimed soils, such as Willows, should not be kept fallow for long periods because the salts will migrate upward in the soil profile through evaporation.

Erosion control is needed on most soils. Water erosion occurs when raindrops strike bare soil and disperse the soil aggregates. Soils on slopes of more than 2 percent are susceptible to water erosion. Cool climatic conditions limit plant growth during critical erosive periods in winter.

Irrigation water management is essential for all irrigated crops. Correct field irrigation grades, water delivery systems, and irrigation water management are important for profitable crop production, soil and water conservation, the efficient use of irrigation water, and protection of the quality of ground and surface water.

The irrigation methods that can be used in this survey area are flood, furrow, border, and sprinkler. In areas where furrow and border methods are used, the fields should be graded for efficient irrigation water application that meets the needs of the crop and preserves water quality. Slopes should be limited to less than 2 percent. Soil investigation is necessary before field grading is attempted. Investigation of the depth to restrictive layers is needed to determine whether the graded field can adequately support nutrients and meet water requirements. Adjusting the length of irrigation runs to the infiltration rate of the soil ensures that irrigation water can be managed for moisture replenishment and control of toxic salts.

Sprinkler irrigation systems are best adapted to soils with very high infiltration rates or slopes of more than 2 percent. Management is achieved by controlling the rate, amount, and timing of irrigation. The amount of water to be applied should not exceed the amount needed to adequately recharge the root zone. An excessive amount can leach nutrients and thus cause ground-water degradation. Sprinkler systems are good for establishing some crops, such as tomatoes. Good irrigation water management is profitable, conserves water, and protects water quality. Backflow prevention devices on agricultural wells are needed to protect ground water.

Drip irrigation systems are adapted to all soils but are best utilized on sloping soils and on soils with slow permeability, such as Hillgate. These systems conserve water supplies as well as soil nutrients. They result in less erosion than other systems and are beneficial in weed management.

Pasture management should include strategies that protect the soil and obtain sustained forage yields. Maintenance of desirable plant communities is a major consideration. Desirable plants are generally the most palatable. Weedy or undesirable plants usually thrive because livestock do not generally harvest them. An intensity of grazing that allows continued vigorous growth helps to maintain a pasture of desirable plants. Continued vigorous growth is possible only when enough leaf surface remains for plant regrowth. A good grazing plan should leave adequate leaf material and provide rest periods after grazing for plant recovery. An irrigation system that meets plant water requirements is a necessary element in good pasture management. Also, a balanced fertilization program enhances forage production. If optimum pasture growth is to be attained, soil moisture should be managed for minimum plant stress. Keeping animals off the pasture immediately after irrigation can minimize soil compaction. Scattering manure by harrowing or dragging enhances performance of the pasture.

Hayland management should achieve sustained production and soil protection. Profitable production can be maintained by keeping the field free of weeds and harvesting the forage at intervals that allow the plants to sustain thrifty growth. Good irrigation water management is essential. Overirrigation can deplete soil oxygen supplies and leach nutrients below the root zone. Alfalfa plants cannot tolerate even short periods of water saturation. Plants may die or are attacked by disease and lose vigor if the field is overirrigated. Grasses take advantage of the excess water and infest the field.

Soils that have a high water table, such as Corbiere, Mallard, and Scribner soils, are poorly suited to alfalfa hay. Stands can be severely damaged or destroyed during years when the water table is high for long periods. Clayey soils that are subject to flooding or ponding, such as Capay and Willows soils, also are poorly suited to alfalfa hay.

Field and Row Crop Management

By Mike Murray, County Director and Row Crop Farm Advisor, University of California Cooperative Extension Service.

Processing Tomatoes

Processing tomatoes are the most economically important vegetable crop produced in the county (figure 8). They are grown on 25,000 to 30,000 acres in the county annually. In 1996, they had an on-farm value in the county of over $50 million. The crop is planted under contract with one of the 8 to 10 processors that currently contract in the county. There are two distinct production seasons in the county. The west side of the valley (roughly west of Interstate Highway 5) can produce early season crops. This ability allows the canneries to spread out their processing season. The crops are planted from late January through mid-March and are harvested from early July through mid-August. About half of the tomato crop is planted in this west-side district. In the rest of the county, tomatoes are planted from early March through early June and mature from mid-August through early October.

Tomatoes are planted mostly by direct seeding, although there is currently some movement toward transplanting. The transplant shift is being caused by expensive hybrid seed prices, weed management benefits, less irrigation requirements, and the assurance of optimum final plant stands. The crop is grown on raised beds about 60 inches wide. Two rows per bed are planted in the areas of early season crops, and single rows are planted later in the year.

Seedling establishment is facilitated by sprinkler irrigation, and furrow irrigation generally is used during the rest of the growing season. Some wheel-line irrigation is used on the more sloping soils or on problematic soils, such as those characterized by poor infiltration or structure. While the crop requires only about 18 to 20 inches of water, irrigation inefficiencies often result in applications of 30 to 36 inches.

Processing tomatoes are grown mainly on Hillgate, Hustabel, Mallard, Scribner, Vina, and Westfan soils. As with most other crops, they grow best on well drained, friable soils, but much of the crop is successfully produced on class 2 and 3 soils. Irrigation management is the key to success on the poorer soils. Common rotation crops include vineseeds, wheat, and field crops, such as dry beans, sugar beets, and cotton. There is some rotation with rice, but many of the soils used for rice production are unsuitable for optimum tomato production and low yields or poor fruit quality may result.

Vineseed Crops

Colusa County is the production center of the United States and the world for seed crops in the Curcurbit family (cucumbers, squash, pumpkins, watermelons, and other melons). These crops are planted annually on about 15,000 to 20,000 acres in the county. They had an on-farm value in the county of $15 to $20 million in 1996. All seed is currently planted under contract with one of the many contractors doing business in the county.

About half the crop consists of open-pollinated types (pumpkins, winter squashes, watermelons, and other melons), and about half consists of hybrids (summer squashes and cucumbers). Planting occurs after the soils have reached about 60 degrees F, usually from mid-May through mid-July. Harvest occurs from mid-August through late October. The growing season ranges from 70 to 80 days for some melons to over 120 days for winter squashes.

The vineseed crops are seeded directly into 60-inch raised beds. One or two rows per bed are planted, depending on the growth habit (vining nature) of the particular crop. The seed is planted in preirrigated soils. The irrigation method is almost exclusively the furrow system, as seed-borne diseases can occur in areas of overhead irrigation. The amount of water required for growing the crop varies significantly because of differences in length of the growing season, the depth of rooting, and the soil type. The shorter season crops may require only one or two postemergence irrigation runs, whereas the long-season ones may require five or six runs.

The crops are grown on a range of soils, including class 2 and 3 soils. A majority of the acreage of these crops is in areas of clayey soils, such as Myers soils, on the west side of the valley, but the crops also are grown on soils along the Sacramento River, such as Moonbend and Vina soils, which are very productive.

Miscellaneous Vegetables and Field Crops

The management practices needed in areas used for such crops as sweet corn, fresh-market cantaloupes, garlic, vegetable-seed crops, cotton, sugar beets, dry beans, and field corn are specific to those particular crops. The crops must be grown in a manner that meets their unique needs. Information about growing these and other crops can be obtained from the Extension Farm Advisors Office, University of California, or other knowledgeable sources. The annual acreage of these crops varies, depending on a host of economic factors, including the markets for the more major crops at the moment. Many of the crops fit into a good rotation program and help to control weeds, diseases, and insects. The proximity of Colusa County to markets, soil capability, and environmental limitations are important considerations for persons contemplating the production of nontraditional or “new” crops.

Rice and Small Grain Management

By Steven C. Scardaci, Rice Farm Advisor, University of California Cooperative Extension Service.

Rice

Rice is the number one crop in Colusa County in acreage and value. It is planted on 90,000 to 140,000 acres annually and was valued at $100 million in 1996. The USDA commodity program for rice was recently decoupled from production decisions, making the program more market oriented. The future acreage and value of rice will likely follow the market.

Rice is well adapted to the Sacramento Valley with its warm climate and adequate supply of surface water. The clayey, poorly drained soils in the county are well suited to rice culture. Rice is widely grown on Willows, Capay, Myers, Clear Lake, Alcapay, Corbiere, Mallard, and Hillgate soils (figure 9).

Nearly all rice fields have been leveled over the last 20 to 25 years. This leveling helps to eliminate and straighten levees and thus improves equipment efficiency and control of water depth during the season. Most fields are maintained by laser leveling every 4 or 5 years. Only a few fields currently still have contour levees.

Fields are typically prepared for spring planting by chiseling, disking twice, land planing three times, applying fertilizer, and harrowing and rolling. The goals of these operations are to dry and aerate the soil, destroy early germinated weeds, incorporate crop residue into the soil, level the soil, improve fertility, and prepare a final seedbed for planting.

Most growers currently use conventional flow-through irrigation systems, in which water enters the top basin in the field and flows through several basins to the bottom basin. Levees and weir boxes placed at the ends of each levee control waterflow and water depth in the separate basins. Before 1984, most growers established a continuous flow of water through the fields, allowing a small amount of water to spill from the bottom basin into an agricultural drain. This practice allowed growers to maintain a constant water depth and helped to flush soil salts from the field, but pesticide residues in the tailwater were shown to cause water-quality problems. As a result, growers are required to hold irrigation water on the field for a period of time after a pesticide application, allowing the residues to break down or dissipate significantly before the water is released into public waterways. The water-holding times were only 4 to 6 days in 1984. By 1997, however, they were 28 to 30 days. Many growers and some districts have adopted various closed irrigation systems (recirculating, static, and gravity systems) in an effort to improve water control in the rice fields during these pesticide water-holding periods and to meet the established water-quality standards. These systems have been described in University of California publication number 21490, entitled “Rice Irrigation Systems for Tailwater Management.”

Water and soil salinity levels can reduce yields in some areas of rice fields. These problems are most evident in fields that use recycled drain water or well water with an electrical conductivity (EC) of 0.7 dS/meter or greater. In the root zone of the rice field, soil EC levels above 2.0 dS/meter during the early season have reduced yields. Water and soil salinity levels typically increase in the direction of waterflow. The highest levels are at the bottom end of the field. The levels increase during the early season, when waterflow is lower and fields are subject to water-holding requirements. These higher early season salinity levels are problematic since rice seedlings are in the most sensitive plant growth stage. Salinity management may include monitoring of salinity in soil and water, selection or blending of water sources, use of multiple inlets to deliver fresh water to the bottom end of the fields, water recycling, increased waterflow, management of water depth that minimizes the likelihood of overly shallow water and evapoconcentration of salts, selection of a short water-holding period, and applications of soil amendments that increase the rate at which salts are leached in sodic soils.

Currently, incorporation straw into the soil, with and without flooding, and straw bailing are used as alternatives to burning, which is being phased out. The incorporation of straw is the most widely used method since bailing is expensive and straw markets are currently limited. Efforts to develop straw markets are underway.

About 60 to 70 percent of the local rice acreage is continuously planted to rice (rice-rice or rice-rice-fallow rotations). The soils on much of this acreage, for example, Alcapay, Clearlake, and Willows soils, are clayey, poorly drained, and sodic and are not well suited to the economic production of other crops. The remaining rice acreage is in areas of Scribner, Mallard, or other soils that are somewhat better drained, are not sodic, and can be used for rice in rotation with wheat, safflower, and tomatoes.

Small Grains

The small grains grown in the county include wheat, barley, and oats. Wheat, the most important small grain crop in the county, is currently grown on 20,000 to 40,000 acres, while barley is grown on about 750 acres and oats on about 500 acres. The value of the wheat grown in the county was $14 million in 1996. Wheat is the small grain of choice because the yields and prices of this crop are higher than those of barley or oats.

Wheat is typically grown in rotation with tomatoes, vineseed crops, rice safflower, corn, and other field and row crops. Wheat is grown in scattered fields on Moonbend, Westfan, Grandbend, Vina, Hustabel, Scribner, Mallard, and Corval soils. Such soils as those in the Myers, Corbiere, and Capay series may not produce good yields of small grains because of poor internal drainage. During prolonged wet periods, small grains can grow poorly on inadequately drained soils.

Most of the wheat grown on the floor of the Sacramento Valley is irrigated and therefore has a higher yield potential than the nonirrigated wheat in the western foothills. Higher fertilizer, seed, and pesticide inputs are made on irrigated wheat and contribute to a higher yield potential.

Orchard Management

By John P. Edstrom, Orchard Farm Advisor, University of California Cooperative Extension Service.

Almonds represent the major orchard crop in Colusa County. The acreage used for this crop has expanded in recent years to 20,000 acres. Much of this expansion is attributed to the successful adoption of low-volume (drip) irrigation in the Arbuckle-Williams area. The Arbuckle and Arand soils in this area are coarse textured and have a low moisture-holding capacity. The surface layer is shallow in Hillgate soils and is underlain by a dense clay layer. Under such conditions, dramatic yield increases can result from the switch from sprinkler irrigation to drip irrigation that applies water frequently in small amounts to each individual tree. Soil limitations, such as a low water-holding capacity, slope, and a limited rooting depth, can largely be overcome by the use of low-volume irrigation systems coupled with frequent injections of nitrogen and potassium fertilizers through the drip systems.

In general, almond crops grow best on deep, well drained soils, such as those in the Westfan and Arbuckle series. Although well suited to these crops, Grandbend, Moonbend, and Vina soils are at low elevations along the Sacramento River where frosts are common during almond bloom. Primarily because of the frost-free microclimate of the Arbuckle area and nearby low foothills, almond crops are concentrated on Arbuckle, Hillgate, Westfan, and Arand soils. Higher density plantings are required if these soils are to approach the yields produced on prime soils. Typically, 100 or more trees per acre are planted versus 70 to 80 trees per acre on deep alluvial soils, such as Vina and Grandbend. High-density orchards are generally planted in a north-south orientation where trees within the row are spaced closer together than the distance between rows. Planting on mounds or berms helps to protect the trees from excessive moisture from irrigation or rainfall.

Widespread use of the soil modification technique known as slip plowing has significantly altered the soil profiles on thousands of acres of local almond orchards. This technique partially mixes soil layers of different textures to a depth of 5 or 6 feet. This mixing results in improvements in water infiltration and drainage that in turn favor vigorous and more uniform tree establishment. Root systems are generally deeper and more expansive under the modified soil conditions. This method is practiced mainly on Hillgate and Arbuckle soils. The long-term benefits of slip plowing to orchard productivity have not been documented.

Walnuts are generally demanding with respect to soil type. Deep, well drained, moderately textured soils are required for top production. Most Colusa County walnuts are planted adjacent to the Sacramento River, on such soils as those of the Grandbend, Moonbend, and Vina series. Walnuts also are successfully grown in areas of Westfan soils southwest of Williams.

Excessive water can be a problem in areas along the Sacramento River where surface flooding is common inside the levee system and subsurface seepage from the river during periods of high river flows injures orchards outside the levees. In areas that are subject to flooding or seepage, planting on mounds or ridges lessens root-crown damage. Walnut culture has expanded away from the traditional Sacramento River area into heavier textured soils with a higher clay content, such as the somewhat poorly drained Corbiere soils, which were formerly used for row crops.

Prunes are the third major crop in the area and the local tree crop that is the least demanding in soil requirements (figure 10). Prunes can be successfully grown on a wide range of soils but generally grow best on deep, well drained soils. The most productive orchards are planted on Grandbend, Moonbend, and Vina soils along the Sacramento River.

River flooding and seepage are less detrimental to the water-tolerant plum rootstocks used for prunes. Surface, flood irrigation is most commonly used for prunes. Moveable pipe sprinklers are suitable for flood-prone orchards. Permanent sprinklers and low-volume systems should not be installed in orchards where soil erosion or deposition is likely. Minor plantings of prunes are in the Arbuckle area, where Arbuckle, Hillgate, and Arand soils are suitable for prune production, given the use of low-volume irrigation.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The 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 (pH) and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

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

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or 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 (USDA, 1961). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

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

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

Class 1 soils have slight limitations that restrict their use.

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

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

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

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

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

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

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

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 4e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

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

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, 4e-3. No unit designations are given for class 1 soils.

The units are defined as follows:

Unit 1 soils have a potential or actual wind or water erosion hazard.

Unit 2 soils have a drainage or overflow hazard. The soils are generally somewhat poorly drained or poorly drained and are flooded or ponded.

Unit 3 soils have a slowly or very slowly permeable subsoil or substratum.

Unit 4 soils have coarse or gravelly textures.

Unit 5 soils have fine or very fine textures.

Unit 6 soils have salinity or alkali properties sufficient to constitute a continuing limitation or hazard.

Unit 7 soils have enough stones, cobbles, or rocks to interfere with tillage.

Unit 8 soils have a hardpan or hard, unweathered bedrock in the root zone.

Unit 9 soils have low inherent fertility associated with strong acidity; a low calcium-magnesium ratio; or excess calcium, boron, or molydenum.

Unit 10 soils have a high content of organic matter. They are generally peats or mucks.

Unit 11 soils have a coarse sandy or very gravelly substratum that limits root penetration and moisture retention.

The land capability classification of each major component in the map units in this survey area is given in table 7 and in the section “Detailed Soil Map Units.”

Important Farmlands

Two kinds of important farmland are recognized in this soil survey—prime farmland and additional farmland of statewide importance.

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. Prime farmland is permeable to water and air, is not excessively erodible or saturated with water for long periods, and either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 245,000 acres in the survey area, or approximately 33 percent of the total acreage, meets the soil requirements for prime farmland. Most areas of this land are in the eastern part of the survey area, in the Sacramento Valley. The crops grown on this land, mainly rice, tomatoes, almonds, prunes, and wheat, account for a large part of the county's total agricultural income each year.

Most of the soils in the upland valleys would meet the requirements for prime farmland if an adequate and dependable supply of irrigation water were available.

A recent trend in land use in some parts of California 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 area that are considered prime farmland are listed in table 8. 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 doughtiness, 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 in this publication. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Farmland of Statewide Importance

This is land, in addition to prime and unique farmlands, that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops.

The criteria for defining and delineating this land are to be determined by the appropriate State agency or agencies. Generally, additional farmlands of statewide importance include those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmland if conditions are favorable. In some States additional farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

The map units in the survey area that are considered additional farmland of statewide importance are listed in table 9. 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 doughtiness, 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."

Storie Index

The soils used primarily used as cropland in the Sacramento Valley and as rangeland in the Coast Range foothills are rated in table 10a according to the Storie index (Storie, 1933 and 1976). The soils used primarily as timberland in the higher Coast Range are rated in table 10b according to the Storie index (Storie and Weislander, 1948). The Storie index expresses numerically the relative degree of suitability of a soil for general intensive agricultural uses or for timber at the time of the evaluation.

Index for Cropland and Rangeland

The Storie index rating is based on soil characteristics and is obtained by evaluating surface and subsurface chemical and physical properties and surface landscape features. The original "Storie Soil-Rating Chart" (Storie, 1976) is in Appendix C. Some of the terminology used in this chart is not used today. When the ratings were developed, however, they were compared to today's terminology and the most logical estimate for the rating was made.

Availability of water for irrigation, local climate, size and accessibility of mapped areas, distance to markets, and other factors that might determine the desirability of growing certain plants in a given locality were not considered the rating. Therefore, the index should not be used as the only indicator of land value. Where the local economic and geographic factors are known to the user, however, the Storie index may provide additional objective information for land tract value comparisons.

Four general factors are used in determining the index rating—*A*, the permeability, available water capacity, and depth of the soil; *B*, the texture of the surface soil; *C*, the dominant slope of the soil body; and *X*, other conditions more readily subject to management or modification by the land user. In this area these conditions include drainage and flooding, salinity and alkalinity, fertility, acidity, erosion, and microrelief. For some soils, more than one of these X conditions are used in determining the rating.

A rating of 100 percent expresses the most favorable, or ideal, condition for general crop production. Lower percentage ratings are assigned for less favorable conditions or characteristics. Factor ratings, in percentages, are selected from tables prepared from data, including yield data. Certain properties are assigned a range of values to allow for variations in the properties that affect the suitability of the soil for general agricultural purposes.

The index rating for a soil component of a map unit is obtained by multiplying the percentage rating values given to its four factors, A, B, C, and X. If more than one condition is recognized for the X factor for a soil, the value for each condition acts as a multiplier. Therefore, any of the general factors or X factor conditions may dominate or control the final rating.

If a map unit consists primarily of one named soil series (a consociation), the index rating for the named soil component equals the index rating for the map unit. If a map unit consists of more than one named component (a complex), ratings are assigned to each named component (soil series or miscellaneous area, such as Rock outcrop). Inclusions of other soils or minor components not identified in the map unit name are not considered in the calculations.

Map units are assigned grades according to their suitability for general intensive agriculture as shown by their Storie index ratings. The six grades and their range in index ratings are:

Grade 1—80 to 100
Grade 2—60 to 79
Grade 3—40 to 59
Grade 4—20 to 39
Grade 5—10 to 19
Grade 6—less than 10

Grade 1 soils are well suited to intensively cultivated crops that are climatically adapted to the region.

Grade 2 soils are good agricultural soils, although they are not so desirable as soils in grade 1 because of a less permeable subsoil, deep cemented layers (e.g., duripans), a gravelly or moderately fine textured surface layer, moderate or strong slopes, restricted drainage, low available water capacity, lower soil fertility, or a slight or moderate hazard of flooding.

Grade 3 soils are only fairly well suited to agriculture because of moderate soil depth; moderate to steep slopes; restricted permeability in the subsoil; a clayey, sandy, or gravelly surface layer; somewhat restricted drainage; acidity; low fertility; or a hazard of flooding.

Grade 4 soils are poorly suited to agriculture. They are more limited in their agricultural potential than the soils in grade 3 because of such restrictions as a shallower depth; steeper slopes; poorer drainage; a less permeable subsoil; a gravelly, sandy, or clayey surface layer; channeled or hummocky microrelief; or acidity.

Grade 5 soils are very poorly suited to agriculture and are seldom cultivated. They are more commonly used as pasture, rangeland, or woodland.

Grade 6 soils and miscellaneous areas are not suited to agriculture because of very severe or extreme limitations. They are better suited to limited use as rangeland, protective habitat, woodland, or watershed.

Index for Timberland

The Storie index rating is based on soil characteristics and is obtained by evaluating surface and subsurface chemical and physical properties and climatic features. The original "Timber Soil Rating Chart" (Storie and Weislander,1948) is in Appendix C. Some of the terminology used in this chart is not used today. When the ratings were developed, however, they were compared to today's terminology and the most logical estimate for the rating was made.

The size and accessibility of mapped areas, distance to markets, and other factors that might determine the desirability of timber production in a given locality were not considered in the rating. Therefore, the index should not be used as the only indicator of timber production. Where the local economic and geographic factors are known to the user, however, the Storie index may provide additional objective information for timber production.

Five general factors are used in determining the index rating—*A*, soil depth and texture; *B*, permeability; *C*, chemical characteristics of the soil; *D*, drainage and runoff properties of the soil; and *E*, climate.

The index rating for a soil component of a map unit is obtained by multiplying the percentage rating values given to its five factors, A, B, C, D, and E.

If a map unit consists primarily of one named soil series (a consociation), the index rating for the named soil component equals the index rating for the map unit. If a map unit consists of more than one named component (a complex), ratings are assigned to each named component, except for Rock outcrop. Miscellaneous areas, such as Rock ourcrop, are considered to be unsuitable for timber production and are not rated or are assigned a zero rating. Inclusions of other soils or minor components not identified in the map unit name are not considered in the calculations.

Timber site ratings expressed as percentages are assigned adjective ratings according to the suitability of the soil for general intensive timber production. See figure 23 in Appendix C. The five adjective ratings and their range in numerical ratings are:

Redwood—100 to 120
High—85 to 99
Medium—50 to 84
Low—30 to 49
Non-timber—0 to 29

Rangeland

By Larry Branham, Range Specialist, Natural Resources Conservation Service.

Approximately 325,000 acres in Colusa County is used as rangeland (figure 11). The majority of the rangeland is in the western part of the county and is situated between the irrigated cropland on the valley floor and the areas of brush and forest in the mountains. Elevation ranges from about 200 to 7,000 feet.

The typical livestock enterprise in the survey area is a cow-calf operation, although stocker operations do occur. The 1996 Colusa County Agricultural Commissioner summary reported 24,000 cattle and calves valued at over $7 million. In addition, some range areas are used in a long rotation with dryland cereal grain production.

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

Table 11 shows, for each soil that supports rangeland 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 the table follows.

An *ecological site* is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was ascertained during this survey; thus, ecological sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction (pH), salt content, and a seasonal high water table are also important.

Total production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperature 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.

Dry weight is the total annual yield per acre of air-dry vegetation. Yields are adjusted to a common percent of air-dry moisture content. The relationship of green weight to air-dry weight varies according to such factors as exposure, amount of shade, recent rains, and unseasonable dry periods.

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*, 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.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only.

The objective in range 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, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Technical assistance in rangeland management can be obtained from the local office of the Natural Resources Conservation Service or from the Cooperative Extension Service.

Figure 8.—Tomatoes on Vina soils in an area north of Grimes.

Figure 9.—Willows soils flooded for rice production. The Coast Range is in the background.

Figure 10.—Prunes on Scribner soils in an area south of Grimes.

Figure 11.—Corval soils along Contina Vineyard Creek. These soils are used for livestock grazing. The Goldeagle-Positas-Balcom complex is in the background.

Climate

The weather has a significant influence on the growth of range vegetation. The occurrence of the first effective rainfall and the distribution of subsequent rainfall as well as temperature greatly affect seasonal growth and total forage production. Typically, soil moisture conditions are favorable when temperatures are too low (December through February) for good plant growth, and soil moisture can be limiting when temperatures are optimum for plant growth (April and May). Soil moisture conditions in the spring greatly affect total production and species composition.

Physical Characteristics

Soils, topography, and aspect influence forage production and species composition.

The soil factors that affect forage production are the effective rooting depth, the water-holding capacity, texture, the content of organic matter, fertility, and parent material. These factors in varying combinations determine the forage production potential of the soil. In general, the deeper, fine textured soils have a high potential for forage production, whereas the shallow, coarser textured soils tend to have a lower production potential.

Grazing when the soils are wet can result in severe soil compaction, especially in areas of fine textured soils, such as clays and clay loams. Compaction increases the bulk density and strength of the soil while reducing the infiltration rate and porosity. These conditions lead to increased runoff, slow seedling growth, and restricted root development. Compaction and its effects can be lessened by maintaining adequate ground cover and by allowing the soil to rest and recover through prescribed grazing management.

Parent material affects the type and amount of nutrients available for plant growth. In some areas the proportion of nutrients may limit plant growth. Soils that formed in serpentintic parent materials, such as those in Bear Valley, may exhibit reduced production because of a high ratio of magnesium to calcium.

Topography affects the moisture regime, which in turn influences forage production. On steep slopes high runoff rates reduce the opportunity for infiltration of rainfall and result in a high potential for erosion. On moderate to gentle slopes, the runoff rates are lower, there is more opportunity for infiltration, and the potential for erosion is lower. Flat and bottom areas collect and hold runoff that can create saturated soil conditions.

Aspect affects forage production primarily through its effects on temperatures and solar radiation. South- and west-facing slopes tend to dry faster and warm earlier in spring than north-facing slopes, which tend to be colder in winter.

Vegetation

Range vegetation in the survey area is dominated by annual cool-season grasses and forbs, the majority of which were introduced from Europe. Cool-season annuals begin each year from seed, requiring favorable moisture and temperature conditions for germination.

These introduced species include both desirable forage species, such as soft chess, wild oats, burclover, and filaree, and less desirable species, such as medusahead, starthistle, and red brome.

Warm-season, summer-growing species do occur, but they are usually of little forage value. These species include tarweed, vinegarweed, and turkeymullein. These species grow and survive on residual soil moisture not utilized by the cool-season species.

Native plant species, particularly the perennial grasses, grow throughout the rangeland in the county. Their contribution to overall forage production is limited, but where they do occur, they provide significant forage both early and late in the growing season. Cool-season native perennial grasses include needlegrasses, wildrye, oniongrasses, and pine bluegrass. Additional native species include woody plants, such as blue oak, foothill pine, California juniper, buckbrush, manzanita, and chamise, and native forbs, such as lupines, brodiaea, lilies, and poppies.

Management of Rangeland

Proper management is essential to maintain or improve the productivity of rangeland for livestock, wildlife, and related resources. It must address the needs of both the animals and the plants. Following is a description of management measures and range improvement practices involved in the proper use of rangeland.

Prescribed Grazing

Prescribed grazing is the controlled harvest of range forage at a level and intensity that optimizes forage production while at the same time addressing the needs associated with the plants, animals, soil, and water. Guidelines for developing a grazing management plan may include key forage species, season of use, seasonal plant growth, forage utilization, animal nutrition, livestock distribution, and proper grazing use.

The key forage species may be a single or select group of species, such as native perennial grasses, or a desirable plant community. In either case it is important to know the growth and reproductive requirements of the chosen species and to develop management guidelines to address these needs.

Season of Use

Season of use is the period when the range is being grazed. This period typically starts in November or December and runs through April or May. Within the grazing period there are three growth phases. These phases relate to the rate of growth and quality and quantity of available forage.

The first phase begins with the fall rains and germination of the winter annual species and continues through the period of slow growth in winter. Available green forage is limited, and livestock primarily utilize residual dry matter from the previous growing season. Forage quality is low, and supplemental food is usually required to meet the nutritional requirements of the livestock.

The second growth phase begins in late winter. During this period the rate of forage growth increases and the quality and quantity of forage plants are adequate for livestock nutritional requirements.

The third phase begins in early spring and continues to plant maturity. During this period, forage growth exceeds the nutritional requirements of the livestock, there is a surplus of forage, and grazing can be adjusted so that the proper amount of residual dry matter is left on the soil.

Balancing livestock numbers with the different growth phases allows the efficient utilization of available forage, encourages the growth of desirable forage species, and reduces the extent of soil trampling during the winter.

Range Improvement Practices

Range improvement practices, such as livestock water developments, fences, and access trails, are used to achieve better livestock distribution and uniform forage utilization. These practices should be part of an overall grazing management plan.

Such practices as range seeding, applications of fertilizer, and brush management restore or improve forage productivity. A grazing management plan is needed to ensure that the conditions that necessitated these practices do not continue to occur.

Riparian Areas

Riparian areas, although small, are very important components of rangeland ecosystems. They provide essential habitat for many wildlife species, carry runoff from the rangeland, and provide water and forage for livestock. Managing these areas as separate units helps to maintain and enhance the many benefits derived from the areas.

Recreational Development

The soils of the survey area are rated in tables 12 and 13 according to limitations that affect their suitability for recreational uses. 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. *Slight* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Moderate* 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. *Severe* 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 12 and 13 can be supplemented by other information in this survey, for example, interpretations for building site development, construction materials, sanitary facilities, and water management.

Camp Areas

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 rock fragments. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Major Management Considerations

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.

Dusty.—Soil particles detach easily and cause dust.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides

Permeability.—The movement of water through the soil adversely affects the specified use. The permeability may be either too slow or too fast.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.

Rock fragments.—The profile contains enough rock fragments of a specific size to adversely affect site preparation or trafficability.

Salinity (EC).—Excess water-soluble salts in the soil restrict the growth of most plants.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.

Sodicity (SAR).—Excess exchangeable sodium, which imparts poor physical properties, restricts the growth of plants.

Surface clay.—The clay content or clayey texture of the surface layer results in a soil that is slippery and sticky when wet and slow to dry. The soil climate may modify the limitation.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.

Picnic Areas

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, wetness, ponding, flooding, permeability, and rock fragments. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Major Management Considerations

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.

Dusty.—Soil particles detach easily and cause dust.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides

Permeability.—The movement of water through the soil adversely affects the specified use. The permeability may be either too slow or too fast.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.

Rock fragments.—The profile contains enough rock fragments of a specific size to adversely affect site preparation or trafficability.

Salinity (EC).—Excess water-soluble salts in the soil restrict the growth of most plants.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.

Sodicity (SAR).—Excess exchangeable sodium, which imparts poor physical properties, restricts the growth of plants.

Surface clay.—The clay content or clayey texture of the surface layer results in a soil that is slippery and sticky when wet and slow to dry. The soil climate may modify the limitation.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.

Playgrounds

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 rock fragments on the surface 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; the content of clay, sand, or organic matter; wetness; ponding; flooding; permeability; and rock fragments. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Major Management Considerations

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.

Dusty.—Soil particles detach easily and cause dust.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides

Permeability.—The movement of water through the soil adversely affects the specified use. The permeability may be either too slow or too fast.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.

Rock fragments.—The profile contains enough rock fragments of a specific size to adversely affect site preparation or trafficability.

Salinity (EC).—Excess water-soluble salts in the soil restrict the growth of most plants.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.

Sodicity (SAR).—Excess exchangeable sodium, which imparts poor physical properties, restricts the growth of plants.

Surface clay.—The clay content or clayey texture of the surface layer results in a soil that is slippery and sticky when wet and slow to dry. The soil climate may modify the limitation.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.

Paths and Trails

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 rock fragments on the surface, wetness, ponding, flooding, slope, texture of the surface layer, and the content of sand, clay, or organic matter.

Major Management Considerations

Dusty.—Soil particles detach easily and cause dust.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides.

K factor.—The soil is in a potential water erosion class.

Organic matter (OM).—A high content of organic matter at some depth, sometimes expressed as a Unified soil class (PT, OL, or OH), can result in poor engineering properties and subsidence. A low content of organic matter can restrict the growth of plants.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.

Rock fragments.—The profile contains enough rock fragments of a specific size to adversely affect site preparation or trafficability

Sand or sandy texture.—At some depth the content of sand or a sandy texture results in a soil that is soft and loose, droughty, and low in fertility or is too fine for use as gravel.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.

Surface clay.—The clay content or clayey texture of the surface layer results in a soil that is slippery and sticky when wet and slow to dry. The soil climate may modify the limitation.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.

Off-Road Motorcycle Trails

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 rock fragments on the surface, slope, wetness, ponding, flooding, texture of the surface layer, and the content of clay, sand, or organic matter.

Major Management Considerations

Dusty.—Soil particles detach easily and cause dust.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides.

Organic matter (OM).—A high content of organic matter at some depth, sometimes expressed as a Unified soil class (PT, OL, or OH), can result in poor engineering properties and subsidence. A low content of organic matter can restrict the growth of plants.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.

Rock fragments.—The profile contains enough rock fragments of a specific size to adversely affect site preparation or trafficability.

Sand or sandy texture.—At some depth the content of sand or a sandy texture results in a soil that is soft and loose, droughty, and low in fertility or is too fine for use as gravel.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.

Surface clay.—The clay content or clayey texture of the surface layer results in a soil that is slippery and sticky when wet and slow to dry. The soil climate may modify the limitation.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.

Lawns, Landscaping, and Golf Fairways

Lawns and landscaping require 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 soil reaction (pH); 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, wetness, ponding, slope, stoniness, and the content of sand, clay, or organic matter in 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 soil reaction (pH); 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, wetness, ponding, slope, rock fragments on the surface, and the content 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.

Major Management Considerations

Available water capacity (AWC).—The available water capacity is low enough to restrict the growth of plants.

Calcium carbonates.—The content of calcium carbonates may be high enough to restrict the growth of plants.

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.

Depth to pan.—Dense, hard, somewhat impervious cemented soil material at a specific depth restricts the use.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides

Organic matter (OM).—A high content of organic matter at some depth, sometimes expressed as a Unified soil class (PT, OL, or OH), can result in poor engineering properties and subsidence. A low content of organic matter can restrict the growth of plants.

pH.—The pH of the soil is too low (acid) or too high (basic) for the growth of most plants.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.

Rock fragments.—The profile contains enough rock fragments of a specific size to adversely affect site preparation or trafficability.

Salinity (EC).—Excess water-soluble salts in the soil restrict the growth of most plants.

Sand or sandy texture.—At some depth the content of sand or a sandy texture results in a soil that is soft and loose, droughty, and low in fertility or is too fine for use as gravel.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.

Sodicity (SAR).—Excess exchangeable sodium, which imparts poor physical properties, restricts the growth of plants.

Sulfur content.—The sulfur level in the soil may be high enough to restrict the growth of plants.

Surface clay.—The clay content or clayey texture of the surface layer results in a soil that is slippery and sticky when wet and slow to dry. The soil climate may modify the limitation.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on 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 within a depth of 5 or 6 feet. Because of the map scale, small areas of different minor components may be included within the mapped areas of a specific soil.

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

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction (pH), depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the 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 14 and 15 show the degree and kind of soil limitations that affect dwellings with and without basements, small commercial buildings, local roads and streets, and shallow excavations.

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. *Slight* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Moderate* 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. *Severe* 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 wetness, ponding, flooding, subsidence, linear extensibility (LEP or shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification. The properties that affect the ease and amount of excavation include wetness, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount, size, and depth 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 wetness, ponding, flooding, subsidence, linear extensibility (LEP or 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, size, and depth 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, wetness, ponding, flooding, the content of rock fragments, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (LEP or 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 content of rock fragments, and dense layers influence the ease of digging, filling, and compacting. Seasonal wetness, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, wetness, and linear extensibility (LEP or shrink-swell potential) influence the resistance to sloughing.

The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; content of rock fragments; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Major Management Considerations for Dellings Without Basements

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.

- Onsite investigation is needed to identify areas where the soil is deep enough for dwellings.
- If slopes are more than 8 percent, cutting may be needed to provide level building sites. The cuts can expose the bedrock.
- The bedrock can serve as a good base for the foundation.
- Frequent irrigation cycles and controlled application rates help to maintain vegetation .

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides.

- The hazard of flooding should be considered before buildings or capital improvements are planned and installed.

• Buildings, roads, and streets should be located above the expected level of flooding.
• Dikes and channels that have outlets for floodwater can protect buildings from flooding.

Organic matter (OM).—A high content of organic matter at some depth, sometimes expressed as a Unified soil class (PT, OL, or OH), can result in poor engineering properties and subsidence. A low content of organic matter can restrict the growth of plants.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.

Shrink-swell (LEP).—Shrinking when the soil is dry and swelling when it is wet are expressed as the linear extensibility percent (LEP). Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
• Properly designing foundations and footings and diverting runoff away from buildings help to prevent the structural damage caused by shrinking and swelling.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.
• Excavation for buildings increases the hazard of erosion.
• During construction all bare ground should be mulched. A ground cover should be established to prevent excessive erosion during periods of high rainfall.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.
• A drainage system is needed where building foundations are constructed.

Major Management Considerations for Dwellings With Basements

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.
• Onsite investigation is needed to identify areas where the soil is deep enough for dwellings.
• If slopes are more than 8 percent, cutting may be needed to provide level building sites. The cuts can expose the bedrock.
• The bedrock can serve as a good base for the foundation.
• Frequent irrigation cycles and controlled application rates help to maintain vegetation .

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides
• The hazard of flooding should be considered before buildings or capital improvements are planned and installed.
• Buildings, roads, and streets should be located above the expected level of flooding.
• Dikes and channels that have outlets for floodwater can protect buildings from flooding.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.
• A drainage system is needed where building foundations are constructed.

Rock fragments.—The profile contains enough rock fragments of a specific size to adversely affect site preparation or trafficability.

Shrink-swell (LEP).—Shrinking when the soil is dry and swelling when it is wet are expressed as the linear extensibility percent (LEP). Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
• Properly designing foundations and footings and diverting runoff away from buildings help to prevent the structural damage caused by shrinking and swelling.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.
• Excavation for buildings increases the hazard of erosion.
• During construction all bare ground should be mulched. A ground cover should be established to prevent excessive erosion during periods of high rainfall.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.
• A drainage system is needed where building foundations are constructed.

Major Management Considerations for Small Commercial Buildings

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.
• Onsite investigation is needed to identify areas where the soil is deep enough for the buildings.
• If slopes are more than 4 percent, cutting may be needed to provide level building sites. The cuts can expose the bedrock.
• The bedrock can serve as a good base for the foundation.
• Frequent irrigation cycles and controlled application rates help to maintain vegetation .

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides
• The hazard of flooding should be considered before buildings or capital improvements are planned and installed.

• Buildings, roads, and streets should be located above the expected level of flooding.
• Dikes and channels that have outlets for floodwater can protect buildings from flooding

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.
• A drainage system is needed where building foundations are constructed.

Rock fragments.—The profile contains enough rock fragments of a specific size to adversely affect site preparation or trafficability.

Shrink-swell (LEP).—Shrinking when the soil is dry and swelling when it is wet are expressed as the linear extensibility percent (LEP). Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
• Properly designing foundations and footings and diverting runoff away from buildings help to prevent the structural damage caused by shrinking and swelling.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.
• Excavation for buildings increases the hazard of erosion.
• During construction all bare ground should be mulched. A ground cover should be established to prevent excessive erosion during periods of high rainfall.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.
• A drainage system is needed where building foundations are constructed.

Major Management Considerations for Local Roads and Streets

AASHTO GI (soil strength).—Engineering properties of the soil expressed as the AASHTO group index indicate soil strength. Values of more than 8 indicate low soil strength for roads and airfield construction.

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.
• Onsite investigation is needed to identify areas where the soil is deep enough for local roads and streets.
• If slopes are more than 8 percent, cutting may be needed to provide esentially level sites for roads and streets. The cuts can expose the bedrock.
• The bedrock can serve as a good base for the roads and streets.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.
• A drainage system is needed where roads are constructed.

Shrink-swell (LEP).—Shrinking when the soil is dry and swelling when it is wet are expressed as the linear extensibility percent (LEP). Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
• Properly designing the road base and diverting runoff away from the roads help to prevent the damage caused by shrinking and swelling.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.
• Excavation for roads increases the hazard of erosion.
• During construction all bare ground should be mulched. A ground cover should be established to prevent excessive erosion during periods of high rainfall.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.
• A drainage system is needed where roads are constructed.

Major Management Considerations for Shallow Excavations

Bulk density (dense layer).—A high bulk density can result in a soil layer that is too dense.

Caving potential.—The walls or sides of excavations tend to cave inward. All soil excavations have the potential to cave, but some soils have a higher potential than others.

Clay or clayey texture.—At some depth the clay content or a clayey texture results in a soil that is slippery and sticky when wet and slow to dry.

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.
• Onsite investigation is needed to identify areas where the soil is deep enough for excavations.
• If slopes are more than 8 percent, cutting may be needed to provide a level site. These excavations can expose the bedrock.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides.
• The hazard of flooding should be considered before excavations are made.

• Dikes and channels that have outlets for floodwater can protect excavations.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.

• A drainage system is needed during some periods of the year.

Rock fragments.—The profile contains enough rock fragments of a specific size to adversely affect site preparation or trafficability.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.

• Excavation increases the hazard of erosion.

• During construction all bare ground should be mulched. A ground cover should be established to prevent excessive erosion during periods of high rainfall.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the period when excavations can be made.

• A drainage system is needed during some periods of the year.

Sanitary Facilities

Tables 16 and 17 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. *Slight* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Moderate* 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. *Severe* 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, rock fragments, 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 rock fragments 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.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the 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.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

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, wetness, ponding, slope, flooding, texture, stones and boulders, highly organic layers, soil reaction (pH), 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, wetness, 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, wetness, ponding, rock fragments, slope, depth to bedrock or a cemented pan, soil reaction (pH), 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 a weter 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.

Major Management Considerations for Septic Tank Absorption Fields

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.

- Onsite investigation is needed to identify areas where the soil is deep enough for septic tank absorption fields.
- The filtering capacity of the leach lines is restricted by the limited soil volume available for filtering the effluent, or bedrock can prevent installation of the

leach lines. If the leach lines are installed too close to the bedrock, the effluent can contaminate ground water.
• Enlarging the septic tank absorption fields helps to overcome the limited depth to bedrock.
• If slopes are more than 8 percent, cutting may be needed to provide essentially level sites. The cuts can expose the bedrock.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides
• The hazard of flooding should be considered before capital improvements are planned and the system is installed.
• The system should be located above the expected level of flooding.
• Dikes and channels that have outlets for floodwater can protect the onsite sewage disposal system from flooding.

Permeability.—The movement of water through the soil adversely affects the specified use. The permeability may be either too slow or too fast.
• Restricted permeability increases the possibility of failure of septic tank absorption fields.
• Restricted permeability can be overcome by increasing the size of the absorption field and using coarser backfill material or by installing the leach lines in strata that are more permeable.
• Building up or mounding the septic system site with suitable fill material increases the filtering capacity of the absorption field.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.
• Adding suitable fill material to raise the absorption field can improve the performance of the septic system.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.
• Onsite investigation is needed to identify areas where the soil is suitable for septic tank absorption fields.
• Installing the leach lines on the contour helps to prevent the seepage of effluent in downslope areas.
• During construction all bare ground should be mulched. A ground cover should be established to prevent excessive erosion during periods of high rainfall.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.
• Adding suitable fill material to raise the absorption field a sufficient distance above the seasonal high water table can improve the performance of the septic system .

Major Management Considerations for Sewage Lagoons

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.
• Onsite investigation is needed to identify areas where the soil is deep enough for the sewage lagoon.
• Enlarging the sewage lagoon helps to overcome the limited depth to bedrock.
• If slopes are more than 2 percent, cutting may be needed to provide essentially level sites. The cuts can expose the bedrock.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides
• The hazard of flooding should be considered before capital improvements are planned and the sewage lagoon is installed.
• The sewage lagoon should be located above the expected level of flooding.
• Dikes and channels that have outlets for floodwater can protect the sewage lagoon from flooding.

Organic matter (OM).—A high content of organic matter at some depth, sometimes expressed as a Unified soil class (PT, OL, or OH), can result in poor engineering properties and subsidence. A low content of organic matter can restrict the growth of plants.

Permeability.—The movement of water through the soil adversely affects the specified use. The permeability may be either too slow or too fast.
• A suitable lining is needed to prevent seepage and contamination of the ground water.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.
• Adding suitable fill material to raise the sewage lagoon improves performance.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.
• Onsite investigation is needed to identify areas where the soil is suitable for sewage lagoons.
• Installing sewage lagoons on the contour helps to prevent the seepage of effluent in downslope areas.
• During construction all bare ground should be mulched. A ground cover should be established to prevent excessive erosion during periods of high rainfall.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.
• Adding suitable fill material to raise the sewage

lagoon a sufficient distance above the seasonal high water table improves performance.

Major Management Considerations for Trench Sanitary Landfills

Clay or clayey texture.—At some depth the clay content or a clayey texture results in a soil that is slippery and sticky when wet and slow to dry.

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.

- Onsite investigation is needed to identify areas where the soil is deep enough for sanitary landfills.
- Enlarging the sanitary landfill helps to overcome the limited depth to bedrock.
- If slopes are more than 8 percent, cutting may be needed to provide essentially level sites. The cuts can expose the bedrock.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides

- The hazard of flooding should be considered before capital improvements are planned and the sanitary landfill is installed.
- The sanitary landfill should be located above the expected level of flooding.
- Dikes and channels that have outlets for floodwater can protect the sanitary landfill from flooding.

Permeability.—The movement of water through the soil adversely affects the specified use. The permeability may be either too slow or too fast.

- A suitable lining is needed to prevent seepage and contamination of the ground water.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.

- Adding suitable fill material to raise the sanitary landfill improves performance.

Salinity (EC).—Excess water-soluble salts in the soil restrict the growth of most plants.

Sand or sandy texture.—At some depth the content of sand or a sandy texture results in a soil that is soft and loose, droughty, and low in fertility or is too fine for use as gravel.

Sodicity (SAR).—Excess exchangeable sodium, which imparts poor physical properties, restricts the growth of plants.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.

- Onsite investigation is needed to identify areas where the soil is suitable for sanitary landfills.
- Installing sanitary landfills on the contour helps to prevent the seepage of effluent in downslope areas.
- During construction all bare ground should be mulched. A ground cover should be established to prevent excessive erosion during periods of high rainfall.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.

- Adding suitable fill material to raise the sanitary landfill a sufficient distance above the seasonal high water table improves performance.

Major Management Considerations for Area Sanitary Landfills

Depth to bedrock.—Bedrock is close enough to the surface to restrict the use.

- Onsite investigation is needed to identify areas where the soil is deep enough for sanitary landfills.
- Enlarging the sanitary landfill helps to overcome the limited depth to bedrock.

Flooding.—The soil is flooded by moving water from stream overflow, runoff, or high tides

- The hazard of flooding should be considered before capital improvements are planned and the sanitary landfill is installed.
- The sanitary landfill should be located above the expected level of flooding.
- Dikes and channels that have outlets for floodwater can protect the sanitary landfill from flooding.

Permeability.—The movement of water through the soil adversely affects the specified use. The permeability may be either too slow or too fast.

- A suitable lining is needed to prevent seepage and contamination of the ground water.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.

- Adding suitable fill material to raise the sanitary landfill improves performance.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.

- Onsite investigation is needed to identify areas where the soil is suitable for sanitary landfills.
- Installing sanitary landfills on the contour helps to prevent the seepage of effluent in downslope areas.
- During construction all bare ground should be mulched. A ground cover should be established to prevent excessive erosion during periods of high rainfall.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.

- Adding suitable fill material to raise the sanitary landfill a sufficient distance above the seasonal high water table improves performance.

Major Management Considerations for Daily Cover for Landfill

Clay or clayey texture.—At some depth the clay content or a clayey texture results in a soil that is slippery and sticky when wet and slow to dry.

Depth to bedrock.—Bedrock is too near the surface.

• Onsite investigation is needed to identify areas where the soil is deep enough to provide cover material.

Organic matter (OM).—A high content of organic matter at some depth, sometimes expressed as a Unified soil class (PT, OL, or OH), can result in poor engineering properties and subsidence. A low content of organic matter can restrict the growth of plants.

Packing.—Unified class OL, OH, CH, or MH indicates that the soil may be difficult to compact with regular earthwork construction equipment.

Permeability.—The movement of water through the soil adversely affects the specified use. The permeability may be either too slow or too fast.

• The material is too coarse for use as landfill cover. Using this material as cover can result in seepage and contamination of the ground water.

pH.—The pH of the soil is too low (acid) or too high (basic) for the growth of most plants.

Ponding.—Standing water on soils in closed depressions that is removed only by percolation or evapotranspiration.

• Seasonal ponding may restrict access to the material.

Rock fragments.—The profile contains enough rock fragments of a specific size to adversely affect site preparation or trafficability.

Salinity (EC).—Excess water-soluble salts in the soil restrict the growth of most plants.

Sand or sandy texture.—At some depth the content of sand or a sandy texture results in a soil that is soft and loose, subject to wind erosion, droughty, and low in fertility or is too fine for use as gravel.

Slope.—The slope is steep enough that special practices are required to ensure satisfactory performance of the soil.

• Onsite investigation is needed to identify areas where the slope is suitable.

• If slopes are more than 8 percent, cutting may be needed. The cuts can expose undesirable material.

• The cuts should be mulched. A ground cover should be established to prevent excessive erosion during periods of high rainfall.

Sodicity (SAR).—Excess exchangeable sodium, which imparts poor physical properties, restricts the growth of plants.

Wetness.—Wetness near the surface or a high water table restricts the growth of plants and the construction of facilities.

• Seasonal wetness may restrict access to the material.

Construction Materials

Tables 18 and 19 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.

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.

The soils are rated as a *good, fair,* or *poor* source of sand and gravel. A rating of *good* means that the source material is likely to be in or below the soil. The numerical ratings in these columns indicate the degree of probability. The number 0.0 indicates that the soil is an improbable source. A number between 0.0 and 1.0 indicates the degree to which the soil is a probable source of sand or gravel.

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 18, only the probability 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, the thickness of suitable material, and the content of rock fragments. If the lowest layer of the soil contains sand or gravel, the soil is rated as a probable source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness.

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 (pH), 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; soil reaction (pH); 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 rock fragments, wetness, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Water Management

Table 20 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for embankments, dikes, and levees and for pond reservoir areas. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

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

Table 5.--Limitations Affecting Irrigated Cropland

(The information in this table is based on Pacific Southwest MLRA Office interpretations. It 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. Only the three highest value limitations are lisited. There may be more limitations. Fine-earth fractions and rock fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in describing the limitations is given at the end of the table.)

Map symbol and soil name	Pct.	Limitation	Value
100:			
Capay clay loam, occasionally flooded	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Occasional flooding	0.50
101:			
Capay silty clay, frequently flooded	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Frequent flooding	1.00
		Surface clay >40% and smectitic	1.00
102:			
Capay clay loam	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Wetness at a depth of 20-60"	0.28
103:			
Capay clay loam, frequently flooded	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Frequent flooding	1.00
		Surface clay >40% and smectitic	1.00
104:			
Willows silty clay, frequently flooded	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Permeability <.2"/hr in surface	1.00
		Frequent flooding	1.00
105:			
Willows silty clay, occasionally flooded	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Permeability <.2"/hr in surface	1.00
		Surface clay >40% and smectitic	1.00
106:			
Willows silty clay	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Permeability <.2"/hr in surface	1.00
		Surface clay >40% and smectitic	1.00
107:			
Scribner silt loam, occasionally flooded	80	Major limitations:	
		Wetness at a depth of <20"	1.00
		Occasional flooding	0.50
		Moderate AWC (5.0-7.5") to 40"	0.23

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
108:			
Scribner silt loam	80	Major limitations:	
		Wetness at a depth of <20"	1.00
		Moderate AWC (5.0-7.5") to 40"	0.23
109:			
Scribner silt loam, frequently flooded	80	Major limitations:	
		Frequent flooding	1.00
		Wetness at a depth of <20"	1.00
		Moderate AWC (5.0-7.5") to 40"	0.23
110:			
Hustabel sandy loam	80	Major limitations:	
		Permeability ≥ 2"/hr (seepage)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.98
		CEC of 5-20 meq/100g within 40"	0.67
112:			
Westfan loam	80	Major limitations:	
		Permeability ≥ 2"/hr (seepage)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.54
		CEC of 5-20 meq/100g within 40"	0.07
113:			
Westfan loam, sodic	85	Major limitations:	
		Permeability ≥ 2"/hr (seepage)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.54
		CEC of 5-20 meq/100g within 40"	0.07
114:			
Westfan clay loam	80	Major limitations:	
		Shrink-swell (LEP 3-6)	0.50
		Moderate AWC (5.0-7.5") to 40"	0.09
115:			
Clear Lake clay, occasionally flooded	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.57
116:			
Clear Lake clay, calcareous, occasionally flooded	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.57
117:			
Clear Lake clay, calcareous, frequently flooded	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Frequent flooding	1.00
		Surface clay >40% and smectitic	1.00
118:			
Clear Lake clay, frequently flooded	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Frequent flooding	1.00
		Surface clay >40% and smectitic	1.00

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
124:			
Moonbend silt loam, occasionally flooded	80	Major limitations:	
		Shrink-swell (LEP 3-6)	0.92
		Occasional flooding	0.50
		Moderate AWC (5.0-7.5") to 40"	0.12
125:			
Moonbend silt loam	80	Major limitations:	
		Shrink-swell (LEP 3-6)	0.92
		Moderate AWC (5.0-7.5") to 40"	0.12
126:			
Moonbend silt loam, frequently flooded	80	Major limitations:	
		Frequent flooding	1.00
		Shrink-swell (LEP 3-6)	0.92
		Moderate AWC (5.0-7.5") to 40"	0.12
127:			
Mallard clay loam	85	Major limitations:	
		Wetness at a depth of 20-60"	0.59
		Shrink-swell (LEP 3-6)	0.50
		Moderate AWC (5.0-7.5") to 40"	0.29
128:			
Mallard loam	85	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Wetness at a depth of 20-60"	0.59
		Moderate AWC (5.0-7.5") to 40"	0.27
129:			
Mallard clay loam, occasionally flooded	85	Major limitations:	
		Wetness at a depth of 20-60"	0.59
		Shrink-swell (LEP 3-6)	0.50
		Occasional flooding	0.50
130:			
Corbiere silt loam	85	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		SAR of 4-13 mmohs/cm	0.98
		Wetness at a depth of 20-60"	0.89
131:			
Corbiere silt loam, frequently flooded	85	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Frequent flooding	1.00
		SAR of 4-13 mmohs/cm	0.98
133:			
Corbiere silt loam, occasionally flooded	85	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		SAR of 4-13 mmohs/cm	0.98
		Wetness at a depth of 20-60"	0.89
136:			
Colusa loam	85	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		SAR of >13 mmohs/cm	1.00
		EC of >8 mmohs/cm	1.00

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
141:			
Myers clay	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Permeability <.2"/hr in surface	1.00
144:			
Hillgate clay loam	85	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Abrupt textural change	1.00
		Surface clay 20-40% and smectitic	0.68
145:			
Hillgate loam	90	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Abrupt textural change	1.00
		CEC of 5-20 meq/100g within 40"	0.51
147:			
Hillgate loam	90	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Abrupt textural change	1.00
		CEC of 5-20 meq/100g within 40"	0.51
150:			
Arbuckle sandy loam	85	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		Shrink-swell (LEP 3-6)	0.50
151:			
Arbuckle sandy loam	50	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		Shrink-swell (LEP 3-6)	0.50
Hillgate loam	40	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Abrupt textural change	1.00
		CEC of 5-20 meq/100g within 40"	0.51
152:			
Arbuckle gravelly loam	85	Major limitations:	
		Moderate AWC (5.0-7.5") to 40"	0.86
		Shrink-swell (LEP 3-6)	0.50
155:			
Alcapay clay	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		EC of 4-8 mmohs/cm	0.75
160:			
Grandbend loam	80	Major limitations:	
		Wetness at a depth of 20-60"	0.74
		Moderate AWC (5.0-7.5") to 40"	0.51
		Shrink-swell (LEP 3-6)	0.50
170:			
Vina loam, frequently flooded	80	Major limitations:	
		Frequent flooding	1.00
		CEC of 5-20 meq/100g within 40"	0.67
		Moderate AWC (5.0-7.5") to 40"	0.50

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
171:			
Vina loam	85	Major limitations:	
		CEC of 5-20 meq/100g within 40"	0.67
		Moderate AWC (5.0-7.5") to 40"	0.50
172:			
Vina fine sandy loam, frequently flooded	80	Major limitations:	
		Frequent flooding	1.00
		CEC of 5-20 meq/100g within 40"	0.67
		Moderate AWC (5.0-7.5") to 40"	0.52
174:			
Vina loam, occasionally flooded	85	Major limitations:	
		CEC of 5-20 meq/100g within 40"	0.67
		Occasional flooding	0.50
		Moderate AWC (5.0-7.5") to 40"	0.50
175:			
Tujunga loam, overwash, frequently flooded	85	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of <5 meq/100g within 40"	1.00
176:			
Columbia fine sandy loam, frequently flooded	80	Major limitations:	
		Permeability ≥ 2"/hr (seepage)	1.00
		Frequent flooding	1.00
		CEC of 5-20 meq/100g within 40"	0.67
177:			
Holillipah loamy sand, channeled	80	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of <5 meq/100g within 40"	1.00
185:			
Riverwash	95	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of <5 meq/100g within 40"	1.00
187:			
Westfan loam, occasionally flooded	85	Major limitations:	
		Permeability ≥ 2"/hr (seepage)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.54
		Occasional flooding	0.50
188:			
Westfan loam, clay substratum	80	Major limitations:	
		Shrink-swell (LEP 3-6)	0.50
		Moderate AWC (5.0-7.5") to 40"	0.25
189:			
Arand very gravelly sandy loam	85	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of <5 meq/100g within 40"	1.00

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
190:			
Arand very gravelly loam----------	85	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of <5 meq/100g within 40"	1.00
193:			
Westfan gravelly loam-------------	80	Major limitations:	
		Moderate AWC (5.0-7.5") to 40"	0.86
		Shrink-swell (LEP 3-6)	0.50
200:			
Clear Lake clay, occasionally flooded--------------------------	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.57
204:			
Capay clay, occasionally flooded--	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Permeability <.2"/hr in surface	1.00
		Surface clay >40% and smectitic	1.00
205:			
Capay clay------------------------	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Permeability <.2"/hr in surface	1.00
		Surface clay >40% and smectitic	1.00
206:			
Capay clay------------------------	90	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Permeability <.2"/hr in surface	1.00
		Surface clay >40% and smectitic	1.00
210:			
Corval loam-----------------------	85	Major limitations:	
		Shrink-swell (LEP 3-6)	0.50
		CEC of 5-20 meq/100g within 40"	0.33
		Moderate AWC (5.0-7.5") to 40"	0.09
211:			
Corval clay loam------------------	85	Major limitations:	
		Shrink-swell (LEP 3-6)	0.50
		Moderate AWC (5.0-7.5") to 40"	0.00
212:			
Ayar clay-------------------------	85	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43
213:			
Ayar clay-------------------------	85	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43
215:			
Altamont silty clay---------------	45	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
215:			
Sehorn silty clay	35	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Low AWC (<5.0") to 40"	1.00
216:			
Altamont silty clay	45	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43
Sehorn silty clay	35	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Low AWC (<5.0") to 40"	1.00
218:			
Sehorn silty clay	45	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Low AWC (<5.0") to 40"	1.00
Altamont silty clay	35	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43
220:			
Altamont silty clay	85	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43
221:			
Altamont silty clay	85	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43
230:			
Corning clay loam	90	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Abrupt textural change	1.00
		Shrink-swell (LEP >6)	1.00
232:			
Maywood gravelly loam, occasionally flooded	85	Major limitations:	
		Permeability ≥ 2"/hr (seepage)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.60
		Occasional flooding	0.50
233:			
Eastpark clay loam	95	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP 3-6)	0.50
		CEC of 5-20 meq/100g within 40"	0.33
241:			
Contra Costa loam	55	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.97
		Depth to bedrock between 20 and 40"	0.46

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
241:			
Altamont silty clay	35	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43
253:			
Millsholm loam	55	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Altamont silty clay	20	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43
Rock outcrop	15	Not rated	---
255:			
Millsholm loam	55	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Rock outcrop	35	Not rated	---
257:			
Millsholm loam	50	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Capay clay	35	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Permeability <.2"/hr in surface	1.00
		Surface clay >40% and smectitic	1.00
261:			
Millsholm loam	60	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Altamont silty clay	25	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43
270:			
Balcom silt loam	55	Major limitations:	
		Moderate AWC (5.0-7.5") to 40"	0.65
		CEC of 5-20 meq/100g within 40"	0.50
		Depth to bedrock between 20 and 40"	0.32
Ayar clay	30	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
271:			
Balcom silt loam	55	Major limitations:	
		Moderate AWC (5.0-7.5") to 40"	0.65
		CEC of 5-20 meq/100g within 40"	0.50
		Depth to bedrock between 20 and 40"	0.32
Ayar clay	30	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43
275:			
Goldeagle clay loam	45	Major limitations:	
		Moderate AWC (5.0-7.5") to 40"	0.54
		Shrink-swell (LEP 3-6)	0.50
Positas gravelly sandy loam	25	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		Shrink-swell (LEP >6)	1.00
Balcom silt loam	15	Major limitations:	
		Moderate AWC (5.0-7.5") to 40"	0.65
		CEC of 5-20 meq/100g within 40"	0.50
		Depth to bedrock between 20 and 40"	0.32
276:			
Positas gravelly sandy loam	90	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		Shrink-swell (LEP >6)	1.00
280:			
Skyhigh gravelly clay loam	45	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP >6)	1.00
		Depth to bedrock between 20 and 40"	0.48
Millsholm loam	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
300:			
Contra Costa loam	50	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.97
		Depth to bedrock between 20 and 40"	0.46
Millsholm loam	40	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
305:			
Contra Costa loam	85	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.97
		Depth to bedrock between 20 and 40"	0.46

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
311:			
Contra Costa loam	85	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.97
		Depth to bedrock between 20 and 40"	0.46
312:			
Saltcanyon loam	90	Major limitations:	
		Shrink-swell (LEP 3-6)	0.50
		Moderate AWC (5.0-7.5") to 40"	0.38
		CEC of 5-20 meq/100g within 40"	0.17
313:			
Saltcanyon loam	90	Major limitations:	
		Shrink-swell (LEP 3-6)	0.50
		Moderate AWC (5.0-7.5") to 40"	0.38
		CEC of 5-20 meq/100g within 40"	0.17
315:			
Mallard clay loam	90	Major limitations:	
		Shrink-swell (LEP 3-6)	0.50
		Moderate AWC (5.0-7.5") to 40"	0.29
316:			
Hillgate loam	90	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Abrupt textural change	1.00
		CEC of 5-20 meq/100g within 40"	0.51
320:			
Millsholm loam	85	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
329:			
Sehorn silty clay	40	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Low AWC (<5.0") to 40"	1.00
Millsholm loam	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Altamont silty clay	15	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Moderate AWC (5.0-7.5") to 40"	0.43
330:			
Millsholm loam	60	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Contra Costa loam	25	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.97
		Depth to bedrock between 20 and 40"	0.46

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
331:			
Sehorn silty clay	35	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Surface clay >40% and smectitic	1.00
		Low AWC (<5.0") to 40"	1.00
Millsholm loam	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Rock outcrop	20	Not rated	---
332:			
Millsholm loam	50	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Rock outcrop	40	Not rated	---
334:			
Millsholm loam	70	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Contra Costa loam	15	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.97
		Depth to bedrock between 20 and 40"	0.46
337:			
Millsholm loam	50	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Saltcanyon loam	35	Major limitations:	
		Shrink-swell (LEP 3-6)	0.50
		Moderate AWC (5.0-7.5") to 40"	0.38
		CEC of 5-20 meq/100g within 40"	0.17
345:			
Skyhigh gravelly clay loam	40	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP >6)	1.00
		Depth to bedrock between 20 and 40"	0.48
Sleeper clay loam	30	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.46
		CEC of 5-20 meq/100g within 40"	0.17
Millsholm loam	15	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
346:			
Skyhigh gravelly clay loam	45	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP >6)	1.00
		Depth to bedrock between 20 and 40"	0.48

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
346:			
Millsholm loam	20	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Sleeper clay loam	20	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.46
		CEC of 5-20 meq/100g within 40"	0.17
347:			
Boar loam	45	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		CEC of 5-20 meq/100g within 40"	0.33
		Moderate AWC (5.0-7.5") to 40"	0.33
Sleeper clay loam	40	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.46
		CEC of 5-20 meq/100g within 40"	0.17
348:			
Boar loam	45	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		CEC of 5-20 meq/100g within 40"	0.33
		Moderate AWC (5.0-7.5") to 40"	0.33
Sleeper clay loam	40	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.46
		CEC of 5-20 meq/100g within 40"	0.17
350:			
Haploxererts	80	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.63
		CEC of 5-20 meq/100g within 40"	0.33
355:			
Venado clay	80	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Permeability <.2"/hr in surface	1.00
		Wetness at a depth of 20-60"	0.89
360:			
Bearvalley gravelly sandy loam	85	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of 5-20 meq/100g within 40"	0.97
365:			
Leesville clay loam	85	Major limitations:	
		Permeability ≥ 2"/hr (seepage)	1.00
		Low AWC (<5.0") to 40"	1.00
		CEC of 5-20 meq/100g within 40"	0.83
366:			
Leesville clay loam	85	Major limitations:	
		Permeability ≥ 2"/hr (seepage)	1.00
		Low AWC (<5.0") to 40"	1.00
		CEC of 5-20 meq/100g within 40"	0.83

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
370:			
Livermore very gravelly loam	90	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		Shrink-swell (LEP 3-6)	0.50
371:			
Buttes gravelly sandy loam	50	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		Shrink-swell (LEP 3-6)	0.50
Millsholm loam	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
519:			
Stonyford gravelly loam	50	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Guenoc loam	30	Major limitations:	
		Moderate AWC (5.0-7.5") to 40"	0.95
		Shrink-swell (LEP 3-6)	0.50
		Depth to bedrock between 20 and 40"	0.48
520:			
Stonyford gravelly loam	65	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Guenoc loam	15	Major limitations:	
		Moderate AWC (5.0-7.5") to 40"	0.95
		Shrink-swell (LEP 3-6)	0.50
		Depth to bedrock between 20 and 40"	0.48
521:			
Stonyford gravelly loam	65	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Guenoc loam	15	Major limitations:	
		Moderate AWC (5.0-7.5") to 40"	0.95
		Shrink-swell (LEP 3-6)	0.50
		Depth to bedrock between 20 and 40"	0.48
524:			
Arand, frequently flooded	65	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of <5 meq/100g within 40"	1.00
Riverwash	25	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of <5 meq/100g within 40"	1.00

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
526:			
Etsel gravelly sandy loam	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Maymen sandy loam	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		Depth to bedrock <20"	1.00
Marpa very gravelly sandy loam	20	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
		Depth to bedrock between 20 and 40"	0.48
527:			
Maymen sandy loam	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		Depth to bedrock <20"	1.00
Etsel gravelly sandy loam	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Speaker gravelly loam	20	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP 3-6)	0.50
		Depth to bedrock between 20 and 40"	0.48
528:			
Maymen sandy loam	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		Depth to bedrock <20"	1.00
Etsel gravelly sandy loam	25	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Snook gravelly sandy loam	25	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
529:			
Maymen sandy loam	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		Depth to bedrock <20"	1.00
Etsel gravelly sandy loam	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Mayacama gravelly coarse sandy loam	20	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		Densic material (root restriction)	1.00

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
542:			
Okiota loam	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP >6)	1.00
		Depth to bedrock <20"	1.00
Dubakella gravelly clay loam	25	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP >6)	1.00
		Depth to bedrock between 20 and 40"	0.48
Henneke sandy loam	25	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP >6)	1.00
		Depth to bedrock <20"	1.00
545:			
Henneke sandy loam	40	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP >6)	1.00
		Depth to bedrock <20"	1.00
Montara gravelly sandy loam	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Rock outcrop	15	Not rated	---
548:			
Henneke sandy loam	45	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP >6)	1.00
		Depth to bedrock <20"	1.00
Okiota loam	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP >6)	1.00
		Depth to bedrock <20"	1.00
549:			
Henneke sandy loam	45	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP >6)	1.00
		Depth to bedrock <20"	1.00
Okiota loam	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP >6)	1.00
		Depth to bedrock <20"	1.00
557:			
Neuns very gravelly loam	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock between 20 and 40"	0.48
Bamtush very gravelly loam	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Speaker gravelly loam	20	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP 3-6)	0.50
		Depth to bedrock between 20 and 40"	0.48

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
564:			
Fouts gravelly loam	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP >6)	1.00
		Depth to bedrock between 20 and 40"	0.48
Yorkville clay loam	35	Major limitations:	
		Shrink-swell (LEP >6)	1.00
		Moderate AWC (5.0-7.5") to 40"	0.55
		CEC of 5-20 meq/100g within 40"	0.17
Squawrock gravelly loam	15	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Shrink-swell (LEP 3-6)	0.50
		Depth to bedrock between 20 and 40"	0.48
570:			
Endoaquolls, frequently ponded	90	Major limitations:	
		Wetness at a depth of <20"	1.00
		Shrink-swell (LEP 3-6)	0.50
		Moderate AWC (5.0-7.5") to 40"	0.13
590:			
Neuns very gravelly loam	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock between 20 and 40"	0.48
Marpa very gravelly sandy loam	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
		Depth to bedrock between 20 and 40"	0.48
Goulding gravelly loam	20	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.83
591:			
Neuns very gravelly loam	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock between 20 and 40"	0.48
Sheetiron gravelly sandy loam	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Goulding gravelly loam	20	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.83
592:			
Neuns very gravelly loam	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock between 20 and 40"	0.48
Goulding gravelly loam	25	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.83

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
592:			
Sheetiron gravelly sandy loam-----	25	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of 5-20 meq/100g within 40"	0.67
596:			
Yollabolly very gravelly loam-----	40	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Rock outcrop---------------------	35	Not rated	---
Freezeout very gravelly sandy loam----------------------------	20	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of 5-20 meq/100g within 40"	0.67
597:			
Yollabolly very gravelly loam-----	55	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Freezeout very gravelly sandy loam----------------------------	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of 5-20 meq/100g within 40"	0.67
599:			
Freezeout very gravelly sandy loam----------------------------	55	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Yollabolly very gravelly loam-----	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
600:			
Freezeout very gravelly sandy loam----------------------------	50	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Permeability ≥ 2"/hr (seepage)	1.00
		CEC of 5-20 meq/100g within 40"	0.67
Yollabolly very gravelly loam-----	35	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
610:			
Neuns very gravelly loam----------	40	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock between 20 and 40"	0.48

Table 5.--Limitations Affecting Irrigated Cropland--Continued

Map symbol and soil name	Pct.	Limitation	Value
610:			
Bamtush very gravelly loam--------	25	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Goulding gravelly loam------------	20	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		Depth to bedrock <20"	1.00
		CEC of 5-20 meq/100g within 40"	0.83
650:			
Bamtush very gravelly loam--------	55	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		CEC of 5-20 meq/100g within 40"	0.33
Marpa very gravelly sandy loam----	30	Major limitations:	
		Low AWC (<5.0") to 40"	1.00
		CEC of 5-20 meq/100g within 40"	0.67
		Depth to bedrock between 20 and 40"	0.48

The interpretation for *irrigated cropland* evaluates the following soil properties at varying depths in the soil: available water capacity (AWC), permeability (which can result in seepage if too rapid and saturation of the surface layer if too slow), content of calcium carbonate, root restrictions, shrink-swell potential as measured by linear extensibility percent (LEP), content of sodium, cation-exchange capacity (CEC), flooding, wetness in the root zone, content of clay or rock fragments (which can limit tillage), content of salts, and depth to bedrock or a cemented pan.

Table 6.--Yields Per Acre of Crops

(Yields in the "N" columns are for nonirrigated soils; those in the "I" columns are for irrigated soils. Yields are those that can be expected under a high level of management. Absence of an entry indicates that data were not estimated.)

Map symbol and soil name	Almonds		Corn		Prunes		Rice		Tomatoes		Walnuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I	N	I
	Tons		*Bu*		*Tons*		*Bu*		*Tons*		*Tons*		*Bu*	
100, 101, 102, 103: Capay-----------	---	---	---	165.0	---	---	---	165.0	---	32.0	---	---	20.0	80.0
104, 105, 106: Willows---------	---	---	---	---	---	---	---	175.0	---	---	---	---	---	---
107, 108, 109: Scribner--------	---	---	---	165.0	---	---	---	175.0	---	34.0	---	---	---	80.0
110: Hustabel sandy loam-----------	---	---	---	165.0	---	---	---	---	---	34.0	---	1.0	---	---
112: Westfan loam----	---	---	---	165.0	---	---	---	---	---	34.0	---	---	---	---
113: Westfan loam, sodic----------	---	---	---	---	---	---	---	---	---	30.0	---	---	---	---
114: Westfan clay loam-----------	---	---	---	165.0	---	---	---	---	---	34.0	---	---	---	---
115: Clear Lake clay, occasionally flooded--------	---	---	---	---	---	---	---	175.0	---	---	---	---	---	---
116, 117: Clear Lake clay, calcareous-----	---	---	---	180.0	---	---	---	175.0	---	32.0	---	---	---	80.0
118: Clear Lake clay, frequently flooded--------	---	---	---	---	---	---	---	175.0	---	---	---	---	---	---
124, 125, 126: Moonbend silt loam-----------	---	---	---	165.0	---	2.0	---	---	---	34.0	---	1.0	---	100.0
127, 128, 129: Mallard---------	---	---	---	165.0	---	---	---	165.0	---	34.0	---	---	---	---
130, 131, 133: Corbiere silt loam-----------	---	---	---	165.0	---	---	---	175.0	---	34.0	---	---	---	---
141: Myers clay------	---	---	---	---	---	---	---	175.0	---	34.0	---	---	---	---
144: Hillgate clay loam-----------	---	1.0	---	---	---	---	---	175.0	---	34.0	---	---	---	---

Table 6.--Yields Per Acre of Crops--Continued

Map symbol and soil name	Almonds		Corn		Prunes		Rice		Tomatoes		Walnuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I	N	I
	Tons		*Bu*		*Tons*		*Bu*		*Tons*		*Tons*		*Bu*	
145, 147:														
Hillgate loam---	---	1.0	---	---	---	---	---	---	---	34.0	---	---	---	---
150:														
Arbuckle sandy loam-----------	---	1.5	---	---	---	---	---	---	---	34.0	---	---	---	---
151:														
Arbuckle sandy loam-----------	---	1.5	---	---	---	---	---	---	---	---	---	---	---	---
Hillgate loam---	---	1.0	---	---	---	---	---	---	---	---	---	---	---	---
152:														
Arbuckle gravelly loam--	---	1.5	---	---	---	---	---	---	---	---	---	---	---	---
155:														
Alcapay clay----	---	---	---	---	---	---	---	165.0	---	---	---	---	---	---
160:														
Grandbend loam--	---	---	---	165.0	---	2.0	---	---	---	34.0	---	---	---	80.0
170:														
Vina loam, frequently flooded--------	---	---	---	165.0	---	2.0	---	---	---	34.0	---	1.0	---	---
171:														
Vina loam-------	---	---	---	165.0	---	2.0	---	---	---	34.0	---	1.0	---	100.0
172:														
Vina fine sandy loam, frequently flooded--------	---	---	---	165.0	---	2.0	---	---	---	34.0	---	1.0	---	---
174:														
Vina loam, occasionally flooded--------	---	---	---	165.0	---	2.0	---	---	---	34.0	---	1.0	---	100.0
175:														
Tujunga loam, overwash, frequently flooded--------	---	---	---	---	---	---	---	---	---	---	---	0.8	---	---
176:														
Columbia fine sandy loam, frequently flooded--------	---	---	---	165.0	---	---	---	---	---	34.0	---	---	---	---
177:														
Holillipah loamy sand, channeled	---	---	---	---	---	---	---	---	---	---	---	0.8	---	---

Table 6.--Yields Per Acre of Crops--Continued

Map symbol and soil name	Almonds		Corn		Prunes		Rice		Tomatoes		Walnuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I	N	I
	Tons		Bu		Tons		Bu		Tons		Tons		Bu	
187:														
Westfan loam, occasionally flooded--------	---	---	---	165.0	---	---	---	---	---	34.0	---	---	---	---
188:														
Westfan loam, clay substratum	---	1.5	---	165.0	---	---	---	---	---	34.0	---	---	---	---
189:														
Arand very gravelly sandy loam-----------	---	0.5	---	---	---	---	---	---	---	34.0	---	---	---	---
193:														
Westfan gravelly loam-----------	---	1.5	---	165.0	---	---	---	---	---	34.0	---	---	---	---
200:														
Clear Lake clay, occasionally flooded--------	---	---	---	---	---	---	---	175.0	---	---	---	---	---	---
204:														
Capay clay, occasionally flooded--------	---	---	---	---	---	---	---	165.0	---	32.0	---	---	20.0	80.0
205:														
Capay clay------	---	---	---	---	---	---	---	165.0	---	32.0	---	---	20.0	80.0
206:														
Capay clay------	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
210, 211:														
Corval----------	---	---	---	165.0	---	---	---	---	---	34.0	---	---	---	---
212, 213:														
Ayar clay-------	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
215, 216:														
Altamont silty clay-----------	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
Sehorn silty clay-----------	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
218:														
Sehorn silty clay-----------	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
Altamont silty clay-----------	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
220:														
Altamont silty clay-----------	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
221:														
Altamont silty clay-----------	---	---	---	---	---	---	---	---	---	18.0	---	---	20.0	---

Table 6.--Yields Per Acre of Crops--Continued

Map symbol and soil name	Almonds		Corn		Prunes		Rice		Tomatoes		Walnuts		Wheat	
	N	I	N	I	N	I	N	I	N	I	N	I	N	I
	Tons		*Bu*		*Tons*		*Bu*		*Tons*		*Tons*		*Bu*	
253:														
Millsholm loam--	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
Altamont silty clay-----------	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
255:														
Millsholm loam--	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
257:														
Millsholm loam--	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
Capay clay------	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
261:														
Millsholm loam--	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
Altamont silty clay-----------	---	---	---	---	---	---	---	---	---	---	---	---	20.0	---
280, 300:														
Millsholm loam--	---	---	---	---	---	---	---	---	---	---	---	---	25.0	---
316:														
Hillgate loam---	---	1.0	---	---	---	---	---	---	---	30.0	---	---	---	---
329:														
Millsholm loam--	---	---	---	---	---	---	---	---	---	---	---	---	25.0	---
Altamont silty clay-----------	---	---	---	---	---	---	---	---	---	18.0	---	---	20.0	---
337, 345, 346, 371:														
Millsholm loam--	---	---	---	---	---	---	---	---	---	---	---	---	25.0	---
524:														
Arand, frequently flooded-------	---	0.5	---	---	---	---	---	---	---	30.0	---	---	---	---

Table 7.--Land Capability Classification

(The land capability system groups soils primarily on the basis of their ability to produce the commonly grown cultivated crops and pasture plants over a long period of time without deteriorating. Land capability placement in California is based on State criteria developed in 1978 and revised in 1992. Absence of an entry indicates that no land capability classification is assigned.)

Map symbol and soil name	Land capability	
	N	I
100:		
Capay clay loam, occasionally flooded	4w-5	2w-5
101:		
Capay silty clay, frequently flooded	4w-2	4w-2
102:		
Capay clay loam	4s-5	2s-5
103:		
Capay clay loam, frequently flooded	4w-2	4w-2
104:		
Willows silty clay, frequently flooded	4w-2	4w-2
105:		
Willows silty clay, occasionally flooded	4w-2	3w-2
106:		
Willows silty clay	4w-2	3w-2
107:		
Scribner silt loam, occasionally flooded	4w-2	3w-2
108:		
Scribner silt loam	4w-2	3w-2
109:		
Scribner silt loam, frequently flooded	4w-2	4w-2
110:		
Hustabel sandy loam	4s	1
112:		
Westfan loam	4s	1
113:		
Westfan loam, sodic	4s-6	2s-6
114:		
Westfan clay loam	4s	1
115:		
Clear Lake clay, occasionally flooded	4w-5	3w-5
116:		
Clear Lake clay, calcareous, occasionally flooded	4w-5	3w-5

Table 7.--Land Capability Classification--Continued

Map symbol and soil name	Land capability N	Land capability I
117:		
Clear Lake clay, calcareous, frequently flooded	4w-2	4w-2
118:		
Clear Lake clay, frequently flooded	4w-2	4w-2
124:		
Moonbend silt loam, occasionally flooded	4w-2	2w-2
125:		
Moonbend silt loam	4s	1
126:		
Moonbend silt loam, frequently flooded	4w-2	4w-2
127:		
Mallard clay loam	4w-3	2w-3
128:		
Mallard loam	4w-3	2w-3
129:		
Mallard clay loam, occasionally flooded	4w-3	2w-3
130:		
Corbiere silt loam	4w-3	2w-3
131:		
Corbiere silt loam, frequently flooded	4w-3	4w-3
133:		
Corbiere silt loam, occasionally flooded	4w-3	2w-3
136:		
Colusa loam	4s-6	4s-6
141:		
Myers clay	4s-5	2s-5
144:		
Hillgate clay loam	4s-3	2s-3
145:		
Hillgate loam	4s-3	2s-3
147:		
Hillgate loam	4e-3	2e-3
150:		
Arbuckle sandy loam	4e-4	2e-4
151:		
Arbuckle sandy loam	4e-4	2e-4
Hillgate loam	4e-3	2e-3
152:		
Arbuckle gravelly loam	4e-4	2e-4

Table 7.--Land Capability Classification--Continued

Map symbol and soil name	Land capability N	Land capability I
155:		
Alcapay clay	4w-5	3w-5
160:		
Grandbend loam	4w-2	2w-2
170:		
Vina loam, frequently flooded	4w-2	4w-2
171:		
Vina loam	4s	1
172:		
Vina fine sandy loam, frequently flooded	4w-2	4w-2
174:		
Vina loam, occasionally flooded	4w-2	2w-2
175:		
Tujunga loam, overwash, frequently flooded	6w	4w-2
176:		
Columbia fine sandy loam, frequently flooded	4w-2	4w-2
177:		
Holillipah loamy sand, channeled	4w-2	4w-2
185:		
Riverwash	8	---
187:		
Westfan loam, occasionally flooded	4w-2	2w-2
188:		
Westfan loam, clay substratum	4s-3	2s-3
189:		
Arand very gravelly sandy loam	4s-4	4s-4
190:		
Arand very gravelly loam	4s-4	4s-4
193:		
Westfan gravelly loam	4s-4	2s-4
200:		
Clear Lake clay, occasionally flooded	4w-5	3w-5
204:		
Capay clay, occasionally flooded	4w-5	2w-5
205:		
Capay clay	4s-5	2s-5
206:		
Capay clay	4s-5	2s-5
210:		
Corval loam	4s	1

Table 7.--Land Capability Classification--Continued

Map symbol and soil name	Land capability N	Land capability I
211:		
Corval clay loam	4s	1
212:		
Ayar clay	4e-5	3e-5
213:		
Ayar clay	4e-5	4e-5
215:		
Altamont silty clay	4e-5	---
Sehorn silty clay	4e-5	---
216:		
Altamont silty clay	4e-5	3e-5
Sehorn silty clay	4e-5	3e-5
218:		
Sehorn silty clay	6e	---
Altamont silty clay	6e	---
220:		
Altamont silty clay	4e-5	2e-5
221:		
Altamont silty clay	4e-5	3e-5
230:		
Corning clay loam	4e-5	3e-5
232:		
Maywood gravelly loam, occasionally flooded	4e-2	2s-2
233:		
Eastpark clay loam	4s-9	2s-9
241:		
Contra Costa loam	6e	---
Altamont silty clay	6e	---
253:		
Millsholm loam	6e	---
Altamont silty clay	4e-8	3e-8
Rock outcrop	8	---
255:		
Millsholm loam	6e	6e
Rock outcrop	8	---
257:		
Millsholm loam	6e	6e
Capay clay	4s-5	2s-5

Table 7.--Land Capability Classification--Continued

Map symbol and soil name	Land capability N	Land capability I
261:		
Millsholm loam	6e	---
Altamont silty clay	4e-5	4e-5
270:		
Balcom silt loam	4e-3	---
Ayar clay	4e-5	---
271:		
Balcom silt loam	6e	---
Ayar clay	6e	---
275:		
Goldeagle clay loam	7e	---
Positas gravelly sandy loam	7e	---
Balcom silt loam	7e	---
276:		
Positas gravelly sandy loam	6e	---
280:		
Skyhigh gravelly clay loam	6e	---
Millsholm loam	6e	---
300:		
Contra Costa loam	7e	---
Millsholm loam	7e	---
305:		
Contra Costa loam	7e	---
311:		
Contra Costa loam	4e-5	3e-5
312:		
Saltcanyon loam	4e-1	2e-1
313:		
Saltcanyon loam	4e-1	2e-1
315:		
Mallard clay loam	4e-3	2e-3
316:		
Hillgate loam	4e-3	---
320:		
Millsholm loam	6e	---
329:		
Sehorn silty clay	4e-5	---
Millsholm loam	6e	---

Table 7.--Land Capability Classification--Continued

Map symbol and soil name	Land capability N	Land capability I
329:		
Altamont silty clay	4e-5	---
330:		
Millsholm loam	6e	---
Contra Costa loam	4e-8	---
331:		
Sehorn silty clay	6e	---
Millsholm loam	6e	---
Rock outcrop	8	---
332:		
Millsholm loam	7e	---
Rock outcrop	8	---
334:		
Millsholm loam	7e	---
Contra Costa loam	7e	---
337:		
Millsholm loam	6e	---
Saltcanyon loam	4e-1	2e-1
345:		
Skyhigh gravelly clay loam	4e-8	---
Sleeper clay loam	4e-8	---
Millsholm loam	6e	---
346:		
Skyhigh gravelly clay loam	6e	---
Millsholm loam	6e	---
Sleeper clay loam	6e	---
347:		
Boar loam	4e-3	---
Sleeper clay loam	4e-3	---
348:		
Boar loam	6e	---
Sleeper clay loam	6e	---
350:		
Haploxererts	6e	---
355:		
Venado clay	4w-9	3w-9

Table 7.--Land Capability Classification--Continued

Map symbol and soil name	Land capability N	Land capability I
360:		
Bearvalley gravelly sandy loam	4e-9	4e-9
365:		
Leesville clay loam	4e-9	2e-9
366:		
Leesville clay loam	4s-9	2s-9
370:		
Livermore very gravelly loam	4s-4	4s-4
371:		
Buttes gravelly sandy loam	6e	---
Millsholm loam	6e	---
519:		
Stonyford gravelly loam	4e	---
Guenoc loam	3e-8	---
520:		
Stonyford gravelly loam	4e	---
Guenoc loam	3e-8	---
521:		
Stonyford gravelly loam	4e	---
Guenoc loam	3e-8	---
524:		
Arand, frequently flooded	6w	---
Riverwash	8	---
526:		
Etsel gravelly sandy loam	7e	---
Maymen sandy loam	7e	---
Marpa very gravelly sandy loam	7e	---
527:		
Maymen sandy loam	7e	---
Etsel gravelly sandy loam	7e	---
Speaker gravelly loam	6e	---
528:		
Maymen sandy loam	7e	---
Etsel gravelly sandy loam	7e	---
Snook gravelly sandy loam	7e	---
529:		
Maymen sandy loam	7e	---

Table 7.--Land Capability Classification--Continued

Map symbol and soil name	Land capability N	Land capability I
529:		
Etsel gravelly sandy loam	7e	---
Mayacama gravelly coarse sandy loam	6e	---
542:		
Okiota loam	7e	---
Dubakella gravelly clay loam	6e	---
Henneke sandy loam	7e	---
545:		
Henneke sandy loam	7e	---
Montara gravelly sandy loam	7e	---
Rock outcrop	8	---
548:		
Henneke sandy loam	7e	---
Okiota loam	7e	---
549:		
Henneke sandy loam	7e	---
Okiota loam	7e	---
557:		
Neuns very gravelly loam	6e	---
Bamtush very gravelly loam	6e	---
Speaker gravelly loam	6e	---
564:		
Fouts gravelly loam	6e	---
Yorkville clay loam	6e	---
Squawrock gravelly loam	6e	---
570:		
Endoaquolls, frequently ponded	5w	---
590:		
Neuns very gravelly loam	6e	---
Marpa very gravelly sandy loam	7e	---
Goulding gravelly loam	7e	---
591:		
Neuns very gravelly loam	6e	---
Sheetiron gravelly sandy loam	6e	---
Goulding gravelly loam	6e	---

Table 7.--Land Capability Classification--Continued

Map symbol and soil name	Land capability N	Land capability I
592:		
Neuns very gravelly loam	6e	---
Goulding gravelly loam	7e	---
Sheetiron gravelly sandy loam	6e	---
596:		
Yollabolly very gravelly loam	7e	---
Rock outcrop	8	---
Freezeout very gravelly sandy loam	7e	---
597:		
Yollabolly very gravelly loam	7e	---
Freezeout very gravelly sandy loam	7e	---
599:		
Freezeout very gravelly sandy loam	7e	---
Yollabolly very gravelly loam	7e	---
600:		
Freezeout very gravelly sandy loam	7e	---
Yollabolly very gravelly loam	7e	---
610:		
Neuns very gravelly loam	6e	---
Bamtush very gravelly loam	6e	---
Goulding gravelly loam	7e	---
650:		
Bamtush very gravelly loam	4e	---
Marpa very gravelly sandy loam	4e	---
651:		
Bamtush very gravelly loam	6e	---
Marpa very gravelly sandy loam	6e	---

Table 8.--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
100	Capay clay loam, 0 to 1 percent slopes, occasionally flooded (where irrigated)
101	Capay silty clay, 0 to 2 percent slopes, frequently flooded (where irrigated)
102	Capay clay loam, 0 to 1 percent slopes (where irrigated)
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded (where irrigated and drained)
108	Scribner silt loam, 0 to 1 percent slopes (where irrigated and drained)
112	Westfan loam, 0 to 2 percent slopes (where irrigated)
114	Westfan clay loam, 0 to 1 percent slopes (where irrigated)
115	Clear Lake clay, 0 to 1 percent slopes, occasionally flooded (where irrigated and drained)
116	Clear Lake clay, calcareous, 0 to 2 percent slopes, occasionally flooded (where irrigated and drained)
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded (where irrigated)
125	Moonbend silt loam, 0 to 2 percent slopes (where irrigated)
127	Mallard clay loam, 0 to 1 percent slopes (where irrigated)
128	Mallard loam, 0 to 1 percent slopes (where irrigated)
129	Mallard clay loam, 0 to 1 percent slopes, occasionally flooded (where irrigated)
130	Corbiere silt loam, 0 to 1 percent slopes (where irrigated)
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded (where irrigated)
141	Myers clay, 0 to 2 percent slopes (where irrigated)
144	Hillgate clay loam, 0 to 2 percent slopes (where irrigated)
145	Hillgate loam, 0 to 2 percent slopes (where irrigated)
147	Hillgate loam, 1 to 5 percent slopes (where irrigated)
150	Arbuckle sandy loam, 1 to 5 percent slopes (where irrigated)
151	Arbuckle-Hillgate complex, 1 to 5 percent slopes (where irrigated)
152	Arbuckle gravelly loam, 1 to 5 percent slopes (where irrigated)
160	Grandbend loam, 0 to 2 percent slopes (where irrigated)
171	Vina loam, 0 to 2 percent slopes (where irrigated)
174	Vina loam, 0 to 2 percent slopes, occasionally flooded (where irrigated)
176	Columbia fine sandy loam, 0 to 2 percent slopes, frequently flooded (where irrigated)
187	Westfan loam, 0 to 2 percent slopes, occasionally flooded (where irrigated)
188	Westfan loam, clay substratum, 0 to 2 percent slopes (where irrigated)
193	Westfan gravelly loam, 0 to 2 percent slopes (where irrigated)
200	Clear Lake clay, 0 to 2 percent slopes, occasionally flooded (where irrigated and drained)
204	Capay clay, 0 to 3 percent slopes, occasionally flooded (where irrigated)
205	Capay clay, 0 to 3 percent slopes (where irrigated)
210	Corval loam, 0 to 3 percent slopes (where irrigated)
211	Corval clay loam, 0 to 3 percent slopes (where irrigated)
232	Maywood gravelly loam, 0 to 2 percent slopes, occasionally flooded (where irrigated)
312	Saltcanyon loam, 1 to 5 percent slopes (where irrigated)
315	Mallard clay loam, 2 to 5 percent slopes (where irrigated)
365	Leesville clay loam, 2 to 5 percent slopes (where irrigated)
366	Leesville clay loam, 0 to 2 percent slopes (where irrigated)

Table 9.--Additional Farmland of Statewide Importance

(Urban or built-up areas of the soils listed in this table are not considered farmland of statewide importance.)

Map symbol	Soil name
110	Hustabel sandy loam, 0 to 1 percent slopes
206	Capay clay, 5 to 9 percent slopes
220	Altamont silty clay, 5 to 9 percent slopes
230	Corning clay loam, 1 to 5 percent slopes
233	Eastpark clay loam, 0 to 2 percent slopes
313	Saltcanyon loam, 5 to 9 percent slopes
316	Hillgate loam, 5 to 9 percent slopes
355	Venado clay, 0 to 2 percent slopes
370	Livermore very gravelly loam, 5 to 9 percent slopes

Table 10a.--Storie Index

(The California Storie index expresses numerically the relative degree of suitability of a soil for general intensive agricultural uses at the time of evaluation. The rating is based on soil characteristics only and is obtained by evaluating such factors as soil depth, texture of the surface soil, subsoil characteristics, and surface relief.)

Map symbol and soil name	Storie index				
	A	B	C	X	Index
100: Capay clay loam, occasionally flooded	100	85	100	85	72
101: Capay silty clay, frequently flooded	100	85	100	75	49
102: Capay clay loam	100	85	100	85	72
103: Capay clay loam, frequently flooded	100	85	100	75	64
104: Willows silty clay, frequently flooded	100	70	100	30	21
105: Willows silty clay, occasionally flooded	100	70	100	30	21
106: Willows silty clay	100	70	100	30	21
107: Scribner silt loam, occasionally flooded	100	100	100	40	40
108: Scribner silt loam	100	100	100	40	40
109: Scribner silt loam, frequently flooded	100	100	100	30	30
110: Hustabel sandy loam	100	95	100	95	90
112: Westfan loam	100	100	100	100	100
113: Westfan loam, sodic	100	100	100	60	60
114: Westfan clay loam	100	90	100	100	90
115: Clear Lake clay, occasionally flooded	100	70	100	40	28
116: Clear Lake clay, calcareous, occasionally flooded	100	88	100	40	32
117: Clear Lake clay, calcareous, frequently flooded	100	80	100	30	24
118: Clear Lake clay, frequently flooded	100	70	100	30	21
124: Moonbend silt loam, occasionally flooded	100	100	100	95	95

Table 10a.--Storie Index--Continued

Map symbol and soil name	Storie index				
	A	B	C	X	Index
125:					
Moonbend silt loam	100	100	100	100	100
126:					
Moonbend silt loam, frequently flooded	100	100	100	90	90
127:					
Mallard clay loam	95	90	100	100	86
128:					
Mallard loam	95	100	100	100	95
129:					
Mallard clay loam, occasionally flooded	95	90	100	95	81
130:					
Corbiere silt loam	100	100	100	60	60
131:					
Corbiere silt loam, frequently flooded	100	100	100	50	50
133:					
Corbiere silt loam, occasionally flooded	100	100	100	55	55
136:					
Colusa loam	100	100	100	80x10	8
141:					
Myers clay	100	70	100	95	67
144:					
Hillgate clay loam	50	90	100	100	45
145:					
Hillgate loam	50	100	100	100	50
147:					
Hillgate loam	50	100	95	100	48
150:					
Arbuckle sandy loam	80	95	95	95	69
151:					
Arbuckle sandy loam	80	95	95	95	69
Hillgate loam	50	100	95	95	45
152:					
Arbuckle gravelly loam	85	80	95	80	52
155:					
Alcapay clay	100	85	100	40	34
160:					
Grandbend loam	100	100	100	70	70
170:					
Vina loam, frequently flooded	100	100	100	60	60
171:					
Vina loam	100	100	100	100	100

Table 10a.--Storie Index--Continued

Map symbol and soil name	Storie index A	B	C	X	Index
172:					
Vina fine sandy loam, frequently flooded	100	100	100	60	60
174:					
Vina loam, occasionally flooded	100	100	100	75	75
175:					
Tujunga loam, overwash, frequently flooded	95	100	95	40	36
176:					
Columbia fine sandy loam, frequently flooded	100	100	100	55	55
177:					
Holillipah loamy sand, channeled	100	80	100	60	48
185:					
Riverwash	80	10	95	60x75	3
187:					
Westfan loam, occasionally flooded	100	100	100	95	95
188:					
Westfan loam, clay substratum	95	100	100	100	95
189:					
Arand very gravelly sandy loam	100	50	100	90	45
190:					
Arand very gravelly loam	100	60	100	90	54
193:					
Westfan gravelly loam	100	80	100	100	80
200:					
Clear Lake clay, occasionally flooded	90	70	100	34	21
204:					
Capay clay, occasionally flooded	90	70	95	72	43
205:					
Capay clay	90	70	95	81	48
206:					
Capay clay	90	70	90	81	46
210:					
Corval loam	90	100	95	100	90
211:					
Corval clay loam	100	90	100	100	90
212:					
Ayar clay	100	80	85	30	20
213:					
Ayar clay	100	80	70	30	17
215:					
Altamont silty clay	90	70	70	75	33
Sehorn silty clay	70	70	70	75	26

Table 10a.--Storie Index--Continued

Map symbol and soil name	Storie index				
	A	B	C	X	Index
216:					
Altamont silty clay	90	70	80	75	38
Sehorn silty clay	70	70	80	75	29
218:					
Sehorn silty clay	70	70	40	75	15
Altamont silty clay	90	70	40	75	19
220:					
Altamont silty clay	90	70	90	75	43
221:					
Altamont silty clay	90	70	80	75	38
230:					
Corning clay loam	25	85	95	95	19
232:					
Maywood gravelly loam, occasionally flooded	100	80	100	95	76
233:					
Eastpark clay loam	60	85	95	60	29
241:					
Contra Costa loam	70	100	40	95	27
Altamont silty clay	90	70	40	75	19
253:					
Millsholm loam	35	100	85	67	20
Altamont silty clay	90	70	85	53	28
255:					
Millsholm loam	35	100	75	67	18
Rock outcrop.					
257:					
Millsholm loam	35	100	90	95	30
Capay clay	90	70	90	81	46
261:					
Millsholm loam	35	100	70	95	23
Altamont silty clay	90	70	70	75	33
270:					
Balcom silt loam	80	100	70	30	17
Ayar clay	100	80	70	30	17
271:					
Balcom silt loam	80	100	40	30	10
Ayar clay	100	80	40	30	10
275:					
Goldeagle clay loam	65	95	30	30	6

Table 10a.--Storie Index--Continued

Map symbol and soil name	Storie index				
	A	B	C	X	Index
275:					
Positas gravelly sandy loam	50	70	30	100	11
Balcom silt loam	80	100	30	30	7
276:					
Positas gravelly sandy loam	50	70	40	100	14
280:					
Skyhigh gravelly clay loam	70	80	55	100	31
Millsholm loam	35	100	55	95	18
300:					
Contra Costa loam	70	100	20	95	13
Millsholm loam	35	100	20	95	7
305:					
Contra Costa loam	70	100	20	95	13
311:					
Contra Costa loam	70	100	80	95	53
312:					
Saltcanyon loam	95	100	95	100	90
313:					
Saltcanyon loam	95	100	90	100	86
315:					
Mallard clay loam	95	90	95	100	81
316:					
Hillgate loam	50	100	90	95	43
320:					
Millsholm loam	35	100	78	95	26
329:					
Sehorn silty clay	70	70	70	75	26
Millsholm loam	35	100	70	95	23
Altamont silty clay	90	70	70	75	33
330:					
Millsholm loam	35	100	70	95	23
Contra Costa loam	70	95	70	95	43
331:					
Sehorn silty clay	70	70	40	53	10
Millsholm loam	35	100	40	67	9
Rock outcrop.					
332:					
Millsholm loam	35	100	55	95	18
Rock outcrop.					

Table 10a.--Storie Index--Continued

Map symbol and soil name	Storie index				
	A	B	C	X	Index
334:					
Millsholm loam	35	100	30	95	10
Contra Costa loam	70	95	30	95	19
337:					
Millsholm loam	35	100	85	95	28
Saltcanyon loam	95	100	85	100	81
345:					
Skyhigh gravelly clay loam	70	80	70	100	39
Sleeper clay loam	95	90	70	60	36
Millsholm loam	35	100	70	95	23
346:					
Skyhigh gravelly clay loam	70	80	40	100	22
Millsholm loam	35	100	40	95	13
Sleeper clay loam	95	90	40	60	21
347:					
Boar loam	95	100	70	60	40
Sleeper clay loam	95	90	70	60	36
348:					
Boar loam	95	90	40	60	21
Sleeper clay loam	95	90	40	60	21
350:					
Haploxererts	70	85	40	60	14
355:					
Venado clay	80	70	95	60	32
360:					
Bearvalley gravelly sandy loam	80	70	95	60	32
365:					
Leesville clay loam	90	85	95	60	44
366:					
Leesville clay loam	90	85	95	60	44
370:					
Livermore very gravelly loam	80	60	90	100	43
371:					
Buttes gravelly sandy loam	60	70	40	100	17
Millsholm loam	35	100	40	95	13
519:					
Stonyford gravelly loam	35	80	85	95	23
Guenoc loam	65	100	85	95	52

Table 10a.--Storie Index--Continued

Map symbol and soil name	Storie index				
	A	B	C	X	Index
520:					
Stonyford gravelly loam	35	80	70	95	19
Guenoc loam	65	100	70	95	43
521:					
Stonyford gravelly loam	35	70	40	95	9
Guenoc loam	65	100	40	95	29
524:					
Arand very gravelly sandy loam, frequently flodded	100	60	100	75	45
Riverwash	80	10	95	60x75	3
526:					
Etsel gravelly sandy loam	25	70	40	95	7
Maymen sandy loam	35	95	40	80	11
Marpa very gravelly sandy loam	50	50	40	95	10
527:					
Maymen sandy loam	35	95	40	80	11
Etsel gravelly sandy loam	25	70	40	95	7
Speaker gravelly loam	50	80	40	100	16
528:					
Maymen sandy loam	35	95	30	80	8
Etsel gravelly sandy loam	25	70	30	95	5
Snook gravelly sandy loam	20	70	30	95	4
529:					
Maymen sandy loam	35	95	30	80	8
Etsel gravelly sandy loam	25	70	30	95	5
Mayacama gravelly coarse sandy loam	70	65	30	100	14
542:					
Okiota loam	55	100	55	60	18
Dubakella gravelly clay loam	55	80	55	60	15
Henneke sandy loam	50	95	55	60	16
545:					
Henneke sandy loam	50	95	55	42	11
Montara gravelly sandy loam	20	70	55	42	7
Rock outcrop.					
548:					
Henneke sandy loam	50	95	40	60	11
Okiota loam	55	100	40	60	13

Table 10a.--Storie Index--Continued

Map symbol and soil name	Storie index				
	A	B	C	X	Index
549:					
Henneke sandy loam	50	95	20	60	6
Okiota loam	55	100	20	60	7
564:					
Fouts gravelly loam	50	80	55	95	21
Yorkville clay loam	80	85	55	95	36
Squawrock gravelly loam	50	80	55	95	21
570:					
Endoaquolls, frequently ponded	95	100	95	25	23

Table 10b.--Storie Index

(The California Storie Index expresses numerically the relative degree of suitability of a soil for commercial timber at the time of evaluation. The rating is based on soil and climatic characteristics and is obtained by evaluating such factors as soil depth, texture of the surface soil, permeability, chemical characteristics, drainage and runoff, and a climatic factor. For soils that are used primarily for general intensive agricultural and range uses, see table 10a.)

Map symbol and soil name	Storie index					
	A	B	C	D	E	Index
557:						
Neuns very gravelly loam	60	95	100	100	95	54
Bamtush very gravelly loam	95	90	100	100	95	81
Speaker gravelly loam	95	90	100	100	95	47
590:						
Neuns very gravelly loam	60	95	100	100	100	57
Marpa very gravelly sandy loam	55	90	100	100	100	50
Goulding gravelly loam	30	95	100	95	100	27
591:						
Neuns very gravelly loam	60	95	100	100	100	57
Sheetiron gravelly sandy loam	60	100	100	100	100	60
Goulding gravelly loam	30	95	100	95	100	27
592:						
Neuns very gravelly loam	60	95	100	100	100	57
Goulding gravelly loam	30	95	100	95	100	27
Sheetiron gravelly sandy loam	60	100	100	100	100	60
596:						
Yollabolly very gravelly loam	40	95	100	80	100	30
Rock outcrop.						
Freezeout very gravelly sandy loam	55	100	100	100	100	55
597:						
Yollabolly very gravelly loam	40	95	100	80	100	30
Freezeout very gravelly sandy loam	55	100	100	100	100	55
599:						
Freezeout very gravelly sandy loam	55	100	100	100	100	55
Yollabolly very gravelly loam	40	95	100	80	100	30
600:						
Freezeout very gravelly sandy loam	55	100	100	100	100	55
Yollabolly very gravelly loam	40	95	100	80	100	30
610:						
Neuns very gravelly loam	60	95	100	100	100	57
Bamtush very gravelly loam	95	90	100	100	100	86

Table 10b.--Storie Index--Continued

Map symbol and soil name	Storie index					
	A	B	C	D	E	Index
610:						
Goulding gravelly loam	30	95	100	95	100	27
650:						
Bamtush very gravelly loam	90	90	100	100	95	81
Marpa very gravelly sandy loam	50	90	100	100	95	43
651:						
Bamtush very gravelly loam	90	90	100	100	95	81
Marpa very gravelly sandy loam	50	90	100	100	95	43

Table 11.--Rangeland Productivity and Characteristic Plant Communities

Map symbol and soil name	Ecological site	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		*Pct*
145, 147:					
Hillgate loam---	Loamy	Favorable	2,500	Soft chess	35
		Normal	1,800	Wild oat	15
		Unfavorable	1,000	Filaree	10
				Yellow starthistle	10
				Medusahead	5
				Ripgut brome	5
				Tomcat clover	5
190:					
Arand very gravelly loam--	Coarse loamy	Favorable	1,800	Soft chess	30
		Normal	1,400	Wild oat	20
		Unfavorable	800	Filaree	10
				Annual lupine	5
				Mouse barley	5
				Ripgut brome	5
				Yellow starthistle	5
200:					
Clear Lake clay, occasionally flooded--------	Clayey bottom	Favorable	4,200	Wild oat	20
		Normal	3,400	Medusahead	15
		Unfavorable	2,200	Italian ryegrass	10
				Mouse barley	10
				Perennial ryegrass	10
				Ripgut brome	10
				Burclover	5
				Filaree	5
				Soft chess	5
				Yellow starthistle	5
204, 205:					
Capay-----------	Fine loamy bottom	Favorable	3,800	Wild oat	20
		Normal	3,000	Medusahead	10
		Unfavorable	1,700	Ripgut brome	10
				Yellow starthistle	10
				Italian ryegrass	5
				Burclover	5
				Filaree	5
				Mouse barley	5
				Soft chess	5
				Tomcat clover	5
206:					
Capay clay------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
210:					
Corval loam-----	Loamy	Favorable	2,500	Soft chess	35
		Normal	1,800	Wild oat	15
		Unfavorable	1,000	Filaree	10
				Yellow starthistle	10
				Medusahead	5
				Ripgut brome	5
				Tomcat clover	5

Table 11.--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
			Lb/acre		*Pct*
212, 213:					
Ayar clay-------	Clayey	Favorable	3,500	Wild oat	25
		Normal	2,500	Burclover	10
		Unfavorable	1,400	Filaree	10
				Medusahead	10
				Ripgut brome	10
				Soft chess	10
				Mouse barley	5
				Tomcat clover	5
				Yellow starthistle	5
215, 216:					
Altamont silty clay-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
Sehorn silty clay-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
218:					
Sehorn silty clay-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
Altamont silty clay-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
220, 221:					
Altamont silty clay-----------	Clayey	Favorable	3,500	Wild oat	25
		Normal	2,500	Burclover	10
		Unfavorable	1,400	Filaree	10
				Medusahead	10
				Ripgut brome	10
				Soft chess	10
				Blue oak	5
				Mouse barley	5
				Yellow starthistle	5

Table 11.--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
			Lb/acre		Pct
230:					
Corning clay loam-----------	Gravelly loamy	Favorable	1,800	Filaree	20
		Normal	1,200	Wild oat	20
		Unfavorable	800	Soft chess	15
				Annual lupine	5
				Blue oak	5
				Popcornflower	5
				Rattail fescue	5
				Red brome	5
				Ripgut brome	5
				Tomcat clover	5
232:					
Maywood gravelly loam, occasionally flooded--------	Gravelly loamy	Favorable	1,800	Filaree	20
		Normal	1,200	Wild oat	20
		Unfavorable	800	Soft chess	15
				Annual lupine	5
				Blue oak	5
				Popcornflower	5
				Rattail fescue	5
				Red brome	5
				Ripgut brome	5
				Tomcat clover	5
233:					
Eastpark clay loam-----------	Serpentine fine loamy bottom	Favorable	3,000	Wild oat	20
		Normal	2,400	Medusahead	10
		Unfavorable	1,400	Ripgut brome	10
				Yellow starthistle	10
				Italian ryegrass	5
				Burclover	5
				Filaree	5
				Mouse barley	5
				Soft chess	5
				Tomcat clover	5
241:					
Contra Costa loam-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
Altamont silty clay-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5

Table 11.--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
			Lb/acre		*Pct*
253:					
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Filaree	10
		Unfavorable	400	Rattail fescue	10
				Wild oat	10
				Blue oak	5
				Red brome	5
Altamont silty clay-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
Rock outcrop.					
255:					
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Filaree	10
		Unfavorable	400	Rattail fescue	10
				Wild oat	10
				Blue oak	5
				Red brome	5
Rock outcrop.					
257:					
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Filaree	10
		Unfavorable	400	Rattail fescue	10
				Wild oat	10
				Blue oak	5
				Red brome	5
Capay clay------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
261:					
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Filaree	10
		Unfavorable	400	Rattail fescue	10
				Wild oat	10
				Blue oak	5
				Red brome	5
Altamont silty clay-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5

Table 11.--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
			Lb/acre		*Pct*
270, 271:					
Balcom silt loam-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
Ayar clay-------	Clayey	Favorable	3,500	Wild oat	25
		Normal	2,500	Burclover	10
		Unfavorable	1,400	Filaree	10
				Medusahead	10
				Ripgut brome	10
				Soft chess	10
				Blue oak	5
				Mouse barley	5
				Yellow starthistle	5
275:					
Goldeagle clay loam-----------	Loamy (blue oak)	Favorable	1,400	Filaree	20
		Normal	1,000	Slender oat	20
		Unfavorable	800	Soft chess	20
				Annual lupine	10
				Blue oak	5
				Buckbrush	5
				Rattail fescue	5
				Ripgut brome	5
Positas gravelly sandy loam-----	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
Balcom silt loam-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5

Table 11.--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
			Lb/acre		*Pct*
276:					
Positas gravelly sandy loam-----	Loamy (blue oak)	Favorable	1,400	Filaree	20
		Normal	1,000	Slender oat	20
		Unfavorable	800	Soft chess	20
				Annual lupine	10
				Blue oak	5
				Buckbrush	5
				Rattail fescue	5
				Ripgut brome	5
280:					
Skyhigh gravelly clay loam------	Clayey	Favorable	4,200	Blue oak	10
		Normal	3,300	Burclover	10
		Unfavorable	2,000	Chamise	10
				Filaree	10
				Purple needlegrass	10
				Soft chess	10
				Wild oat	10
				California scrub oak	5
				Clover	5
				Miscellaneous annual grasses	5
				Miscellaneous shrubs	5
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Rattail fescue	10
		Unfavorable	400	Wild oat	10
				Blue oak	5
				Filaree	5
				Red brome	5
				Redstem filaree	5
300:					
Contra Costa loam-----------	Steep loamy	Favorable	800	Chamise	15
		Normal	600	Filaree	10
		Unfavorable	400	Soft chess	10
				Buckbrush	5
				Rattail fescue	5
				Red brome	5
				Wild oat	5
Millsholm loam--	Steep loamy	Favorable	800	Chamise	15
		Normal	600	Soft chess	10
		Unfavorable	400	Buckbrush	5
				Filaree	5
				Rattail fescue	5
				Red brome	5
				Redstem filaree	5
				Wild oat	5
305, 311:					
Contra Costa loam-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5

Table 11.--Rangeland Productivity and Characteristic Plant Communities--Continued

Map symbol and soil name	Ecological site	Total production Kind of year	Dry weight	Characteristic vegetation	Composition
			Lb/acre		*Pct*
312, 313:					
Saltcanyon loam	Loamy	Favorable	2,500	Soft chess	35
		Normal	1,800	Wild oat	15
		Unfavorable	1,000	Filaree	10
				Yellow starthistle	10
				Medusahead	5
				Ripgut brome	5
				Tomcat clover	5
315:					
Mallard clay loam-----------	Fine loamy bottom	Favorable	3,800	Wild oat	20
		Normal	3,000	Medusahead	10
		Unfavorable	1,700	Ripgut brome	10
				Yellow starthistle	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Filaree	5
				Mouse barley	5
				Soft chess	5
				Tomcat clover	5
316:					
Hillgate loam---	Loamy	Favorable	2,500	Soft chess	35
		Normal	1,800	Wild oat	15
		Unfavorable	1,000	Filaree	10
				Yellow starthistle	10
				Medusahead	5
				Ripgut brome	5
				Tomcat clover	5
320:					
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Filaree	10
		Unfavorable	400	Rattail fescue	10
				Wild oat	10
				Blue oak	5
				Red brome	5
329:					
Sehorn silty clay-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Rattail fescue	10
		Unfavorable	400	Wild oat	10
				Blue oak	5
				Filaree	5
				Red brome	5
				Redstem filaree	5

Table 11.--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	Compo- sition
			Lb/acre		*Pct*
329:					
Altamont silty clay-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
330:					
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Filaree	10
		Unfavorable	400	Rattail fescue	10
				Wild oat	10
				Blue oak	5
				Red brome	5
Contra Costa loam-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
331:					
Sehorn silty clay-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Rattail fescue	10
		Unfavorable	400	Wild oat	10
				Blue oak	5
				Filaree	5
				Red brome	5
				Redstem filaree	5
Rock outcrop.					
332:					
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Filaree	10
		Unfavorable	400	Rattail fescue	10
				Wild oat	10
				Blue oak	5
				Red brome	5
Rock outcrop.					

Table 11.--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
			Lb/acre		Pct
334:					
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Filaree	10
		Unfavorable	400	Rattail fescue	10
				Wild oat	10
				Blue oak	5
				Red brome	5
Contra Costa loam-----------	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Blue oak	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
337:					
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Filaree	10
		Unfavorable	400	Rattail fescue	10
				Wild oat	10
				Blue oak	5
				Red brome	5
Saltcanyon loam	Loamy	Favorable	2,500	Soft chess	35
		Normal	1,800	Wild oat	15
		Unfavorable	1,000	Filaree	10
				Yellow starthistle	10
				Medusahead	5
				Ripgut brome	5
				Tomcat clover	5
345:					
Skyhigh gravelly clay loam------	Clayey	Favorable	4,200	Blue oak	10
		Normal	3,300	Burclover	10
		Unfavorable	2,000	Chamise	10
				Filaree	10
				Purple needlegrass	10
				Soft chess	10
				Wild oat	10
				California scrub oak	5
				Clover	5
				Miscellaneous annual grasses	5
				Miscellaneous shrubs	5
Sleeper clay loam-----------	Clayey unstable (annual grass)	Favorable	3,200	Soft chess	30
		Normal	3,000	Wild oat	15
		Unfavorable	1,800	Filaree	10
				Needlegrass	10
				Ripgut brome	10
				Blue oak	5
				Bluegrass	5
				Foxtail fescue	5
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Rattail fescue	10
		Unfavorable	400	Wild oat	10
				Blue oak	5
				Filaree	5
				Red brome	5
				Redstem filaree	5

Table 11.--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
			Lb/acre		*Pct*
346:					
Skyhigh gravelly clay loam------	Loamy (blue oak)	Favorable	1,400	Filaree	20
		Normal	1,000	Slender oat	20
		Unfavorable	800	Soft chess	20
				Annual lupine	10
				Blue oak	5
				Buckbrush	5
				Rattail fescue	5
				Ripgut brome	5
Millsholm loam--	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Rattail fescue	10
		Unfavorable	400	Wild oat	10
				Blue oak	5
				Filaree	5
				Red brome	5
				Redstem filaree	5
Sleeper clay loam-----------	Clayey unstable (annual grass)	Favorable	3,200	Soft chess	30
		Normal	3,000	Wild oat	15
		Unfavorable	1,800	Filaree	10
				Needlegrass	10
				Ripgut brome	10
				Blue oak	5
				Bluegrass	5
				Foxtail fescue	5
347:					
Boar loam-------	Loamy (blue oak)	Favorable	1,400	Filaree	20
		Normal	1,000	Slender oat	20
		Unfavorable	800	Soft chess	20
				Annual lupine	10
				Blue oak	5
				Buckbrush	5
				Rattail fescue	5
				Ripgut brome	5
Sleeper clay loam-----------	Clayey unstable (annual grass)	Favorable	3,200	Soft chess	30
		Normal	3,000	Wild oat	15
		Unfavorable	1,800	Filaree	10
				Needlegrass	10
				Ripgut brome	10
				Blue oak	5
				Bluegrass	5
				Foxtail fescue	5
348:					
Boar loam-------	Clayey unstable (annual grass)	Favorable	3,000	Soft chess	30
		Normal	2,500	Wild oat	15
		Unfavorable	2,000	Blue oak	10
				Filaree	10
				Needlegrass	10
				Ripgut brome	10
				Foxtail fescue	5

Table 11.--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
			Lb/acre		Pct
348:					
Sleeper clay loam-----------	Loamy (blue oak)	Favorable	1,400	Filaree	20
		Normal	1,000	Slender oat	20
		Unfavorable	800	Soft chess	20
				Annual lupine	10
				Blue oak	5
				Buckbrush	5
				Rattail fescue	5
				Ripgut brome	5
350:					
Haploxererts----	Fine loamy	Favorable	3,100	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,200	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5
355:					
Venado clay-----	Clayey bottom	Favorable	3,400	Wild oat	20
		Normal	2,700	Medusahead	15
		Unfavorable	1,800	Italian ryegrass	10
				Mouse barley	10
				Ripgut brome	10
				Burclover	5
				Filaree	5
				Soft chess	5
				Yellow starthistle	5
360:					
Bearvalley gravelly sandy loam-----------	Gravelly loamy	Favorable	1,400	Filaree	20
		Normal	1,000	Wild oat	20
		Unfavorable	600	Soft chess	15
				Annual lupine	5
				Popcornflower	5
				Rattail fescue	5
				Red brome	5
				Ripgut brome	5
				Tomcat clover	5
365, 366:					
Leesville clay loam-----------	Fine loamy	Favorable	2,500	Soft chess	20
		Normal	1,800	Wild oat	20
		Unfavorable	1,000	Filaree	10
				Ripgut brome	10
				Italian ryegrass	5
				Burclover	5
				Medusahead	5
				Yellow starthistle	5

Table 11.--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
			Lb/acre		Pct
370:					
Livermore very gravelly loam	Gravelly loamy	Favorable	1,400	Filaree	20
		Normal	1,000	Wild oat	20
		Unfavorable	600	Soft chess	15
				Annual lupine	5
				Popcornflower	5
				Rattail fescue	5
				Red brome	5
				Ripgut brome	5
				Tomcat clover	5
371:					
Buttes gravelly sandy loam	Loamy (blue oak)	Favorable	1,100	Filaree	20
		Normal	800	Slender oat	20
		Unfavorable	600	Soft chess	20
				Annual lupine	10
				Blue oak	5
				Buckbrush	5
				Rattail fescue	5
				Ripgut brome	5
Millsholm loam	Shallow loamy	Favorable	1,100	Soft chess	20
		Normal	800	Rattail fescue	10
		Unfavorable	400	Wild oat	10
				Blue oak	5
				Filaree	5
				Red brome	5
				Redstem filaree	5
564:					
Fouts gravelly loam	Very gravelly loamy (annual grass)	Favorable	2,600	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,400	Broadleaf filaree	10
				Burclover	5
				Foxtail fescue	5
				Purple needlegrass	5
Yorkville clay loam	Clayey unstable (annual grass)	Favorable	3,300	Wild oat	30
		Normal	2,500	Soft chess	15
		Unfavorable	1,200	Burclover	10
				Filaree	10
				Ripgut brome	10
				Foxtail fescue	5
				Purple needlegrass	5
Squawrock gravelly loam	Very gravelly loamy (annual grass)	Favorable	2,600	Soft chess	20
		Normal	2,200	Wild oat	20
		Unfavorable	1,400	Broadleaf filaree	10
				Burclover	5
				Foxtail fescue	5
				Purple needlegrass	5

Table 11.--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
			Lb/acre		*Pct*
570:					
Endoaquolls, frequently ponded--------	Semi-wet meadow	Favorable	4,000	Carex	25
		Normal	3,000	Redtop	25
		Unfavorable	2,500	Rush	25
				Clover	5
				Miscellaneous annual forbs	5

Table 12.--Recreational Development (Part 1)

(The information in this table is based on Pacific Southwest MLRA Office interpretations. It 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. The rating is based on the limitation with the highest value. Only the three highest value limitations are listed. There may be more limitations. Fine-earth fractions and rock fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in describing the limitations is given at the end of the table.)

Map symbol and soil name	Pct.	Camp areas		Picnic areas		Playgrounds	
		Limitation	Value	Limitation	Value	Limitation	Value
100:							
Capay clay loam, occasionally flooded	90	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Permeability of .06-.6"/hr	0.50	Occasional flooding	0.50
		Permeability of .06-.6"/hr	0.50		0.50	Permeability of .06-.6"/hr	0.50
101:							
Capay silty clay, frequently flooded	90	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Frequent flooding	0.50	Flooding > occasional	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06-.6"/hr	0.44	Permeability of .06-.6"/hr	0.44
102:							
Capay clay loam	90	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Permeability of .06-.6"/hr	0.50	Permeability of .06-.6"/hr	0.50
		Permeability of .06-.6"/hr	0.50				
103:							
Capay clay loam, frequently flooded	90	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Frequent flooding	0.50	Flooding > occasional	1.00
		Permeability of .06-.6"/hr	0.50	Permeability of .06-.6"/hr	0.50	Permeability of .06-.6"/hr	0.50
104:							
Willows silty clay, frequently flooded	90	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Permeability <.06"/hr	1.00	Flooding > occasional	1.00
		Permeability <.06"/hr	1.00	Surface clay >40%	1.00	Permeability <.06"/hr	1.00
		SAR >12	1.00	Frequent flooding	0.50	Surface clay >40%	1.00
105:							
Willows silty clay, occasionally flooded	90	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Permeability <.06"/hr	1.00	Permeability <.06"/hr	1.00
		Permeability <.06"/hr	1.00	Surface clay >40%	1.00	Surface clay >40%	1.00
		SAR >12	1.00			Occasional flooding	0.50

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Value	Picnic areas: Limitation	Value	Playgrounds: Limitation	Value
106:							
Willows silty clay----------------	90	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Permeability <.06"/hr	1.00	Permeability <.06"/hr	1.00
		Permeability <.06"/hr	1.00	Surface clay >40%	1.00	Surface clay >40%	1.00
		SAR >12	1.00				
107:							
Scribner silt loam, occasionally flooded-------------------------	80	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Wetness from 12 to 30"		Wetness <18" depth	1.00
		Wetness <18" depth	1.00	depth	0.75	Occasional flooding	0.50
		Permeability of .06-.6"/hr	0.15	Permeability of .06-.6"/hr	0.15	Permeability of .06-.6"/hr	0.15
108:							
Scribner silt loam----------------	80	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Wetness from 12 to 30"	0.75	Wetness <18" depth	1.00
		Wetness <18" depth	1.00	depth		Permeability of .06-.6"/hr	0.15
		Permeability of .06-.6"/hr	0.15	Permeability of .06-.6"/hr	0.15		
109:							
Scribner silt loam, frequently flooded-------------------------	80	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Wetness from 12 to 30"		Flooding > occasional	1.00
		Wetness <18" depth	1.00	depth	0.75	Wetness <18" depth	1.00
		Permeability of .06-.6"/hr	0.15	Frequent flooding	0.50	Permeability of .06-.6"/hr	0.15
				Permeability of .06-.6"/hr	0.15		
110:							
Hustabel sandy loam---------------	80	Severe		Slight		Slight	
		Flooding ≥ rare	1.00				
112:							
Westfan loam----------------------	80	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Dusty	0.50
		SAR >12	1.00				
		Dusty	0.50				
113:							
Westfan loam, sodic---------------	85	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Dusty	0.50
		SAR >12	1.00				
		Dusty	0.50				
114:							
Westfan clay loam-----------------	80	Severe		Slight		Slight	
		Flooding ≥ rare	1.00				

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas		Picnic areas		Playgrounds	
		Limitation	Value	Limitation	Value	Limitation	Value
115:							
Clear Lake clay, occasionally flooded	90	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Surface clay >40% and dry climate	0.50	Occasional flooding	0.50
		Surface clay >40% and dry climate	0.50	Permeability of .06-.6"/hr	0.44	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44			Permeability of .06-.6"/hr	0.44
116:							
Clear Lake clay, calcareous, occasionally flooded	90	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Surface clay >40% and dry climate	0.50	Occasional flooding	0.50
		Surface clay >40% and dry climate	0.50	Permeability of .06-.6"/hr	0.44	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44		0.44	Permeability of .06-.6"/hr	0.44
117:							
Clear Lake clay, calcareous, frequently flooded	90	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Frequent flooding	0.50	Flooding > occasional	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06-.6"/hr	0.44	Permeability of .06-.6"/hr	0.44
118:							
Clear Lake clay, frequently flooded	90	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Frequent flooding	0.50	Flooding > occasional	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06-.6"/hr	0.44	Permeability of .06-.6"/hr	0.44
124:							
Moonbend silt loam, occasionally flooded	80	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Occasional flooding	0.50
		Dusty	0.50			Dusty	0.50
125:							
Moonbend silt loam	80	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50				

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Camp areas: Value	Picnic areas: Limitation	Picnic areas: Value	Playgrounds: Limitation	Playgrounds: Value
126:							
Moonbend silt loam, frequently flooded	80	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Frequent flooding	0.50	Flooding > occasional	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
127:							
Mallard clay loam	85	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Permeability of .06-.6"/hr	0.44	Permeability of .06-.6"/hr	0.44
		Permeability of .06-.6"/hr	0.44				
128:							
Mallard loam	85	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50				
129:							
Mallard clay loam, occasionally flooded	85	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Permeability of .06-.6"/hr	0.44	Occasional flooding	0.50
		Permeability of .06-.6"/hr	0.44			Permeability of .06-.6"/hr	0.44
130:							
Corbiere silt loam	85	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Permeability of .06-.6"/hr	0.94	Permeability of .06-.6"/hr	0.94
		SAR >12	1.00	Wetness from 10 to 30” depth	0.19	Wetness from 18 to 30" depth	0.44
		Permeability of .06-.6"/hr	0.94				
131:							
Corbiere silt loam, frequently flooded	85	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Permeability of .06-.6"/hr	0.94	Flooding > occasional	1.00
		SAR >12	1.00	Frequent flooding	0.50	Permeability of .06-.6"/hr	0.94
		Permeability of .06-.6"/hr	0.94	Wetness from 12 to 30" depth	0.19	Wetness from 18 to 30" depth	0.44
133:							
Corbiere silt loam, occasionally flooded	85	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Permeability of .06-.6"/hr	0.94	Permeability of .06-.6"/hr	0.94
		SAR >12	1.00	Wetness from 12 to 30" depth	0.19	Occasional flooding	0.50
		Permeability of .06-.6"/hr	0.94			Wetness from 18 to 30" depth	0.44

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas		Picnic areas		Playgrounds	
		Limitation	Value	Limitation	Value	Limitation	Value
136:							
Colusa loam	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Surface SAR >13	1.00	Surface SAR >13	1.00
		SAR >12	1.00	Surface EC >8 mmhos/cm	1.00	Surface EC >8 mmhos/cm	1.00
		Surface EC >8 mmhos/cm	1.00	Dusty	0.50	Dusty	0.50
141:							
Myers clay	90	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Surface clay >40% and dry climate	0.50	Permeability of .06-.6"/hr	0.46	Permeability of .06-.6"/hr	0.46
		Permeability of .06-.6"/hr	0.46				
144:							
Hillgate clay loam	85	Slight		Slight		Slight	
145:							
Hillgate loam	90	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
147:							
Hillgate loam	90	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Slopes 2 to 6%	0.26
150:							
Arbuckle sandy loam	85	Slight		Slight		Moderate	
						Slopes 2 to 6%	0.26
151:							
Arbuckle sandy loam	50	Slight		Slight		Moderate	
						Slopes 2 to 6%	0.26
Hillgate loam	40	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Slopes 2 to 6%	0.26
152:							
Arbuckle gravelly loam	85	Moderate		Moderate		Severe	
		Dusty	0.50	Dusty	0.50	Surface rock fragments (>3") >25%	1.00
						Dusty	0.50
						Slopes 2 to 6%	0.26

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas		Picnic areas		Playgrounds	
		Limitation	Value	Limitation	Value	Limitation	Value
155:							
Alcapay clay	90	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		SAR >12	1.00	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
		Surface clay >40% and dry climate	0.50				
160:							
Grandbend loam	80	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50				
170:							
Vina loam, frequently flooded	80	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Frequent flooding	0.50	Flooding > occasional	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
171:							
Vina loam	85	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50				
172:							
Vina fine sandy loam, frequently flooded	80	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Frequent flooding	0.50	Flooding > occasional	1.00
174:							
Vina loam, occasionally flooded	85	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Occasional flooding	0.50
		Dusty	0.50			Dusty	0.50
175:							
Tujunga loam, overwash, frequently flooded	85	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Frequent flooding	0.50	Flooding > occasional	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
176:							
Columbia fine sandy loam, frequently flooded	80	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Frequent flooding	0.50	Flooding > occasional	1.00
177:							
Holillipah loamy sand, channeled	80	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Frequent flooding	0.50	Flooding > occasional	1.00

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Value	Picnic areas: Limitation	Value	Playgrounds: Limitation	Value
185:							
Riverwash	95	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Wetness <12" depth	1.00	Flooding > occasional	1.00
		Wetness <18" depth	1.00	Very dusty	1.00	Wetness <18" depth	1.00
		Very dusty	1.00	Frequent flooding	0.50	Very dusty	1.00
187:							
Westfan loam, occasionally flooded	85	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Occasional flooding	0.50
		SAR >12	1.00			Dusty	0.50
		Dusty	0.50				
188:							
Westfan loam, clay substratum	80	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50	Permeability of .06-.6"/hr	0.10	Permeability of .06-.6"/hr	0.10
189:							
Arand very gravelly sandy loam	85	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Rock fragments (<3") 25-50%	0.08	Surface rock fragments (<3") >25%	1.00
		Rock fragments (<3") 25-50%	0.08				
190:							
Arand very gravelly loam	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Rock fragments (<3") >50%	1.00	Surface rock fragments (<3") >25%	1.00
		Rock fragments (<3") >50%	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50				
193:							
Westfan gravelly loam	80	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Dusty	0.50	Surface rock fragments (<3") >25%	1.00
		Dusty	0.50	Rock fragments (<3") 25-50%	0.08	Dusty	0.50
		Rock fragments (<3") 25-50%	0.08				
200:							
Clear Lake clay, occasionally flooded	90	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Surface clay >40% and dry climate	0.50	Occasional flooding	0.50
		Surface clay >40% and dry climate	0.50	Permeability of .06 to .6"/hr	0.44	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44			Permeability of .06 to .6"/hr	0.44

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Camp areas: Value	Picnic areas: Limitation	Picnic areas: Value	Playgrounds: Limitation	Playgrounds: Value
204:							
Capay clay, occasionally flooded--	90	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Surface clay >40% and dry climate	0.50	Occasional flooding	0.50
		Surface clay >40% and dry climate	0.50	Permeability of .06 to .6"/hr	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.50			Permeability of .06 to .6"/hr	0.50
205:							
Capay clay------------------------	90	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Surface clay >40% and dry climate	0.50	Permeability of .06 to .6"/hr	0.50	Permeability of .06 to .6"/hr	0.50
		Permeability of .06-.6"/hr	0.50			Slopes 2 to 6%	0.02
206:							
Capay clay------------------------	90	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.50	Permeability of .06 to .6"/hr	0.50	Surface clay >40% and dry climate	0.50
						Permeability of .06 to .6"/hr	0.50
210:							
Corval loam-----------------------	85	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50			Slopes 2 to 6%	0.02
211:							
Corval clay loam------------------	85	Severe		Slight		Moderate	
		Flooding ≥ rare	1.00			Slopes 2 to 6%	0.02
212:							
Ayar clay-------------------------	85	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Surface clay >40% and dry climate	0.50
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Permeability of .06 to .6"/hr	0.44

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Value	Picnic areas: Limitation	Value	Playgrounds: Limitation	Value
213:							
Ayar clay	85	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
215:							
Altamont silty clay	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
Sehorn silty clay	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Bedrock at 20-40" and slope >2%	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Surface clay >40% and dry climate	0.50
216:							
Altamont silty clay	45	Moderate		Moderate		Severe	
		Slopes 8 to 15%	0.63	Slopes 8 to 15%	0.63	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
Sehorn silty clay	35	Moderate		Moderate		Severe	
		Slopes 8 to 15%	0.63	Slopes 8 to 15%	0.63	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Bedrock at 20-40" and slope >2%	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Surface clay >40% and dry climate	0.50
218:							
Sehorn silty clay	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Bedrock at 20-40" and slope >2%	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Surface clay >40% and dry climate	0.50

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Value	Picnic areas: Limitation	Value	Playgrounds: Limitation	Value
218:							
Altamont silty clay	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
220:							
Altamont silty clay	85	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Surface clay >40% and dry climate	0.50
						Permeability of .06 to .6"/hr	0.44
221:							
Altamont silty clay	85	Moderate		Moderate		Severe	
		Slopes 8 to 15%	0.63	Slopes 8 to 15%	0.63	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
230:							
Corning clay loam	90	Slight		Slight		Moderate	
						Slopes 2 to 6%	0.26
232:							
Maywood gravelly loam, occasionally flooded	85	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Surface rock fragments (<3") 10-25%	0.94
		Dusty	0.50			Occasional flooding	0.50
						Dusty	0.50
233:							
Eastpark clay loam	95	Moderate		Moderate		Moderate	
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas		Picnic areas		Playgrounds	
		Limitation	Value	Limitation	Value	Limitation	Value
241:							
Contra Costa loam	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Bedrock at 20-40" and slope >2%	0.50
Altamont silty clay	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
253:							
Millsholm loam	55	Severe		Severe		Severe	
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Bedrock depth <20"	1.00
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Dusty	0.50
Altamont silty clay	20	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Surface clay >40% and dry climate	0.50
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Permeability of .06 to .6"/hr	0.44
Rock outcrop	15	Not rated		Not rated		Not rated	
255:							
Millsholm loam	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Rock outcrop	35	Not rated		Not rated		Not rated	
257:							
Millsholm loam	50	Severe		Severe		Severe	
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Slopes 2 to 6%	0.98
						Dusty	0.50

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas		Picnic areas		Playgrounds	
		Limitation	Value	Limitation	Value	Limitation	Value
257:							
Capay clay	35	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Surface clay >40% and dry climate	0.50	Slopes 2 to 6%	0.98
		Surface clay and dry climate	0.50	Permeability of .06 to .6"/hr	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.50			Permeability of .06 to .6"/hr	0.50
261:							
Millsholm loam	60	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Altamont silty clay	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
270:							
Balcom silt loam	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Surface rock fragments (<3") 10-25%	0.06
Ayar clay	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
271:							
Balcom silt loam	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Surface rock fragments (<3") 10-25%	0.06

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Value	Picnic areas: Limitation	Value	Playgrounds: Limitation	Value
271:							
Ayar clay	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
275:							
Goldeagle clay loam	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
Positas gravelly sandy loam	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Surface rock fragments (<3") >25%	1.00
						Permeability of .06 to .6"/hr	0.44
Balcom silt loam	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
						Surface rock fragments (<3") 10-25%	0.06
276:							
Positas gravelly sandy loam	90	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Surface rock fragments (<3") >25%	1.00
						Permeability of .06 to .6"/hr	0.44
280:							
Skyhigh gravelly clay loam	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Bedrock at 20-40" and slope >2%	0.50
Millsholm loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Camp areas: Value	Picnic areas: Limitation	Picnic areas: Value	Playgrounds: Limitation	Playgrounds: Value
300:							
Contra Costa loam	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Bedrock at 20-40" and slope >2%	0.50
Millsholm loam	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
305:							
Contra Costa loam	85	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Bedrock at 20-40" and slope >2%	0.50
311:							
Contra Costa loam	85	Moderate		Moderate		Severe	
		Slopes 8 to 15%	0.63	Slopes 8 to 15%	0.63	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Bedrock at 20-40" and slope >2%	0.50
312:							
Saltcanyon loam	90	Severe		Moderate		Moderate	
		Flooding ≥ rare	1.00	Dusty	0.50	Dusty	0.50
		Dusty	0.50			Slopes 2 to 6%	0.26
313:							
Saltcanyon loam	90	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Dusty	0.50	Slopes >6%	1.00
		Dusty	0.50			Dusty	0.50
315:							
Mallard clay loam	90	Moderate		Moderate		Moderate	
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Slopes 2 to 6%	0.50
						Permeability of .06 to .6"/hr	0.44
316:							
Hillgate loam	90	Moderate		Moderate		Severe	
		Dusty	0.50	Dusty	0.50	Slopes >6%	1.00
						Dusty	0.50

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Value	Picnic areas: Limitation	Value	Playgrounds: Limitation	Value
320:							
Millsholm loam	85	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
329:							
Sehorn silty clay	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Bedrock at 20-40" and slope >2%	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Surface clay >40% and dry climate	0.50
Millsholm loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Altamont silty clay	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
330:							
Millsholm loam	60	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Contra Costa loam	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Bedrock at 20-40" and slope >2%	0.50
331:							
Sehorn silty clay	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Bedrock at 20-40" and slope >2%	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Surface clay >40% and dry climate	0.50

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas		Picnic areas		Playgrounds	
		Limitation	Value	Limitation	Value	Limitation	Value
331:							
Millsholm loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Rock outcrop	20	Not rated		Not rated		Not rated	
332:							
Millsholm loam	50	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Rock outcrop	40	Not rated		Not rated		Not rated	
334:							
Millsholm loam	70	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Contra Costa loam	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Bedrock at 20-40" and slope >2%	0.50
337:							
Millsholm loam	50	Severe		Severe		Severe	
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Bedrock depth <20"	1.00
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Dusty	0.50
Saltcanyon loam	35	Moderate		Moderate		Severe	
		Dusty	0.50	Dusty	0.50	Slopes >6%	1.00
		Slopes 8 to 15%	0.04	Slopes 8 to 15%	0.04	Dusty	0.50
345:							
Skyhigh gravelly clay loam	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Bedrock at 20-40" and slope >2%	0.50

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas Limitation	Value	Picnic areas Limitation	Value	Playgrounds Limitation	Value
345:							
Sleeper clay loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Permeability of .06 to .6"/hr	0.46
Millsholm loam	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
346:							
Skyhigh gravelly clay loam	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Bedrock at 20-40" and slope >2%	0.50
Millsholm loam	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Sleeper clay loam	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Permeability of .06 to .6"/hr	0.46
347:							
Boar loam	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Sleeper clay loam	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Permeability of .06 to .6"/hr	0.46
348:							
Boar loam	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas Limitation	Value	Picnic areas Limitation	Value	Playgrounds Limitation	Value
348:							
Sleeper clay loam	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Permeability of .06 to .6"/hr	0.46
350:							
Haploxererts	80	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
355:							
Venado clay	80	Moderate		Moderate		Moderate	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50
		Permeability of .06-.6"/hr	0.46	Permeability of .06 to .6"/hr	0.46	Permeability of .06 to .6"/hr	0.46
		Wetness from 18 to 30" depth	0.44	Wetness from 12 to 30" depth	0.19	Wetness from 18 to 30" depth	0.44
360:							
Bearvalley gravelly sandy loam	85	Moderate		Moderate		Severe	
		Rock fragments (<3") 25-50%	0.50	Rock fragments (<3") 25-50%	0.50	Surface rock fragments (<3") >25%	1.00
						Slopes 2 to 6%	0.50
365:							
Leesville clay loam	85	Slight		Slight		Moderate	
						Slopes 2 to 6%	0.50
						Surface rock fragments (<3") 10-25%	0.50
366:							
Leesville clay loam	85	Slight		Slight		Moderate	
						Surface rock fragments (<3") 10-25%	0.50
370:							
Livermore very gravelly loam	90	Severe		Severe		Severe	
		Rock fragments (<3") >50%	1.00	Rock fragments (<3") >50%	1.00	Surface rock fragments (<3") >25%	1.00
		Dusty	0.50	Dusty	0.50	Slopes >6%	1.00
						Dusty	0.50

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Value	Picnic areas: Limitation	Value	Playgrounds: Limitation	Value
371:							
Buttes gravelly sandy loam	50	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Rock fragments (<3") 25-50%	0.50	Rock fragments (<3") 25-50%	0.50	Surface rock fragments (<3") >25%	1.00
Millsholm loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
519:							
Stonyford gravelly loam	50	Severe		Severe		Severe	
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Surface rock fragments (<3") >25%	1.00
		Dusty	0.50	Dusty	0.50	Slopes >6%	1.00
		Rock fragments (<3") 25-50%	0.36	Rock fragments (<3") 25-50%	0.36	Bedrock depth <20"	1.00
Guenoc loam	30	Moderate		Moderate		Severe	
		Dusty	0.50	Dusty	0.50	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Dusty	0.50
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Bedrock at 20-40" and slope >2%	0.50
520:							
Stonyford gravelly loam	65	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Surface rock fragments (<3") >25%	1.00
		Dusty	0.50	Dusty	0.50	Bedrock depth <20"	1.00
Guenoc loam	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Bedrock at 20-40" and slope >2%	0.50
521:							
Stonyford gravelly loam	65	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Surface rock fragments (<3") >25%	1.00
		Dusty	0.50	Dusty	0.50	Bedrock depth <20"	1.00

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas		Picnic areas		Playgrounds	
		Limitation	Value	Limitation	Value	Limitation	Value
521:							
Guenoc loam	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Bedrock at 20-40" and slope >2%	0.50
524:							
Arand, frequently flooded	65	Severe		Moderate		Severe	
		Flooding ≥ rare	1.00	Frequent flooding	0.50	Flooding > occasional	1.00
		Rock fragments (<3") 25-50%	0.08	Rock fragments (<3") 25-50%	0.08	Surface rock fragments (<3") >25%	1.00
Riverwash	25	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Wetness <12" depth	1.00	Flooding > occasional	1.00
		Wetness <18" depth	1.00	Very dusty	1.00	Wetness <18" depth	1.00
		Very dusty	1.00	Frequent flooding	0.50	Very dusty	1.00
526:							
Etsel gravelly sandy loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Rock fragments (<3") 25-50%	0.41	Rock fragments (<3") 25-50%	0.41	Surface rock fragments (<3") >25%	1.00
Maymen sandy loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
						Surface rock fragments (<3") 10-25%	0.18
Marpa very gravelly sandy loam	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.10	Permeability of .06 to .6"/hr	0.10	Bedrock at 20-40" and slope >2%	0.50
						Permeability of .06 to .6"/hr	0.10
527:							
Maymen sandy loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
						Surface rock fragments (<3") 10-25%	0.18

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Camp areas: Value	Picnic areas: Limitation	Picnic areas: Value	Playgrounds: Limitation	Playgrounds: Value
527:							
Etsel gravelly sandy loam---------	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Rock fragments (<3") 25-50%	0.41	Rock fragments (<3") 25-50%	0.41	Surface rock fragments (<3") >25%	1.00
Speaker gravelly loam-------------	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
528:							
Maymen sandy loam-----------------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
						Surface rock fragments (<3") 10-25%	0.18
Etsel gravelly sandy loam---------	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Rock fragments (<3") 25-50%	0.41	Rock fragments (<3") 25-50%	0.41	Surface rock fragments (<3") >25%	1.00
Snook gravelly sandy loam---------	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Rock fragments (<3") 25-50%	0.32	Rock fragments (<3") 25-50%	0.32	Surface rock fragments (<3") >25%	1.00
529:							
Maymen sandy loam-----------------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
						Surface rock fragments (<3") 10-25%	0.18
Etsel gravelly sandy loam---------	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Rock fragments (<3") 25-50%	0.41	Rock fragments (<3") 25-50%	0.41	Surface rock fragments (<3") >25%	1.00

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas		Picnic areas		Playgrounds	
		Limitation	Value	Limitation	Value	Limitation	Value
529:							
Mayacama gravelly coarse sandy loam----------------------------	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Rock fragments (<3") 25-50%	0.68	Rock fragments (<3") 25-50%	0.68	Surface rock fragments (<3") >25%	1.00
		Permeability of .06-.6"/hr	0.10	Permeability of .06-.6"/hr	0.10	Bedrock at 20-40" and slope >2%	0.50
				.			
				.			
542:							
Okiota loam-----------------------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
Dubakella gravelly clay loam------	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Rock fragments (<3") >50%	1.00	Rock fragments (<3") >50%	1.00	Surface rock fragments (<3") >25%	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06-.6"/hr	0.44	Bedrock at 20-40" and slope >2%	0.50
Henneke sandy loam----------------	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
545:							
Henneke sandy loam----------------	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
Montara gravelly sandy loam-------	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Surface rock fragments (<3") >25%	1.00
		Rock fragments (<3") 25-50%	0.32	Rock fragments (<3") 25-50%	0.32	Bedrock depth <20"	1.00
Rock outcrop----------------------	15	Not rated		Not rated		Not rated	

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Value	Picnic areas: Limitation	Value	Playgrounds: Limitation	Value
548:							
Henneke sandy loam	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
Okiota loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
549:							
Henneke sandy loam	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06 to .6"/hr	0.44	Permeability of .06 to .6"/hr	0.44
Okiota loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
557:							
Neuns very gravelly loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
						Bedrock at 20-40" and slope >2%	0.50
Bamtush very gravelly loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
Speaker gravelly loam	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
564:							
Fouts gravelly loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Dusty	0.50	Dusty	0.50	Surface rock fragments (<3") >25%	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06-.6"/hr	0.44	Dusty	0.50
Yorkville clay loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.44	Permeability of .06-.6"/hr	0.44	Permeability of .06-.6"/hr	0.44

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Camp areas: Value	Picnic areas: Limitation	Picnic areas: Value	Playgrounds: Limitation	Playgrounds: Value
564:							
Squawrock gravelly loam	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Rock fragments (<3") 25-50%	0.50	Rock fragments (<3") 25-50%	0.50	Surface rock fragments (<3") >25%	1.00
		Dusty	0.50	Dusty	0.50	Dusty	0.50
570:							
Endoaquolls, frequently ponded	90	Severe		Severe		Severe	
		Ponded (any duration)	1.00	Ponded (any duration)	1.00	Ponded (any duration)	1.00
		Wetness <18" depth	1.00	Wetness <12" depth	1.00	Wetness <18" depth	1.00
		Permeability of .06-.6"/hr	0.15	Permeability of .06-.6"/hr	0.15	Permeability of .06-.6"/hr	0.15
590:							
Neuns very gravelly loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
						Bedrock at 20-40" and slope >2%	0.50
Marpa very gravelly sandy loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.10	Permeability of .06-.6"/hr	0.10	Bedrock at 20-40" and slope >2%	0.50
						Permeability of .06-.6"/hr	0.10
Goulding gravelly loam	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
591:							
Neuns very gravelly loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
						Bedrock at 20-40" and slope >2%	0.50
Sheetiron gravelly sandy loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
						Bedrock at 20-40" and slope >2%	0.50
Goulding gravelly loam	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas		Picnic areas		Playgrounds	
		Limitation	Value	Limitation	Value	Limitation	Value
592:							
Neuns very gravelly loam----------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
						Bedrock at 20-40" and slope >2%	0.50
Goulding gravelly loam------------	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
Sheetiron gravelly sandy loam-----	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
						Bedrock at 20-40" and slope >2%	0.50
596:							
Yollabolly very gravelly loam-----	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Rock fragments (<3") >50%	1.00	Rock fragments (<3") >50%	1.00	Surface rock fragments (<3") >25%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
Rock outcrop----------------------	35	Not rated		Not rated		Not rated	
Freezeout very gravelly sandy loam----------------------------	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
						Bedrock at 20-40" and slope >2%	0.50
597:							
Yollabolly very gravelly loam-----	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Rock fragments (<3") >50%	1.00	Rock fragments (<3") >50%	1.00	Surface rock fragments (<3") >25%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
Freezeout very gravelly sandy loam----------------------------	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
						Bedrock at 20-40" and slope >2%	0.50

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Camp areas: Value	Picnic areas: Limitation	Picnic areas: Value	Playgrounds: Limitation	Playgrounds: Value
599:							
Freezeout very gravelly sandy loam	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
						Bedrock at 20-40" and slope >2%	0.50
Yollabolly very gravelly loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Rock fragments (<3") >50%	1.00	Rock fragments (<3") >50%	1.00	Surface rock fragments (<3") >25%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
600:							
Freezeout very gravelly sandy loam	50	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
						Bedrock at 20-40" and slope >2%	0.50
Yollabolly very gravelly loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Rock fragments (<3") >50%	1.00	Rock fragments (<3") >50%	1.00	Surface rock fragments (<3") >25%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
610:							
Neuns very gravelly loam	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
						Bedrock at 20-40" and slope 2%	0.50
Bamtush very gravelly loam	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
Goulding gravelly loam	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Bedrock depth <20"	1.00	Bedrock depth <20"	1.00	Bedrock depth <20"	1.00
650:							
Bamtush very gravelly loam	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00

Table 12.--Recreational Development (Part 1)--Continued

Map symbol and soil name	Pct.	Camp areas: Limitation	Camp areas: Value	Picnic areas: Limitation	Picnic areas: Value	Playgrounds: Limitation	Playgrounds: Value
650:							
Marpa very gravelly sandy loam----	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.10	Permeability of .06 to .6"/hr	0.10	Bedrock at 20-40" and slope >2%	0.50
						Permeability of .06 to .6"/hr	0.10
651:							
Bamtush very gravelly loam--------	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
Marpa very gravelly sandy loam----	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >6%	1.00
		Permeability of .06-.6"/hr	0.10	Permeability of .06 to .6"/hr	0.10	Bedrock at 20-40" and slope >2%	0.50
						Permeability of .06 to .6"/hr	0.10

The interpretation for *camp areas* evaluates the following soil properties at varying depths in the soil: flooding; ponding; wetness; slope; depth to bedrock; depth to a cemented pan; rock fragments less than, equal to, or more than 3 inches in size; sodium content (SAR); salinity (EC); a clayey surface layer; Unified classes for a high content of organic matter (PT, OL, and OH); soil dustiness; and permeability that is too rapid, allowing seepage in some climates.

The interpretation for *picnic areas* evaluates the following soil properties at varying depths in the soil: flooding, ponding, wetness, slope, depth to bedrock, depth to a cemented pan, salinity (EC), pH, soil dustiness, rock fragments more than 3 inches in size, surface rock fragments more than 10 inches in size, the amount of sand or clay in the surface layer, Unified classes for a high content of organic matter (PT, OL, and OH), and permeability that is too rapid, allowing seepage in some climates.

The interpretation for *playgrounds* evaluates the following soil properties at varying depths in the soil: flooding, ponding, wetness, slope, depth to bedrock, depth to a cemented pan, surface rock fragments more than 10 inches in size, rock fragments equal to or less than 3 inches in size, Unified classes for a high content of organic matter (PT, OL, and OH), soil dustiness, sand or clay content in the surface layer, pH, salinity (EC), and permeability that is too rapid, allowing seepage in some climates.

Table 13.--Recreational Development (Part 2)

(The information in this table is based on Pacific Southwest MLRA Office interpretations. It 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. The rating is based on the limitation with the highest value. Only the three highest value limitations are listed. There may be more limitations. Fine-earth fractions and rock fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in describing the limiations is given at the end of the table.)

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
100:							
Capay clay loam, occasionally flooded	90	Slight		Slight		Moderate	
						Occasional flooding	0.80
101:							
Capay silty clay, frequently flooded	90	Moderate		Moderate		Moderate	
		Frequent flooding	0.50	Frequent flooding	0.50	Frequent flooding	0.90
102:							
Capay clay loam	90	Slight		Slight		Slight	
103:							
Capay clay loam, frequently flooded	90	Moderate		Moderate		Moderate	
		Frequent flooding	0.50	Frequent flooding	0.50	Frequent flooding	0.90
104:							
Willows silty clay, frequently flooded	90	Severe		Severe		Severe	
		Surface clay >40%	1.00	Surface clay >40%	1.00	Clay in surface ≥ 40%	1.00
		Frequent flooding	0.50	Frequent flooding	0.50	SAR >12	1.00
						Frequent flooding	0.90
105:							
Willows silty clay, occasionally flooded	90	Severe		Severe		Severe	
		Surface clay >40%	1.00	Surface clay >40%	1.00	Clay in surface ≥ 40%	1.00
						SAR >12	1.00
						Occasional flooding	0.80
106:							
Willows silty clay	90	Severe		Severe		Severe	
		Surface clay >40%	1.00	Surface clay >40%	1.00	Clay in surface ≥ 40%	1.00
						SAR >12	1.00

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
107:							
Scribner silt loam, occasionally flooded	80	Moderate		Moderate		Moderate	
		Wetness from 12 to 24" depth	0.44	Wetness from 12 to 24" depth	0.44	Occasional flooding	0.80
						Wetness from 12 to 24" depth	0.44
108:							
Scribner silt loam	80	Moderate		Moderate		Moderate	
		Wetness from 12 to 24" depth	0.44	Wetness from 12 to 24" depth	0.44	Wetness from 12 to 24" depth	0.44
109:							
Scribner silt loam, frequently flooded	80	Moderate		Moderate		Moderate	
		Frequent flooding	0.50	Frequent flooding	0.50	Frequent flooding	0.90
		Wetness from 12 to 24" depth	0.44	Wetness from 12 to 24" depth	0.44	Wetness from 12 to 24" depth	0.44
110:							
Hustabel sandy loam	80	Slight		Slight		Slight	
112:							
Westfan loam	80	Moderate		Moderate		Severe	
		Dusty	0.50	Dusty	0.50	SAR >12	1.00
113:							
Westfan loam, sodic	85	Moderate		Moderate		Severe	
		Dusty	0.50	Dusty	0.50	SAR >12	1.00
114:							
Westfan clay loam	80	Slight		Slight		Slight	
115:							
Clear Lake clay, occasionally flooded	90	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
						Occasional flooding	0.80
116:							
Clear Lake clay, calcareous, occasionally flooded	90	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
						Occasional flooding	0.80

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
117, 118:							
Clear Lake clay, calcareous, frequently flooded	90	Moderate		Moderate		Severe	
		Frequent flooding	0.50	Frequent flooding	0.50	Clay in surface ≥ 40%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Frequent flooding	0.90
124:							
Moonbend silt loam, occasionally flooded	80	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	Occasional flooding	0.80
125:							
Moonbend silt loam	80	Moderate		Moderate		Slight	
		Dusty	0.50	Dusty	0.50		
126:							
Moonbend silt loam, frequently flooded	80	Moderate		Moderate		Moderate	
		Frequent flooding	0.50	Frequent flooding	0.50	Frequent flooding	0.90
		Dusty	0.50	Dusty	0.50		
127:							
Mallard clay loam	85	Slight		Slight		Slight	
128:							
Mallard loam	85	Moderate		Moderate		Slight	
		Dusty	0.50	Dusty	0.50		
129:							
Mallard clay loam, occasionally flooded	85	Slight		Slight		Moderate	
						Occasional flooding	0.80
130:							
Corbiere silt loam	85	Slight		Slight		Severe	
						SAR >12	1.00
131:							
Corbiere silt loam, frequently flooded	85	Moderate		Moderate		Severe	
		Frequent flooding	0.50	Frequent flooding	0.50	SAR >12	1.00
						Frequent flooding	0.90

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
133:							
Corbiere silt loam, occasionally flooded	85	Slight		Slight		Severe	
						SAR >12	1.00
						Occasional flooding	0.80
136:							
Colusa loam	85	Moderate		Moderate		Severe	
		Dusty	0.50	Dusty	0.50	SAR >12	1.00
						AWC <2" to 40"	1.00
						Surface EC >8 mmhos/cm	1.00
141:							
Myers clay	90	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
144:							
Hillgate clay loam	85	Slight		Slight		Moderate	
						AWC 2-4" to 40"	0.07
145, 147:							
Hillgate loam	90	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	AWC 2-4" to 40"	0.45
150:							
Arbuckle sandy loam	85	Slight		Slight		Slight	
151:							
Arbuckle sandy loam	50	Slight		Slight		Slight	
Hillgate, loam	40	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	AWC 2-4" to 40"	0.45
152:							
Arbuckle gravelly loam	85	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	Rock fragments (gravel size) 25-50%	0.01
155:							
Alcapay clay	90	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	SAR >12	1.00
						Clay in surface ≥ 40%	1.00

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
160:							
Grandbend loam	80	Moderate		Moderate		Slight	
		Dusty	0.50	Dusty	0.50		
170:							
Vina loam, frequently flooded	80	Moderate		Moderate		Moderate	
		Frequent flooding	0.50	Frequent flooding	0.50	Frequent flooding	0.90
		Dusty	0.50	Dusty	0.50		
171:							
Vina loam	85	Moderate		Moderate		Slight	
		Dusty	0.50	Dusty	0.50		
172:							
Vina fine sandy loam, frequently flooded	80	Moderate		Moderate		Moderate	
		Frequent flooding	0.50	Frequent flooding	0.50	Frequent flooding	0.90
174:							
Vina loam, occasionally flooded	85	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	Occasional flooding	0.80
175:							
Tujunga loam, overwash, frequently flooded	85	Moderate		Moderate		Moderate	
		Frequent flooding	0.50	Frequent flooding	0.50	Frequent flooding	0.90
		Dusty	0.50	Dusty	0.50	AWC 2-4" to 40"	0.38
176:							
Columbia fine sandy loam, frequently flooded	80	Moderate		Moderate		Moderate	
		Frequent flooding	0.50	Frequent flooding	0.50	Frequent flooding	0.90
177:							
Holillipah loamy sand, channeled	80	Moderate		Moderate		Moderate	
		Frequent flooding	0.50	Frequent flooding	0.50	Frequent flooding	0.90
						AWC 2-4" to 40"	0.74
185:							
Riverwash	95	Severe		Severe		Severe	
		Wetness <12" depth	1.00	Wetness <12" depth	1.00	Wetness <12" depth	1.00
		Very dusty	1.00	Very dusty	1.00	Frequent flooding	0.90
		Frequent flooding	0.50	Frequent flooding	0.50	AWC 2-4" to 40"	0.24

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
187:							
Westfan loam, occasionally flooded-------------------------	85	Moderate		Moderate		Severe	
		Dusty	0.50	Dusty	0.50	SAR >12	1.00
						Occasional flooding	0.80
188:							
Westfan loam, clay substratum-----	80	Moderate		Moderate		Slight	
		Dusty	0.50	Dusty	0.50		
189:							
Arand very gravelly sandy loam----	85	Slight		Slight		Moderate	
						AWC 2-4" to 40"	0.91
						Rock fragments (gravel size) 25-50%	0.08
190:							
Arand very gravelly loam----------	85	Moderate		Moderate		Severe	
		Dusty	0.50	Dusty	0.50	Rock fragments (gravel size) >50%	1.00
						AWC 2-4" to 40"	0.93
193:							
Westfan gravelly loam-------------	80	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	Rock fragments (gravel size) 25-50%	0.08
200:							
Clear Lake clay, occasionally flooded-------------------------	90	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
						Occasional flooding	0.80
204:							
Capay clay, occasionally flooded--	90	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
						Occasional flooding	0.80
205:							
Capay clay------------------------	90	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails: Limitation	Value	Off-road motorcycle trails: Limitation	Value	Lawns, landscaping, and golf fairways: Limitation	Value
206:							
Capay clay	90	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
210:							
Corval loam	85	Moderate		Moderate		Slight	
		Dusty	0.50	Dusty	0.50		
211:							
Corval clay loam	85	Slight		Slight		Slight	
212:							
Ayar clay	85	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
						Slopes 8 to 15%	0.16
213:							
Ayar clay	85	Moderate		Moderate		Severe	
		Slopes 15-25%	0.92	Surface clay >40% and dry climate	0.50	Slopes >15%	1.00
		Surface clay >40% and dry climate	0.50			Clay in surface ≥ 40%	1.00
215:							
Altamont silty clay	45	Moderate		Moderate		Severe	
		Slopes 15-25%	0.92	Surface clay >40% and dry climate	0.50	Slopes >15%	1.00
		Surface clay >40% and dry climate	0.50			Clay in surface ≥ 40%	1.00
Sehorn silty clay	35	Moderate		Moderate		Severe	
		Slopes 15-25%	0.92	Surface clay >40% and dry climate	0.50	Slopes >15%	1.00
		Surface clay >40% and dry climate	0.50			Clay in surface ≥ 40%	1.00
						Bedrock depth 20 to 40"	0.42
216:							
Altamont silty clay	45	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
						Slopes 8 to 15%	0.63
Sehorn silty clay	35	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
						Slopes 8 to 15%	0.63
						Bedrock depth 20 to 40"	0.42

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
218:							
Sehorn silty clay	45	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
						Bedrock depth 20 to 40"	0.42
Altamont silty clay	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
220:							
Altamont silty clay	85	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
221:							
Altamont silty clay	85	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
						Slopes 8 to 15%	0.63
230:							
Corning clay loam	90	Slight		Slight		Severe	
						AWC <2" to 40"	1.00
232:							
Maywood gravelly loam, occasionally flooded	85	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	Occasional flooding	0.80
233:							
Eastpark clay loam	95	Slight		Slight		Slight	
241:							
Contra Costa loam	55	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth 20 to 40"	0.42
		Dusty	0.50				
Altamont silty clay	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails: Limitation	Value	Off-road motorcycle trails: Limitation	Value	Lawns, landscaping, and golf fairways: Limitation	Value
253:							
Millsholm loam	55	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
						Slopes 8 to 15%	0.16
Altamont silty clay	20	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
						Slopes 8 to 15%	0.16
Rock outcrop	15	Not rated		Not rated		Not rated	
255:							
Millsholm loam	55	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth <20"	1.00
		Slopes 15-25%	0.50			Slopes >15%	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
Rock outcrop	35	Not rated		Not rated		Not rated	
257:							
Millsholm loam	50	Moderate		Moderate		Severe	
		Dusty	0.50	Dusty	0.50	Bedrock depth <20"	1.00
						AWC <2" to 40"	0.99
Capay clay	35	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
261:							
Millsholm loam	60	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Slopes >15%	1.00
		Slopes 15-25%	0.82			Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
Altamont silty clay	25	Moderate		Moderate		Severe	
		Slopes 15-25%	0.82	Surface clay >40% and dry climate	0.50	Slopes >15%	1.00
		Surface clay >40% and dry climate	0.50			Clay in surface ≥ 40%	1.00

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails: Limitation	Value	Off-road motorcycle trails: Limitation	Value	Lawns, landscaping, and golf fairways: Limitation	Value
270:							
Balcom silt loam	55	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Slopes >15%	1.00
		Slopes 15-25%	0.92			Bedrock depth 20 to 40"	0.20
		Dusty	0.50				
Ayar clay	30	Moderate		Moderate		Severe	
		Slopes 15-25%	0.92	Surface clay >40% and dry climate	0.50	Slopes >15%	1.00
		Surface clay >40% and dry climate	0.50			Clay in surface ≥ 40%	1.00
271:							
Balcom silt loam	55	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth 20 to 40"	0.20
		Dusty	0.50				
Ayar clay	30	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
275:							
Goldeagle clay loam	45	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
Positas gravelly sandy loam	25	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
						AWC 2-4" to 40"	0.02
Balcom silt loam	15	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth 20 to 40"	0.20
		Dusty	0.50				
276:							
Positas gravelly sandy loam	90	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
						AWC 2-4" to 40"	0.02

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails: Limitation	Value	Off-road motorcycle trails: Limitation	Value	Lawns, landscaping, and golf fairways: Limitation	Value
280:							
Skyhigh gravelly clay loam	45	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Slopes 25 to 40%	0.56	Slopes >15%	1.00
		Slopes >25%	1.00	Dusty	0.50	Bedrock depth 20 to 40"	0.46
		Dusty	0.50			AWC 2-4" to 40"	0.02
Millsholm loam	30	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Slopes 25 to 40%	0.56	Slopes >15%	1.00
		Slopes >25%	1.00	Dusty	0.50	Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
300:							
Contra Costa loam	55	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth 20 to 40"	0.42
		Dusty	0.50				
Millsholm loam	45	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
305:							
Contra Costa loam	85	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth 20 to 40"	0.42
		Dusty	0.50				
311:							
Contra Costa loam	85	Severe		Moderate		Moderate	
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Slopes 8 to 15%	0.63
		Dusty	0.50			Bedrock depth 20 to 40"	0.42
312, 313:							
Saltcanyon loam	90	Moderate		Moderate		Slight	
		Dusty	0.50	Dusty	0.50		
315:							
Mallard clay loam	90	Slight		Slight		Slight	

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
316:							
Hillgate loam	90	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	AWC 2-4" to 40"	0.45
320:							
Millsholm loam	85	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth <20"	1.00
		Dusty	0.50			Slopes >15%	1.00
						AWC <2" to 40"	0.99
329:							
Sehorn silty clay	40	Moderate		Moderate		Severe	
		Slopes 15-25%	0.82	Surface clay >40% and dry climate	0.50	Slopes >15%	1.00
		Surface clay >40% and dry climate	0.50			Clay in surface ≥ 40%	1.00
						Bedrock depth 20 to 40"	0.42
Millsholm loam	30	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Slopes >15%	1.00
		Slopes 15-25%	0.82			Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
Altamont silty clay	15	Moderate		Moderate		Severe	
		Slopes 15-25%	0.82	Surface clay >40% and dry climate	0.50	Slopes >15%	1.00
		Surface clay >40% and dry climate	0.50			Clay in surface ≥ 40%	1.00
330:							
Millsholm loam	60	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Slopes >15%	1.00
		Slopes 15-25%	0.82			Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
Contra Costa loam	25	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Slopes >15%	1.00
		Slopes 15-25%	0.82			Bedrock depth 20 to 40"	0.42
		Dusty	0.50				
331:							
Sehorn silty clay	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
						Bedrock depth 20 to 40"	0.42

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
331:							
Millsholm loam	30	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
Rock outcrop	20	Not rated		Not rated		Not rated	
332:							
Millsholm loam	50	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
Rock outcrop	40	Not rated		Not rated		Not rated	
334:							
Millsholm loam	70	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
Contra Costa loam	15	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth 20 to 40"	0.42
		Dusty	0.50				
337:							
Millsholm loam	50	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
						Slopes 8 to 15%	0.16
Saltcanyon loam	35	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	Slopes 8 to 15%	0.04
345:							
Skyhigh gravelly clay loam	40	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Slopes >15%	1.00
		Slopes 15-25%	0.82			Bedrock depth 20 to 40"	0.46
		Dusty	0.50			AWC 2-4" to 40"	0.02

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
345:							
Sleeper clay loam-----------------	30	Moderate		Slight		Severe	
		Slopes 15-25%	0.82			Slopes >15%	1.00
Millsholm loam--------------------	15	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Slopes >15%	1.00
		Slopes 15-25%	0.82			Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
346:							
Skyhigh gravelly clay loam--------	45	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth 20 to 40"	0.46
		Dusty	0.50			AWC 2-4" to 40"	0.02
Millsholm loam--------------------	20	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
Sleeper clay loam-----------------	20	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
347:							
Boar loam-------------------------	45	Moderate		Moderate		Severe	
		Slopes 15-25%	0.82	Dusty	0.50	Slopes >15%	1.00
		Dusty	0.50				
Sleeper clay loam-----------------	40	Moderate		Slight		Severe	
		Slopes 15-25%	0.82			Slopes >15%	1.00
348:							
Boar loam-------------------------	45	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Dusty	0.50	Dusty	0.50		
Sleeper clay loam-----------------	40	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
350:							
Haploxererts----------------------	80	Severe		Moderate		Severe	
		Slopes >25%	1.00	Slopes 25 to 40%	0.22	Slopes >15%	1.00

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails: Limitation	Value	Off-road motorcycle trails: Limitation	Value	Lawns, landscaping, and golf fairways: Limitation	Value
355:							
Venado clay	80	Moderate		Moderate		Severe	
		Surface clay >40% and dry climate	0.50	Surface clay >40% and dry climate	0.50	Clay in surface ≥ 40%	1.00
360:							
Bearvalley gravelly sandy loam	85	Slight		Slight		Moderate	
						AWC 2-4" to 40"	0.94
						Rock fragments (gravel size) 25-50%	0.50
365:							
Leesville clay loam	85	Slight		Slight		Slight	
366:							
Leesville clay loam	85	Slight		Slight		Slight	
370:							
Livermore very gravelly loam	90	Moderate		Moderate		Severe	
		Dusty	0.50	Dusty	0.50	Rock fragments (gravel size) >50%	1.00
						AWC 2-4" to 40"	0.57
371:							
Buttes gravelly sandy loam	50	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
						AWC <2" to 40"	1.00
						Rock fragments (gravel size) 25-50%	0.50
Millsholm loam	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00	Dusty	0.50	Bedrock depth <20"	1.00
		Dusty	0.50			AWC <2" to 40"	0.99
519:							
Stonyford gravelly loam	50	Moderate		Moderate		Severe	
		Dusty	0.50	Dusty	0.50	Bedrock depth <20"	1.00
						AWC <2" to 40"	1.00
						Rock fragments (gravel size) 25-50%	0.36
Guenoc loam	30	Moderate		Moderate		Moderate	
		Dusty	0.50	Dusty	0.50	Bedrock depth 20 to 40"	0.46
						Slopes 8 to 15%	0.16

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails: Limitation	Value	Off-road motorcycle trails: Limitation	Value	Lawns, landscaping, and golf fairways: Limitation	Value
520:							
Stonyford gravelly loam	65	Severe		Moderate		Severe	
		Slopes >25%	1.00	Dusty	0.50	Slopes >15%	1.00
		Dusty	0.50			Bedrock depth <20"	1.00
						AWC <2" to 40"	1.00
Guenoc loam	15	Severe		Moderate		Severe	
		Slopes >25%	1.00	Dusty	0.50	Slopes >15%	1.00
		Dusty	0.50			Bedrock depth 20 to 40"	0.46
521:							
Stonyford gravelly loam	65	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Dusty	0.50	Dusty	0.50	Bedrock depth <20"	1.00
						AWC <2" to 40"	1.00
Guenoc loam	15	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Dusty	0.50	Dusty	0.50	Bedrock depth 20 to 40"	0.46
524:							
Arand, frequently flooded	65	Moderate		Moderate		Moderate	
		Frequent flooding	0.50	Frequent flooding	0.50	AWC 2-4" to 40"	0.91
						Frequent flooding	0.90
						Fragments (gravel size) 25-50%	0.08
Riverwash	25	Severe		Severe		Severe	
		Wetness <12" depth	1.00	Wetness <12" depth	1.00	Wetness <12" depth	1.00
		Very dusty	1.00	Very dusty	1.00	Frequent flooding	0.90
		Frequent flooding	0.50	Frequent flooding	0.50	AWC 2-4" to 40"	0.24
526:							
Etsel gravelly sandy loam	30	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Bedrock depth <20"	1.00
						Slopes >15%	1.00
						AWC <2" to 40"	1.00
Maymen sandy loam	30	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Bedrock depth <20"	1.00
						Slopes >15%	1.00
						AWC <2" to 40"	1.00

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails: Limitation	Value	Off-road motorcycle trails: Limitation	Value	Lawns, landscaping, and golf fairways: Limitation	Value
526:							
Marpa very gravelly sandy loam----	20	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC 2-4" to 40"	0.74
						Bedrock depth 20 to 40"	0.46
527:							
Maymen sandy loam-----------------	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Bedrock depth <20"	1.00
						Slopes >15%	1.00
						AWC <2" to 40"	1.00
Etsel gravelly sandy loam---------	30	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Bedrock depth <20"	1.00
						Slopes >15%	1.00
						AWC <2" to 40"	1.00
Speaker gravelly loam-------------	20	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			Bedrock depth 20 to 40"	0.46
						AWC 2-4" to 40"	0.01
528:							
Maymen sandy loam-----------------	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Bedrock depth <20"	1.00
						Slopes >15%	1.00
						AWC <2" to 40"	1.00
Etsel gravelly sandy loam---------	25	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Bedrock depth <20"	1.00
						Slopes >15%	1.00
						AWC <2" to 40"	1.00
Snook gravelly sandy loam---------	25	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Bedrock depth <20"	1.00
						Slopes >15%	1.00
						AWC <2" to 40"	1.00
529:							
Maymen sandy loam-----------------	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Bedrock depth <20"	1.00
						Slopes >15%	1.00
						AWC <2" to 40"	1.00

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
529:							
Etsel gravelly sandy loam	30	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Bedrock depth <20"	1.00
						Slopes >15%	1.00
						AWC <2" to 40"	1.00
Mayacama gravelly coarse sandy loam	20	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
						Rock fragments (gravel size) 25-50%	0.68
						Bedrock depth 20 to 40"	0.42
542:							
Okiota loam	35	Severe		Moderate		Severe	
		Slopes >25%	1.00	Dusty	0.50	Slopes >15%	1.00
		Dusty	0.50	Slopes 25 to 40%	0.22	Bedrock depth <20"	1.00
						AWC <2" to 40"	1.00
Dubakella gravelly clay loam	25	Severe		Severe		Severe	
		Slopes >25%	1.00	Surface rock fragments <3" >65%	1.00	Slopes >15%	1.00
		Surface rock fragments <3" >65%	1.00	Slopes 25 to 40%	0.22	Rock fragments (gravel size) >50%	1.00
						Bedrock depth 20 to 40"	0.46
Henneke sandy loam	25	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Slopes 25 to 40%	0.22	Slopes >15%	1.00
		Slopes >25%	1.00			AWC <2" to 40"	1.00
						Bedrock depth <20"	1.00
545:							
Henneke sandy loam	40	Severe		Moderate		Severe	
		K factor >.35 and slopes >8%	1.00	Slopes 25 to 40%	0.22	Slopes >15%	1.00
		Slopes >25%	1.00			AWC <2" to 40"	1.00
						Bedrock depth <20"	1.00
Montara gravelly sandy loam	30	Severe		Moderate		Severe	
		Slopes >25%	1.00	Slopes 25 to 40%	0.22	Slopes >15%	1.00
						AWC <2" to 40"	1.00
						Bedrock depth <20"	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
548:							
Henneke sandy loam	45	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC <2" to 40"	1.00
						Bedrock depth <20"	1.00
Okiota loam	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Dusty	0.50	Dusty	0.50	Bedrock depth <20"	1.00
						AWC <2" to 40"	1.00
549:							
Henneke sandy loam	45	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC <2" to 40"	1.00
						Bedrock depth <20"	1.00
Okiota loam	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Dusty	0.50	Dusty	0.50	Bedrock depth <20"	1.00
						AWC <2" to 40"	1.00
557:							
Neuns very gravelly loam	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC 2-4" to 40"	0.77
						Bedrock depth 20 to 40"	0.46
Bamtush very gravelly loam	30	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC 2-4" to 40"	0.07
Speaker gravelly loam	20	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			Bedrock depth 20 to 40"	0.46
						AWC 2-4" to 40"	0.01
564:							
Fouts gravelly loam	35	Severe		Moderate		Severe	
		Slopes >25%	1.00	Slopes 25 to 40%	0.56	Slopes >15%	1.00
		Dusty	0.50	Dusty	0.50	Bedrock depth 20 to 40"	0.46
						AWC 2-4" to 40"	0.01
Yorkville clay loam	35	Severe		Moderate		Severe	
		Slopes >25%	1.00	Slopes 25 to 40%	0.56	Slopes >15%	1.00

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
564:							
Squawrock gravelly loam-----------	15	Severe		Moderate		Severe	
		Slopes >25%	1.00	Slopes 25 to 40%	0.56	Slopes >15%	1.00
		Dusty	0.50	Dusty	0.50	AWC 2-4" to 40"	0.80
						Rock fragments (gravel size) 25-50%	0.50
570:							
Endoaquolls, frequently ponded----	90	Severe		Severe		Severe	
		Ponding (any duration)	1.00	Ponding (any duration)	1.00	Ponding (any duration)	1.00
		Wetness <12" depth	1.00	Wetness <12" depth	1.00	Wetness <12" depth	1.00
590:							
Neuns very gravelly loam----------	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC 2-4" to 40"	0.77
						Bedrock depth 20 to 40"	0.46
Marpa very gravelly sandy loam----	30	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC 2-4" to 40"	0.74
						Bedrock depth 20 to 40"	0.46
Goulding gravelly loam------------	20	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC <2" to 40"	1.00
						Bedrock depth <20"	1.00
591:							
Neuns very gravelly loam----------	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC 2-4" to 40"	0.77
						Bedrock depth 20 to 40"	0.46
Sheetiron gravelly sandy loam-----	30	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC <2" to 40"	1.00
						Bedrock depth 20 to 40"	0.46
Goulding gravelly loam------------	20	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC <2" to 40"	1.00
						Bedrock depth <20"	1.00

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
592:							
Neuns very gravelly loam----------	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes				AWC 2-4" to 40"	0.77
		>8%	1.00			Bedrock depth 20 to 40"	0.46
Goulding gravelly loam------------	25	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes				AWC <2" to 40"	1.00
		>8%	1.00			Bedrock depth <20"	1.00
Sheetiron gravelly sandy loam------	25	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes				AWC <2" to 40"	1.00
		>8%	1.00			Bedrock depth 20 to 40"	0.46
596:							
Yollabolly very gravelly loam-----	40	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Dusty	0.50	Dusty	0.50	AWC <2" to 40"	1.00
						Bedrock depth <20"	1.00
Rock outcrop----------------------	35	Not rated		Not rated		Not rated	
Freezeout very gravelly sandy loam----------------------------	20	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes				AWC <2" to 40"	1.00
		>8%	1.00			Bedrock depth 20 to 40"	0.46
597:							
Yollabolly very gravelly loam-----	55	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Dusty	0.50	Dusty	0.50	AWC <2" to 40"	1.00
						Bedrock depth <20"	1.00
Freezeout very gravelly sandy loam----------------------------	30	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes				AWC <2" to 40"	1.00
		>8%	1.00			Bedrock depth 20 to 40"	0.46

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails		Off-road motorcycle trails		Lawns, landscaping, and golf fairways	
		Limitation	Value	Limitation	Value	Limitation	Value
599:							
Freezeout very gravelly sandy loam	55	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC <2" to 40"	1.00
						Bedrock depth 20 to 40"	0.46
Yollabolly very gravelly loam	30	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Dusty	0.50	Dusty	0.50	AWC <2" to 40"	1.00
						Bedrock depth <20"	1.00
600:							
Freezeout very gravelly sandy loam	50	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC <2" to 40"	1.00
						Bedrock depth 20 to 40"	0.46
Yollabolly very gravelly loam	35	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		Dusty	0.50	Dusty	0.50	AWC <2" to 40"	1.00
						Bedrock depth <20"	1.00
610:							
Neuns very gravelly loam	40	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC 2-4" to 40"	0.77
						Bedrock depth 20 to 40"	0.46
Bamtush very gravelly loam	25	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC 2-4" to 40"	0.07
Goulding gravelly loam	20	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC <2" to 40"	1.00
						Bedrock depth <20"	1.00
650:							
Bamtush very gravelly loam	55	Severe		Slight		Severe	
		K factor >.35 and slopes >8%	1.00			Slopes >15%	1.00
		Slopes 15-25%	0.82			AWC 2-4" to 40"	0.07

Table 13.--Recreational Development (Part 2)--Continued

Map symbol and soil name	Pct.	Paths and trails: Limitation	Value	Off-road motorcycle trails: Limitation	Value	Lawns, landscaping, and golf fairways: Limitation	Value
650:							
Marpa very gravelly sandy loam----	30	Severe		Slight		Severe	
		K factor >.35 and slopes >8%	1.00			Slopes >15%	1.00
		Slopes 15-25%	0.82			AWC 2-4" to 40"	0.74
						Bedrock depth 20 to 40"	0.46
651:							
Bamtush very gravelly loam--------	55	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC 2-4" to 40"	0.07
Marpa very gravelly sandy loam----	30	Severe		Severe		Severe	
		Slopes >25%	1.00	Slopes >40%	1.00	Slopes >15%	1.00
		K factor >.35 and slopes >8%	1.00			AWC 2-4" to 40"	0.74
						Bedrock depth 20 to 40"	0.46

The interpretation for *paths and trails* evaluates the following soil properties at varying depths in the soil: flooding; ponding; wetness; slope; rock fragments less than, equal to, or more than 3 inches in size; sand or clay content in the surface layer; surface rock fragments more than or equal to 10 inches in size; Unified classes for a high content of organic matter (PT, OL, and OH); soil dustiness; and the hazard of water erosion.

The interpretation for *off-road motorcycle trails* evaluates the following soil properties at varying depths in the soil: flooding; ponding; wetness; slope; soil dustiness; rock fragments less than, equal to, or more than 3 inches in size; sand or clay content in the surface layer; and Unified classes for a high content of organic matter (PT, OL, and OH).

The interpretation for *lawns, landscaping, and golf fairways* evaluates the following soil properties at varying depths in the soil: flooding; ponding; wetness; slope; depth to bedrock; depth to a cemented pan; rock fragments more than, equal to, or less than 3 inches in size; Unified classes for a high content of organic matter (PT, OL, and OH); soil dustiness; sand or clay content in the surface layer; surface rock fragments more than or equal to 10 inches in size; soil pH; salinity (EC); sodium content (SAR); calcium carbonates; and sulfur content.

Table 14.--Building Site Development (Part 1)

(The information in this table is based on Pacific Southwest MLRA Office interpretations. It 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. The rating is based on the limitation with the highest value. Only the three highest value limitations are listed. There may be more limitations. Fine-earth fractions and rock fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in describing the limitations is given at the end of the table.)

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
100, 101, 102, 103:							
Capay	90	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
				Wetness from 2.5' to 6' depth	0.61		
104, 105, 106:							
Willows silty clay	90	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
				Wetness from 2.5' to 6' depth	0.61		
107, 108, 109:							
Scribner silt loam	80	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Wetness <18" depth	1.00	Wetness <2.5' depth	1.00	Wetness <18" depth	1.00
110:							
Hustabel sandy loam	80	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
				Wetness from 2.5' to 6' depth	0.95		
112:							
Westfan loam	80	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.68			Shrink-swell (LEP 3-6)	0.68
113:							
Westfan loam, sodic	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.68			Shrink-swell (LEP 3-6)	0.68
114:							
Westfan clay loam	80	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
115, 116, 117, 118:							
Clear Lake clay-------------------	90	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
				Wetness from 2.5' to 6' depth	0.61		
124, 125, 126:							
Moonbend silt loam----------------	80	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.92	Shrink-swell (LEP 3-6)	0.92	Shrink-swell (LEP 3-6)	0.92
127:							
Mallard clay loam-----------------	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP >6)	1.00	Wetness from 2.5' to 6' depth	0.95	Shrink-swell (LEP >6)	1.00
				Shrink-swell (LEP 3-6)	0.50		
128:							
Mallard loam----------------------	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP 3-6)	0.50
				Wetness from 2.5' to 6' depth	0.95		
129:							
Mallard clay loam, occasionally flooded-------------------------	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP >6)	1.00	Wetness from 2.5' to 6' depth	0.95	Shrink-swell (LEP >6)	1.00
				Shrink-swell (LEP 3-6)	0.50		
130, 131, 133:							
Corbiere silt loam----------------	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Wetness from 18 to 30" depth	0.44	Wetness <2.5' depth	1.00	Wetness from 18 to 30" depth	0.44

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Limitation	Value	Limitation	Value	Limitation	Value
136:							
Colusa loam	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.18	Wetness from 2.5' to 6' depth	0.61	Shrink-swell (LEP 3-6)	0.18
				Shrink-swell (LEP 3-6)	0.18		
141:							
Myers clay	90	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
144:							
Hillgate clay loam	85	Moderate		Moderate		Moderate	
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50
145, 147:							
Hillgate loam	90	Slight		Slight		Slight	
150:							
Arbuckle sandy loam	85	Slight		Moderate		Slight	
				Shrink-swell (LEP 3-6)	0.50		
151:							
Arbuckle sandy loam	50	Slight		Moderate		Slight	
				Shrink-swell (LEP 3-6)	0.50		
Hillgate loam	40	Slight		Slight		Slight	
152:							
Arbuckle gravelly loam	85	Moderate		Moderate		Moderate	
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50
155:							
Alcapay clay	90	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
				Wetness from 2.5' to 6' depth	0.61		
160:							
Grandbend loam	80	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.50	Wetness <2.5' depth	1.00	Shrink-swell (LEP 3-6)	0.50
				Shrink-swell (LEP 3-6)	0.50		

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Limitation	Value	Limitation	Value	Limitation	Value
170:							
Vina loam, frequently flooded-----	80	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
171:							
Vina loam------------------------	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
172:							
Vina fine sandy loam, frequently flooded-------------------------	80	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
174:							
Vina loam, occasionally flooded---	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
175:							
Tujunga loam, overwash, frequently flooded--------------	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
176:							
Columbia fine sandy loam, frequently flooded--------------	80	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
177:							
Holillipah loamy sand, channeled--	80	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
185:							
Riverwash------------------------	95	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Wetness <18" depth	1.00	Wetness <2.5' depth	1.00	Wetness <18" depth	1.00
187:							
Westfan loam, occasionally floode--------------------------	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.68			Shrink-swell (LEP 3-6)	0.68
188:							
Westfan loam, clay substratum-----	80	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
189, 190:							
Arand	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
193:							
Westfan gravelly loam	80	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50
200:							
Clear Lake clay, occasionally flooded	90	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
				Wetness from 2.5' to 6' depth	0.61		
204, 205:							
Capay clay	90	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
				Wetness from 2.5' to 6' depth	0.61		
206:							
Capay clay	90	Severe		Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
				Wetness from 2.5' to 6' depth	0.61	Slopes from 4% to 8%	0.86
210, 211:							
Corval	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50
212:							
Ayar clay	85	Severe		Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Slopes >8%	1.00
213:							
Ayar clay	85	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Limitation	Value	Limitation	Value	Limitation	Value
215:							
Altamont silty clay	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
Sehorn silty clay	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.42	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.42
216:							
Altamont silty clay	45	Severe		Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Slopes >8%	1.00
		Slopes 8 to 15%	0.63	Slopes 8 to 15%	0.63	Shrink-swell (LEP >6)	1.00
Sehorn silty clay	35	Severe		Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Slopes >8%	1.00
		Slopes 8 to 15%	0.63	Bedrock (hard) <40" depth	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.42	Slopes 8 to 15%	0.63	Bedrock (hard) from 20 to 40"	0.42
218:							
Sehorn silty clay	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.42	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.42
Altamont silty clay	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
220:							
Altamont silty clay	85	Severe		Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
						Slopes from 4% to 8%	0.86
221:							
Altamont silty clay	85	Severe		Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Slopes >8%	1.00
		Slopes 8 to 15%	0.63	Slopes 8 to 15%	0.63	Shrink-swell (LEP >6)	1.00
230:							
Corning clay loam	90	Severe		Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Limitation	Value	Limitation	Value	Limitation	Value
232:							
Maywood gravelly loam, occasionally flooded------------	85	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
233:							
Eastpark clay loam----------------	95	Moderate		Moderate		Moderate	
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50
241:							
Contra Costa loam-----------------	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.42	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.42
Altamont silty clay---------------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
253:							
Millsholm loam--------------------	55	Severe		Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Slopes >8%	1.00
Altamont silty clay---------------	20	Severe		Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Slopes >8%	1.00
Rock outcrop----------------------	15	Not rated		Not rated		Not rated	
255:							
Millsholm loam--------------------	55	Severe		Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Slopes >15%	1.00	Bedrock (hard) <20" depth	1.00
Rock outcrop----------------------	35	Not rated		Not rated		Not rated	
257:							
Millsholm loam--------------------	50	Severe		Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
						Slopes from 4% to 8%	0.47

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Limitation	Value	Limitation	Value	Limitation	Value
257:							
Capay clay	35	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
				Wetness from 2.5' to 6' depth	0.61	Slopes from 4% to 8%	0.47
261:							
Millsholm loam	60	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Altamont silty clay	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
270:							
Balcom silt loam	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
				Bedrock (soft) from 20 to 40"	0.20		
Ayar clay	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
271:							
Balcom silt loam	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
				Bedrock (soft) from 20 to 40"	0.20		
Ayar clay	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
275:							
Goldeagle clay loam	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP >6)	1.00
Positas gravelly sandy loam	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
275:							
Balcom silt loam------------------	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
				Bedrock (soft) from 20 to 40"	0.20		
276:							
Positas gravelly sandy loam-------	90	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
280:							
Skyhigh gravelly clay loam--------	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
Millsholm loam--------------------	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
300:							
Contra Costa loam-----------------	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.42	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.42
Millsholm loam--------------------	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
305:							
Contra Costa loam-----------------	85	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.42	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.42
311:							
Contra Costa loam-----------------	85	Severe		Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Slopes >8%	1.00
		Slopes 8 to 15%	0.63	Bedrock (hard) <40" depth	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.42	Slopes 8 to 15%	0.63	Bedrock (hard) from 20 to 40"	0.42

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
312:							
Saltcanyon loam-------------------	90	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50
313:							
Saltcanyon loam-------------------	90	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Slopes from 4% to 8%	0.86
						Shrink-swell (LEP 3-6)	0.50
315:							
Mallard clay loam-----------------	90	Severe		Moderate		Severe	
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP >6)	1.00
316:							
Hillgate loam---------------------	90	Slight		Slight		Moderate	
						Slopes from 4% to 8%	0.86
320:							
Millsholm loam--------------------	85	Severe		Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
329:							
Sehorn silty clay-----------------	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.42	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.42
Millsholm loam--------------------	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Altamont silty clay---------------	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
330:							
Millsholm loam--------------------	60	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
330:							
Contra Costa loam	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.42	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.42
331:							
Sehorn silty clay	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.42	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.42
Millsholm loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
332:							
Millsholm loam	50	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Rock outcrop	40	Not rated		Not rated		Not rated	
334:							
Millsholm loam	70	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Contra Costa loam	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.42	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.42
337:							
Millsholm loam	50	Severe		Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Slopes >8%	1.00
Saltcanyon loam	35	Moderate		Moderate		Severe	
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Slopes >8%	1.00
		Slopes 8 to 15%	0.04	Slopes 8 to 15%	0.04	Shrink-swell (LEP 3-6)	0.50

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
345:							
Skyhigh gravelly clay loam	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
Sleeper clay loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
				Bedrock (hard) from 40 to 60"	0.42		
Millsholm loam	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
346:							
Skyhigh gravelly clay loam	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
Millsholm loam	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Sleeper clay loam	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
				Bedrock (hard) from 40 to 60"	0.42		
347:							
Boar loam	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
Sleeper clay loam	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
				Bedrock (hard) from 40 to 60"	0.42		

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
348:							
Boar loam-------------------------	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
Sleeper clay loam-----------------	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
				Bedrock (hard) from 40 to 60"	0.42		
350:							
Haploxererts----------------------	80	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
355:							
Venado clay-----------------------	80	Severe		Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Wetness from 18 to 30" depth	0.44	Wetness <2.5' depth	1.00	Wetness from 18 to 30" depth	0.44
360:							
Bearvalley gravelly sandy loam----	85	Slight		Slight		Slight	
365:							
Leesville clay loam---------------	85	Slight		Slight		Slight	
366:							
Leesville clay loam---------------	85	Slight		Slight		Slight	
370:							
Livermore very gravelly loam------	90	Moderate		Moderate		Moderate	
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Slopes from 4% to 8%	0.86
						Shrink-swell (LEP 3-6)	0.50
371:							
Buttes gravelly sandy loam--------	50	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50
				Bedrock (soft) from 20 to 40"	0.46		
Millsholm loam--------------------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
519:							
Stonyford gravelly loam-----------	50	Severe		Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Slopes >8%	1.00
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Shrink-swell (LEP 3-6)	0.50
Guenoc loam-----------------------	30	Moderate		Severe		Severe	
		Shrink-swell (LEP 3-6)	0.50	Bedrock (hard) <40" depth	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Bedrock (hard) from 20 to 40"	0.46
520, 521:							
Stonyford gravelly loam-----------	65	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50
Guenoc loam-----------------------	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP 3-6)	0.50	Bedrock (hard) <40" depth	1.00	Shrink-swell (LEP 3-6)	0.50
		Bedrock (hard) from 20 to 40"	0.46	Shrink-swell (LEP 3-6)	0.50	Bedrock (hard) from 20 to 40"	0.46
524:							
Arand, frequently flooded---------	65	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
Riverwash-------------------------	25	Severe		Severe		Severe	
		Flooding ≥ rare	1.00	Flooding ≥ rare	1.00	Flooding ≥ rare	1.00
		Wetness <18" depth	1.00	Wetness <2.5' depth	1.00	Wetness <18" depth	1.00
526:							
Etsel gravelly sandy loam---------	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Maymen sandy loam-----------------	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Marpa very gravelly sandy loam----	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
527:							
Maymen sandy loam-----------------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Etsel gravelly sandy loam---------	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Speaker gravelly loam-------------	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50
				Bedrock (soft) from 20 to 40"	0.46		
528:							
Maymen sandy loam-----------------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Etsel gravelly sandy loam---------	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Snook gravelly sandy loam---------	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
529:							
Maymen sandy loam-----------------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Etsel gravelly sandy loam---------	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Mayacama gravelly coarse sandy loam----------------------------	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.42	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.42

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
542:							
Okiota loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Dubakella gravelly clay loam	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
Henneke sandy loam	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
545:							
Henneke sandy loam	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Montara gravelly sandy loam	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Rock outcrop	15	Not rated		Not rated		Not rated	
548, 549:							
Henneke sandy loam	45	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Okiota loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
557:							
Neuns very gravelly loam	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
557:							
Bamtush very gravelly loam--------	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
Speaker gravelly loam-------------	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50
				Bedrock (soft) from 20 to 40"	0.46		
564:							
Fouts gravelly loam---------------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
Yorkville clay loam---------------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00	Shrink-swell (LEP >6)	1.00
Squawrock gravelly loam-----------	15	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Shrink-swell (LEP 3-6)	0.50	Bedrock (hard) <40" depth	1.00	Shrink-swell (LEP 3-6)	0.50
		Bedrock (hard) from 20 to 40"	0.46	Shrink-swell (LEP 3-6)	0.50	Bedrock (hard) from 20 to 40"	0.46
570:							
Endoaquolls, frequently ponded----	90	Severe		Severe		Severe	
		Ponding (any duration)	1.00	Ponding (any duration)	1.00	Ponding (any duration)	1.00
		Wetness <18" depth	1.00	Wetness <2.5' depth	1.00	Wetness <18" depth	1.00
		Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50	Shrink-swell (LEP 3-6)	0.50
590:							
Neuns very gravelly loam----------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
Marpa very gravelly sandy loam----	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Limitation	Value	Limitation	Value	Limitation	Value
590:							
Goulding gravelly loam------------	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
591:							
Neuns very gravelly loam----------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
Sheetiron gravelly sandy loam-----	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
Goulding gravelly loam------------	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
592:							
Neuns very gravelly loam----------	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
Goulding gravelly loam------------	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Sheetiron gravelly sandy loam-----	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
596:							
Yollabolly very gravelly loam-----	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Rock outcrop----------------------	35	Not rated		Not rated		Not rated	

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements: Limitation	Value	Dwellings with basements: Limitation	Value	Small commercial buildings: Limitation	Value
596:							
Freezeout very gravelly sandy loam----------------------------	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
597:							
Yollabolly very gravelly loam-----	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
Freezeout very gravelly sandy loam----------------------------	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
599:							
Freezeout very gravelly sandy loam----------------------------	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
Yollabolly very gravelly loam-----	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
600:							
Freezeout very gravelly sandy loam----------------------------	50	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
Yollabolly very gravelly loam-----	35	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
610:							
Neuns very gravelly loam----------	40	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46

Table 14.--Building Site Development (Part 1)--Continued

Map symbol and soil name	Pct.	Dwellings without basements		Dwellings with basements		Small commercial buildings	
		Limitation	Value	Limitation	Value	Limitation	Value
610:							
Bamtush very gravelly loam--------	25	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
Goulding gravelly loam------------	20	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00	Bedrock (hard) <20" depth	1.00
650:							
Bamtush very gravelly loam--------	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
Marpa very gravelly sandy loam----	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46
651:							
Bamtush very gravelly loam--------	55	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
Marpa very gravelly sandy loam----	30	Severe		Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >8%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00	Bedrock (hard) from 20 to 40"	0.46

The interpretation for *dwellings without basements* evaluates the following soil properties, some at varying depths in the soil: flooding, ponding, wetness, slope, subsidence of organic soils, shrink-swell potential expressed as linear extensibility percent (LEP), organic Unified classes for low soil strength (PT, OL, or OH), depth to hard or soft bedrock, depth to a thick or thin cemented pan, and rock fragments more than 3 inches in size.

The interpretation for *dwellings with basements* evaluates the following soil properties, some at varying depths in the soil: flooding, ponding, wetness, slope, subsidence of organic soils, shrink-swell potential expressed as linear extensibility percent (LEP), organic Unified classes for low strength (PT, OL, or OH), depth to hard or soft bedrock, depth to a thick or thin cemented pan, and rock fragments more than 3 inches in size.

The interpretation for *small commercial buildings* evaluates the following soil properties, some at varying depths in the soil: flooding, ponding, wetness, slope, subsidence of organic soils, shrink-swell potential expressed as linear extensibility percent (LEP), depth to hard or soft bedrock, depth to a thick or thin cemented pan, and rock fragments more than 3 inches in size.

Table 15.--Building Site Development (Part 2)

(The information in this table is based on Pacific Southwest MLRA Office interpretations. It 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. The rating is based on the limitation with the highest value. Only the three highest value limitations are listed. There may be more limitations. Fine-earth fractions and rock fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in describing the limitations is given at the end of the table.)

Map symbol and soil name	Pct.	Local roads and streets		Shallow excavations	
		Limitation	Value	Limitation	Value
100, 101:					
Capay, occasionally or frequently flooded	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Flooding ≥ occasional	1.00	Wetness from 2.5' to 6' depth	0.61
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.50
102:					
Capay clay loam	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Wetness from 2.5' to 6' depth	0.61
		Rare flooding	0.50	Clay from 40 to 60%	0.50
103:					
Capay clay loam, frequently flooded	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Flooding ≥ occasional	1.00	Wetness from 2.5' to 6' depth	0.61
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.50
104, 105:					
Willows, occasionally or frequently flooded	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Flooding ≥ occasional	1.00	Clay from 40 to 60%	0.78
		Shrink-swell (LEP >6)	1.00	Wetness from 2.5' to 6' depth	0.61
106:					
Willows silty clay	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.78
		Rare flooding	0.50	Wetness from 2.5' to 6' depth	0.61
107:					
Scribner silt loam, occasionally flooded	80	Severe		Severe	
		Flooding ≥ occasional	1.00	Wetness <2.5' depth	1.00
		AASHTO GI >8 (soil strength)	1.00	Very frequent flooding	0.50
		Wetness from 12 to 30" depth	0.75	Low caving potential	0.10
108:					
Scribner silt loam	80	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Wetness <2.5' depth	1.00
		Wetness from 12 to 30" depth	0.75	Low caving potential	0.10
		Rare flooding	0.50		
109:					
Scribner silt loam, frequently flooded	80	Severe		Severe	
		Flooding ≥ occasional	1.00	Wetness <2.5' depth	1.00
		AASHTO GI >8 (soil strength)	1.00	Very frequent flooding	0.50
		Wetness from 12 to 30" depth	0.75	Low caving potential	0.10

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets		Shallow excavations	
		Limitation	Value	Limitation	Value
110:					
Hustabel sandy loam	80	Moderate		Moderate	
		Rare flooding	0.50	Wetness from 2.5' to 6' depth	0.95
				Low caving potential	0.10
112:					
Westfan loam	80	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Low caving potential	0.10
		Shrink-swell (LEP 3-6)	0.68		
		Rare flooding	0.50		
113:					
Westfan loam, sodic	85	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Low caving potential	0.10
		Shrink-swell (LEP 3-6)	0.68		
		Rare flooding	0.50		
114:					
Westfan clay loam	80	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Low caving potential	0.10
		Shrink-swell (LEP 3-6)	0.50		
		Rare flooding	0.50		
115:					
Clear Lake clay, occasionally flooded	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay >60%	1.00
		Flooding ≥ occasional	1.00	Wetness from 2.5' to 6' depth	0.61
116, 117, 118:					
Clear Lake, occasionally or frequently flooded	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay >60%	1.00
		Flooding ≥ occasional	1.00	Wetness from 2.5' to 6' depth	0.61
124:					
Moonbend silt loam, occasionally flooded	80	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Very frequent flooding	0.50
		Flooding ≥ occasional	1.00	Low caving potential	0.10
		Shrink-swell (LEP 3-6)	0.92		
125:					
Moonbend silt loam	80	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Low caving potential	0.10
		Shrink-swell (LEP 3-6)	0.92		
		Rare flooding	0.50		
126:					
Moonbend silt loam, frequently flooded	80	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Very frequent flooding	0.50
		Flooding ≥ occasional	1.00	Low caving potential	0.10
		Shrink-swell (LEP 3-6)	0.92		
127:					
Mallard clay loam	85	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Wetness from 2.5' to 6' depth	0.95
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.12
		Rare flooding	0.50	Low caving potential	0.10

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets: Limitation	Value	Shallow excavations: Limitation	Value
128:					
Mallard loam	85	Moderate		Moderate	
		Shrink-swell (LEP 3-6)	0.50	Wetness from 2.5' to 6' depth	0.95
		Rare flooding	0.50	Clay from 40 to 60%	0.12
		AASHTO GI 5-8 (soil strength)	0.22	Low caving potential	0.10
129:					
Mallard clay loam, occasionally flooded	85	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Wetness from 2.5' to 6' depth	0.95
		Flooding ≥ occasional	1.00	Very frequent flooding	0.50
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.12
130:					
Corbiere silt loam	85	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Wetness <2.5' depth	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.63
		Rare flooding	0.50	Low caving potential	0.10
131:					
Corbiere silt loam, frequently flooded	85	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Wetness <2.5' depth	1.00
		Flooding ≥ occasional	1.00	Clay from 40 to 60%	0.63
		Shrink-swell (LEP >6)	1.00	Very frequent flooding	0.50
133:					
Corbiere silt loam, occasionally flooded	85	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Wetness <2.5' depth	1.00
		Flooding ≥ occasional	1.00	Clay from 40 to 60%	0.63
		Shrink-swell (LEP >6)	1.00	Very frequent flooding	0.50
136:					
Colusa loam	85	Moderate		Moderate	
		AASHTO GI 5-8 (soil strength)	0.78	Wetness from 2.5' to 6' depth	0.61
		Rare flooding	0.50	Low caving potential	0.10
		Shrink-swell (LEP 3-6)	0.18		
141:					
Myers clay	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.50
		Rare flooding	0.50		
144:					
Hillgate clay loam	85	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Clay from 40 to 60%	0.12
		Shrink-swell (LEP 3-6)	0.50	Low caving potential	0.10
145, 147:					
Hillgate loam	90	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Low caving potential	0.10
				Clay from 40 to 60%	0.03
150:					
Arbuckle sandy loam	85	Slight		Severe	
				Caving potential	1.00
151:					
Arbuckle sandy loam	50	Slight		Severe	
				Caving potential	1.00

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets: Limitation	Value	Shallow excavations: Limitation	Value
151:					
Hillgate loam	40	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Low caving potential	0.10
				Clay from 40 to 60%	0.03
152:					
Arbuckle gravelly loam	85	Moderate		Severe	
		Shrink-swell (LEP 3-6)	0.50	Caving potential	1.00
		AASHTO GI 5-8 (soil strength)	0.22		
155:					
Alcapay clay	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Wetness from 2.5' to 6' depth	0.61
		Rare flooding	0.50	Clay from 40 to 60%	0.50
160:					
Grandbend loam	80	Moderate		Severe	
		Shrink-swell (LEP 3-6)	0.50	Wetness <2.5' depth	1.00
		Rare flooding	0.50	Low caving potential	0.10
170:					
Vina loam, frequently flooded	80	Severe		Moderate	
		Flooding ≥ occasional	1.00	Very frequent flooding	0.50
				Low caving potential	0.10
171:					
Vina loam	85	Moderate		Moderate	
		Rare flooding	0.50	Low caving potential	0.10
172:					
Vina fine sandy loam, frequently flooded	80	Severe		Moderate	
		Flooding ≥ occasional	1.00	Very frequent flooding	0.50
				Low caving potential	0.10
174:					
Vina loam, occasionally flooded	85	Severe		Moderate	
		Flooding ≥ occasional	1.00	Very frequent flooding	0.50
				Low caving potential	0.10
175:					
Tujunga loam, overwash, frequently flooded	85	Severe		Severe	
		Flooding ≥ occasional	1.00	Caving potential	1.00
				Very frequent flooding	0.50
176:					
Columbia fine sandy loam, frequently flooded	80	Severe		Moderate	
		Flooding ≥ occasional	1.00	Very frequent flooding	0.50
				Low caving potential	0.10
177:					
Holillipah loamy sand, channeled	80	Severe		Severe	
		Flooding ≥ occasional	1.00	Caving potential	1.00
				Very frequent flooding	0.50

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets: Limitation	Value	Shallow excavations: Limitation	Value
187:					
Westfan loam, occasionally flooded	85	Severe		Moderate	
		Flooding ≥ occasional	1.00	Very frequent flooding	0.50
		AASHTO GI >8 (soil strength)	1.00	Low caving potential	0.10
		Shrink-swell (LEP 3-6)	0.68		
188:					
Westfan loam, clay substratum	80	Moderate		Moderate	
		Shrink-swell (LEP 3-6)	0.50	Clay from 40 to 60%	0.12
		Rare flooding	0.50	Low caving potential	0.10
		AASHTO GI 5-8 (soil strength)	0.22		
189:					
Arand very gravelly sandy loam	85	Moderate		Severe	
		Rare flooding	0.50	Caving potential	1.00
190:					
Arand very gravelly loam	85	Moderate		Severe	
		Rare flooding	0.50	Caving potential	1.00
193:					
Westfan gravelly loam	80	Moderate		Severe	
		Shrink-swell (LEP 3-6)	0.50	Caving potential	1.00
		Rare flooding	0.50		
200:					
Clear Lake clay, occasionally flooded	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay >60%	1.00
		Flooding ≥ occasional	1.00	Wetness from 2.5' to 6' depth	0.61
204:					
Capay clay, occasionally flooded	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay >60%	1.00
		Flooding ≥ occasional	1.00	Wetness from 2.5' to 6' depth	0.61
205:					
Capay clay	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay >60%	1.00
		Rare flooding	0.50	Wetness from 2.5' to 6' depth	0.61
206:					
Capay clay	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay >60%	1.00
				Wetness from 2.5' to 6' depth	0.61
210, 211:					
Corval	85	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Low caving potential	0.10
		Shrink-swell (LEP 3-6)	0.50		
		Rare flooding	0.50		
212:					
Ayar clay	85	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Slopes 8 to 15%	0.16
		Slopes 8 to 15%	0.16	Clay from 40 to 60%	0.12

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets: Limitation	Value	Shallow excavations: Limitation	Value
213:					
Ayar clay	85	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.12
215:					
Altamont silty clay	45	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Caving potential	1.00
		Slopes >15%	1.00	Clay from 40 to 60%	0.83
Sehorn silty clay	35	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Caving potential	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
216:					
Altamont silty clay	45	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.83
		Slopes 8 to 15%	0.63	Slopes 8 to 15%	0.63
Sehorn silty clay	35	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Bedrock (hard) <40" depth	1.00
		Slopes 8 to 15%	0.63	Clay from 40 to 60%	0.81
218:					
Sehorn silty clay	45	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Caving potential	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
Altamont silty clay	35	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Caving potential	1.00
		Slopes >15%	1.00	Clay from 40 to 60%	0.83
220:					
Altamont silty clay	85	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.83
221:					
Altamont silty clay	85	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.83
		Slopes 8 to 15%	0.63	Slopes 8 to 15%	0.63
230:					
Corning clay loam	90	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Caving potential	1.00
		AASHTO GI >8 (soil strength)	1.00	Clay from 40 to 60%	0.50
232:					
Maywood gravelly loam, occasionally flooded	85	Severe		Moderate	
		Flooding ≥ occasional	1.00	Very frequent flooding	0.50
				Low caving potential	0.10

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets		Shallow excavations	
		Limitation	Value	Limitation	Value
233:					
Eastpark clay loam	95	Moderate		Severe	
		Shrink-swell (LEP 3-6)	0.50	Caving potential	1.00
				Clay from 40 to 60%	0.12
241:					
Contra Costa loam	55	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Bedrock (hard) <40" depth	1.00
Altamont silty clay	35	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Caving potential	1.00
		Slopes >15%	1.00	Clay from 40 to 60%	0.83
253:					
Millsholm loam	55	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16
				Low caving potential	0.10
Altamont silty clay	20	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.83
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16
Rock outcrop	15	Not rated		Not rated	
255:					
Millsholm loam	55	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
				Low caving potential	0.10
257:					
Millsholm loam	50	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
				Low caving potential	0.10
Capay clay	35	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay >60%	1.00
		Rare flooding	0.50	Wetness from 2.5' to 6' depth	0.61
261:					
Millsholm loam	60	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Altamont silty clay	25	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Caving potential	1.00
		Slopes >15%	1.00	Clay from 40 to 60%	0.83
270, 271:					
Balcom silt loam	55	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
				Bedrock (soft) from 20 to 40"	0.20
				Low caving potential	0.10

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets		Shallow excavations	
		Limitation	Value	Limitation	Value
270, 271:					
Ayar clay	30	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.12
275:					
Goldeagle clay loam	45	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Low caving potential	0.10
Positas gravelly sandy loam	25	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.50
Balcom silt loam	15	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
				Bedrock (soft) from 20 to 40"	0.20
				Low caving potential	0.10
276:					
Positas gravelly sandy loam	90	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.50
280:					
Skyhigh gravelly clay loam	45	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Bedrock (hard) <40" depth	1.00
Millsholm loam	30	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
300:					
Contra Costa loam	55	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Bedrock (hard) <40" depth	1.00
Millsholm loam	45	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
305:					
Contra Costa loam	85	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Bedrock (hard) <40" depth	1.00
311:					
Contra Costa loam	85	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Bedrock (hard) <40" depth	1.00
		Slopes 8 to 15%	0.63	Slopes 8 to 15%	0.63

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets: Limitation	Value	Shallow excavations: Limitation	Value
312:					
Saltcanyon loam	90	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Low caving potential	0.10
		Shrink-swell (LEP 3-6)	0.50		
		Rare flooding	0.50		
313:					
Saltcanyon loam	90	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Low caving potential	0.10
		Shrink-swell (LEP 3-6)	0.50		
		Rare flooding	0.50		
315:					
Mallard clay loam	90	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Clay from 40 to 60%	0.12
		Shrink-swell (LEP >6)	1.00	Low caving potential	0.10
316:					
Hillgate loam	90	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Low caving potential	0.10
				Clay from 40 to 60%	0.03
320:					
Millsholm loam	85	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
				Low caving potential	0.10
329:					
Sehorn silty clay	40	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Caving potential	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
Millsholm loam	30	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Altamont silty clay	15	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Caving potential	1.00
		Slopes >15%	1.00	Clay from 40 to 60%	0.83
330:					
Millsholm loam	60	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Contra Costa loam	25	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Bedrock (hard) <40" depth	1.00
331:					
Sehorn silty clay	35	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Caving potential	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets		Shallow excavations	
		Limitation	Value	Limitation	Value
331:					
Millsholm loam----------------------	30	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
332:					
Millsholm loam----------------------	50	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
334:					
Millsholm loam----------------------	70	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Contra Costa loam------------------	15	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Bedrock (hard) <40" depth	1.00
337:					
Millsholm loam----------------------	50	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16
				Low caving potential	0.10
Saltcanyon loam---------------------	35	Severe		Moderate	
		AASHTO GI >8 (soil strength)	1.00	Low caving potential	0.10
		Shrink-swell (LEP 3-6)	0.50	Slopes 8 to 15%	0.04
		Slopes 8 to 15%	0.04		
345:					
Skyhigh gravelly clay loam---------	40	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Bedrock (hard) <40" depth	1.00
Sleeper clay loam------------------	30	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Bedrock (hard) from 40 to 60"	0.42
		Shrink-swell (LEP >6)	1.00	Low caving potential	0.10
Millsholm loam----------------------	15	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
346:					
Skyhigh gravelly clay loam---------	45	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Bedrock (hard) <40" depth	1.00
Millsholm loam----------------------	20	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets: Limitation	Value	Shallow excavations: Limitation	Value
346:					
Sleeper clay loam	20	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Bedrock (hard) from 40 to 60"	0.42
		Shrink-swell (LEP >6)	1.00	Low caving potential	0.10
347:					
Boar loam	45	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Low caving potential	0.10
		Shrink-swell (LEP >6)	1.00		
Sleeper clay loam	40	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Bedrock (hard) from 40 to 60"	0.42
		Shrink-swell (LEP >6)	1.00	Low caving potential	0.10
348:					
Boar loam	45	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Low caving potential	0.10
		Shrink-swell (LEP >6)	1.00		
Sleeper clay loam	40	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Bedrock (hard) from 40 to 60"	0.42
		Shrink-swell (LEP >6)	1.00	Low caving potential	0.10
350:					
Haploxererts	80	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.12
355:					
Venado clay	80	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Caving potential	1.00
		Shrink-swell (LEP >6)	1.00	Wetness <2.5' depth	1.00
		Wetness from 12 to 30" depth	0.19	Clay >60%	1.00
360:					
Bearvalley gravelly sandy loam	85	Slight		Severe	
				Caving potential	1.00
365, 366:					
Leesville clay loam	85	Slight		Severe	
				Caving potential	1.00
370:					
Livermore very gravelly loam	90	Moderate		Severe	
		Shrink-swell (LEP 3-6)	0.50	Caving potential	1.00
371:					
Buttes gravelly sandy loam	50	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Shrink-swell (LEP 3-6)	0.50	Caving potential	1.00
				Bedrock (soft) from 20 to 40"	0.46
Millsholm loam	35	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets: Limitation	Value	Shallow excavations: Limitation	Value
519:					
Stonyford gravelly loam	50	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Shrink-swell (LEP 3-6)	0.50	Slopes 8 to 15%	0.16
		Slopes 8 to 15%	0.16	Low caving potential	0.10
Guenoc loam	30	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Bedrock (hard) <40" depth	1.00
		Shrink-swell (LEP 3-6)	0.50	Slopes 8 to 15%	0.16
		Bedrock (hard) from 20 to 40"	0.46	Low caving potential	0.10
520, 521:					
Stonyford gravelly loam	65	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
		Shrink-swell (LEP 3-6)	0.50	Low caving potential	0.10
Guenoc loam	15	Severe		Severe	
		AASHTO GI >8 (soil strength	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Shrink-swell (LEP 3-6)	0.50	Low caving potential	0.10
524:					
Arand, frequently flooded	65	Severe		Severe	
		Flooding ≥ occasional	1.00	Caving potential	1.00
				Very frequent flooding	0.50
526:					
Etsel gravelly sandy loam	30	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Maymen sandy loam	30	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Marpa very gravelly sandy loam	20	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Caving potential	1.00
				Bedrock (hard) <40" depth	1.00
527:					
Maymen sandy loam	35	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Etsel gravelly sandy loam	30	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Speaker gravelly loam	20	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Shrink-swell (LEP 3-6)	0.50	Caving potential	1.00
				Bedrock (soft) from 20 to 40"	0.46

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets: Limitation	Value	Shallow excavations: Limitation	Value
528:					
Maymen sandy loam	35	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Etsel gravelly sandy loam	25	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Snook gravelly sandy loam	25	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
				Low caving potential	0.10
529:					
Maymen sandy loam	35	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Etselgravelly sandy loam	30	Severe		Severe	
		Bedrock (hard) <20" depth	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Mayacama gravelly coarse sandy loam	20	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Bedrock (hard) from 20 to 40"	0.42	Caving potential	1.00
				Bedrock (hard) <40" depth	1.00
542:					
Okiota loam	35	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.12
Dubakella gravelly clay loam	25	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Caving potential	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00
Henneke sandy loam	25	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Shrink-swell (LEP >6)	1.00	Slopes >15%	1.00
		Bedrock (hard) <20" depth	1.00	Low caving potential	0.10
545:					
Henneke sandy loam	40	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Shrink-swell (LEP >6)	1.00	Slopes >15%	1.00
		Bedrock (hard) <20" depth	1.00	Low caving potential	0.10
Montara gravelly sandy loam	30	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Rock outcrop	15	Not rated		Not rated	

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets		Shallow excavations	
		Limitation	Value	Limitation	Value
548:					
Henneke sandy loam	45	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Shrink-swell (LEP >6)	1.00	Slopes >15%	1.00
		Bedrock (hard) <20" depth	1.00	Low caving potential	0.10
Okiota loam	35	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.12
549:					
Henneke sandy loam	45	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Shrink-swell (LEP >6)	1.00	Slopes >15%	1.00
		Bedrock (hard) <20" depth	1.00	Low caving potential	0.10
Okiota loam	35	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Clay from 40 to 60%	0.12
557:					
Neuns very gravelly loam	35	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Caving potential	1.00
				Bedrock (hard) <40" depth	1.00
Bamtush very gravelly loam	30	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
				Caving potential	1.00
Speaker gravelly loam	20	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Shrink-swell (LEP 3-6)	0.50	Caving potential	1.00
				Bedrock (soft) from 20 to 40"	0.46
564:					
Fouts gravelly loam	35	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Shrink-swell (LEP >6)	1.00	Caving potential	1.00
		AASHTO GI >8 (soil strength)	1.00	Bedrock (hard) <40" depth	1.00
Yorkville clay loam	35	Severe		Severe	
		AASHTO GI >8 (soil strength)	1.00	Slopes >15%	1.00
		Slopes >15%	1.00	Low caving potential	0.10
		Shrink-swell (LEP >6)	1.00		
Squawrock gravelly loam	15	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Shrink-swell (LEP 3-6)	0.50	Caving potential	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00
570:					
Endoaquolls, frequently ponded	90	Severe		Severe	
		Ponding (any duration)	1.00	Ponding (any duration)	1.00
		Wetness < 12" depth	1.00	Wetness <2.5' depth	1.00
		Shrink-swell (LEP 3-6)	0.50	Caving potential	1.00

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets		Shallow excavations	
		Limitation	Value	Limitation	Value
590:					
Neuns very gravelly loam	35	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Caving potential	1.00
				Bedrock (hard) <40" depth	1.00
Marpa very gravelly sandy loam	30	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Caving potential	1.00
				Bedrock (hard) <40" depth	1.00
Goulding gravelly loam	20	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
591:					
Neuns very gravelly loam	35	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Caving potential	1.00
				Bedrock (hard) <40" depth	1.00
Sheetiron gravelly sandy loam	30	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Caving potential	1.00
				Bedrock (hard) <40" depth	1.00
Goulding gravelly loam	20	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
592:					
Neuns very gravelly loam	35	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Caving potential	1.00
				Bedrock (hard) <40" depth	1.00
Goulding gravelly loam	25	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
Sheetiron gravelly sandy loam	25	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Caving potential	1.00
				Bedrock (hard) <40" depth	1.00
596:					
Yollabolly very gravelly loam	40	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
		Possible frost action	0.50	Low caving potential	0.10
Freezeout very gravelly sandy loam	20	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Possible frost action	0.50	Caving potential	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets: Limitation	Value	Shallow excavations: Limitation	Value
597:					
Yollabolly very gravelly loam	55	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
		Possible frost action	0.50	Low caving potential	0.10
Freezeout very gravelly sandy loam	30	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Possible frost action	0.50	Caving potential	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00
599:					
Freezeout very gravelly sandy loam	55	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Possible frost action	0.50	Caving potential	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00
Yollabolly very gravelly loam	30	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
		Possible frost action	0.50	Low caving potential	0.10
600:					
Freezeout very gravelly sandy loam	50	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Possible frost action	0.50	Caving potential	1.00
		Bedrock (hard) from 20 to 40"	0.46	Bedrock (hard) <40" depth	1.00
Yollabolly very gravelly loam	35	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
		Possible frost action	0.50	Low caving potential	0.10
610:					
Neuns very gravelly loam	40	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Caving potential	1.00
				Bedrock (hard) <40" depth	1.00
Bamtush very gravelly loam	25	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
				Caving potential	1.00
Goulding gravelly loam	20	Severe		Severe	
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Bedrock (hard) <20" depth	1.00	Slopes >15%	1.00
				Low caving potential	0.10
650:					
Bamtush very gravelly loam	55	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
				Caving potential	1.00
Marpa very gravelly sandy loam	30	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Caving potential	1.00
				Bedrock (hard) <40" depth	1.00

Table 15.--Building Site Development (Part 2)--Continued

Map symbol and soil name	Pct.	Local roads and streets		Shallow excavations	
		Limitation	Value	Limitation	Value
651:					
Bamtush very gravelly loam--------	55	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
				Caving potential	1.00
Marpa very gravelly sandy loam----	30	Severe		Severe	
		Slopes >15%	1.00	Slopes >15%	1.00
		Bedrock (hard) from 20 to 40"	0.46	Caving potential	1.00
				Bedrock (hard) <40" depth	1.00

The interpretation for *local roads and streets* evaluates the following soil properties at varying depths in the soil: flooding, ponding, wetness, slope, organic Unified classes for low soil strength (PT, OL, and OH), amount of clay, depth to hard or soft bedrock, depth to a thick or thin cemented pan, rock fragments more than 3 inches in size, bulk density, and the caving potential of the soil.

The interpretation for *shallow excavations* evaluates the following soil properties at varying depths in the soil: flooding, ponding, wetness, slope, subsidence of organic soils, shrink-swell potential expressed as linear extensibility percent (LEP), potential for frost action, depth to hard or soft bedrock, depth to a thick or thin cemented pan, rock fragments more than 3 inches in size, and soil strength expressed as the AASHTO group index number (AASHTO GI).

Table 16.--Sanitary Facilities (Part 1)

(The information in this table is based on Pacific Southwest MLRA Office interpretations. It 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. The rating is based on the limitation with the highest value. Only the three highest value limitations are listed. There may be more limitations. Fine-earth fractions and rock fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in describing the limitations is given at the end of the table.)

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
100, 101:					
Capay, occasionally or frequently flooded	90	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability <.6"/hr in 24-72"	1.00	Wetness from 3.5 to 5' depth	0.71
		Wetness <4' depth	1.00		
102:					
Capay clay loam	90	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Wetness from 3.5 to 5' depth	0.71
		Wetness <4' depth	1.00	Rare flooding	0.50
		Rare flooding	0.50		
103:					
Capay clay loam, frequently flooded	90	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability <.6"/hr in 24-72"	1.00	Wetness from 3.5 to 5' depth	0.71
		Wetness <4' depth	1.00		
104:					
Willows silty clay, frequently flooded	90	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability <.6"/hr in 24-72"	1.00	Wetness from 3.5 to 5' depth	0.71
		Wetness <4' depth	1.00		
105:					
Willows silty clay, occasionally flooded	90	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability <.6"/hr in 24-72"	1.00	Wetness from 3.5 to 5' depth	0.71
		Wetness <4' depth	1.00		
106:					
Willows silty clay	90	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Wetness from 3.5 to 5' depth	0.71
		Wetness <4' depth	1.00	Rare flooding	0.50
		Rare flooding	0.50		
107:					
Scribner silt loam, occasionally flooded	80	Severe		Severe	
		Flooding ≥ occasional	1.00	Wetness <3.5' depth	1.00
		Wetness <4' depth	1.00	Flooding ≥ occasional	1.00
		Permeability of .6-2"/hr	0.50	Permeability .6-2"/hr (some seepage)	0.50
108:					
Scribner silt loam	80	Severe		Severe	
		Wetness <4' depth	1.00	Wetness <3.5' depth	1.00
		Rare flooding	0.50	Permeability .6-2"/hr (some seepage)	0.50
		Permeability of .6-2"/hr	0.50	Rare flooding	0.50

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields: Limitation	Value	Sewage lagoons: Limitation	Value
109:					
Scribner silt loam, frequently flooded	80	Severe		Severe	
		Flooding ≥ occasional	1.00	Wetness <3.5' depth	1.00
		Wetness <4' depth	1.00	Flooding ≥ occasional	1.00
		Permeability of .6-2"/hr	0.50	Permeability .6-2"/hr (some seepage)	0.50
110:					
Hustabel sandy loam	80	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Permeability >2"/hr (seepage)	1.00
		Wetness <4' depth	1.00	Wetness from 3.5 to 5' depth	0.50
		Rare flooding	0.50	Rare flooding	0.50
112:					
Westfan loam	80	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Permeability >2"/hr (seepage)	1.00
		Rare flooding	0.50	Rare flooding	0.50
113:					
Westfan loam, sodic	85	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Permeability >2"/hr (seepage)	1.00
		Rare flooding	0.50	Rare flooding	0.50
114:					
Westfan clay loam	80	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Rare flooding	0.50
		Rare flooding	0.50		
115, 116, 117, 118:					
Clear Lake, occasionally or frequently flooded	90	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability <.6"/hr in 24-72"	1.00	Wetness from 3.5 to 5' depth	0.71
		Wetness <4' depth	1.00		
124:					
Moonbend silt loam, occasionally flooded	80	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability <.6"/hr in 24-72"	1.00	Permeability .6-2"/hr (some seepage)	0.50
125:					
Moonbend silt loam	80	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Rare flooding	0.50	Rare flooding	0.50
126:					
Moonbend silt loam, frequently flooded	80	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability <.6"/hr in 24-72"	1.00	Permeability .6-2"/hr (some seepage)	0.50
127:					
Mallard clay loam	85	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Wetness <3.5' depth	1.00
		Wetness <4' depth	1.00	Rare flooding	0.50
		Rare flooding	0.50		

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
128:					
Mallard loam	85	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Wetness <3.5' depth	1.00
		Wetness <4' depth	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Rare flooding	0.50	Rare flooding	0.50
129:					
Mallard clay loam, occasionally flooded	85	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability <.6"/hr in 24-72"	1.00	Wetness <3.5' depth	1.00
		Wetness <4' depth	1.00		
130:					
Corbiere silt loam	85	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Wetness <3.5' depth	1.00
		Wetness <4' depth	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Rare flooding	0.50	Rare flooding	0.50
131, 133:					
Corbiere, frequently or occasionally flooded	85	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability <.6"/hr in 24-72"	1.00	Wetness <3.5' depth	1.00
		Wetness <4' depth	1.00	Permeability .6-2"/hr (some seepage)	0.50
136:					
Colusa loam	85	Severe		Moderate	
		Wetness <4' depth	1.00	Wetness from 3.5 to 5' depth	0.71
		Rare flooding	0.50	Permeability .6-2"/hr (some seepage)	0.50
				Rare flooding	0.50
141:					
Myers clay	90	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Rare flooding	0.50
		Rare flooding	0.50		
144:					
Hillgate clay loam	85	Slight		Slight	
145:					
Hillgate loam	90	Slight		Moderate	
				Permeability .6-2"/hr (some seepage)	0.50
147:					
Hillgate loam	90	Slight		Moderate	
				Permeability .6-2"/hr (some seepage)	0.50
				Slopes 2 to 8%	0.17
150:					
Arbuckle sandy loam	85	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Permeability >2"/hr (seepage)	1.00
				Slopes 2 to 8%	0.17
151:					
Arbuckle sandy loam	50	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Permeability >2"/hr (seepage)	1.00
				Slopes 2 to 8%	0.17
Hillgate loam	40	Slight		Moderate	
				Permeability .6-2"/hr (some seepage)	0.50
				Slopes 2 to 8%	0.17

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
152:					
Arbuckle gravelly loam	85	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Slopes 2 to 8%	0.17
155:					
Alcapay clay	90	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Wetness from 3.5 to 5' depth	0.71
		Wetness <4' depth	1.00	Rare flooding	0.50
		Rare flooding	0.50		
160:					
Grandbend loam	80	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Wetness <3.5' depth	1.00
		Wetness <4' depth	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Rare flooding	0.50	Rare flooding	0.50
170:					
Vina loam, frequently flooded	80	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability of .6-2"/hr	0.50	Permeability .6-2"/hr (some seepage)	0.50
171:					
Vina loam	85	Moderate		Moderate	
		Rare flooding	0.50	Permeability .6-2"/hr (some seepage)	0.50
		Permeability of .6-2"/hr	0.50	Rare flooding	0.50
172:					
Vina fine sandy loam, frequently flooded	80	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability of .6-2"/hr	0.50	Permeability .6-2"/hr (some seepage)	0.50
174:					
Vina loam, occasionally flooded	85	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability of .6-2"/hr	0.50	Permeability .6-2"/hr (some seepage)	0.50
175:					
Tujunga loam, overwash, frequently flooded	85	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability > 6"/hr above 60"	1.00	Permeability >2"/hr (seepage)	1.00
176:					
Columbia fine sandy loam, frequently flooded	80	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability of .6-2"/hr	0.50	Permeability >2"/hr (seepage)	1.00
177:					
Holillipah loamy sand, channeled	80	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability > 6"/hr above 60"	1.00	Permeability >2"/hr (seepage)	1.00
185:					
Riverwash	95	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Wetness <4' depth	1.00	Permeability >2"/hr (seepage)	1.00
				Wetness from 3.5 to 5' depth	0.50

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
187:					
Westfan loam, occasionally flooded	85	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability <.6"/hr in 24-72"	1.00	Permeability >2"/hr (seepage)	1.00
188:					
Westfan loam, clay substratum	80	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Rare flooding	0.50
		Rare flooding	0.50		
189:					
Arand very gravelly sandy loam	85	Moderate		Severe	
		Rare flooding	0.50	Permeability >2"/hr (seepage)	1.00
				Rare flooding	0.50
190:					
Arand very gravelly loam	85	Moderate		Severe	
		Rare flooding	0.50	Permeability >2"/hr (seepage)	1.00
		Permeability of .6-2"/hr	0.50	Rare flooding	0.50
193:					
Westfan gravelly loam	80	Moderate		Moderate	
		Rare flooding	0.50	Permeability .6-2"/hr (some seepage)	0.50
		Permeability of .6-2"/hr	0.50	Rare flooding	0.50
200:					
Clear Lake clay, occasionally flooded	90	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability <.6"/hr in 24-72"	1.00	Wetness from 3.5 to 5' depth	0.71
		Wetness <4' depth	1.00		
204:					
Capay clay, occasionally flooded	90	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability <.6"/hr in 24-72"	1.00	Wetness from 3.5 to 5' depth	0.71
		Wetness <4' depth	1.00		
205:					
Capay clay	90	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Wetness from 3.5 to 5' depth	0.71
		Wetness <4' depth	1.00	Rare flooding	0.50
		Rare flooding	0.50		
206:					
Capay clay	90	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Slopes 2 to 8%	0.83
		Wetness <4' depth	1.00	Wetness from 3.5 to 5' depth	0.71
210:					
Corval loam	85	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Rare flooding	0.50
		Rare flooding	0.50		
211:					
Corval clay loam	85	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Rare flooding	0.50
		Rare flooding	0.50		

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
212:					
Ayar clay------------------------	85	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes 8 to 15%	0.16		
		Depth to bedrock 40-72"	0.01		
213:					
Ayar clay------------------------	85	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00		
		Depth to bedrock 40-72"	0.01		
215:					
Altamont silty clay---------------	45	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (soft) from 40 to 60"	0.42
		Depth to bedrock 40-72"	0.78		
Sehorn silty clay-----------------	35	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
216:					
Altamont silty clay---------------	45	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Depth to bedrock 40-72"	0.78	Bedrock (soft) from 40 to 60"	0.42
		Slopes 8 to 15%	0.63		
Sehorn silty clay-----------------	35	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes 8 to 15%	0.63		
218:					
Sehorn silty clay-----------------	45	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
Altamont silty clay---------------	35	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (soft) from 40 to 60"	0.42
		Depth to bedrock 40-72"	0.78		
220:					
Altamont silty clay---------------	85	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Slopes 2 to 8%	0.83
		Depth to bedrock 40-72"	0.78	Bedrock (soft) from 40 to 60"	0.42
221:					
Altamont silty clay---------------	85	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Depth to bedrock 40-72"	0.78	Bedrock (soft) from 40 to 60"	0.42
		Slopes 8 to 15%	0.63		
230:					
Corning clay loam-----------------	90	Slight		Moderate	
				Permeability .6-2"/hr (some seepage)	0.50
				Slopes 2 to 8%	0.17

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
232:					
Maywood gravelly loam, occasionally flooded	85	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Permeability of .6-2"/hr	0.50	Permeability >2"/hr (seepage)	1.00
233:					
Eastpark clay loam	95	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Permeability .6-2"/hr (some seepage)	0.50
241:					
Contra Costa loam	55	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
Altamont silty clay	35	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (soft) from 40 to 60"	0.42
		Depth to bedrock 40-72"	0.78		
253:					
Millsholm loam	55	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Impermeable above 24"	1.00	Slopes >8%	1.00
		Slopes 8 to 15%	0.16	Permeability .6-2"/hr (some seepage)	0.50
Altamont silty clay	20	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Depth to bedrock 40-72"	0.78	Bedrock (soft) from 40 to 60"	0.42
		Slopes 8 to 15%	0.16		
Rock outcrop	15	Not rated		Not rated	
255:					
Millsholm loam	55	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Impermeable above 24"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Permeability .6-2"/hr (some seepage)	0.50
Rock outcrop	35	Not rated		Not rated	
257:					
Millsholm loam	50	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Impermeable above 24"	1.00	Slopes 2 to 8%	0.67
				Permeability .6-2"/hr (some seepage)	0.50
Capay clay	35	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Wetness from 3.5 to 5' depth	0.71
		Wetness <4' depth	1.00	Slopes 2 to 8%	0.67
		Rare flooding	0.50	Rare flooding	0.50
261:					
Millsholm loam	60	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
261:					
Altamont silty clay	25	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (soft) from 40 to 60"	0.42
		Depth to bedrock 40-72"	0.78		
270, 271:					
Balcom silt loam	55	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Bedrock (soft) < 40" depth	1.00
		Permeability of .6-2"/hr	0.50	Permeability .6-2"/hr (some seepage)	0.50
Ayar clay	30	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00		
		Depth to bedrock 40-72"	0.01		
275:					
Goldeagle clay loam	45	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Permeability <.6"/hr in 24-72"	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Depth to bedrock 40-72"	0.27		
Positas gravelly sandy loam	25	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Permeability >2"/hr (seepage)	1.00
Balcom silt loam	15	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Bedrock (soft) < 40" depth	1.00
		Permeability of .6-2"/hr	0.50	Permeability .6-2"/hr (some seepage)	0.50
276:					
Positas gravelly sandy loam	90	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Permeability >2"/hr (seepage)	1.00
280:					
Skyhigh gravelly clay loam	45	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
Millsholm loam	30	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50
300:					
Contra Costa loam	55	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
Millsholm loam	45	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields: Limitation	Value	Sewage lagoons: Limitation	Value
305:					
Contra Costa loam	85	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
311:					
Contra Costa loam	85	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes 8 to 15%	0.63		
312:					
Saltcanyon loam	90	Moderate		Moderate	
		Rare flooding	0.50	Permeability .6-2"/hr (some seepage)	0.50
		Permeability of .6-2"/hr	0.50	Rare flooding	0.50
				Slopes 2 to 8%	0.17
313:					
Saltcanyon loam	90	Moderate		Moderate	
		Rare flooding	0.50	Slopes 2 to 8%	0.83
		Permeability of .6-2"/hr	0.50	Permeability .6-2"/hr (some seepage)	0.50
				Rare flooding	0.50
315:					
Mallard clay loam	90	Severe		Moderate	
		Permeability <.6"/hr in 24-72"	1.00	Slopes 2 to 8%	0.33
316:					
Hillgate loam	90	Slight		Moderate	
				Slopes 2 to 8%	0.83
				Permeability .6-2"/hr (some seepage)	0.50
320:					
Millsholm loam	85	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Impermeable above 24"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Permeability .6-2"/hr (some seepage)	0.50
329:					
Sehorn silty clay	40	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
Millsholm loam	30	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50
Altamont silty clay	15	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (soft) from 40 to 60"	0.42
		Depth to bedrock 40-72"	0.78		
330:					
Millsholm loam	60	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
330:					
Contra Costa loam	25	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
331:					
Sehorn silty clay	35	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
Millsholm loam	30	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50
Rock outcrop	20	Not rated		Not rated	
332:					
Millsholm loam	50	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50
Rock outcrop	40	Not rated		Not rated	
334:					
Millsholm loam	70	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50
Contra Costa loam	15	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
337:					
Millsholm loam	50	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Impermeable above 24"	1.00	Slopes >8%	1.00
		Slopes 8 to 15%	0.16	Permeability .6-2"/hr (some seepage)	0.50
Saltcanyon loam	35	Moderate		Severe	
		Permeability of .6-2"/hr	0.50	Slopes >8%	1.00
		Slopes 8 to 15%	0.04	Permeability .6-2"/hr (some seepage)	0.50
345:					
Skyhigh gravelly clay loam	40	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
Sleeper clay loam	30	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) from 40 to 60"	0.42
		Depth to bedrock 40-72"	0.78		

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
345:					
Millsholm loam	15	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50
346:					
Skyhigh gravelly clay loam	45	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
Millsholm loam	20	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50
Sleeper clay loam	20	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) from 40 to 60"	0.42
		Depth to bedrock 40-72"	0.78		
347:					
Boar loam	45	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Permeability <.6"/hr in 24-72"	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Depth to bedrock 40-72"	0.01		
Sleeper clay loam	40	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) from 40 to 60"	0.42
		Depth to bedrock 40-72"	0.78		
348:					
Boar loam	45	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Permeability <.6"/hr in 24-72"	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Depth to bedrock 40-72"	0.01		
Sleeper clay loam	40	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) from 40 to 60"	0.42
		Depth to bedrock 40-72"	0.78		
350:					
Haploxererts	80	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Permeability .6-2"/hr (some seepage)	0.50
355:					
Venado clay	80	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Wetness <3.5' depth	1.00
		Wetness <4' depth	1.00		
360:					
Bearvalley gravelly sandy loam	85	Severe		Severe	
		Permeability > 6"/hr above 60"	1.00	Permeability >2"/hr (seepage)	1.00
				Slopes 2 to 8%	0.33

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
365:					
Leesville clay loam	85	Severe		Severe	
		Permeability > 6"/hr above 60"	1.00	Permeability >2"/hr (seepage)	1.00
				Slopes 2 to 8%	0.33
366:					
Leesville clay loam	85	Severe		Severe	
		Permeability > 6"/hr above 60"	1.00	Permeability >2"/hr (seepage)	1.00
370:					
Livermore very gravelly loam	90	Moderate		Severe	
		Permeability of .6-2"/hr	0.72	Permeability >2"/hr (seepage)	1.00
				Slopes 2 to 8%	0.83
371:					
Buttes gravelly sandy loam	50	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Permeability >2"/hr (seepage)	1.00
				Bedrock (soft) < 40" depth	1.00
Millsholm loam	35	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50
519:					
Stonyford gravelly loam	50	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Impermeable above 24"	1.00	Slopes >8%	1.00
		Slopes 8 to 15%	0.16		
Guenoc loam	30	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes 8 to 15%	0.16	Slopes >8%	1.00
520:					
Stonyford gravelly loam	65	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00		
Guenoc loam	15	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
521:					
Stonyford gravelly loam	65	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00		
Guenoc loam	15	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
524:					
Arand, frequently flooded	65	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
				Permeability >2"/hr (seepage)	1.00

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
524:					
Riverwash	25	Severe		Severe	
		Flooding ≥ occasional	1.00	Flooding ≥ occasional	1.00
		Wetness <4' depth	1.00	Permeability >2"/hr (seepage)	1.00
				Wetness from 3.5 to 5' depth	0.50
526:					
Etsel gravelly sandy loam	30	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00		
Maymen sandy loam	30	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability >2"/hr (seepage)	1.00
Marpa very gravelly sandy loam	20	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Permeability <.6"/hr in 24-72"	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00	Organic matter (PT, OL, OH)	1.00
527:					
Maymen sandy loam	35	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability >2"/hr (seepage)	1.00
Etsel gravelly sandy loam	30	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00		
Speaker gravelly loam	20	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Permeability <.6"/hr in 24-72"	1.00	Bedrock (soft) < 40" depth	1.00
		Depth to bedrock <40"	1.00	Organic matter (PT, OL, OH)	1.00
528:					
Maymen sandy loam	35	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability >2"/hr (seepage)	1.00
Etsel gravelly sandy loam	25	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00		
Snook gravelly sandy loam	25	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00		
529:					
Maymen sandy loam	35	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability >2"/hr (seepage)	1.00

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
529:					
Etsel gravelly sandy loam---------	30	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00		
Mayacama gravelly coarse sandy loam----------------------------	20	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Permeability <.6"/hr in 24-72"	1.00	Permeability >2"/hr (seepage)	1.00
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
542:					
Okiota loam----------------------	35	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00		
Dubakella gravelly clay loam------	25	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
Henneke sandy loam----------------	25	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Organic matter (PT, OL, OH)	1.00
545:					
Henneke sandy loam----------------	40	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Organic matter (PT, OL, OH)	1.00
Montara gravelly sandy loam-------	30	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00		
Rock outcrop----------------------	15	Not rated		Not rated	
548, 549:					
Henneke sandy loam----------------	45	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Organic matter (PT, OL, OH)	1.00
Okiota loam----------------------	35	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00		
557:					
Neuns very gravelly loam----------	35	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Permeability of .6-2"/hr	0.50	Organic matter (PT, OL, OH)	1.00
Bamtush very gravelly loam--------	30	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Permeability <.6"/hr in 24-72"	1.00	Organic matter (PT, OL, OH)	1.00
		Depth to bedrock 40-72"	0.01	Permeability .6-2"/hr (some seepage)	0.50

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
557:					
Speaker gravelly loam	20	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Permeability <.6"/hr in 24-72"	1.00	Bedrock (soft) < 40" depth	1.00
		Depth to bedrock <40"	1.00	Organic matter (PT, OL, OH)	1.00
564:					
Fouts gravelly loam	35	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
Yorkville clay loam	35	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00		
		Depth to bedrock 40-72"	0.01		
Squawrock gravelly loam	15	Severe		Severe	
		Permeability <.6"/hr in 24-72"	1.00	Slopes >8%	1.00
		Slopes >15%	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00		
570:					
Endoaquolls, frequently ponded	90	Severe		Severe	
		Ponding (any duration)	1.00	Wetness <3.5' depth	1.00
		Wetness <4' depth	1.00	Ponding (any duration)	1.00
		Permeability <.6"/hr in 24-72"	1.00	Permeability .6-2"/hr (some seepage)	0.50
590:					
Neuns very gravelly loam	35	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Permeability of .6-2"/hr	0.50	Organic matter (PT, OL, OH)	1.00
Marpa very gravelly sandy loam	30	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Permeability <.6"/hr in 24-72"	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00	Organic matter (PT, OL, OH)	1.00
Goulding gravelly loam	20	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Organic matter (PT, OL, OH)	1.00
591:					
Neuns very gravelly loam	35	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Permeability of .6-2"/hr	0.50	Organic matter (PT, OL, OH)	1.00
Sheetiron gravelly sandy loam	30	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Permeability >2"/hr (seepage)	1.00
				Bedrock (hard) <40" depth	1.00
Goulding gravelly loam	20	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Organic matter (PT, OL, OH)	1.00

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields		Sewage lagoons	
		Limitation	Value	Limitation	Value
592:					
Neuns very gravelly loam	35	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Permeability of .6-2"/hr	0.50	Organic matter (PT, OL, OH)	1.00
Goulding gravelly loam	25	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Organic matter (PT, OL, OH)	1.00
Sheetiron gravelly sandy loam	25	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Permeability >2"/hr (seepage)	1.00
				Bedrock (hard) <40" depth	1.00
596:					
Yollabolly very gravelly loam	40	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50
Rock outcrop	35	Not rated		Not rated	
Freezeout very gravelly sandy loam	20	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Permeability >2"/hr (seepage)	1.00
				Bedrock (hard) <40" depth	1.00
597:					
Yollabolly very gravelly loam	55	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50
Freezeout very gravelly sandy loam	30	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Permeability >2"/hr (seepage)	1.00
				Bedrock (hard) <40" depth	1.00
599:					
Freezeout very gravelly sandy loam	55	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Permeability >2"/hr (seepage)	1.00
				Bedrock (hard) <40" depth	1.00
Yollabolly very gravelly loam	30	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50
600:					
Freezeout very gravelly sandy loam	50	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Permeability >2"/hr (seepage)	1.00
				Bedrock (hard) <40" depth	1.00

Table 16.--Sanitary Facilities (Part 1)--Continued

Map symbol and soil name	Pct.	Septic tank absorption fields Limitation	Value	Sewage lagoons Limitation	Value
600:					
Yollabolly very gravelly loam-----	35	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Permeability .6-2"/hr (some seepage)	0.50
610:					
Neuns very gravelly loam----------	40	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Permeability of .6-2"/hr	0.50	Organic matter (PT, OL, OH)	1.00
Bamtush very gravelly loam--------	25	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Permeability <.6"/hr in 24-72"	1.00	Organic matter (PT, OL, OH)	1.00
		Depth to bedrock 40-72"	0.01	Permeability .6-2"/hr (some seepage)	0.50
Goulding gravelly loam------------	20	Severe		Severe	
		Depth to bedrock <40"	1.00	Bedrock (hard) <40" depth	1.00
		Slopes >15%	1.00	Slopes >8%	1.00
		Impermeable above 24"	1.00	Organic matter (PT, OL, OH)	1.00
650, 651:					
Bamtush very gravelly loam--------	55	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Permeability <.6"/hr in 24-72"	1.00	Organic matter (PT, OL, OH)	1.00
		Depth to bedrock 40-72"	0.01	Permeability .6-2"/hr (some seepage)	0.50
Marpa very gravelly sandy loam----	30	Severe		Severe	
		Slopes >15%	1.00	Slopes >8%	1.00
		Permeability <.6"/hr in 24-72"	1.00	Bedrock (hard) <40" depth	1.00
		Depth to bedrock <40"	1.00	Organic matter (PT, OL, OH)	1.00

The interpretation for *septic tank absorption fields* evaluates the following soil properties at varying depths in the soil: flooding; ponding; wetness; slope; subsidence of organic soils; depth to hard or soft bedrock; depth to a cemented pan; permeability that is too fast, allowing seepage; and permeability that is too slow or an impermeable layer at shallow a depth.

The interpretation for *sewage lagoons* evaluates the following soil properties at varying depths in the soil: flooding, ponding, wetness, slope, organic Unified classes for low strength (PT, OL, and OH), depth to hard or soft bedrock, depth to a cemented pan, rock fragments more than 3 inches in size, and permeability that is too fast, allowing seepage.

Table 17.--Sanitary Facilities (Part 2)

(The information in this table is based on Pacific Southwest MLRA Office interpretations. It 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. The rating is based on the limitation with the highest value. Only three highest value limitations are listed. There may be more limitations. Fine-earth fractions and rock fragments are reported on a weight basis. A explanation of the rating criteria and of the abbreviations used in describing the limitations is given at the end of the table.)

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
100: Capay clay loam, occasionally flooded	90	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Wetness <6' depth	1.00	Occasional flooding	0.60	Clay or silty clay	1.00
		Clay or silty clay	1.00				
101: Capay silty clay, frequently flooded	90	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00	Frequent flooding	0.80	Packing (OL, OH, CH, or MH)	1.00
		Wetness <6' depth	1.00			Clay or silty clay	1.00
102: Capay clay loam	90	Severe		Severe		Poor	
		Wetness <6' depth	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00	Rare flooding	0.40	Clay or silty clay	1.00
		Rare flooding	0.50				
103: Capay clay loam, frequently flooded	90	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Wetness <6' depth	1.00	Frequent flooding	0.80	Clay or silty clay	1.00
		Clay or silty clay	1.00				
104, 105: Willows, frequently or occasionally flooded	90	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00	Frequent flooding	0.80	Packing (OL, OH, CH, or MH)	1.00
		Wetness <6' depth	1.00	Occasional flooding	0.60	Clay or silty clay	1.00
106: Willows silty clay	90	Severe		Severe		Poor	
		Clay or silty clay	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Wetness <6' depth	1.00	Rare flooding	0.40	Packing (OL, OH, CH, or MH)	1.00
		SAR >13; not aridic climate	1.00			Clay or silty clay	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill: Limitation	Value	Area sanitary landfill: Limitation	Value	Daily cover for landfill: Limitation	Value
107:							
Scribner silt loam, occasionally flooded	80	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Wetness <18" depth	1.00
		Wetness <6' depth	1.00	Occasional flooding	0.60		
108:							
Scribner silt loam	80	Severe		Severe		Poor	
		Wetness <6' depth	1.00	Wetness <5' depth	1.00	Wetness <18" depth	1.00
		Rare flooding	0.50	Rare flooding	0.40		
109:							
Scribner silt loam, frequently flooded	80	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Wetness <18" depth	1.00
		Wetness <6' depth	1.00	Frequent flooding	0.80		
110:							
Hustabel sandy loam	80	Severe		Severe		Fair	
		Wetness <6' depth	1.00	Wetness <5' depth	1.00	Permeability >2.0 in/hr	0.50
		Rare flooding	0.50	Seepage in 20-40" depth	1.00	Wetness 18-40" depth	0.11
				Rare flooding	0.40		
112:							
Westfan loam	80	Severe		Severe		Poor	
		SAR >13; not aridic climate	1.00	Seepage in 20-40" depth	1.00	SAR >13; not aridic climate	1.00
		Rare flooding	0.50	Rare flooding	0.40	Permeability >2.0 in/hr	0.50
113:							
Westfan loam, sodic	85	Severe		Severe		Poor	
		SAR >13; not aridic climate	1.00	Seepage in 20-40" depth	1.00	SAR >13; not aridic climate	1.00
		Rare flooding	0.50	Rare flooding	0.40	Permeability >2.0 in/hr	0.50
114:							
Westfan clay loam	80	Moderate		Moderate		Fair	
		Rare flooding	0.50	Rare flooding	0.40	Silt or clay texture 10-60"	0.50
		Clay loam, silty clay, silty clay loam	0.50			Clay loam, silty clay, silty clay loam	0.50
115, 116, 117, 118:							
Clear Lake, occasionally or frequently flooded	90	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00	Occasional flooding	0.60	Packing (OL, OH, CH, or MH)	1.00
		Wetness <6' depth	1.00	Frequent flooding	0.80	Clay or silty clay	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
124:							
Moonbend silt loam, occasionally flooded-------------------------	80	Severe		Moderate		Fair	
		Flooding ≥ occasional	1.00	Occasional flooding	0.60	Silt or clay texture 10-60"	0.50
		Clay loam, silty clay, silty clay loam	050			Clay loam, silty clay, silty clay loam	0.50
125:							
Moonbend silt loam----------------	80	Moderate		Moderate		Fair	
		Rare flooding	0.50	Rare flooding	0.40	Silt or clay texture 10-60"	0.50
		Clay loam, silty clay, silty clay loam	0.50			Clay loam, silty clay, silty clay loam	0.50
126:							
Moonbend silt loam, frequently flooded-------------------------	80	Severe		Moderate		Fair	
		Flooding ≥ occasional	1.00	Frequent flooding	0.80	Silt or clay texture 10-60"	0.50
		Clay loam, silty clay, silty clay loam	0.50			Clay loam, silty clay, silty clay loam	0.50
127:							
Mallard clay loam-----------------	85	Severe		Severe		Fair	
		Wetness <6' depth	1.00	Wetness <5' depth	1.00	Silt or clay texture 10-60"	0.50
		Rare flooding	0.50	Rare flooding	0.40	Clay loam, silty clay, silty clay loam	0.50
		Clay loam, silty clay, silty clay loam	0.50			Wetness 18-40" depth	0.11
128:							
Mallard loam----------------------	85	Severe		Severe		Poor	
		Wetness <6' depth	1.00	Wetness <5' depth	1.00	Packing (OL, OH, CH, or MH)	1.00
		Rare flooding	0.50	Rare flooding	0.40	Wetness 18-40" depth	0.11
129:							
Mallard clay loam, occasionally flooded-------------------------	85	Severe		Severe		Fair	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Silt or clay texture 10-60"	0.50
		Wetness <6' depth	1.00	Occasional flooding	0.60	Clay loam, silty clay, silty clay loam	0.50
		Clay loam, silty clay, silty clay loam	0.50			Wetness 18-40" depth	0.11
130:							
Corbiere silt loam----------------	85	Severe		Severe		Poor	
		Wetness <6' depth	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00	Rare flooding	0.40	Packing (OL, OH, CH, or MH)	1.00
		Rare flooding	0.50			Clay or silty clay	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill: Limitation	Value	Area sanitary landfill: Limitation	Value	Daily cover for landfill: Limitation	Value
131, 133:							
Corbiere, frequently or occasionally flooded	85	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Wetness <6' depth	1.00	Frequent flooding	0.80	Packing (OL, OH, CH, or MH)	1.00
		Clay or silty clay	1.00			Clay or silty clay	1.00
136:							
Colusa loam	85	Severe		Severe		Poor	
		SAR >13; not aridic climate	1.00	Wetness <5' depth	1.00	SAR >13; not aridic climate	1.00
		Wetness <6' depth	1.00	Rare flooding	0.40	EC >16 mmhos and not arid	0.47
		Rare flooding	0.50				
141:							
Myers clay	90	Moderate		Moderate		Poor	
		Rare flooding	0.50	Rare flooding	0.40	Packing (OL, OH, CH, or MH)	1.00
144:							
Hillgate clay loam	85	Moderate		Slight		Poor	
		Clay loam, silty clay, silty clay loam	0.50			Packing (OL, OH, CH, or MH)	1.00
						Silt or clay texture 10-60"	0.50
						Clay loam, silty clay, silty clay loam	0.50
145, 147:							
Hillgate loam	90	Slight		Slight		Poor	
						Packing (OL, OH, CH, or MH)	1.00
150:							
Arbuckle sandy loam	85	Slight		Severe		Good	
				Seepage in 20-40" depth	1.00		
151:							
Arbuckle sandy loam	50	Slight		Severe		Good	
				Seepage in 20-40" depth	1.00		
Hillgate loam	40	Slight		Slight		Poor	
						Packing (OL, OH, CH, or MH)	1.00
152:							
Arbuckle gravelly loam	85	Moderate		Slight		Fair	
		Clay loam, silty clay, silty clay loam	0.50			Silt or clay texture 10-60"	0.50
						Clay loam, silty clay, silty clay loam	0.50
						Rock fragments <75 mm 25-50%	0.36

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
155:							
Alcapay clay	90	Severe		Severe		Poor	
		SAR >13; not aridic climate	1.00	Wetness <5' depth	1.00	SAR >13; not aridic climate	1.00
		Clay or silty clay	1.00	Rare flooding	0.40	Silty clay or clay 10-60"	1.00
		Wetness <6' depth	1.00			Packing (OL, OH, CH, or MH)	1.00
160:							
Grandbend loam	80	Severe		Severe		Fair	
		Wetness <6' depth	1.00	Wetness <5' depth	1.00	Wetness 18-40" depth	0.47
		Rare flooding	0.50	Rare flooding	0.40		
170:							
Vina loam, frequently flooded	80	Severe		Moderate		Good	
		Flooding ≥ occasional	1.00	Frequent flooding	0.80		
171:							
Vina loam	85	Moderate		Moderate		Good	
		Rare flooding	0.50	Rare flooding	0.40		
172, 174:							
Vina, frequently or occasionally flooded	80	Severe		Moderate		Good	
		Flooding ≥ occasional	1.00	Frequent flooding	0.80		
				Occasional flooding	0.60		
175:							
Tujunga loam, overwash, frequently flooded	85	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Seepage in 20-40" depth	1.00	Texture=s, fs, cos, or sg	1.00
		Seepage in bottom layer	1.00	Frequent flooding	0.80	Permeability >2.0 in/hr	1.00
		Sandy textures (cos, s, fs, lcos, or vfs)	1.00				
176:							
Columbia fine sandy loam, frequently flooded	80	Severe		Severe		Good	
		Flooding ≥ occasional	1.00	Seepage in 20-40" depth	1.00		
				Frequent flooding	0.80		
177:							
Holillipah loamy sand, channeled	80	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Seepage in 20-40" depth	1.00	Texture=s, fs, cos, or sg	1.00
		Seepage in bottom layer	1.00	Frequent flooding	0.80	Permeability >2.0 in/hr	1.00
		Sandy textures (cos, s, fs, lcos, or vfs)	1.00				

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
185:							
Riverwash-------------------------	95	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Texture=s, fs, cos, or sg	1.00
		Wetness <6' depth	1.00	Seepage in 20-40" depth	1.00	Wetness <18" depth	1.00
		Sandy textures (cos, s, fs, lcos, or vfs)	1.00	Frequent flooding	0.80	Permeability >2.0 in/hr	0.50
187:							
Westfan loam, occasionally flooded-------------------------	85	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Seepage in 20-40" depth	1.00	SAR >13; not aridic climate	1.00
		SAR >13; not aridic climate	1.00	Occasional flooding	0.60	Permeability >2.0 in/hr	0.50
188:							
Westfan loam, clay substratum-----	80	Moderate		Moderate		Fair	
		Rare flooding	0.50	Rare flooding	0.40	Silt or clay texture 10-60"	0.50
		Clay loam, silty clay, silty clay loam	0.50			Clay loam, silty clay, silty clay loam	0.50
189:							
Arand very gravelly sandy loam----	85	Severe		Severe		Poor	
		Sandy textures (cos, s, fs, lcos, or vfs)	1.00	Seepage in 20-40" depth	1.00	Texture=s, fs, cos, or sg	1.00
		Seepage in bottom layer	1.00	Rare flooding	0.40	Rock fragments <75 mm 25-50%	0.70
		Rare flooding	0.50			Permeability >2.0 in/hr	0.50
190:							
Arand very gravelly loam----------	85	Severe		Severe		Poor	
		Seepage in bottom layer	1.00	Seepage in 20-40" depth	1.00	Rock fragments <75 mm >50%	1.00
		Rare flooding	0.50	Rare flooding	0.40	Permeability >2.0 in/hr	0.50
		Sandy textures (cosl, ls, lfs, or lvfs)	0.50			Texture of lcos, ls, lfs, or vfs	0.50
193:							
Westfan gravelly loam-------------	80	Moderate		Moderate		Fair	
		Rare flooding	0.50	Rare flooding	0.40	Rock fragments <75 mm 25-50%	0.08
200:							
Clear Lake clay, occasionally flooded-------------------------	90	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00	Occasional flooding	0.60	Packing (OL, OH, CH, or MH)	1.00
		Wetness <6' depth	1.00			Clay or silty clay	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
204:							
Capay clay, occasionally flooded--	90	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00	Occasional flooding	0.60	Packing (OL, OH, CH, or MH)	1.00
		Wetness <6' depth	1.00			Clay or silty clay	1.00
205:							
Capay clay------------------------	90	Severe		Severe		Poor	
		Clay or silty clay	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Wetness <6' depth	1.00	Rare flooding	0.40	Packing (OL, OH, CH, or MH)	1.00
		Rare flooding	0.50			Clay or silty clay	1.00
206:							
Capay clay------------------------	90	Severe		Severe		Poor	
		Clay or silty clay	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Wetness <6' depth	1.00			Packing (OL, OH, CH, or MH)	1.00
						Clay or silty clay	1.00
210, 211:							
Corval----------------------------	85	Moderate		Moderate		Fair	
		Rare flooding	0.50	Rare flooding	0.40	Silt or clay texture 10-60"	0.50
		Clay loam, silty clay, silty clay loam	0.50			Clay loam, silty clay, silty clay loam	0.50
212:							
Ayar clay-------------------------	85	Severe		Moderate		Poor	
		Clay or silty clay	1.00	Slopes 8 to 15%	0.16	Silty clay or clay 10-60"	1.00
		Lithic or paralithic bedrock <72"	1.00			Packing (OL, OH, CH, or MH)	1.00
		Slopes 8 to 15%	0.16			Clay or silty clay	1.00
213:							
Ayar clay-------------------------	85	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Clay or silty clay	1.00			Silty clay or clay 10-60"	1.00
		Lithic or paralithic bedrock <72"	1.00			Packing (OL, OH, CH, or MH)	1.00
215:							
Altamont silty clay---------------	45	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00			Packing (OL, OH, CH, or MH)	1.00
						Depth to bedrock 40-60"	0.42

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
215:							
Sehorn silty clay-----------------	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic				Packing (OL, OH, CH, or MH)	1.00
		bedrock <72"	1.00			Depth to bedrock <40"	1.00
216:							
Altamont silty clay---------------	45	Severe		Moderate		Poor	
		Lithic or paralithic		Slopes 8 to 15%	0.63	Packing (OL, OH, CH, or MH)	1.00
		bedrock <72"	1.00			Slopes 8 to 15%	0.63
		Slopes 8 to 15%	0.63			Depth to bedrock 40-60"	0.42
Sehorn silty clay-----------------	35	Severe		Moderate		Poor	
		Lithic or paralithic		Slopes 8 to 15%	0.63	Packing (OL, OH, CH, or MH)	1.00
		bedrock <72"	1.00			Depth to bedrock <40"	1.00
		Slopes 8 to 15%	0.63			Slopes 8 to 15%	0.63
218:							
Sehorn silty clay-----------------	45	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic				Packing (OL, OH, CH, or MH)	1.00
		bedrock <72"	1.00			Depth to bedrock <40"	1.00
Altamont silty clay---------------	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic				Packing (OL, OH, CH, or MH)	1.00
		bedrock <72"	1.00			Depth to bedrock 40-60"	0.42
220:							
Altamont silty clay---------------	85	Severe		Slight		Poor	
		Lithic or paralithic				Packing (OL, OH, CH, or MH)	1.00
		bedrock <72"	1.00			Depth to bedrock 40-60"	0.42
221:							
Altamont silty clay---------------	85	Severe		Moderate		Poor	
		Lithic or paralithic		Slopes 8 to 15%	0.63	Packing (OL, OH, CH, or MH)	1.00
		bedrock <72"	1.00			Slopes 8 to 15%	0.63
		Slopes 8 to 15%	0.63			Depth to bedrock 40-60"	0.42
230:							
Corning clay loam-----------------	90	Moderate		Slight		Fair	
		Clay loam, silty clay,				Silt or clay texture 10-60"	0.50
		silty clay loam	0.50			Clay loam, silty clay,	
						silty clay loam	0.50

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
232:							
Maywood gravelly loam, occasionally flooded	85	Severe		Moderate		Good	
		Flooding ≥ occasional	1.00	Occasional flooding	0.60		
		Seepage in bottom layer	1.00				
233:							
Eastpark clay loam	95	Moderate		Slight		Fair	
		Clay loam, silty clay, silty clay loam	0.50			Rock fragments <75 mm 25-50%	0.97
						Silt or clay texture 10-60"	0.50
						Clay loam, silty clay, silty clay loam	0.50
241:							
Contra Costa loam	55	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00			Clay or silty clay	1.00
Altamont silty clay	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00			Packing (OL, OH, CH, or MH)	1.00
						Depth to bedrock 40-60"	0.42
253:							
Millsholm loam	55	Severe		Severe		Poor	
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16
Altamont silty clay	20	Severe		Moderate		Poor	
		Lithic or paralithic bedrock <72"	1.00	Slopes 8 to 15%	0.16	Packing (OL, OH, CH, or MH)	1.00
		Slopes 8 to 15%	0.16			Depth to bedrock 40-60"	0.42
						Slopes 8 to 15%	0.16
Rock outcrop	15	Not rated		Not rated		Not rated	
255:							
Millsholm loam	55	Severe		Severe		Poor	
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
Rock outcrop	35	Not rated		Not rated		Not rated	

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
257:							
Millsholm loam	50	Severe		Severe		Poor	
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
Capay clay	35	Severe		Severe		Poor	
		Clay or silty clay	1.00	Wetness <5' depth	1.00	Silty clay or clay 10-60"	1.00
		Wetness <6' depth	1.00	Rare flooding	0.40	Packing (OL, OH, CH, or MH)	1.00
		Rare flooding	0.50			Clay or silty clay	1.00
261:							
Millsholm loam	60	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
Altamont silty clay	25	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00			Packing (OL, OH, CH, or MH)	1.00
						Depth to bedrock 40-60"	0.42
270:							
Balcom silt loam	55	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		Seepage in bottom layer	1.00				
Ayar clay	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Clay or silty clay	1.00			Silty clay or clay 10-60"	1.00
		Lithic or paralithic bedrock <72"	1.00			Packing (OL, OH, CH, or MH)	1.00
271:							
Balcom silt loam	55	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		Seepage in bottom layer	1.00				
Ayar clay	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Clay or silty clay	1.00			Silty clay or clay 10-60"	1.00
		Lithic or paralithic bedrock <72"	1.00			Packing (OL, OH, CH, or MH)	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill: Limitation	Value	Area sanitary landfill: Limitation	Value	Daily cover for landfill: Limitation	Value
275:							
Goldeagle clay loam	45	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00			Silt or clay texture 10-60"	0.50
		Clay loam, silty clay, silty clay loam	0.50			Clay loam, silty clay, silty clay loam	0.50
Positas gravelly sandy loam	25	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Clay or silty clay	1.00	Seepage in 20-40" depth	1.00	Silty clay or clay 10-60"	1.00
						Packing (OL, OH, CH, or MH)	1.00
Balcom silt loam	15	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		Seepage in bottom layer	1.00				
276:							
Positas gravelly sandy loam	90	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Clay or silty clay	1.00	Seepage in 20-40" depth	1.00	Silty clay or clay 10-60"	1.00
						Packing (OL, OH, CH, or MH)	1.00
280:							
Skyhigh gravelly clay loam	45	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00			Packing (OL, OH, CH, or MH)	1.00
Millsholm loam	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
300:							
Contra Costa loam	55	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00			Clay or silty clay	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
300:							
Millsholm loam	45	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
305:							
Contra Costa loam	85	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00			Clay or silty clay	1.00
311:							
Contra Costa loam	85	Severe		Severe		Poor	
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00	Slopes 8 to 15%	0.63	Clay or silty clay	1.00
		Slopes 8 to 15%	0.63			Depth to bedrock <40"	1.00
312, 313:							
Saltcanyon loam	90	Moderate		Moderate		Fair	
		Rare flooding	0.50	Rare flooding	0.40	Silt or clay texture 10-60"	0.50
		Clay loam, silty clay, silty clay loam	0.50			Clay loam, silty clay, silty clay loam	0.50
315:							
Mallard clay loam	90	Moderate		Slight		Fair	
		Clay loam, silty clay, silty clay loam	0.50			Silt or clay texture 10-60"	0.50
						Clay loam, silty clay, silty clay loam	0.50
316:							
Hillgate loam	90	Slight		Slight		Poor	
						Packing (OL, OH, CH, or MH)	1.00
320:							
Millsholm loam	85	Severe		Severe		Poor	
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
329:							
Sehorn silty clay	40	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00			Packing (OL, OH, CH, or MH)	1.00
						Depth to bedrock <40"	1.00
Millsholm loam	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
Altamont silty clay	15	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00			Packing (OL, OH, CH, or MH)	1.00
						Depth to bedrock 40-60"	0.42
330:							
Millsholm loam	60	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
Contra Costa loam	25	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00			Clay or silty clay	1.00
331:							
Sehorn silty clay	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00			Packing (OL, OH, CH, or MH)	1.00
						Depth to bedrock <40"	1.00
Millsholm loam	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
Rock outcrop	20	Not rated		Not rated		Not rated	
332:							
Millsholm loam	50	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill: Limitation	Value	Area sanitary landfill: Limitation	Value	Daily cover for landfill: Limitation	Value
332:							
Rock outcrop	40	Not rated		Not rated		Not rated	
334:							
Millsholm loam	70	Severe Slopes >15% Lithic or paralithic bedrock <72"	 1.00 1.00	Severe Slopes >15% Bedrock depth <40"	 1.00 1.00	Poor Depth to bedrock <40" Slopes >15%	 1.00 1.00
Contra Costa loam	15	Severe Slopes >15% Lithic or paralithic bedrock <72" Clay or silty clay	 1.00 1.00 1.00	Severe Slopes >15% Bedrock depth <40"	 1.00 1.00	Poor Slopes >15% Silty clay or clay 10-60" Clay or silty clay	 1.00 1.00 1.00
337:							
Millsholm loam	50	Severe Lithic or paralithic bedrock <72" Slopes 8 to 15%	 1.00 0.16	Severe Bedrock depth <40" Slopes 8 to 15%	 1.00 0.16	Poor Depth to bedrock <40" Slopes 8 to 15%	 1.00 0.16
Saltcanyon loam	35	Moderate Clay loam, silty clay, silty clay loam Slopes 8 to 15%	 0.50 0.04	Moderate Slopes 8 to 15%	 0.04	Fair Silt or clay texture 10-60" Clay loam, silty clay, silty clay loam Slopes 8 to 15%	 0.50 0.50 0.04
345:							
Skyhigh gravelly clay loam	40	Severe Slopes >15% Lithic or paralithic bedrock <72" Clay or silty clay	 1.00 1.00 1.00	Severe Slopes >15% Bedrock depth <40"	 1.00 1.00	Poor Slopes >15% Silty clay or clay 10-60" Packing (OL, OH, CH, or MH)	 1.00 1.00 1.00
Sleeper clay loam	30	Severe Slopes >15% Lithic or paralithic bedrock <72" Clay or silty clay	 1.00 1.00 1.00	Severe Slopes >15% Bedrock depth from 40-60"	 1.00 0.42	Poor Slopes >15% Silty clay or clay 10-60" Clay or silty clay	 1.00 1.00 1.00
Millsholm loam	15	Severe Slopes >15% Lithic or paralithic bedrock <72"	 1.00 1.00	Severe Slopes >15% Bedrock depth <40"	 1.00 1.00	Poor Depth to bedrock <40" Slopes >15%	 1.00 1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
346:							
Skyhigh gravelly clay loam--------	45	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00			Packing (OL, OH, CH, or MH)	1.00
Millsholm loam--------------------	20	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
Sleeper clay loam-----------------	20	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth from 40-60"	0.42	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00			Clay or silty clay	1.00
347:							
Boar loam-------------------------	45	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Clay or silty clay	1.00			Silty clay or clay 10-60"	1.00
		Lithic or paralithic bedrock <72"	1.00			Packing (OL, OH, CH, or MH)	1.00
Sleeper clay loam-----------------	40	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth from 40-60"	0.42	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00			Clay or silty clay	1.00
348:							
Boar loam-------------------------	45	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Clay or silty clay	1.00			Silty clay or clay 10-60"	1.00
		Lithic or paralithic bedrock <72"	1.00			Packing (OL, OH, CH, or MH)	1.00
Sleeper clay loam-----------------	40	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth from 40-60"	0.42	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00			Clay or silty clay	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
350:							
Haploxererts----------------------	80	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Seepage in bottom layer	1.00			Packing (OL, OH, CH, or MH)	1.00
		Clay or silty clay	1.00			Silty clay or clay 10-60"	1.00
355:							
Venado clay-----------------------	80	Severe		Severe		Poor	
		Wetness <6' depth	1.00	Wetness <5' depth	1.00	Packing (OL, OH, CH, or MH)	1.00
						Wetness 18-40" depth	0.86
360:							
Bearvalley gravelly sandy loam----	85	Severe		Severe		Poor	
		Seepage in bottom layer	1.00	Seepage in 20-40" depth	1.00	Rock fragments <75 mm >50%	1.00
		Sandy textures (cosl, ls, lfs, or lvfs)	0.50			Permeability >2.0 in/hr	1.00
						Texture of lcos, ls, lfs, or vfs	0.50
365:							
Leesville clay loam---------------	85	Severe		Severe		Poor	
		Seepage in bottom layer	1.00	Seepage in 20-40" depth	1.00	Permeability >2.0 in/hr	1.00
		Sandy textures (cosl, ls, lfs, or lvfs)	0.50			Rock fragments <75 mm 25-50%	0.69
						Texture of lcos, ls, lfs, or vfs	0.50
366:							
Leesville clay loam---------------	85	Severe		Severe		Poor	
		Seepage in bottom layer	1.00	Seepage in 20-40" depth	1.00	Permeability >2.0 in/hr	1.00
		Sandy textures (cosl, ls, lfs, or lvfs)	0.50			Rock fragments <75 mm 25-50%	0.69
						Texture of lcos, ls, lfs, or vfs	0.50
370:							
Livermore very gravelly loam------	90	Severe		Slight		Poor	
		Seepage in bottom layer	1.00			Rock fragments <75 mm >50%	1.00
						Permeability >2.0 in/hr	0.21
371:							
Buttes gravelly sandy loam--------	50	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
				Seepage in 20-40" depth	1.00	Rock fragments <75 mm >50%	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
371:							
Millsholm loam	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
519:							
Stonyford gravelly loam	50	Severe		Severe		Poor	
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		Clay loam, silty clay, silty clay loam	0.50	Slopes 8 to 15%	0.16	Silt or clay texture 10-60"	0.50
		Slopes 8 to 15%	0.16			Clay loam, silty clay, silty clay loam	0.50
Guenoc loam	30	Severe		Severe		Poor	
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		Slopes 8 to 15%	0.16	Slopes 8 to 15%	0.16	Silt or clay texture 10-60"	0.50
						Packing (OL, OH, CH, or MH) and kaolinitic	0.50
520, 521:							
Stonyford gravelly loam	65	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
		Clay loam, silty clay, silty clay loam	0.50			Silt or clay texture 10-60"	0.50
Guenoc loam	15	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
						Silt or clay texture 10-60"	0.50
524:							
Arand, frequently flooded	65	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Seepage in 20-40" depth	1.00	Texture=s, fs, cos, or sg	1.00
		Sandy textures (cos, s, fs, lcos, or vfs)	1.00	Frequent flooding	0.80	Rock fragments <75 mm 25-50%	0.70
		Seepage in bottom layer	1.00			Permeability >2.0 in/hr	0.50
Riverwash	25	Severe		Severe		Poor	
		Flooding ≥ occasional	1.00	Wetness <5' depth	1.00	Texture=s, fs, cos, or sg	1.00
		Wetness <6' depth	1.00	Seepage in 20-40" depth	1.00	Wetness <18" depth	1.00
		Sandy textures (cos, s, fs, lcos, or vfs)	1.00	Frequent flooding	0.80	Permeability >2.0 in/hr	0.50

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
526:							
Etsel gravelly sandy loam---------	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
						Rock fragments <75 mm 25-50%	0.99
Maymen sandy loam-----------------	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
						Permeability >2.0 in/hr	0.50
Marpa very gravelly sandy loam----	20	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
						Rock fragments <75 mm >50%	1.00
527:							
Maymen sandy loam-----------------	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
						Permeability >2.0 in/hr	0.50
Etsel gravelly sandy loam---------	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
						Rock fragments <75 mm 25-50%	0.99
Speaker gravelly loam-------------	20	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		Clay loam, silty clay, silty clay loam	0.50			Silt or clay texture 10-60"	0.50
528:							
Maymen sandy loam-----------------	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
						Permeability >2.0 in/hr	0.50

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
528:							
Etsel gravelly sandy loam---------	25	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Slopes >15%	1.00
		bedrock <72"	1.00			Rock fragments <75 mm	
						25-50%	0.99
Snook gravelly sandy loam---------	25	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Slopes >15%	1.00
		bedrock <72"	1.00			Rock fragments <75 mm	
						25-50%	0.64
529:							
Maymen sandy loam-----------------	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Slopes >15%	1.00
		bedrock <72"	1.00			Permeability >2.0 in/hr	0.50
Etsel gravelly sandy loam---------	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Slopes >15%	1.00
		bedrock <72"	1.00			Rock fragments <75 mm	
						25-50%	0.99
Mayacama gravelly coarse sandy loam----------------------------	20	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		bedrock <72"	1.00	Seepage in 20-40" depth	1.00	Rock fragments <75 mm	
						25-50%	0.98
542:							
Okiota loam-----------------------	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Slopes >15%	1.00
		bedrock <72"	1.00			Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00				
Dubakella gravelly clay loam------	25	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Rock fragments <75 mm >50%	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Slopes >15%	1.00
		bedrock <72"	1.00			Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00				

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
542:							
Henneke sandy loam	25	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
		Clay or silty clay	1.00			Silty clay or clay 10-60"	1.00
545:							
Henneke sandy loam	40	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
		Clay or silty clay	1.00			Silty clay or clay 10-60"	1.00
Montara gravelly sandy loam	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
						Rock fragments <75 mm 25-50%	0.32
Rock outcrop	15	Not rated		Not rated		Not rated	
548, 549:							
Henneke sandy loam	45	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
		Clay or silty clay	1.00			Silty clay or clay 10-60"	1.00
Okiota loam	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
		Clay or silty clay	1.00			Silty clay or clay 10-60"	1.00
						Rock fragments <75 mm 25-50%	0.08
557:							
Neuns very gravelly loam	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
						Rock fragments <75 mm >50%	1.00
Bamtush very gravelly loam	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00			Rock fragments <75 mm >50%	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill: Limitation	Value	Area sanitary landfill: Limitation	Value	Daily cover for landfill: Limitation	Value
557:							
Speaker gravelly loam	20	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		Clay loam, silty clay, silty clay loam	0.50			Silt or clay texture 10-60"	0.50
564:							
Fouts gravelly loam	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Silty clay or clay 10-60"	1.00
		Clay or silty clay	1.00			Packing (OL, OH, CH, or MH)	1.00
Yorkville clay loam	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Clay or silty clay	1.00			Silty clay or clay 10-60"	1.00
		Lithic or paralithic bedrock <72"	1.00			Clay or silty clay	1.00
Squawrock gravelly loam	15	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		Clay loam, silty clay, silty clay loam	0.50			Rock fragments <75 mm >50%	1.00
570:							
Endoaquolls, frequently ponded	90	Severe		Severe		Poor	
		Wetness <6' depth	1.00	Ponding (any duration)	1.00	Ponding (any duration)	1.00
		Ponding (any duration)	1.00	Wetness <5' depth	1.00	Wetness <18" depth	1.00
		Clay loam, silty clay, silty clay loam	0.50			Silt or clay texture 10-60"	0.50
590:							
Neuns very gravelly loam	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
						Rock fragments <75 mm >50%	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
590:							
Marpa very gravelly sandy loam----	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		bedrock <72"	1.00			Rock fragments <75 mm >50%	1.00
Goulding gravelly loam------------	20	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Slopes >15%	1.00
		bedrock <72"	1.00			Rock fragments <75 mm >50%	1.00
591:							
Neuns very gravelly loam----------	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		bedrock <72"	1.00			Rock fragments <75 mm >50%	1.00
Sheetiron gravelly sandy loam-----	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		bedrock <72"	1.00	Seepage in 20-40" depth	1.00	Rock fragments <75 mm >50%	1.00
		Seepage in bottom layer	1.00				
Goulding gravelly loam------------	20	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Slopes >15%	1.00
		bedrock <72"	1.00			Rock fragments <75 mm >50%	1.00
592:							
Neuns very gravelly loam----------	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		bedrock <72"	1.00			Rock fragments <75 mm >50%	1.00
Goulding gravelly loam------------	25	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Slopes >15%	1.00
		bedrock <72"	1.00			Rock fragments <75 mm >50%	1.00
Sheetiron gravelly sandy loam-----	25	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic		Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
		bedrock <72"	1.00	Seepage in 20-40" depth	1.00	Rock fragments <75 mm >50%	1.00
		Seepage in bottom layer	1.00				

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
596:							
Yollabolly very gravelly loam-----	40	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
						Rock fragments <75 mm >50%	1.00
Rock outcrop----------------------	35	Not rated		Not rated		Not rated	
Freezeout very gravelly sandy loam----------------------------	20	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
				Seepage in 20-40" depth	1.00	Rock fragments <75 mm >50%	1.00
597:							
Yollabolly very gravelly loam-----	55	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
						Rock fragments <75 mm >50%	1.00
Freezeout very gravelly sandy loam----------------------------	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
				Seepage in 20-40" depth	1.00	Rock fragments <75 mm >50%	1.00
599:							
Freezeout very gravelly sandy loam----------------------------	55	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
				Seepage in 20-40" depth	1.00	Rock fragments <75 mm >50%	1.00
Yollabolly very gravelly loam-----	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
						Rock fragments <75 mm >50%	1.00
600:							
Freezeout very gravelly sandy loam----------------------------	50	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
				Seepage in 20-40" depth	1.00	Rock fragments <75 mm >50%	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
600:							
Yollabolly very gravelly loam-----	35	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
						Rock fragments <75 mm >50%	1.00
610:							
Neuns very gravelly loam----------	40	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
						Rock fragments <75 mm >50%	1.00
Bamtush very gravelly loam--------	25	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00			Rock fragments <75 mm >50%	1.00
Goulding gravelly loam------------	20	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Depth to bedrock <40"	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Slopes >15%	1.00
						Rock fragments <75 mm >50%	1.00
650:							
Bamtush very gravelly loam--------	55	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00			Rock fragments <75 mm >50%	1.00
Marpa very gravelly sandy loam----	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
						Rock fragments <75 mm >50%	1.00
651:							
Bamtush very gravelly loam--------	55	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00			Rock fragments <75 mm >50%	1.00

Table 17.--Sanitary Facilities (Part 2)--Continued

Map symbol and soil name	Pct.	Trench sanitary landfill		Area sanitary landfill		Daily cover for landfill	
		Limitation	Value	Limitation	Value	Limitation	Value
651:							
Marpa very gravelly sandy loam----	30	Severe		Severe		Poor	
		Slopes >15%	1.00	Slopes >15%	1.00	Slopes >15%	1.00
		Lithic or paralithic bedrock <72"	1.00	Bedrock depth <40"	1.00	Depth to bedrock <40"	1.00
						Rock fragments <75 mm >50%	1.00

The interpretation for *trench sanitary landfills* evaluates the following soil properties at varying depths in the soil: flooding, ponding, wetness, slope, depth to hard or soft bedrock, depth to a thick or thin cemented pan, rock fragments 3 to 10 inches in size, sodium content (SAR), soil pH, clayey or sandy textures, and permeability that is too rapid, allowing seepage in some climates.

The interpretation for *area sanitary landfills* evaluates the following soil properties at varying depths in the soil: flooding, ponding, wetness, slope, depth to bedrock, depth to a cemented pan, and permeability that is too rapid, allowing seepage in some climates.

The interpretation for *daily cover for landfill* evaluates the following soil properties at varying depths in the soil: ponding, wetness, slope, depth to bedrock, depth to a cemented pan, rock fragments more than or less than 3 inches in size, Unified classes for peat (PT), Unified classes for packing (OL, OH, CH, and MH), sandy or clayey textures, soil pH, carbonates, sodium content (SAR), salinity (EC), soil climate, kaolinitic mineralogy, and permeability that is too rapid, allowing seepage.

Table 18.--Construction Materials (Part 1)

(The information in this table is based on Pacific Southwest MLRA Office interpretations. It indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.0 to 0.9. The closer the value is to 0.0, the greater the potential limitation. Values of 0.0 are absolute limitations based on the soil property criteria used to develop the interpretation. Values closer to 1.0 indicate lesser limitations. Features with a value of 1.0 have absolutely no limitation and are not shown in the table. Rating classes are determined by the most limiting value. Fine-earth fractions and rock fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in describing the limitations is given at the end of the table.)

Map symbol and soil name	Pct.	Potential as a source of gravel		Potential as a source of sand		Potential as a source of topsoil	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
100:							
Capay clay loam	90	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
101:							
Capay silty clay	90	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	SAR 4 to 13	0.6
102, 103:							
Capay clay loam	90	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
104, 105, 106:							
Willows silty clay, frequently flooded	90	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	EC >8 mmhos	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	SAR >13	0.0
						Clay >40%	0.0
107, 108, 109:							
Scribner silt loam, occasionally flooded	80	Poor		Poor		Fair	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Wetness from 1 to 3'	0.1
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
110:							
Hustabel sandy loam	80	Poor		Fair		Fair	
		Bottom layer not a source	0.0	Thickest layer not a source	0.0	SAR 4 to 13	0.9
		Thickest layer not a source due to fines or a thin layer	0.0	Bottom layer a possible source	0.1		

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
112:							
Westfan loam	80	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
113:							
Westfan loam, sodic	85	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
114:							
Westfan clay loam	80	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
115, 116, 117, 118:							
Clear Lake clay	90	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	SAR 4 to 13	0.9
124, 125, 126:							
Moonbend silt loam	80	Poor		Poor		Fair	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay 27 to 40%	0.6
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
127:							
Mallard clay loam	85	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
128:							
Mallard loam	85	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
129:							
Mallard clay loam, occasionally flooded	85	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
130, 131, 133:							
Corbiere silt loam	85	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	SAR 4 to 13	0.0
						Wetness from 1 to 3'	0.5
136:							
Colusa loam	85	Poor		Fair		Poor	
		Bottom layer not a source	0.0	Thickest layer not a source	0.0	EC >8 mmhos	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Bottom layer a possible source	0.1	SAR >13	0.0
141:							
Myers clay	90	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
144:							
Hillgate clay loam	85	Poor		Poor		Fair	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay 27 to 40%	0.8
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
145, 147:							
Hillgate loam	90	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
150:							
Arbuckle sandy loam	85	Poor		Poor		Fair	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.1
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Hard to reclaim	0.2

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
151:							
Arbuckle sandy loam	50	Poor		Poor		Fair	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.1
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Hard to reclaim	0.2
Hillgate loam	40	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
152:							
Arbuckle gravelly loam	85	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Hard to reclaim	0.7
						Clay 27 to 40%	0.8
155:							
Alcapay clay	90	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	SAR 4 to 13	0.4
160:							
Grandbend loam	80	Poor		Fair		Fair	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Wetness from 1 to 3'	0.9
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer a possible source	0.1		
170:							
Vina loam, frequently flooded	80	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
171:							
Vina loam	85	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
172:							
Vina fine sandy loam, frequently flooded	80	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
174:							
Vina loam, occasionally flooded	85	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
175:							
Tujunga loam, overwash, frequently flooded	85	Poor		Fair		Fair	
		Bottom layer not a source	0.0	Bottom layer a possible source	0.2	Sand fractions 75-85%	0.2
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer a possible source	0.2		
176:							
Columbia fine sandy loam, frequently flooded	80	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
177:							
Holillipah loamy sand, channeled	80	Poor		Fair		Good	
		Bottom layer not a source	0.0	Bottom layer a possible source	0.1		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer a possible source	0.1		
185:							
Riverwash	95	Poor		Fair		Poor	
		Bottom layer not a source	0.0	Thickest layer a possible source	0.1	Wetness >3' depth	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Bottom layer a possible source	0.1	Content of rock fragments	0.9
187:							
Westfan loam, occasionally flooded	85	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
188:							
Westfan loam, clay substratum-----	80	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
189:							
Arand very gravelly sandy loam----	85	Poor		Fair		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer a possible source	0.1	Hard to reclaim	0.0
190:							
Arand very gravelly loam----------	85	Fair		Poor		Poor	
		Thickest layer possible source	0.6	Bottom layer not a source	0.0	Hard to reclaim	0.0
		Bottom layer a possible source	0.6	Thickest layer not a source	0.0	Content of rock fragments	0.0
193:							
Westfan gravelly loam-------------	80	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Hard to reclaim	0.9
200:							
Clear Lake clay, occasionally flooded-------------------------	90	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	SAR 4 to 13	0.9
204, 205, 206:							
Capay clay------------------------	90	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
210, 211:							
Corval----------------------------	85	Poor		Poor		Fair	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay 27 to 40%	0.9
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
212:							
Ayar clay	85	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope 8 to 12%	0.8
213:							
Ayar clay	85	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
215:							
Altamont silty clay	45	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Hard to reclaim	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
						Slope >15%	0.0
Sehorn silty clay	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
216:							
Altamont silty clay	45	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Hard to reclaim	0.0
						Slope 12 to 15%	0.4
Sehorn silty clay	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope 12 to 15%	0.4
						Depth to bedrock 20 to 40"	0.5
218:							
Sehorn silty clay	45	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
Altamont silty clay	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Hard to reclaim	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
						Slope >15%	0.0

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
220:							
Altamont silty clay	85	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Hard to reclaim	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
221:							
Altamont silty clay	85	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Hard to reclaim	0.0
						Slope 12 to 15%	0.4
230:							
Corning clay loam	90	Fair		Poor		Fair	
		Thickest layer not a source due to fines or a thin layer	0.0	Bottom layer not a source	0.0	Clay 27 to 40%	0.8
		Bottom layer a possible source	0.1	Thickest layer not a source	0.0		
232:							
Maywood gravelly loam, occasionally flooded	85	Poor		Fair		Good	
		Bottom layer not a source	0.0	Thickest layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Bottom layer a possible source	0.1		
233:							
Eastpark clay loam	95	Fair		Poor		Poor	
		Thickest layer possible source	0.3	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Bottom layer a possible source	0.5	Thickest layer not a source	0.0	Clay 27 to 40%	0.9
241:							
Contra Costa loam	55	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
Altamont silty clay	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Hard to reclaim	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
						Slope >15%	0.0
253:							
Millsholm loam	55	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.5
						Slope 8 to 12%	0.8

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
253:							
Altamont silty clay	20	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Hard to reclaim	0.0
						Slope 8 to 12%	0.8
Rock outcrop	15	Not rated		Not rated		Not rated	
255:							
Millsholm loam	55	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Content of rock fragments	0.5
Rock outcrop	35	Not rated		Not rated		Not rated	
257:							
Millsholm loam	50	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.5
Capay clay	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
261:							
Millsholm loam	60	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
						Content of rock fragments	0.5
Altamont silty clay	25	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Hard to reclaim	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
						Slope >15%	0.0
270:							
Balcom silt loam	55	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock 20 to 40"	0.7
						Calcium carbonates 15-40%	0.9
						Content of rock fragments	0.9

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
270:							
Ayar clay-------------------------	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
271:							
Balcom silt loam------------------	55	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock 20 to 40"	0.7
						Calcium carbonates 15-40%	0.9
						Content of rock fragments	0.9
Ayar clay-------------------------	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
275:							
Goldeagle clay loam---------------	45	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
Positas gravelly sandy loam-------	25	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
						Hard to reclaim	0.0
						Content of rock fragments	0.5
Balcom silt loam------------------	15	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock 20 to 40"	0.7
						Calcium carbonates 15-40%	0.9
						Content of rock fragments	0.9
276:							
Positas gravelly sandy loam-------	90	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
						Hard to reclaim	0.0
						Content of rock fragments	0.5

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
280:							
Skyhigh gravelly clay loam--------	45	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Content of rock fragments	0.0
						Depth to bedrock 20 to 40"	0.5
Millsholm loam-------------------	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
						Content of rock fragments	0.5
300:							
Contra Costa loam----------------	55	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
Millsholm loam-------------------	45	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
						Content of rock fragments	0.5
305:							
Contra Costa loam----------------	85	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
311:							
Contra Costa loam----------------	85	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope 12 to 15%	0.4
						Depth to bedrock 20 to 40"	0.5
312, 313:							
Saltcanyon loam------------------	90	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
315:							
Mallard clay loam----------------	90	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
316:							
Hillgate loam	90	Poor		Poor		Good	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0		
		Thickest layer not a source		Thickest layer not a source	0.0		
		due to fines or a thin layer	0.0				
320:							
Millsholm loam	85	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source		Thickest layer not a source	0.0	Slope >15%	0.0
		due to fines or a thin layer	0.0			Content of rock fragments	0.5
329:							
Sehorn silty clay	40	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source		Thickest layer not a source	0.0	Slope >15%	0.0
		due to fines or a thin layer	0.0				
						Depth to bedrock 20 to 40"	0.5
Millsholm loam	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source		Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
		due to fines or a thin layer	0.0			Content of rock fragments	0.5
Altamont silty clay	15	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Hard to reclaim	0.0
		Thickest layer not a source		Thickest layer not a source	0.0	Clay >40%	0.0
		due to fines or a thin layer	0.0			Slope >15%	0.0
330:							
Millsholm loam	60	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source		Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
		due to fines or a thin layer	0.0			Content of rock fragments	0.5
Contra Costa loam	25	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source		Thickest layer not a source	0.0	Slope >15%	0.0
		due to fines or a thin layer	0.0			Depth to bedrock 20 to 40"	0.5
331:							
Sehorn silty clay	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source		Thickest layer not a source	0.0	Slope >15%	0.0
		due to fines or a thin layer	0.0			Depth to bedrock 20 to 40"	0.5

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
331:							
Millsholm loam	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
						Content of rock fragments	0.5
Rock outcrop	20	Not rated		Not rated		Not rated	
332:							
Millsholm loam	50	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
						Content of rock fragments	0.5
Rock outcrop	40	Not rated		Not rated		Not rated	
334:							
Millsholm loam	70	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
						Content of rock fragments	0.5
Contra Costa loam	15	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
337:							
Millsholm loam	50	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.5
						Slope 8 to 12%	0.8
Saltcanyon loam	35	Poor		Poor		Fair	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope 8 to 12%	0.9
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0		
345:							
Skyhigh gravelly clay loam	40	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Content of rock fragments	0.0
						Depth to bedrock 20 to 40"	0.5

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
345:							
Sleeper clay loam	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
Millsholm loam	15	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
						Content of rock fragments	0.5
346:							
Skyhigh gravelly clay loam	45	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Content of rock fragments	0.0
						Depth to bedrock 20 to 40"	0.5
Millsholm loam	20	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
						Content of rock fragments	0.5
Sleeper clay loam	20	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
347, 348:							
Boar loam	45	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
Sleeper clay loam	40	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
350:							
Haploxererts	80	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
						Hard to reclaim	0.1
						Content of rock fragments	0.9

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
355:							
Venado clay-----------------------	80	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Wetness from 1 to 3'	0.5
360:							
Bearvalley gravelly sandy loam----	85	Fair		Poor		Poor	
		Bottom layer a possible source	0.2	Bottom layer not a source	0.0	Hard to reclaim	0.0
		Thickest layer possible source	0.2	Thickest layer not a source	0.0	Content of rock fragments	0.0
365, 366:							
Leesville clay loam---------------	85	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Hard to reclaim	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.7
370:							
Livermore very gravelly loam------	90	Fair		Poor		Poor	
		Bottom layer a possible source	0.2	Bottom layer not a source	0.0	Hard to reclaim	0.0
		Thickest layer possible source	0.2	Thickest layer not a source	0.0	Content of rock fragments	0.0
371:							
Buttes gravelly sandy loam--------	50	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
Millsholm loam--------------------	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
						Content of rock fragments	0.5
519:							
Stonyford gravelly loam-----------	50	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
						Slope 8 to 12%	0.8
						Clay 27 to 40%	0.9
Guenoc loam-----------------------	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock 20 to 40"	0.5
						Slope 8 to 12%	0.8
						Content of rock fragments	0.9

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
520, 521:							
Stonyford gravelly loam	65	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock <20"	0.0
						Clay 27 to 40%	0.9
Guenoc loam	15	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
						Content of rock fragments	0.9
Arand, frequently flooded	65	Poor		Fair		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer a possible source	0.1	Hard to reclaim	0.0
Riverwash	25	Poor		Fair		Poor	
		Bottom layer not a source	0.0	Thickest layer a possible source	0.1	Wetness >3' depth	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Bottom layer a possible source	0.1	Content of rock fragments	0.9
526:							
Etsel gravelly sandy loam	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.0
						Depth to bedrock <20"	0.0
Maymen sandy loam	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock <20"	0.0
Marpa very gravelly sandy loam	20	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.0
						Depth to bedrock 20 to 40"	0.5
						Clay 27 to 40%	0.9
527:							
Maymen sandy loam	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock <20"	0.0

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
527:							
Etsel gravelly sandy loam	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.0
						Depth to bedrock <20"	0.0
Speaker gravelly loam	20	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.3
						Depth to bedrock 20 to 40"	0.5
528:							
Maymen sandy loam	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock <20"	0.0
Etsel gravelly sandy loam	25	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.0
						Depth to bedrock <20"	0.0
Snook gravelly sandy loam	25	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.0
						Depth to bedrock <20"	0.0
529:							
Maymen sandy loam	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock <20"	0.0
Etsel gravelly sandy loam	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.0
						Depth to bedrock <20"	0.0
Mayacama gravelly coarse sandy loam	20	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
542:							
Okiota loam	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock <20"	0.0
						Content of rock fragments	0.9
Dubakella gravelly clay loam	25	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.0
						Clay >40%	0.0
						Depth to bedrock 20 to 40"	0.5
Henneke sandy loam	25	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
						Slope >15%	0.0
						Content of rock fragments	0.0
545:							
Henneke sandy loam	40	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
						Slope >15%	0.0
						Content of rock fragments	0.0
Montara gravelly sandy loam	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Depth to bedrock <20"	0.0
						Slope >15%	0.0
Rock outcrop	15	Not rated		Not rated		Not rated	
548, 549:							
Henneke sandy loam	45	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay >40%	0.0
						Slope >15%	0.0
						Content of rock fragments	0.0
Okiota loam	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock <20"	0.0
						Content of rock fragments	0.9

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
557:							
Neuns very gravelly loam----------	35	Fair		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer possible source	0.1	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
Bamtush very gravelly loam--------	30	Fair		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer possible source	0.2	Thickest layer not a source	0.0	Hard to reclaim	0.0
						Content of rock fragments	0.0
Speaker gravelly loam-------------	20	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.3
						Depth to bedrock 20 to 40"	0.5
564:							
Fouts gravelly loam---------------	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.0
						Clay >40%	0.0
						Depth to bedrock 20 to 40"	0.5
Yorkville clay loam---------------	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Clay >40%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
Squawrock gravelly loam-----------	15	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.0
						Depth to bedrock 20 to 40"	0.5
						Clay 27 to 40%	0.8
570:							
Endoaquolls, frequently ponded----	90	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Wetness >3' depth	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Clay 27 to 40%	0.7
						Hard to reclaim	0.9
590:							
Neuns very gravelly loam----------	35	Fair		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer possible source	0.1	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
590:							
Marpa very gravelly sandy loam	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.0
						Depth to bedrock 20 to 40"	0.5
						Clay 27 to 40%	0.9
Goulding gravelly loam	20	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Content of rock fragments	0.0
591:							
Neuns very gravelly loam	35	Fair		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer possible source	0.1	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
Sheetiron gravelly sandy loam	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
Goulding gravelly loam	20	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Content of rock fragments	0.0
592:							
Neuns very gravelly loam	35	Fair		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer possible source	0.1	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
Goulding gravelly loam	25	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Content of rock fragments	0.0
Sheetiron gravelly sandy loam	25	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
596:							
Yollabolly very gravelly loam-----	40	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Content of rock fragments	0.0
Rock outcrop---------------------	35	Not rated		Not rated		Not rated	
Freezeout very gravelly sandy loam----------------------------	20	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
597:							
Yollabolly very gravelly loam-----	55	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Content of rock fragments	0.0
Freezeout very gravelly sandy loam----------------------------	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
599:							
Freezeout very gravelly sandy loam----------------------------	55	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
Yollabolly very gravelly loam-----	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Content of rock fragments	0.0
600:							
Freezeout very gravelly sandy loam----------------------------	50	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5

Table 18.--Construction Materials (Part 1)--Continued

Map symbol and soil name	Pct.	Potential as a source of gravel: Rating class and limiting features	Value	Potential as a source of sand: Rating class and limiting features	Value	Potential as a source of topsoil: Rating class and limiting features	Value
600:							
Yollabolly very gravelly loam	35	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Content of rock fragments	0.0
610:							
Neuns very gravelly loam	40	Fair		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Content of rock fragments	0.0
		Thickest layer possible source	0.1	Thickest layer not a source	0.0	Slope >15%	0.0
						Depth to bedrock 20 to 40"	0.5
Bamtush very gravelly loam	25	Fair		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer possible source	0.2	Thickest layer not a source	0.0	Hard to reclaim	0.0
						Content of rock fragments	0.0
Goulding gravelly loam	20	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Depth to bedrock <20"	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Slope >15%	0.0
						Content of rock fragments	0.0
650, 651:							
Bamtush very gravelly loam	55	Fair		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer possible source	0.2	Thickest layer not a source	0.0	Hard to reclaim	0.0
						Content of rock fragments	0.0
Marpa very gravelly sandy loam	30	Poor		Poor		Poor	
		Bottom layer not a source	0.0	Bottom layer not a source	0.0	Slope >15%	0.0
		Thickest layer not a source due to fines or a thin layer	0.0	Thickest layer not a source	0.0	Content of rock fragments	0.0
						Depth to bedrock 20 to 40"	0.5
						Clay 27 to 40%	0.9

The interpretation for *gravel* evaluates rock fragments more than .2 inch in size in the bottom layer or in the thickest layer of the soil.

The interpretation for *sand* evaluates the amount of sand and fine gravel in the thickest layer or in the bottom layer of the soil. Organic soil layers with the Unified engineering class for peat (PT) also are evaluated.

The interpretation for *topsoil* evaluates the following soil properties at various depths: calcium carbonates, clay content, bulk density, sand content, soil wetness, rock fragments .2 inch to 3 inches in size and more than 3 inches in size, content of organic matter (OM), sodium content expressed as the sodium adsorption ratio (SAR), salinity expressed as mmhos/cm of electrical conductivity (EC), depth to bedrock, slope, and soil pH.

Table 19.--Construction Materials (Part 2)

(The information in this table is based on Pacific Southwest MLRA Office interpretations. It 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 closer the value is to 0.00, the greater the potential limitation. Values of 0.00 indicate absolute limitations based on the soil property criteria used to develop the interpretation. Values closer to 1.0 indicate lesser limitations. Features with a value of 1.00 have absolutely no limitation and are not shown in the table. Rating classes are determined by the most limiting value. Fine-earth fractions and rock fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in describing the limitations is given at the end of the table.)

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
100:					
Capay clay loam, occasionally flooded	90	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
				LEP 3 to 9	0.25
101:					
Capay silty clay, frequently flooded	90	Poor		Poor	
		OM <.5%	0.00	AASHTO GI >8	0.00
		Clay >40%	0.00	LEP 3 to 9	0.25
102:					
Capay clay loam	90	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
				LEP 3 to 9	0.25
103:					
Capay clay loam, frequently flooded	90	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
				LEP 3 to 9	0.25
104, 105, 106:					
Willows silty clay	90	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		SAR >13	0.00	LEP 3 to 9	0.12
		Maximum pH >8.5	0.00		
		OM of .5 to 1%	0.32		
		EC 8 to 16 mmhos/cm	0.45		
107, 108, 109:					
Scribner silt loam	80	Fair		Poor	
		OM of .5 to 1%	0.18	AASHTO GI >8	0.00
		K factor .10-.35	0.90	Wetness from 1 to 3'	0.14
110:					
Hustabel sandy loam	80	Fair		Good	
		K factor .10-.35	0.90		
		SAR from 4 to 13	0.97		
112, 113:					
Westfan loam	80	Poor		Good	
		Maximum pH >8.5	0.00		
		K factor <.10	0.99		
		SAR <4	1.00		
114:					
Westfan clay loam	80	Good		Poor	
				AASHTO GI >8	0.00
				LEP 3 to 9	0.75

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
115, 116, 117, 118:					
Clear Lake clay	90	Poor		Poor	
		Clay >40%	0.00	LEP >9	0.00
		SAR from 4 to 13	0.90	AASHTO GI >8	0.00
124, 125, 126:					
Moonbend silt loam	80	Fair		Poor	
		Clay 27 to 40%	0.56	AASHTO GI >8	0.00
		K factor .10-.35	0.90	LEP 3 to 9	0.78
127:					
Mallard clay loam	85	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
				LEP 3 to 9	0.57
128:					
Mallard loam	85	Good		Poor	
				AASHTO GI >8	0.00
				LEP 3 to 9	0.59
129:					
Mallard clay loam, occasionally flooded	85	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
				LEP 3 to 9	0.57
130, 131, 133:					
Corbiere silt loam	85	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		Maximum pH >8.5	0.00	LEP 3 to 9	0.28
		SAR from 4 to 13	0.40	Wetness from 1 to 3'	0.53
		K factor .10-.35	0.90		
		OM of .5 to 1%	0.98		
136:					
Colusa loam	85	Poor		Fair	
		SAR >13	0.00	LEP 3 to 9	0.98
		AWC <3" to 60" depth	0.00		
		Maximum pH >8.5	0.00		
		pH of 4 to 5 to 40" or <5 below 40"	0.50		
		K factor .10-.35	0.68		
		EC 8 to 16 mmhos/cm	0.90		
		OM of .5 to 1%	0.97		
141:					
Myers clay	90	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
				LEP 3 to 9	0.25
144:					
Hillgate clay loam	85	Fair		Poor	
		AWC 3-6" to 60" depth	0.09	AASHTO GI >8	0.00
		Clay 27 to 40%	0.76	LEP 3 to 9	0.75
145, 147:					
Hillgate loam	90	Fair		Poor	
		AWC 3-6" to 60" depth	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.08		

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
150:					
Arbuckle sandy loam---------------	85	Poor		Fair	
		OM <.5%	0.00	LEP 3 to 9	0.91
151:					
Arbuckle sandy loam---------------	50	Poor		Fair	
		OM <.5%	0.00	LEP 3 to 9	0.91
Hillgate loam---------------------	40	Fair		Poor	
		AWC 3-6" to 60" depth	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.08		
152:					
Arbuckle gravelly loam------------	85	Poor		Fair	
		OM <.5%	0.00	AASHTO GI 5 to 8	0.78
		Clay 27 to 40%	0.76	LEP 3 to 9	0.83
155:					
Alcapay clay----------------------	90	Poor		Poor	
		Maximum pH >8.5	0.00	AASHTO GI >8	0.00
		Clay >40%	0.00	LEP 3 to 9	0.25
		SAR from 4 to 13	0.40		
		OM of .5 to 1%	0.50		
160:					
Grandbend loam----------------- --	80	Good		Fair	
		K factor <.10	0.99	LEP 3 to 9	0.70
				Wetness from 1 to 3'	0.89
170, 171:					
Vina loam------------------------	80	Poor		Good	
		OM <.5%	0.00		
172:					
Vina fine sandy loam, frequently flooded--------------------------	80	Good		Good	
174:					
Vina loam, occasionally flooded---	85	Poor		Good	
		OM <.5%	0.00		
175:					
Tujunga loam, overwash, frequently flooded---------------	85	Poor		Good	
		OM <.5%	0.00		
		AWC 3-6" to 60" depth	0.38		
		Sand fractions 75 to 85%	0.50		
176:					
Columbia fine sandy loam, frequently flooded---------------	80	Poor		Good	
		OM <.5%	0.00		
177:					
Holillipah loamy sand, channeled--	80	Poor		Good	
		OM <.5%	0.00		
		WEG = 1 or 2	0.00		
		AWC 3-6" to 60" depth	0.55		

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
185:					
Riverwash	95	Poor		Poor	
		OM <.5%	0.00	Wetness >3' depth	0.00
		AWC 3-6" to 60" depth	0.77		
187:					
Westfan loam, occasionally flooded	85	Poor		Good	
		Maximum pH >8.5	0.00		
		K factor <.10	0.99		
		SAR <4	1.00		
188:					
Westfan loam, clay substratum	80	Good		Fair	
				LEP 3 to 9	0.57
				AASHTO GI 5 to 8	0.78
189:					
Arand very gravelly sandy loam	85	Poor		Good	
		OM <.5%	0.00		
		AWC 3-6" to 60" depth	0.01		
190:					
Arand very gravelly loam	85	Poor		Good	
		AWC <3" to 60" depth	0.00		
		OM <.5%	0.00		
193:					
Westfan gravelly loam	80	Good		Fair	
				LEP 3 to 9	0.75
200:					
Clear Lake clay, occasionally flooded	90	Poor		Poor	
		Clay >40%	0.00	LEP >9	0.00
		SAR from 4 to 13	0.90	AASHTO GI >8	0.00
204, 205, 206:					
Capay clay	90	Poor		Poor	
		Maximum pH >8.5	0.00	LEP >9	0.00
		Clay >40%	0.00	AASHTO GI >8	0.00
210:					
Corval loam	85	Fair		Poor	
		Clay 27 to 40%	0.98	AASHTO GI >8	0.00
				LEP 3 to 9	0.75
211:					
Corval clay loam	85	Fair		Poor	
		Clay 27 to 40%	0.98	AASHTO GI >8	0.00
				LEP 3 to 9	0.75
213:					
Ayar clay	85	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.50	Slopes 15 to 25%	0.08
				LEP 3 to 9	0.25

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
215, 216:					
Altamont silty clay	45	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.80	Slopes 15 to 25%	0.08
				LEP 3 to 9	0.25
				Depth to bedrock 40 to 60"	0.58
Sehorn silty clay	35	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		AWC 3-6" to 60" depth	0.58	AASHTO GI >8	0.00
		OM of .5 to 1%	0.74	Slopes 15 to 25%	0.08
				LEP 3 to 9	0.36
218:					
Sehorn silty clay	45	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		AWC 3-6" to 60" depth	0.58	AASHTO GI >8	0.00
		OM of .5 to 1%	0.74	Slopes >25%	0.00
				LEP 3 to 9	0.36
Altamont silty clay	35	Poor		Poor	
		Clay >40%	0.00	Slopes >25%	0.00
		OM of .5 to 1%	0.80	AASHTO GI >8	0.00
				LEP 3 to 9	0.25
				Depth to bedrock 40 to 60"	0.58
220:					
Altamont silty clay	85	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.80	LEP 3 to 9	0.25
				Depth to bedrock 40 to 60"	0.58
221:					
Altamont silty clay	85	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.80	LEP 3 to 9	0.25
				Depth to bedrock 40 to 60"	0.58
230:					
Corning clay loam	90	Poor		Fair	
		AWC <3" to 60" depth	0.00	LEP 3 to 9	0.25
		OM of .5 to 1%	0.50		
		Clay 27 to 40%	0.76		
232:					
Maywood gravelly loam, occasionally flooded	85	Fair		Good	
		OM of .5 to 1%	0.50		
233:					
Eastpark clay loam	95	Fair		Fair	
		OM of .5 to 1%	0.50	LEP 3 to 9	0.73
		Clay 27 to 40%	0.98		
241:					
Contra Costa loam	55	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	AASHTO GI >8	0.00
		AWC 3-6" to 60" depth	0.73	Slopes >25%	0.00
		K factor <.10	0.99	LEP 3 to 9	0.46

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
241:					
Altamont silty clay	35	Poor		Poor	
		Clay >40%	0.00	Slopes >25%	0.00
		OM of .5 to 1%	0.80	AASHTO GI >8	0.00
				LEP 3 to 9	0.25
				Depth to bedrock 40 to 60"	0.58
253:					
Millsholm loam	55	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00		
		K factor <.10	0.99		
Altamont silty clay	20	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.80	LEP 3 to 9	0.25
				Depth to bedrock 40 to 60"	0.58
Rock outcrop	15	Not rated		Not rated	
255:					
Millsholm loam	55	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes 15 to 25%	0.50
		K factor <.10	0.99		
Rock outcrop	35	Not rated		Not rated	
257:					
Millsholm loam	50	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00		
		K factor <.10	0.99		
Capay clay	35	Poor		Poor	
		Maximum pH >8.5	0.00	LEP >9	0.00
		Clay >40%	0.00	AASHTO GI >8	0.00
261:					
Millsholm loam	60	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes 15 to 25%	0.18
		K factor <.10	0.99		
Altamont silty clay	25	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.80	Slopes 15 to 25%	0.18
				LEP 3 to 9	0.25
				Depth to bedrock 40 to 60"	0.58
270:					
Balcom silt loam	55	Fair		Poor	
		OM of .5 to 1%	0.08	Depth to bedrock <40"	0.00
		K factor .10-.35	0.90	Slopes 15 to 25%	0.08
		Calcium carbonates 15 to 40%	0.92		
		AWC 3-6" to 60" depth	0.99		
Ayar clay	30	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.50	Slopes 15 to 25%	0.08
				LEP 3 to 9	0.25

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
271:					
Balcom silt loam------------------	55	Fair		Poor	
		OM of .5 to 1%	0.08	Depth to bedrock <40"	0.00
		K factor .10-.35	0.90	Slopes >25%	0.00
		Calcium carbonates 15 to 40%	0.92		
		AWC 3-6" to 60" depth	0.99		
Ayar clay-------------------------	30	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.50	Slopes >25%	0.00
				LEP 3 to 9	0.25
275:					
Goldeagle clay loam---------------	45	Poor		Poor	
		OM <.5%	0.00	Slopes >25%	0.00
		Clay >40%	0.00	LEP 3 to 9	0.51
		K factor <.10	0.99		
Positas gravelly sandy loam-------	25	Poor		Poor	
		Clay >40%	0.00	Slopes >25%	0.00
		OM <.5%	0.00	AASHTO GI >8	0.00
				LEP 3 to 9	0.47
Balcom silt loam------------------	15	Fair		Poor	
		OM of .5 to 1%	0.08	Depth to bedrock <40"	0.00
		K factor .10-.35	0.90	Slopes >25%	0.00
		Calcium carbonates 15 to 40%	0.92		
		AWC 3-6" to 60" depth	0.99		
276:					
Positas gravelly sandy loam-------	90	Poor		Poor	
		Clay >40%	0.00	Slopes >25%	0.00
		OM <.5%	0.00	AASHTO GI >8	0.00
				LEP 3 to 9	0.47
280:					
Skyhigh gravelly clay loam--------	45	Poor		Poor	
		Clay >40%	0.00	Slopes >25%	0.00
		OM <.5%	0.00	AASHTO GI >8	0.00
		AWC 3-6" to 60" depth	0.16	Depth to bedrock <40"	0.00
		K factor <.10	0.99	LEP 3 to 9	0.37
Millsholm loam--------------------	30	Poor		Poor	
		OM <.5%	0.00	Slopes >25%	0.00
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		K factor <.10	0.99		
300:					
Contra Costa loam-----------------	55	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	AASHTO GI >8	0.00
		AWC 3-6" to 60" depth	0.73	Slopes >25%	0.00
		K factor <.10	0.99	LEP 3 to 9	0.46
Millsholm loam--------------------	45	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes >25%	0.00
		K factor <.10	0.99		

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
305:					
Contra Costa loam	85	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	AASHTO GI >8	0.00
		AWC 3-6" to 60" depth	0.73	Slopes >25%	0.00
		K factor <.10	0.99	LEP 3 to 9	0.46
311:					
Contra Costa loam	85	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC 3-6" to 60" depth	0.73	LEP 3 to 9	0.46
		K factor <.10	0.99		
312, 313:					
Saltcanyon loam	90	Poor		Poor	
		OM <.5%	0.00	AASHTO GI >8	0.00
				LEP 3 to 9	0.78
315:					
Mallard clay loam	90	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
				LEP 3 to 9	0.57
316:					
Hillgate loam	90	Fair		Poor	
		AWC 3-6" to 60" depth	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.08		
320:					
Millsholm loam	85	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00		
		K factor <.10	0.99		
329:					
Sehorn silty clay	40	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		AWC 3-6" to 60" depth	0.58	AASHTO GI >8	0.00
		OM of .5 to 1%	0.74	Slopes 15 to 25%	0.18
				LEP 3 to 9	0.36
Millsholm loam	30	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes 15 to 25%	0.18
		K factor <.10	0.99		
Altamont silty clay	15	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.80	Slopes 15 to 25%	0.18
				LEP 3 to 9	0.25
				Depth to bedrock 40 to 60"	0.58
330:					
Millsholm loam	60	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes 15 to 25%	0.18
		K factor <.10	0.99		

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
330:					
Contra Costa loam	25	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	AASHTO GI >8	0.00
		AWC 3-6" to 60" depth	0.73	Slopes 15 to 25%	0.18
		K factor <.10	0.99	LEP 3 to 9	0.46
331:					
Sehorn silty clay	35	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		AWC 3-6" to 60" depth	0.58	AASHTO GI >8	0.00
		OM of .5 to 1%	0.74	Slopes >25%	0.00
				LEP 3 to 9	0.36
Millsholm loam	30	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes >25%	0.00
		K factor <.10	0.99		
Rock outcrop	20	Not rated		Not rated	
332:					
Millsholm loam	50	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes >25%	0.00
		K factor <.10	0.99		
Rock outcrop	40	Not rated		Not rated	
334:					
Millsholm loam	70	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes >25%	0.00
		K factor <.10	0.99		
Contra Costa loam	15	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	AASHTO GI >8	0.00
		AWC 3-6" to 60" depth	0.73	Slopes >25%	0.00
		K factor <.10	0.99	LEP 3 to 9	0.46
337:					
Millsholm loam	50	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00		
		K factor <.10	0.99		
Saltcanyon loam	35	Poor		Poor	
		OM <.5%	0.00	AASHTO GI >8	0.00
				LEP 3 to 9	0.78
345:					
Skyhigh gravelly clay loam	40	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	AASHTO GI >8	0.00
		AWC 3-6" to 60" depth	0.16	Slopes 15 to 25%	0.18
		K factor <.10	0.99	LEP 3 to 9	0.37

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
345:					
Sleeper clay loam	30	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.50	Slopes 15 to 25%	0.18
				LEP 3 to 9	0.44
				Depth to bedrock 40 to 60"	0.58
Millsholm loam	15	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes 15 to 25%	0.18
		K factor <.10	0.99		
346:					
Skyhigh gravelly clay loam	45	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	AASHTO GI >8	0.00
		AWC 3-6" to 60" depth	0.16	Slopes >25%	0.00
		K factor <.10	0.99	LEP 3 to 9	0.37
Millsholm loam	20	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes >25%	0.00
		K factor <.10	0.99		
Sleeper clay loam	20	Poor		Poor	
		Clay >40%	0.00	Slopes >25%	0.00
		OM of .5 to 1%	0.50	AASHTO GI >8	0.00
				LEP 3 to 9	0.44
				Depth to bedrock 40 to 60"	0.58
347:					
Boar loam	45	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM <.5%	0.00	Slopes 15 to 25%	0.18
				LEP 3 to 9	0.27
Sleeper clay loam	40	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.50	Slopes 15 to 25%	0.18
				LEP 3 to 9	0.44
				Depth to bedrock 40 to 60"	0.58
348:					
Boar loam	45	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM <.5%	0.00	Slopes >25%	0.00
				LEP 3 to 9	0.27
Sleeper clay loam	40	Poor		Poor	
		Clay >40%	0.00	Slopes >25%	0.00
		OM of .5 to 1%	0.50	AASHTO GI >8	0.00
				LEP 3 to 9	0.44
				Depth to bedrock 40 to 60"	0.58
350:					
Haploxererts	80	Poor		Poor	
		Clay >40%	0.00	Slopes >25%	0.00
		OM of .5 to 1%	0.50	LEP 3 to 9	0.76

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
355:					
Venado clay	80	Poor		Poor	
		Maximum pH >8.5	0.00	AASHTO GI >8	0.00
		Clay >40%	0.00	Wetness from 1 to 3'	0.53
				LEP 3 to 9	0.55
360:					
Bearvalley gravelly sandy loam	85	Fair		Good	
		AWC 3-6" to 60" depth	0.06		
365, 366:					
Leesville clay loam	85	Fair		Good	
		AWC 3-6" to 60" depth	0.85		
371:					
Buttes gravelly sandy loam	50	Poor		Poor	
		AWC <3" to 60" depth	0.00	Slopes >25%	0.00
		OM of .5 to 1%	0.50	Depth to bedrock <40"	0.00
				LEP 3 to 9	0.75
Millsholm loam	35	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes >25%	0.00
		K factor <.10	0.99		
519:					
Stonyford gravelly loam	50	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	LEP 3 to 9	0.75
		Clay 27 to 40%	0.98		
Guenoc loam	30	Poor		Poor	
		OM <.5%	0.00	AASHTO GI >8	0.00
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		AWC 3-6" to 60" depth	0.75	LEP 3 to 9	0.75
520, 521:					
Stonyford gravelly loam	65	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
		Clay 27 to 40%	0.98	LEP 3 to 9	0.75
Guenoc loam	15	Poor		Poor	
		OM <.5%	0.00	Slopes >25%	0.00
		Clay >40%	0.00	AASHTO GI >8	0.00
		AWC 3-6" to 60" depth	0.75	Depth to bedrock <40"	0.00
				LEP 3 to 9	0.75
524:					
Arand, frequently flooded	65	Poor		Good	
		OM <.5%	0.00		
		AWC 3-6" to 60" depth	0.01		
Riverwash	25	Poor		Poor	
		OM <.5%	0.00	Wetness >3' depth	0.00
		AWC 3-6" to 60" depth	0.77		
526:					
Etsel gravelly sandy loam	30	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
526:					
Maymen sandy loam-----------------	30	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
Marpa very gravelly sandy loam----	20	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes >25%	0.00
		Clay 27 to 40%	0.98		
527:					
Maymen sandy loam-----------------	35	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
Etsel gravelly sandy loam---------	30	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
Speaker gravelly loam-------------	20	Fair		Poor	
		AWC 3-6" to 60" depth	0.17	Slopes >25%	0.00
				Depth to bedrock <40"	0.00
				LEP 3 to 9	0.76
528:					
Maymen sandy loam-----------------	35	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
Etsel gravelly sandy loam---------	25	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
Snook gravelly sandy loam---------	25	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.50	Slopes >25%	0.00
529:					
Maymen sandy loam-----------------	35	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
Etsel gravelly sandy loam---------	30	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
Mayacama gravelly coarse sandy loam----------------------------	20	Fair		Poor	
		AWC 3-6" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.50	Slopes >25%	0.00
542:					
Okiota loam-----------------------	35	Poor		Poor	
		Clay >40%	0.00	Slopes >25%	0.00
		AWC <3" to 60" depth	0.00	AASHTO GI >8	0.00
				Depth to bedrock <40"	0.00
				LEP 3 to 9	0.25

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
542:					
Dubakella gravelly clay loam------	25	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		AWC 3-6" to 60" depth	0.25	Slopes >25%	0.00
		OM of .5 to 1%	0.50	LEP 3 to 9	0.25
Henneke sandy loam----------------	25	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		Clay >40%	0.00	Slopes >25%	0.00
		OM of .5 to 1%	0.50	LEP 3 to 9	0.25
545:					
Henneke sandy loam----------------	40	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		Clay >40%	0.00	Slopes >25%	0.00
		OM of .5 to 1%	0.50	LEP 3 to 9	0.25
Montara gravelly sandy loam-------	30	Poor		Poor	
		AWC <3" to 60" depth	0.00	Slopes >25%	0.00
				Depth to bedrock <40"	0.00
Rock outcrop----------------------	15	Not rated		Not rated	
548, 549:					
Henneke sandy loam----------------	45	Poor		Poor	
		AWC <3" to 60" depth	0.00	Slopes >25%	0.00
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.50	LEP 3 to 9	0.25
Okiota loam-----------------------	35	Poor		Poor	
		Clay >40%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	AASHTO GI >8	0.00
				Slopes >25%	0.00
				LEP 3 to 9	0.25
557:					
Neuns very gravelly loam----------	35	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.18	Slopes >25%	0.00
Bamtush very gravelly loam--------	30	Good		Poor	
				Slopes >25%	0.00
Speaker gravelly loam-------------	20	Fair		Poor	
		AWC 3-6" to 60" depth	0.17	Slopes >25%	0.00
				Depth to bedrock <40"	0.00
				LEP 3 to 9	0.76
564:					
Fouts gravelly loam---------------	35	Poor		Poor	
		Clay >40%	0.00	Slopes >25%	0.00
		AWC 3-6" to 60" depth	0.23	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.50	AASHTO GI >8	0.00
				LEP 3 to 9	0.25
Yorkville clay loam---------------	35	Poor		Poor	
		Clay >40%	0.00	AASHTO GI >8	0.00
		OM of .5 to 1%	0.50	Slopes >25%	0.00
				LEP 3 to 9	0.29

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
564:					
Squawrock gravelly loam	15	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.50	Slopes >25%	0.00
		Clay 27 to 40%	0.82	LEP 3 to 9	0.51
570:					
Endoaquolls, frequently ponded	90	Fair		Poor	
		Clay 27 to 40%	0.68	Wetness >3' depth	0.00
		K factor .10-.35	0.68	LEP 3 to 9	0.94
590:					
Neuns very gravelly loam	35	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.18	Slopes >25%	0.00
Marpa very gravelly sandy loam	30	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes >25%	0.00
		Clay 27 to 40%	0.98		
Goulding gravelly loam	20	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.50	Slopes >25%	0.00
Neuns very gravelly loam	35	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.18	Slopes >25%	0.00
Sheetiron gravelly sandy loam	30	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
Goulding gravelly loam	20	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.50	Slopes >25%	0.00
592:					
Neuns very gravelly loam	35	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.18	Slopes >25%	0.00
Goulding gravelly loam	25	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.50	Slopes >25%	0.00
Sheetiron gravelly sandy loam	25	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
596:					
Yollabolly very gravelly loam	40	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
Rock outcrop	35	Not rated		Not rated	
Freezeout very gravelly sandy loam	20	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
				Slopes >25%	0.00

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
597:					
Yollabolly very gravelly loam-----	55	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
Freezeout very gravelly sandy loam----------------------------	30	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
				Slopes >25%	0.00
599:					
Freezeout very gravelly sandy loam----------------------------	55	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
				Slopes >25%	0.00
Yollabolly very gravelly loam-----	30	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
600:					
Freezeout very gravelly sandy loam----------------------------	50	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
				Slopes >25%	0.00
Yollabolly very gravelly loam-----	35	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM <.5%	0.00	Slopes >25%	0.00
610:					
Neuns very gravelly loam----------	40	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.18	Slopes >25%	0.00
Bamtush very gravelly loam--------	25	Good		Poor	
				Slopes >25%	0.00
Goulding gravelly loam------------	20	Poor		Poor	
		AWC <3" to 60" depth	0.00	Depth to bedrock <40"	0.00
		OM of .5 to 1%	0.50	Slopes >25%	0.00
650:					
Bamtush very gravelly loam--------	55	Good		Fair	
				Slopes 15 to 25%	0.18
Marpa very gravelly sandy loam----	30	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes 15 to 25%	0.18
		Clay 27 to 40%	0.98		
651:					
Bamtush very gravelly loam--------	55	Good		Poor	
				Slopes >25%	0.00

Table 19.--Construction Materials (Part 2)--Continued

Map symbol and soil name	Pct.	Potential as a source of reclamation material: Rating class and limiting features	Value	Potential as a source of roadfill: Rating class and limiting features	Value
651:					
Marpa very gravelly sandy loam----	30	Poor		Poor	
		OM <.5%	0.00	Depth to bedrock <40"	0.00
		AWC <3" to 60" depth	0.00	Slopes >25%	0.00
		Clay 27 to 40%	0.98		

The interpretation for *reclamation material* evaluates the following soil properties at various depths in the soil: the content of sand, clay, and rock fragments; the Wind Erodibility Group (WEG); the available water capacity (AWC); soil pH; salinity (EC); amount of sodium (SAR); carbonates; and susceptibility of the soil to water erosion (K factor).

The interpretation for *roadfill* evaluates the following soil properties at various depths in the soil: shrink-swell potential expressed as linear extensibility percent (LEP), depth to bedrock or a cemented pan, wetness, slope, soil strength expressed as AASHTO Group Index Number (AASHTO GIN), and content of rock fragments.

Table 20.--Water Management

(The information in this table is based on Pacific Southwest MLRA Office interpretations. It 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. The rating is based on the limitation with the highest value. Only the three highest value limitations are lisited. There may be more limitations. Fine-earth fractions and rock fragments are reported on a weight basis. An explanation of the rating criteria and of the abbreviations used in describing the limitations is given at the end of the table.)

Map symbol and soil name	Pct.	Embankments, dikes, and levees		Pond reservoir areas	
		Limitation	Value	Limitation	Value
100:					
Capay clay loam, occasionally flooded	90	Severe		Slight	
		Shrink-swell (LEP >6)	1.00		
101:					
Capay silty clay, frequently flooded	90	Severe		Slight	
		Shrink-swell (LEP >6)	1.00		
		MH or CH Unified and PI <40%	0.50		
102, 103:					
Capay clay loam	90	Severe		Slight	
		Shrink-swell (LEP >6)	1.00		
104, 105, 106:					
Willows silty clay	90	Severe		Slight	
		Shrink-swell (LEP >6)	1.00		
		EC 8-16 mmhos/cm	0.55		
		MH or CH Unified and PI <40%	0.50		
107, 108, 109:					
Scribner silt loam	80	Severe		Moderate	
		Wetness <2' depth	1.00	Permeability .6-2"/hr (some seepage)	0.50
		High piping potential	0.20		
110:					
Hustabel sandy loam	80	Severe		Severe	
		Very high piping potential	1.00	Permeability >2"/hr (seepage)	1.00
		Wetness between 2 and 4'	0.46		
112:					
Westfan loam	80	Severe		Severe	
		Very high piping potential	1.00	Permeability >2"/hr (seepage)	1.00
113:					
Westfan loam, sodic	85	Severe		Severe	
		Very high piping potential	1.00	Permeability >2"/hr (seepage)	1.00
114:					
Westfan clay loam	80	Moderate		Slight	
		High piping potential	0.91		
		Shrink-swell (LEP 3-6)	0.50		
115, 116, 117, 118:					
Clear Lake clay	90	Severe		Slight	
		Shrink-swell (LEP >6)	1.00		
		MH or CH Unified and PI ≥40%	1.00		
124, 125, 126:					
Moonbend silt loam	80	Moderate		Moderate	
		Shrink-swell (LEP 3-6)	0.92	Permeability .6-2"/hr (some seepage)	0.50
		High piping potential	0.62		

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees: Limitation	Value	Pond reservoir areas: Limitation	Value
127:					
Mallard clay loam	85	Moderate		Slight	
		Shrink-swell (LEP 3-6)	0.50		
		Wetness between 2 and 4'	0.46		
128:					
Mallard loam	85	Severe		Moderate	
		Shrink-swell (LEP >6)	1.00	Permeability .6-2"/hr (some seepage)	0.50
		MH or CH Unified and PI <40%	0.50		
		Wetness between 2 and 4'	0.46		
129:					
Mallard clay loam, occasionally flooded	85	Moderate		Slight	
		Shrink-swell (LEP 3-6)	0.50		
		Wetness between 2 and 4'	0.46		
130, 131, 133:					
Corbiere silt loam	85	Severe		Moderate	
		Shrink-swell (LEP >6)	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Wetness <2' depth	1.00		
		MH or CH Unified and PI <40%	0.50		
136:					
Colusa loam	85	Severe		Moderate	
		Thin layer	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Very high piping potential	1.00		
		Shrink-swell (LEP 3-6)	0.18		
141:					
Myers clay	90	Severe		Slight	
		Shrink-swell (LEP >6)	1.00		
		MH or CH Unified and PI ≥40%	1.00		
144:					
Hillgate clay loam	85	Severe		Slight	
		Thin layer	1.00		
		MH or CH Unified and PI <40%	0.50		
		High piping potential	0.50		
145, 147:					
Hillgate loam	90	Severe		Moderate	
		MH or CH Unified and PI ≥40%	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Thin layer	1.00		
		High piping potential	0.18		
150:					
Arbuckle sandy loam	85	Moderate		Severe	
		Shrink-swell (LEP 3-6)	0.50	Permeability >2"/hr (seepage)	1.00
				Slopes 2 to 7%	0.00
151:					
Arbuckle sandy loam	50	Moderate		Severe	
		Shrink-swell (LEP 3-6)	0.50	Permeability >2"/hr (seepage)	1.00
				Slopes 2 to 7%	0.00
Hillgate loam	40	Severe		Moderate	
		MH or CH Unified and PI ≥40%	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Thin layer	1.00	Slopes 2 to 7%	0.00
		High piping potential	0.18		

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees		Pond reservoir areas	
		Limitation	Value	Limitation	Value
152:					
Arbuckle gravelly loam------------	85	Moderate		Moderate	
		Shrink-swell (LEP 3-6)	0.50	Slopes 2 to 7%	0.00
155:					
Alcapay clay----------------------	90	Severe		Slight	
		Shrink-swell (LEP >6)	1.00		
		MH or CH Unified and PI ≥40%	1.00		
160:					
Grandbend loam--------------------	80	Moderate		Moderate	
		Wetness between 2 and 4'	0.86	Permeability .6-2"/hr (some seepage)	0.50
		High piping potential	0.83		
		Shrink-swell (LEP 3-6)	0.50		
170:					
Vina loam, frequently flooded-----	80	Severe		Moderate	
		Very high piping potential	1.00	Permeability .6-2"/hr (some seepage)	0.50
171:					
Vina loam-------------------------	85	Severe		Moderate	
		Very high piping potential	1.00	Permeability .6-2"/hr (some seepage)	0.50
172:					
Vina fine sandy loam, frequently flooded-------------------------	80	Severe		Moderate	
		Very high piping potential	1.00	Permeability .6-2"/hr (some seepage)	0.50
174:					
Vina loam, occasionally flooded---	85	Severe		Moderate	
		Very high piping potential	1.00	Permeability .6-2"/hr (some seepage)	0.50
175:					
Tujunga loam, overwash, frequently flooded---------------	85	Moderate		Severe	
		Possible seepage problem	0.50	Permeability >2"/hr (seepage)	1.00
176:					
Columbia fine sandy loam, frequently flooded---------------	80	Severe		Severe	
		Very high piping potential	1.00	Permeability >2"/hr (seepage)	1.00
177:					
Holillipah loamy sand, channeled--	80	Moderate		Severe	
		Possible seepage problem	0.50	Permeability >2"/hr (seepage)	1.00
185:					
Riverwash-------------------------	95	Severe		Severe	
		Wetness <2' depth	1.00	Permeability >2"/hr (seepage)	1.00
187:					
Westfan loam, occasionally flooded-------------------------	85	Severe		Severe	
		Very high piping potential	1.00	Permeability >2"/hr (seepage)	1.00
188:					
Westfan loam, clay substratum-----	80	Moderate		Slight	
		Shrink-swell (LEP 3-6)	0.50		
		High piping potential	0.17		

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees		Pond reservoir areas	
		Limitation	Value	Limitation	Value
189, 190:					
Arand, very gravelly	85	Slight		Severe	
				Permeability >2"/hr (seepage)	1.00
193:					
Westfan gravelly loam	80	Moderate		Moderate	
		Shrink-swell (LEP 3-6)	0.50	Permeability .6-2"/hr (some seepage)	0.50
200:					
Clear Lake clay, occasionally flooded	90	Severe		Slight	
		Shrink-swell (LEP >6)	1.00		
		MH or CH Unified and PI ≥40%	1.00		
204, 205:					
Capay clay	90	Severe		Slight	
		Shrink-swell (LEP >6)	1.00		
		MH or CH Unified and PI <40%	0.50		
206:					
Capay clay	90	Severe		Moderate	
		Shrink-swell (LEP >6)	1.00	Slopes 2 to 7%	0.91
		MH or CH Unified and PI <40%	0.50		
210, 211:					
Corval	85	Moderate		Slight	
		Shrink-swell (LEP 3-6)	0.50		
		High piping potential	0.12		
212, 213:					
Ayar clay	85	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50		
215, 216:					
Altamont silty clay	45	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Depth to bedrock from 20-60"	0.11
		Thin layer	0.11		
Sehorn silty clay	35	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.85	Depth to bedrock from 20-60"	0.85
		MH or CH Unified and PI <40%	0.50		
218:					
Sehorn silty clay	45	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.85	Depth to bedrock from 20-60"	0.85
		MH or CH Unified and PI <40%	0.50		
Altamont silty clay	35	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Depth to bedrock from 20-60"	0.11
		Thin layer	0.11		
220:					
Altamont silty clay	85	Severe		Moderate	
		Shrink-swell (LEP >6)	1.00	Slopes 2 to 7%	0.91
		MH or CH Unified and PI <40%	0.50	Depth to bedrock from 20-60"	0.11
		Thin layer	0.11		

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees		Pond reservoir areas	
		Limitation	Value	Limitation	Value
221:					
Altamont silty clay	85	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Depth to bedrock from 20-60"	0.11
		Thin layer	0.11		
230:					
Corning clay loam	90	Severe		Moderate	
		Shrink-swell (LEP >6)	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Thin layer	1.00	Slopes 2 to 7%	0.00
232:					
Maywood gravelly loam, occasionally flooded	85	Severe		Severe	
		Very high piping potential	1.00	Permeability >2"/hr (seepage)	1.00
233:					
Eastpark clay loam	95	Moderate		Moderate	
		Shrink-swell (LEP 3-6)	0.50	Permeability .6-2"/hr (some seepage)	0.50
241:					
Contra Costa loam	55	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.85	Depth to bedrock from 20-60"	0.85
		MH or CH Unified and PI <40%	0.50		
Altamont silty clay	35	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Depth to bedrock from 20-60"	0.11
		Thin layer	0.11		
253:					
Millsholm loam	55	Severe		Severe	
		Thin layer	1.00	Depth to bedrock <20"	1.00
		Very high piping potential	1.00	Slopes >7%	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Altamont silty clay	20	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Depth to bedrock from 20-60"	0.11
		Thin layer	0.11		
Rock outcrop	15	Not rated		Not rated	
255:					
Millsholm loam	55	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Very high piping potential	1.00	Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Rock outcrop	35	Not rated		Not rated	
257:					
Millsholm loam	50	Severe		Severe	
		Thin layer	1.00	Depth to bedrock <20"	1.00
		Very high piping potential	1.00	Slopes 2 to 7%	0.66
				Permeability .6-2"/hr (some seepage)	0.50
Capay clay	35	Severe		Moderate	
		Shrink-swell (LEP >6)	1.00	Slopes 2 to 7%	0.66
		MH or CH Unified and PI <40%	0.50		

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees: Limitation	Value	Pond reservoir areas: Limitation	Value
261:					
Millsholm loam	60	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Very high piping potential	1.00	Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Altamont silty clay	25	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Depth to bedrock from 20-60"	0.11
		Thin layer	0.11		
270:					
Balcom silt loam	55	Moderate		Severe	
		High piping potential	0.88	Slopes >7%	1.00
		Thin layer	0.77	Depth to bedrock from 20-60"	0.77
				Permeability .6-2"/hr (some seepage)	0.50
Ayar clay	30	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50		
271:					
Balcom silt loam	55	Moderate		Severe	
		High piping potential	0.88	Slopes >7%	1.00
		Thin layer	0.77	Depth to bedrock from 20-60"	0.77
				Permeability .6-2"/hr (some seepage)	0.50
Ayar clay	30	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50		
275:					
Goldeagle clay loam	45	Moderate		Severe	
		Shrink-swell (LEP 3-6)	0.50	Slopes >7%	1.00
		Low piping potential	0.07	Permeability .6-2"/hr (some seepage)	0.50
Positas gravelly sandy loam	25	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Permeability >2"/hr (seepage)	1.00
Balcom silt loam	15	Moderate		Severe	
		High piping potential	0.88	Slopes >7%	1.00
		Thin layer	0.77	Depth to bedrock from 20-60"	0.77
				Permeability .6-2"/hr (some seepage)	0.50
276:					
Positas gravelly sandy loam	90	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Permeability >2"/hr (seepage)	1.00
280:					
Skyhigh gravelly clay loam	45	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.86	Depth to bedrock from 20-60"	0.86
		MH or CH Unified and PI <40%	0.50		
Millsholm loam	30	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Very high piping potential	1.00	Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees		Pond reservoir areas	
		Limitation	Value	Limitation	Value
300:					
Contra Costa loam	50	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.85	Depth to bedrock from 20-60"	0.85
		MH or CH Unified and PI <40%	0.50		
Millsholm loam	40	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Very high piping potential	1.00	Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
305, 311:					
Contra Costa loam	85	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.85	Depth to bedrock from 20-60"	0.85
		MH or CH Unified and PI <40%	0.50		
312:					
Saltcanyon loam	90	Moderate		Moderate	
		High piping potential	0.88	Permeability .6-2"/hr (some seepage)	0.50
		Shrink-swell (LEP 3-6)	0.50	Slopes 2 to 7%	0.00
313:					
Saltcanyon loam	90	Moderate		Moderate	
		High piping potential	0.88	Slopes 2 to 7%	0.91
		Shrink-swell (LEP 3-6)	0.50	Permeability .6-2"/hr (some seepage)	0.50
315:					
Mallard clay loam	90	Moderate		Moderate	
		Shrink-swell (LEP 3-6)	0.50	Slopes 2 to 7%	0.08
316:					
Hillgate loam	90	Severe		Moderate	
		MH or CH Unified and PI ≥40%	1.00	Slopes 2 to 7%	0.91
		Thin layer	1.00	Permeability .6-2"/hr (some seepage)	0.50
		High piping potential	0.18		
320:					
Millsholm loam	85	Severe		Severe	
		Thin layer	1.00	Depth to bedrock <20"	1.00
		Very high piping potential	1.00	Slopes >7%	1.00
				Permeability .6-2"/hr (some seepage)	0.50
329:					
Sehorn silty clay	40	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.85	Depth to bedrock from 20-60"	0.85
		MH or CH Unified and PI <40%	0.50		
Millsholm loam	30	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Very high piping potential	1.00	Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Altamont silty clay	15	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Depth to bedrock from 20-60"	0.11
		Thin layer	0.11		

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees: Limitation	Value	Pond reservoir areas: Limitation	Value
330:					
Millsholm loam	60	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Very high piping potential	1.00	Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Contra Costa loam	25	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.85	Depth to bedrock from 20-60"	0.85
		MH or CH Unified and PI <40%	0.50		
331:					
Sehorn silty clay	35	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.85	Depth to bedrock from 20-60"	0.85
		MH or CH Unified and PI <40%	0.50		
Millsholm loam	30	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Very high piping potential	1.00	Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Rock outcrop	20	Not rated		Not rated	
332:					
Millsholm loam	50	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Very high piping potential	1.00	Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Rock outcrop	40	Not rated		Not rated	
334:					
Millsholm loam	70	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Very high piping potential	1.00	Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Contra Costa loam	15	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.85	Depth to bedrock from 20-60"	0.85
		MH or CH Unified and PI <40%	0.50		
337:					
Millsholm loam	50	Severe		Severe	
		Thin layer	1.00	Depth to bedrock <20"	1.00
		Very high piping potential	1.00	Slopes >7%	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Saltcanyon loam	35	Moderate		Severe	
		High piping potential	0.88	Slopes >7%	1.00
		Shrink-swell (LEP 3-6)	0.50	Permeability .6-2"/hr (some seepage)	0.50
345:					
Skyhigh gravelly clay loam	40	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.86	Depth to bedrock from 20-60"	0.86
		MH or CH Unified and PI <40%	0.50		
Sleeper clay loam	30	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Depth to bedrock from 20-60"	0.11
		Thin layer	0.11		

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees		Pond reservoir areas	
		Limitation	Value	Limitation	Value
345:					
Millsholm loam	15	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Very high piping potential	1.00	Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
346:					
Skyhigh gravelly clay loam	45	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.86	Depth to bedrock from 20-60"	0.86
		MH or CH Unified and PI <40%	0.50		
Millsholm loam	20	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Very high piping potential	1.00	Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Sleeper clay loam	20	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Depth to bedrock from 20-60"	0.11
		Thin layer	0.11		
347, 348:					
Boar loam	45	Severe		Severe	
		MH or CH Unified and PI ≥40%	1.00	Slopes >7%	1.00
		Shrink-swell (LEP >6)	1.00	Permeability .6-2"/hr (some seepage)	0.50
Sleeper clay loam	40	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Depth to bedrock from 20-60"	0.11
		Thin layer	0.11		
350:					
Haploxererts	80	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50	Permeability .6-2"/hr (some seepage)	0.50
		High piping potential	0.18		
355:					
Venado clay	80	Severe		Slight	
		Shrink-swell (LEP >6)	1.00		
		MH or CH Unified and PI ≥40%	1.00		
		Wetness <2' depth	1.00		
360:					
Bearvalley gravelly sandy loam	85	Severe		Severe	
		Seepage problem	1.00	Permeability >2"/hr (seepage)	1.00
				Slopes 2 to 7%	0.08
365:					
Leesville clay loam	85	Moderate		Severe	
		Possible seepage problem	0.50	Permeability >2"/hr (seepage)	1.00
				Slopes 2 to 7%	0.08
366:					
Leesville clay loam	85	Moderate		Severe	
		Possible seepage problem	0.50	Permeability >2"/hr (seepage)	1.00
370:					
Livermore very gravelly loam	90	Moderate		Severe	
		Shrink-swell (LEP 3-6)	0.50	Permeability >2"/hr (seepage)	1.00
				Slopes 2 to 7%	0.91

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees: Limitation	Value	Pond reservoir areas: Limitation	Value
371:					
Buttes gravelly sandy loam	50	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
		Shrink-swell (LEP 3-6)	0.50	Permeability >2"/hr (seepage)	1.00
				Depth to bedrock from 20-60"	0.86
Millsholm loam	35	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Very high piping potential	1.00	Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
519:					
Stonyford gravelly loam	50	Severe		Severe	
		Thin layer	1.00	Depth to bedrock <20"	1.00
		Shrink-swell (LEP 3-6)	0.50	Slopes >7%	1.00
Guenoc loam	30	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
		Shrink-swell (LEP 3-6)	0.50	Depth to bedrock from 20-60"	0.86
520, 521:					
Stonyford gravelly loam	65	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
		Shrink-swell (LEP 3-6)	0.50	Depth to bedrock <20"	1.00
Guenoc loam	15	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
		Shrink-swell (LEP 3-6)	0.50	Depth to bedrock from 20-60"	0.86
524:					
Arand, frequently flooded	65	Slight		Severe	
				Permeability >2"/hr (seepage)	1.00
Riverwash	25	Severe		Severe	
		Wetness <2' depth	1.00	Permeability >2"/hr (seepage)	1.00
526:					
Etsel gravelly sandy loam	30	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
Maymen sandy loam	30	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
				Permeability >2"/hr (seepage)	1.00
Marpa very gravelly sandy loam	20	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Depth to bedrock from 20-60"	0.86
527:					
Maymen sandy loam	35	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
				Permeability >2"/hr (seepage)	1.00
Etsel gravelly sandy loam	30	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees		Pond reservoir areas	
		Limitation	Value	Limitation	Value
527:					
Speaker gravelly loam	20	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
		High piping potential	0.50	Depth to bedrock from 20-60"	0.86
		Shrink-swell (LEP 3-6)	0.50		
528:					
Maymen sandy loam	35	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
				Permeability >2"/hr (seepage)	1.00
Etsel gravelly sandy loam	25	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
Snook gravelly sandy loam	25	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
529:					
Maymen sandy loam	35	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
				Permeability >2"/hr (seepage)	1.00
Etsel gravelly sandy loam	30	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
Mayacama gravelly coarse sandy loam	20	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Permeability >2"/hr (seepage)	1.00
				Depth to bedrock from 20-60"	0.85
542:					
Okiota loam	35	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	1.00	Depth to bedrock <20"	1.00
		MH or CH Unified and PI <40%	0.50		
Dubakella gravelly clay loam	25	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.86	Depth to bedrock from 20-60"	0.86
Henneke sandy loam	25	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	1.00	Depth to bedrock <20"	1.00
545:					
Henneke sandy loam	40	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	1.00	Depth to bedrock <20"	1.00
Montara gravelly sandy loam	30	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
Rock outcrop	15	Not rated		Not rated	

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees		Pond reservoir areas	
		Limitation	Value	Limitation	Value
548, 549:					
Henneke sandy loam	45	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	1.00	Depth to bedrock <20"	1.00
Okiota loam	35	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	1.00	Depth to bedrock <20"	1.00
		MH or CH Unified and PI <40%	0.50		
557:					
Neuns very gravelly loam	35	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Depth to bedrock from 20-60"	0.86
				Permeability .6-2"/hr (some seepage)	0.50
Bamtush very gravelly loam	30	Slight		Severe	
				Slopes >7%	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Speaker gravelly loam	20	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
		High piping potential	0.50	Depth to bedrock from 20-60"	0.86
		Shrink-swell (LEP 3-6)	0.50		
564:					
Fouts gravelly loam	35	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		Thin layer	0.86	Depth to bedrock from 20-60"	0.86
		MH or CH Unified and PI <40%	0.50		
Yorkville clay loam	35	Severe		Severe	
		Shrink-swell (LEP >6)	1.00	Slopes >7%	1.00
		MH or CH Unified and PI <40%	0.50		
Squawrock gravelly loam	15	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
		Shrink-swell (LEP 3-6)	0.50	Depth to bedrock from 20-60"	0.86
570:					
Endoaquolls, frequently ponded	90	Severe		Moderate	
		Ponded (any duration)	1.00	Permeability .6-2"/hr (some seepage)	0.50
		Wetness <2' depth	1.00		
		Shrink-swell (LEP 3-6)	0.50		
590:					
Neuns very gravelly loam	35	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Depth to bedrock from 20-60"	0.86
				Permeability .6-2"/hr (some seepage)	0.50
Marpa very gravelly sandy loam	30	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Depth to bedrock from 20-60"	0.86
Goulding gravelly loam	20	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees Limitation	Value	Pond reservoir areas Limitation	Value
591:					
Neuns very gravelly loam----------	35	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Depth to bedrock from 20-60"	0.86
				Permeability .6-2"/hr (some seepage)	0.50
Sheetiron gravelly sandy loam-----	30	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Permeability >2"/hr (seepage)	1.00
				Depth to bedrock from 20-60"	0.86
Goulding gravelly loam------------	20	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
592:					
Neuns very gravelly loam----------	35	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Depth to bedrock from 20-60"	0.86
				Permeability .6-2"/hr (some seepage)	0.50
Goulding gravelly loam------------	25	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Sheetiron gravelly sandy loam-----	25	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Permeability >2"/hr (seepage)	1.00
				Depth to bedrock from 20-60"	0.86
596:					
Yollabolly very gravelly loam-----	40	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Rock outcrop----------------------	35	Not rated		Not rated	
Freezeout very gravelly sandy loam----------------------------	20	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Permeability >2"/hr (seepage)	1.00
				Depth to bedrock from 20-60"	0.86
597:					
Yollabolly very gravelly loam-----	55	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Freezeout very gravelly sandy loam----------------------------	30	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Permeability >2"/hr (seepage)	1.00
				Depth to bedrock from 20-60"	0.86

Table 20.--Water Management--Continued

Map symbol and soil name	Pct.	Embankments, dikes, and levees		Pond reservoir areas	
		Limitation	Value	Limitation	Value
599:					
Freezeout very gravelly sandy loam	55	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Permeability >2"/hr (seepage)	1.00
				Depth to bedrock from 20-60"	0.86
Yollabolly very gravelly loam	30	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
600:					
Freezeout very gravelly sandy loam	50	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Permeability >2"/hr (seepage)	1.00
				Depth to bedrock from 20-60"	0.86
Yollabolly very gravelly loam	35	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
610:					
Neuns very gravelly loam	40	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Depth to bedrock from 20-60"	0.86
				Permeability .6-2"/hr (some seepage)	0.50
Bamtush very gravelly loam	25	Slight		Severe	
				Slopes >7%	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Goulding gravelly loam	20	Severe		Severe	
		Thin layer	1.00	Slopes >7%	1.00
				Depth to bedrock <20"	1.00
				Permeability .6-2"/hr (some seepage)	0.50
650, 651:					
Bamtush very gravelly loam	55	Slight		Severe	
				Slopes >7%	1.00
				Permeability .6-2"/hr (some seepage)	0.50
Marpa very gravelly sandy loam	30	Moderate		Severe	
		Thin layer	0.86	Slopes >7%	1.00
				Depth to bedrock from 20-60"	0.86

The interpretation for *embankments, dikes, and levees* evaluates the following soil properties at various depths in the soil: ponding; wetness; depth to a restrictive layer; rock fragments more than 3 inches in size; salinity (EC); Unified classes for a high content of organic matter (PT, OL, and OH); Unified classes that are hard to pack (MH and CH); permeability that is too rapid, allowing seepage; piping as determined by Atterberg limits of liquid limit (LL) and plasticity index (PI); sodium content (SAR); and gypsum content.

The interpretation for *pond reservoir areas* evaluates the following soil properties at various depths in the soil: slope, depth to hard or soft bedrock, depth to a cemented pan, marly textures, gypsum content, and permeability that is too rapid, allowing seepage.

Soil Properties

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

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps.

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 21 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

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 as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2001) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, 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 grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

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 grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 22 shows estimates of some physical properties and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this 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 earth-moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^{1}/_{3}$-bar moisture tension. Weight is determined after the soil is dried at 105 degrees C. In table 22, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

K_{sat} or *saturated hydraulic conductivity,* also generally known as *permeability,* refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

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

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

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

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 22, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Table 23 shows estimates of some chemical properties and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Cation-exchange capacity is the amount of exchangable cations that a soil can adsorb. The cations are adsorbed primarily in the clay fraction of the soil. Soils vary in their ability to adsorb cations. The type and amount of clay and the content of organic matter affect the cation-exchange capacity. Estimates of cation-exchange capacity are based on laboratory analyses of selected soils with ammonium acetate at pH 7 and are given in units of milliequivalents per 100 grams of soil (meg/100 g). Soils with a relatively high cation-exchange capacity are generally better at supplying cations for plant growth than other soils.

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

Calcium carbonate is given in table 23 as the percent, by weight, of the fine-earth fraction (less than 2 millimeters) consisting of $CaCO_3$. Carbonates have an effect on soil pH, which is related to the availability of plant nutrients. Carbonates in soils are deposited by floodwater and ground water and by the wind in arid regions and developed from highly calcareous parent materials.

Gypsum is expressed a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Soils with more than 1 percent gypsum are corrosive to concrete. Gypsum is readily soluable but may be difficult to remove from soils with poor drainage.

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 a saturated soil paste. Soils with an SAR of more than 13 may be characterized by reduced permeability (resulting from the dispersion of clay), deterioration of soil structure, and a marked increase in soil pH with a resultant decrease in the availability of some plant nutrients.

Erosion factors are shown in table 24 as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and permeability. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size (USDA, 1978).

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.

Soil Features

Table 25 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. The hardness and thickness of the restrictive layer significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

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

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

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

Water Features

Table 26 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 26 indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. Table 26 indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

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

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

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

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

Physical and Chemical Analyses of Selected Soils

The results of physical analyses of several typical pedons in the survey area are given in table 27 and the results of chemical analyses in table 28. The data are for soils sampled at carefully selected sites. Unless otherwise indicated, the pedons are typical of the series. They are described in the section “Soil Series and Their Morphology.” Soil samples were analyzed by National Soil Survey Laboratory, Lincoln, Nebraska.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. Measurements reported as percent or quantity of unit weight were calculated on an ovendry basis. The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods (USDA, 1996).

Sand—(0.05-2.0 mm fraction) weight percentages of material less than 2 mm (3A1).
Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all material less than 2 mm (3A1).
Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of material less than 2 mm (3A1).
Water retained—pressure extraction, percentage of ovendry weight of less than 2 mm material; $^{1}/_{3}$ or $^{1}/_{10}$ bar (4B1), 15 bars (4B2).
Bulk density—of less than 2 mm material, saran-coated clods field moist (4A1a), $^{1}/_{3}$ bar (4A1d), ovendry (4A1h).
Linear extensibility (LEP)—change in clod dimension based on whole soil (4D).
Organic carbon—wet combustion. Walkley-Black modified acid-dichromate, ferric sulfate titration (6A1c).
Organic carbon—dry combustion (6A2d).
Cation-exchange capacity (CEC)—ammonium acetate, pH 7.0, steam distillation (5A8b).
Reaction (pH)—1:1 water dilution (8C1f).
Soil resistivity—saturated paste (8E1).

Carbonate as calcium carbonate—(fraction less than 2 mm) manometric (6E1g).

Electrical conductivity (EC)—saturation extract (8A3a).

Sodium adsorption ratio (SAR)—(5E).

Table 21.--Engineering Index Properties

(Absence of an entry indicates that the data were not estimated.)

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
100:												
Capay-----------	0-15	Clay loam, silty clay, clay	CH, CL	A-7	0	0	100	100	95-100	85-95	40-60	20-40
	15-33	Silty clay, clay loam, clay	CH, CL	A-7	0	0	100	100	95-100	85-95	40-60	20-40
	33-39	Silty clay, clay	CH	A-7	0	0	100	100	95-100	85-95	50-65	30-45
	39-46	Silty clay, clay	CH	A-7	0	0	100	100	95-100	85-95	50-65	30-45
	46-64	Silty clay, clay	CH	A-7	0	0	100	100	95-100	85-95	50-65	30-45
101:												
Capay-----------	0-8	Silty clay, clay	CH, CL	A-7	0	0	100	100	95-100	85-95	50-65	30-45
	8-21	Silty clay, clay	CH, CL	A-7	0	0	100	100	95-100	85-95	50-65	30-45
	21-36	Silty clay, clay	CH	A-7	0	0	100	100	95-100	85-95	50-65	30-45
	36-48	Clay loam	CH	A-7	0	0	100	100	95-100	85-95	40-60	20-40
	48-58	Clay loam	CH	A-7	0	0	100	100	95-100	85-95	40-60	20-40
102, 103:												
Capay-----------	0-15	Clay loam, silty clay, clay	CH, CL	A-7	0	0	100	100	95-100	85-95	40-60	20-40
	15-33	Silty clay, clay, clay loam	CH, CL	A-7	0	0	100	100	95-100	85-95	40-60	20-40
	33-39	Silty clay, clay	CH	A-7	0	0	100	100	95-100	85-95	50-65	30-45
	39-46	Silty clay, clay	CH	A-7	0	0	100	100	95-100	85-95	50-65	30-45
	46-64	Silty clay, clay	CH	A-7	0	0	100	100	95-100	85-95	50-65	30-45
104, 105, 106:												
Willows---------	0-5	Silty clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	25-35
	5-13	Silty clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	25-35
	13-20	Silty clay	CH	A-7	0	0	100	100	95-100	85-100	55-70	30-40
	20-39	Silty clay	CH	A-7	0	0	100	100	95-100	85-100	55-70	30-40
	39-51	Silty clay	CH	A-7	0	0	100	100	95-100	85-100	55-70	30-40
	51-59	Silty clay	CH	A-7	0	0	100	100	95-100	85-100	55-70	30-40
	59-72	Silty clay, clay	CH	A-7	0	0	100	100	95-100	85-100	55-70	30-40
	72-80	Clay, silty clay	CH	A-7	0	0	100	100	95-100	85-100	55-70	30-40
	80-87	Silty clay, clay	CH	A-7	0	0	100	100	95-100	85-100	55-70	30-40

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
107, 108, 109:												
Scribner--------	0-6	Silt loam	CL	A-4	0	0	100	100	100	85-95	30-40	10-20
	6-12	Clay loam	CL	A-6	0	0	100	100	100	85-95	35-45	15-25
	12-20	Clay loam	CL	A-6	0	0	100	100	100	85-95	35-45	15-25
	20-33	Silt loam, loam	CL	A-4	0	0	100	100	90-100	80-90	30-35	10-25
	33-41	Silt loam, loam	CL	A-4	0	0	100	100	90-100	80-90	30-35	10-25
	41-60	Silt loam, loam	CL	A-4	0	0	100	100	90-100	80-90	30-35	10-15
110:												
Hustabel--------	0-3	Sandy loam	SC, SC-SM	A-2, A-4	0	0	100	100	60-70	30-40	20-30	5-10
	3-13	Sandy loam	SC-SM, SC	A-2, A-4	0	0	100	100	60-70	30-40	20-30	5-10
	13-20	Sandy loam	SC-SM, SC	A-2, A-4	0	0	100	100	60-70	30-40	20-30	5-10
	20-31	Sandy loam	SC, SC-SM	A-2, A-4	0	0	100	100	60-70	30-40	20-30	5-10
	31-35	Silt loam	CL-ML, CL	A-4	0	0	100	100	90-100	70-90	20-30	5-10
	35-40	Loam	CL, CL-ML	A-4	0	0	100	100	85-95	60-75	20-30	5-10
	40-48	Silty clay loam	CL	A-7, A-6	0	0	100	100	95-100	85-95	35-45	15-20
	48-52	Clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-80	35-45	15-20
	52-61	Sandy clay loam	CL, SC	A-6, A-7	0	0	100	100	80-90	35-55	35-45	15-20
112, 113:												
Westfan---------	0-4	Loam	CL	A-6	0	0	100	95-100	85-95	60-75	30-35	10-15
	4-14	Loam	CL	A-6	0	0	100	95-100	85-95	60-75	30-35	10-15
	14-24	Sandy clay loam, loam	CL	A-6	0	0	100	95-100	85-95	65-85	30-40	10-20
	24-33	Sandy clay loam, fine sandy loam	CL, CL-ML, SC-SM, SC	A-4, A-6	0	0	100	95-100	70-85	45-60	25-35	5-15
	33-43	Loam, sandy clay loam, fine sandy loam	CL-ML, SC, CL, SC-SM	A-4, A-6	0	0	100	95-100	70-85	45-60	25-35	5-15
	43-56	Fine sandy loam	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0	100	95-100	70-85	45-60	25-35	5-15
	56-69	Sandy clay loam, fine sandy loam	CL, SC-SM, CL-ML, SC	A-4, A-6	0	0	100	95-100	70-85	45-60	25-35	5-15
	69-93	Sandy clay loam, loam	CL	A-6, A-7	0	0	100	95-100	85-95	70-90	35-50	15-25
	93-98	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	70-90	35-50	15-25
114:												
Westfan---------	0-25	Clay loam	CL	A-6	0	0	100	95-100	90-100	70-80	35-40	15-20
	25-44	Clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	70-80	35-50	15-25
	44-60	Clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	70-80	35-50	15-25
115, 116, 117, 118:												
Clear Lake-----	0-4	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
	4-10	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
	10-20	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
	20-34	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
	34-47	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
	47-59	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
	59-79	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
124, 125, 126:												
Moonbend--------	0-8	Silt loam	CL	A-6	0	0	100	100	90-100	70-90	30-35	10-15
	8-19	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-95	35-45	15-20
	19-33	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	100	95-100	85-95	35-45	15-20
	33-41	Silt loam, loam	CL	A-6	0	0	100	100	85-95	60-75	30-35	10-15
	41-51	Loam, silt loam	CL	A-6	0	0	100	100	90-100	70-90	30-35	10-15
	51-63	Loam, silt loam	CL	A-6	0	0	100	100	90-100	70-90	30-35	10-15
	63-75	Loam, silt loam	CL	A-6	0	0	100	100	90-100	70-90	30-35	10-15
	75-85	Silt loam, loam	CL	A-6	0	0	100	100	85-95	60-75	30-35	10-15
127:												
Mallard---------	0-3	Clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	65-80	35-50	15-25
	3-8	Clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	65-80	35-50	15-25
	8-15	Clay	CH	A-7	0	0	100	95-100	90-100	75-95	50-60	25-30
	15-28	Clay	CH	A-7	0	0	100	95-100	90-100	75-95	50-60	25-30
	28-44	Loam, clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	65-80	35-45	15-20
	44-60	Loam, clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	65-80	35-45	15-20
128:												
Mallard---------	0-8	Loam	CL	A-6	0	0	100	95-100	85-95	60-75	30-35	10-15
	8-25	Loam	CL	A-6	0	0	100	95-100	85-95	60-75	30-35	10-15
	25-39	Clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	65-80	35-50	15-25
	39-55	Clay	CH	A-7	0	0	100	95-100	90-100	75-95	50-60	25-30
	55-60	Clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	65-80	35-45	15-20
129:												
Mallard---------	0-3	Clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	65-80	35-50	15-25
	3-8	Clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	65-80	35-50	15-25
	8-15	Clay	CH	A-7	0	0	100	95-100	90-100	75-95	50-60	25-30
	15-28	Clay	CH	A-7	0	0	100	95-100	90-100	75-95	50-60	25-30
	28-44	Loam, clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	65-80	35-45	15-20
	44-60	Loam, clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	65-80	35-45	15-20
130, 131, 133:												
Corbiere--------	0-6	Silt loam	CL	A-6	0	0	100	95-100	90-100	60-90	30-40	10-20
	6-13	Silt loam	CL	A-6	0	0	100	95-100	90-100	60-90	30-40	10-20
	13-21	Silty clay loam	CL, ML	A-6	0	0	100	95-100	90-100	70-100	35-40	10-15
	21-33	Silty clay	CH, CL	A-7	0	0	100	95-100	90-100	70-100	40-60	20-40
	33-46	Silty clay	CH, CL	A-7	0	0	100	95-100	90-100	70-100	40-60	20-40
	46-59	Silty clay	CH, CL	A-7	0	0	100	95-100	90-100	70-100	40-60	20-40
	59-73	Silty clay	CH, CL	A-7	0	0	100	95-100	90-100	70-100	40-60	20-40
	73-94	Clay	CH	A-7	0	0	100	95-100	90-100	70-100	50-60	20-40
	94-114	Clay	CH	A-7	0	0	100	100	90-100	70-100	50-60	20-40
136:												
Colusa----------	0-2	Loam	CL	A-6	0	0	100	100	95-100	60-80	25-35	10-15
	2-9	Silt loam, loam	CL	A-6	0	0	100	100	95-100	60-80	25-35	10-15
	9-19	Silt loam, loam	CL	A-6	0	0	100	100	95-100	60-80	25-35	10-15
	19-25	Silt loam, loam	CL	A-6	0	0	100	100	95-100	60-80	25-35	10-15
	25-35	Silt loam, loam	CL	A-6	0	0	100	100	95-100	60-80	25-35	10-15
	35-52	Silt loam, loam	CL	A-6	0	0	100	100	95-100	60-80	25-35	10-15
	52-64	Loam, fine sandy loam	CL, CL-ML, SC-SM, SC	A-6, A-4	0	0	100	100	90-100	40-60	20-30	5-10
	64-79	Loam, fine sandy loam	CL, SC-SM, CL-ML, SC	A-4, A-6	0	0	100	100	90-100	40-60	20-30	5-10

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
141:												
Myers-----------	0-3	Clay	CH	A-7	0	0	100	100	90-100	80-95	55-75	30-45
	3-25	Clay	CH	A-7	0	0	100	100	90-100	80-95	55-75	30-45
	25-43	Clay	CH	A-7	0	0	100	100	90-100	80-95	55-75	30-45
	43-56	Clay	CH	A-7	0	0	100	100	90-100	80-95	55-75	30-45
	56-71	Clay loam	CL	A-7	0	0	100	100	90-100	80-95	45-55	25-45
144:												
Hillgate--------	0-10	Clay loam	CL	A-6	0	0	100	95-100	90-100	70-80	30-40	10-20
	10-19	Clay loam	CL	A-6	0	0	100	95-100	90-100	70-80	30-40	10-20
	19-50	Clay	CH	A-7	0	0	100	95-100	90-100	85-95	45-60	30-40
	50-60	Clay loam	CL	A-6	0	0	100	95-100	90-100	70-80	30-40	10-20
145, 147:												
Hillgate--------	0-3	Loam	CL	A-6	0	0	100	95-100	90-100	60-80	30-40	15-20
	3-11	Loam	CL	A-6	0	0	100	95-100	90-100	60-80	30-40	15-20
	11-19	Loam	CL	A-6	0	0	100	95-100	90-100	60-80	30-40	15-20
	19-37	Clay	CH	A-7	0	0	100	95-100	90-100	70-95	45-60	30-50
	37-52	Clay loam	CL	A-7	0	0	100	95-100	90-100	70-80	35-50	20-30
	52-62	Clay loam	CL	A-7	0	0	100	95-100	90-100	70-80	35-50	20-30
	62-72	Clay loam	CL	A-7	0	0	100	95-100	90-100	70-80	35-50	20-30
150:												
Arbuckle--------	0-4	Sandy loam	SC, SM, SC-SM	A-2	0	0	90-100	85-100	55-65	25-35	20-30	NP-10
	4-10	Sandy loam	SC, SC-SM, SM	A-2	0	0	90-100	85-100	55-65	25-35	20-30	NP-10
	10-17	Sandy loam	SC, SM, SC-SM	A-2	0	0	90-100	85-100	55-65	25-35	20-30	NP-10
	17-26	Sandy clay loam, loam, gravelly sandy loam	SC, SC-SM, SM	A-2	0	0	70-90	65-85	40-55	25-30	20-30	NP-10
	26-34	Loam, sandy clay loam, gravelly sandy clay loam	GC, SC	A-6	0	0	70-90	65-85	55-70	35-45	30-40	10-20
	34-44	Sandy clay loam, loam, gravelly loam	GC, SC	A-6	0	0	70-90	65-85	55-70	35-45	30-40	10-20
	44-68	Very gravelly sandy loam, very gravelly sandy clay loam	GC, SC	A-2	0	0-5	55-70	50-65	45-55	25-35	30-40	10-20

Table 21.--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*	
151:												
Arbuckle--------	0-4	Sandy loam	SC, SC-SM, SM	A-2	0	0	90-100	85-100	55-65	25-35	20-30	NP-10
	4-10	Sandy loam	SC, SM, SC-SM	A-2	0	0	90-100	85-100	55-65	25-35	20-30	NP-10
	10-17	Sandy loam	SC, SC-SM, SM	A-2	0	0	90-100	85-100	55-65	25-35	20-30	NP-10
	17-26	Sandy clay loam, loam, gravelly sandy loam	SC, SM, SC-SM	A-2	0	0	70-90	65-85	40-55	25-30	20-30	NP-10
	26-34	Loam, sandy clay loam, gravelly sandy clay loam	GC, SC	A-6	0	0	70-90	65-85	55-70	35-45	30-40	10-20
	34-44	Sandy clay loam, loam, gravelly loam	GC, SC	A-6	0	0	70-90	65-85	55-70	35-45	30-40	10-20
	44-68	Very gravelly sandy loam, very gravelly sandy clay loam	GC, SC	A-2	0	0-5	55-70	50-65	45-55	25-35	30-40	10-20
Hillgate--------	0-3	Loam	CL	A-6	0	0	100	95-100	90-100	60-80	30-40	15-20
	3-11	Loam	CL	A-6	0	0	100	95-100	90-100	60-80	30-40	15-20
	11-19	Loam	CL	A-6	0	0	100	95-100	90-100	60-80	30-40	15-20
	19-37	Clay	CH	A-7	0	0	100	95-100	90-100	70-95	45-60	30-50
	37-52	Clay loam	CL	A-7	0	0	100	95-100	90-100	70-80	35-50	20-30
	52-62	Clay loam	CL	A-7	0	0	100	95-100	90-100	70-80	35-50	20-30
	62-72	Clay loam	CL	A-7	0	0	100	95-100	90-100	70-80	35-50	20-30
152:												
Arbuckle--------	0-8	Gravelly loam	CL, SC, CL-ML, GC	A-4	0	0	75-90	65-85	55-80	50-65	20-30	NP-10
	8-29	Gravelly clay loam	GC, CL, SC	A-6	0	0	65-85	55-75	50-70	40-60	35-45	15-25
	29-51	Gravelly clay loam	CL, GC, SC	A-6	0	0	65-85	55-75	50-70	40-60	35-45	15-25
	51-60	Very gravelly clay loam	GC, CL, SC	A-2	0	0-15	45-55	40-55	25-45	20-35	35-45	15-22
155:												
Alcapay---------	0-5	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	5-10	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	10-24	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	24-35	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	35-53	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	53-64	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
160:												
Grandbend-------	0-16	Loam	CL	A-6	0	0	100	100	85-95	60-75	25-35	10-15
	16-27	Silt loam, loam	CL	A-6, A-4	0	0	100	100	85-100	60-75	20-35	5-15
	27-44	Sandy loam	SC-SM, SC	A-2, A-4	0	0	100	100	60-70	30-40	20-30	5-10
	44-54	Silt loam	CL	A-6	0	0	100	100	90-100	70-90	25-35	10-15
	54-64	Silty clay, silty clay loam	CH, CL	A-7	0	0	100	100	95-100	85-95	40-55	20-30
	64-67	Silty clay loam	CH, CL	A-7	0	0	100	100	95-100	85-95	40-55	20-30

Table 21.--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*	
170, 171:												
Vina------------	0-8	Loam, fine sandy loam	CL-ML, CL	A-6, A-4	0	0	100	95-100	75-95	50-75	25-35	5-15
	8-14	Fine sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	75-95	50-75	25-35	5-15
	14-21	Fine sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	75-95	50-75	25-35	5-15
	21-26	Fine sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	75-95	50-75	25-35	5-15
	26-46	Loam, fine sandy loam, silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	75-95	50-75	25-35	5-15
	46-48	Silt loam, sandy loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	70-90	25-35	5-15
	48-60	Silt loam, sandy loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	70-90	25-35	5-15
172:												
Vina------------	0-15	Loam, fine sandy loam	CL-ML, CL	A-6, A-4	0	0	100	95-100	75-95	50-75	25-35	5-15
	15-25	Fine sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	75-95	50-75	25-35	5-15
	25-42	Loam, fine sandy loam, silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	75-95	50-75	25-35	5-15
	42-52	Silt loam, sandy loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	70-90	25-35	5-15
	52-60	Silt loam, sandy loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	70-90	25-35	5-15
174:												
Vina------------	0-8	Loam, fine sandy loam	CL-ML, CL	A-6, A-4	0	0	100	95-100	75-95	50-75	25-35	5-15
	8-14	Fine sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	75-95	50-75	25-35	5-15
	14-21	Fine sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	75-95	50-75	25-35	5-15
	21-26	Fine sandy loam, loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	75-95	50-75	25-35	5-15
	26-46	Loam, fine sandy loam, silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	75-95	50-75	25-35	5-15
	46-48	Silt loam, sandy loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	70-90	25-35	5-15
	48-60	Silt loam, sandy loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	80-100	70-90	25-35	5-15
175:												
Tujunga---------	0-10	Loam	CL, CL-ML	A-4	0	0	100	100	85-95	50-70	20-30	5-10
	10-17	Loamy sand, fine sand	SM, SP-SM	A-2	0	0	100	100	65-80	10-30	0-10	NP
	17-37	Loamy sand, fine sand	SM, SP-SM	A-2	0	0	100	100	65-80	10-30	0-10	NP
	37-62	Loamy sand, fine sand	SM, SP-SM	A-2	0	0	100	100	65-80	10-30	0-10	NP

Table 21.--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	
176:												
Columbia--------	0-10	Fine sandy loam, loam	CL, CL-ML	A-4, A-2	0	0	100	95-100	75-95	50-75	25-35	5-15
	10-14	Fine sandy loam, loam	CL, CL-ML	A-4, A-2	0	0	100	95-100	75-95	50-75	25-35	5-15
	14-19	Loam, fine sandy loam, silt loam	CL, CL-ML	A-4, A-2	0	0	100	95-100	75-95	50-75	25-35	5-15
	19-33	Fine sandy loam, sandy loam	CL, CL-ML	A-4, A-2	0	0	100	95-100	75-95	50-75	25-35	5-15
	33-38	Fine sandy loam, sandy loam	CL, CL-ML	A-4, A-2	0	0	100	95-100	75-95	50-75	25-35	5-15
	38-68	Very fine sandy loam	CL-ML, CL	A-4, A-2	0	0	100	95-100	75-95	50-75	25-35	5-15
177:												
Holillipah------	0-8	Loamy sand	SM	A-2	0	0	90-100	85-100	60-75	20-30	0-10	NP
	8-32	Sand	SM	A-2, A-1	0	0	80-100	75-100	35-75	10-30	0-10	NP
	32-35	Loamy sand	SM	A-2, A-1	0	0	80-100	75-100	35-75	10-30	0-10	NP
	35-47	Fine sandy loam, loam, silt loam	CL, CL-ML	A-4, A-6	0	0	100	95-100	75-95	50-75	5-20	NP-10
	47-61	Loamy fine sand	SM	A-2, A-1	0	0	80-100	75-100	35-75	10-30	0-10	NP
185:												
Riverwash-------	0-3	Sandy loam	SM	A-2, A-4	0	0	90-100	90-100	50-80	30-45	0-10	NP
	3-60	Stratified gravelly coarse sand to loam	SM, GM	A-1, A-2	0	0	80-95	80-95	45-70	20-35	0-10	NP
187:												
Westfan---------	0-4	Loam	CL	A-6	0	0	100	95-100	85-95	60-75	30-35	10-15
	4-14	Loam	CL	A-6	0	0	100	95-100	85-95	60-75	30-35	10-15
	14-24	Sandy clay loam, loam	CL	A-6	0	0	100	95-100	85-95	65-85	30-40	10-20
	24-33	Sandy clay loam, fine sandy loam	CL, SC-SM, CL-ML, SC	A-4, A-6	0	0	100	95-100	70-85	45-60	25-35	5-15
	33-43	Loam, sandy clay loam, fine sandy loam	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0	100	95-100	70-85	45-60	25-35	5-15
	43-56	Fine sandy loam	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0	100	95-100	70-85	45-60	25-35	5-15
	56-69	Sandy clay loam, fine sandy loam	CL, SC-SM, CL-ML, SC	A-4, A-6	0	0	100	95-100	70-85	45-60	25-35	5-15
	69-93	Sandy clay loam, loam	CL	A-6, A-7	0	0	100	95-100	85-95	70-90	35-50	15-25
	93-98	Silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	70-90	35-50	15-25
188:												
Westfan---------	0-15	Loam	CL, CL-ML	A-4	0	0	90-100	85-95	65-85	50-70	25-30	5-10
	15-41	Clay loam	CL	A-6	0	0	90-100	85-95	70-90	55-75	30-35	10-15
	41-60	Clay	CH	A-7	0	0	85-95	80-95	70-90	60-85	45-55	20-30

Table 21.--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	
189:												
Arand-----------	0-8	Very gravelly sandy loam	SC-SM	A-1, A-2	0	0	60-85	55-85	35-55	15-30	15-25	NP-5
	8-18	Very gravelly sandy loam	SC-SM	A-1, A-2	0	0	60-85	55-85	35-55	15-30	15-25	NP-5
	18-24	Very gravelly sandy loam	SC-SM	A-1, A-2	0	0	60-85	55-85	35-55	15-30	15-25	NP-5
	24-65	Extremely gravelly loamy sand, very gravelly sand	SC-SM	A-1	0	0	45-65	40-65	25-45	5-20	10-20	NP-5
190:												
Arand-----------	0-10	Very gravelly loam	GC, GC-GM	A-1, A-2	0	0-5	30-50	25-50	20-40	15-30	20-40	5-20
	10-32	Extremely gravelly loam	GC, GC-GM	A-1, A-2	0	0-5	20-30	15-25	10-25	10-20	20-40	5-20
	32-60	Extremely gravelly loamy sand	GW-GM	A-1	0	0-20	20-30	15-25	5-20	5-10	10-20	NP-5
193:												
Westfan---------	0-4	Gravelly loam	CL-ML, CL, SC, SC-SM	A-4	0	0	65-85	60-80	50-70	35-60	25-30	5-10
	4-20	Gravelly loam	CL, SC	A-6	0	0	65-85	60-80	50-70	35-60	30-35	10-15
	20-30	Gravelly loam	CL, SC	A-6	0	0	65-85	60-80	50-70	35-60	30-35	10-15
	30-60	Gravelly loam	CL, SC	A-6	0	0	65-85	60-80	50-70	35-60	30-35	10-15
200:												
Clear Lake------	0-4	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
	4-10	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
	10-20	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
	20-34	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
	34-47	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
	47-59	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
	59-79	Clay	CH	A-7	0	0	100	100	95-100	90-100	55-75	30-45
204, 205, 206:												
Capay-----------	0-4	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	4-11	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	11-23	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	23-30	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	30-43	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	43-58	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	58-74	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	74-90	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	90-102	Clay	CH	A-7	0	0	95-100	95-100	95-100	85-100	50-65	30-45

Table 21.--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*	
210:												
Corval----------	0-8	Loam	CL	A-6	0	0	100	100	85-95	60-75	30-35	10-15
	8-24	Silty clay loam, clay loam	CL	A-7, A-6	0	0	100	100	90-100	70-80	35-45	15-20
	24-36	Silty clay loam, clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-80	35-45	15-20
	36-46	Silty clay loam, clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-80	35-45	15-20
	46-60	Silty clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-80	35-45	15-20
	60-70	Silty clay loam, clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-80	35-45	15-20
211:												
Corval----------	0-10	Clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-80	35-45	15-20
	10-50	Clay loam	CL	A-7, A-6	0	0	100	100	90-100	70-80	35-45	15-20
	50-60	Clay loam	CL	A-7, A-6	0	0	100	100	90-100	70-80	35-45	15-20
212, 213:												
Ayar------------	0-9	Clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-65	30-40
	9-25	Clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-65	30-40
	25-36	Clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-65	30-40
	36-46	Clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-65	30-40
	46-58	Clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-65	30-40
	58-72	Clay loam, clay	CH	A-7	0	0	100	95-100	90-100	75-100	50-65	25-40
	>72	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
215, 216												
Altamont--------	0-3	Silty clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	3-9	Silty clay, clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	9-23	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	23-35	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	35-43	Clay, very gravelly silty clay, clay loam	CH	A-7	0	0	75-100	65-100	65-100	60-95	40-65	20-40
	43-49	Clay, silty clay, very gravelly clay loam	CH	A-7	0	0	60-100	45-100	45-100	45-95	40-65	20-40
	>49	Weathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
215, 216												
Sehorn----------	0-5	Silty clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-70	30-40
	5-9	Clay, silty clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-70	30-40
	9-19	Clay, silty clay	CH	A-7	0	0	95-100	95-100	90-100	85-95	55-70	30-40
	19-26	Clay, gravelly silty clay	CH	A-7	0	0	60-100	50-100	45-100	45-95	55-65	30-35
	26-35	Extremely gravelly silty clay	CH	A-7	0	0	30-100	30-100	25-100	25-95	55-65	30-35
	>35	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
218:												
Sehorn----------	0-5	Silty clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-70	30-40
	5-9	Clay, silty clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-70	30-40
	9-19	Clay, silty clay	CH	A-7	0	0	95-100	95-100	90-100	85-95	55-70	30-40
	19-26	Clay, gravelly silty clay	CH	A-7	0	0	60-100	50-100	45-100	45-95	55-65	30-35
	26-35	Extremely gravelly silty clay	CH	A-7	0	0	30-100	30-100	25-100	25-95	55-65	30-35
	>35	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Altamont--------	0-3	Silty clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	3-9	Silty clay, clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	9-23	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	23-35	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	35-43	Clay, very gravelly silty clay, clay loam	CH	A-7	0	0	75-100	65-100	65-100	60-95	40-65	20-40
	43-49	Clay, silty clay, very gravelly clay loam	CH	A-7	0	0	60-100	45-100	45-100	45-95	40-65	20-40
	>49	Weathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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	
220, 221:												
Altamont--------	0-3	Silty clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	3-9	Silty clay, clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	9-23	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	23-35	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	35-43	Clay, very gravelly silty clay, clay loam	CH	A-7	0	0	75-100	65-100	65-100	60-95	40-65	20-40
	43-49	Clay, silty clay, very gravelly clay loam	CH	A-7	0	0	60-100	45-100	45-100	45-95	40-65	20-40
	>49	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
230:												
Corning---------	0-4	Clay loam	CL	A-6	0	0	90-100	85-100	75-95	50-75	25-40	10-20
	4-9	Clay loam	CL	A-6	0	0	90-100	85-100	75-95	50-75	25-40	10-20
	9-20	Gravelly clay loam, clay loam, gravelly clay, clay	CH, CL	A-7	0	0	90-100	85-100	75-95	50-75	40-60	20-30
	20-31	Gravelly clay, gravelly clay loam, clay loam	CH, CL	A-7	0	0-15	90-100	85-100	75-95	50-75	40-60	20-30
	31-39	Clay loam, gravelly clay, gravelly clay loam	CL, SC	A-6	0	0-15	70-85	60-80	50-70	35-60	30-40	10-15
	39-52	Gravelly loam, very gravelly loam, gravelly sandy loam, very cobbly sandy clay loam	GC	A-1, A-2	0	10-30	35-60	30-55	20-50	10-30	20-35	5-15
	52-60	Gravelly loam, very gravelly loam, very gravelly sandy loam	GC	A-1, A-2	0	10-30	35-60	30-55	20-50	10-30	20-35	5-15
232:												
Maywood---------	0-16	Gravelly loam	SC, SC-SM, CL, CL-ML	A-4	0	0	90-100	70-85	60-80	40-65	25-30	5-10
	16-22	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	80-90	50-75	25-30	5-10
	22-41	Loam	CL, CL-ML	A-4	0	0	95-100	85-100	80-90	50-75	25-30	5-10
	41-57	Silt loam	CL, CL-ML	A-4	0	0	95-100	90-100	80-95	65-90	25-30	5-10
	57-60	Fine sandy loam	SC, CL-ML, SC-SM, CL	A-4	0	0	95-100	85-100	60-85	35-55	25-30	5-10

Table 21.--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*	
233:												
Eastpark--------	0-7	Gravelly clay loam, clay loam	CL	A-6, A-7-6	0	0	90-100	90-100	75-90	60-80	40-50	20-30
	7-15	Extremely gravelly clay, gravelly sandy clay loam, very gravelly clay loam, gravelly clay loam	CL	A-6, A-7-6	0	0-10	80-90	70-85	65-80	50-75	40-55	20-35
	15-26	Extremely gravelly clay, very gravelly clay loam, gravelly sandy clay loam, very gravelly clay	GC	A-2-7, A-7	0	0-10	40-60	30-50	25-50	20-45	55-65	35-40
	26-45	Extremely gravelly sandy clay loam, very gravelly sandy clay loam, extremely gravelly clay loam	GC	A-2	0	0-10	20-35	10-25	10-25	10-20	40-50	20-30
	45-54	Loam	CL	A-6	0	0	90-100	90-100	75-90	60-80	35-40	15-20
	54-60	Extremely gravelly sandy clay loam	GC	A-2	0	0	25-35	15-25	10-25	5-15	35-45	15-25
241:												
Contra Costa----	0-3	Loam	CL	A-6	0	0	80-100	75-100	70-90	50-70	30-35	10-15
	3-8	Clay loam	CL	A-6, A-7	0	0	80-100	75-100	70-100	50-70	35-40	15-20
	8-16	Clay loam	CL	A-6, A-7	0	0	90-100	85-100	80-100	75-95	35-40	15-20
	16-28	Clay	CH, CL	A-7	0	0	90-100	85-100	80-100	75-95	45-55	25-35
	28-35	Gravelly clay loam, very gravelly clay loam	GC	A-6, A-7	0	0-10	55-70	50-65	45-60	35-45	35-40	15-20
	>35	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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	
241:												
Altamont--------	0-3	Silty clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	3-9	Silty clay, clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	9-23	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	23-35	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	35-43	Clay, very gravelly silty clay, clay loam	CH	A-7	0	0	75-100	65-100	65-100	60-95	40-65	20-40
	43-49	Clay, silty clay, very gravelly clay loam	CH	A-7	0	0	60-100	45-100	45-100	45-95	40-65	20-40
	>49	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
253:												
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Loam, sandy clay loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Altamont--------	0-3	Silty clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	3-9	Silty clay, clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	9-23	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	23-35	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	35-43	Clay, very gravelly silty clay, clay loam	CH	A-7	0	0	75-100	65-100	65-100	60-95	40-65	20-40
	43-49	Clay, silty clay, very gravelly clay loam	CH	A-7	0	0	60-100	45-100	45-100	45-95	40-65	20-40
	>49	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
255:												
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Loam, sandy clay loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
257:												
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Loam, sandy clay loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Capay-----------	0-4	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	4-11	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	11-23	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	23-30	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	30-43	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	43-58	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	58-74	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	74-90	Clay	CH	A-7	0	0	100	100	95-100	85-100	50-65	30-45
	90-102	Clay	CH	A-7	0	0	95-100	95-100	95-100	85-100	50-65	30-45
261:												
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Sandy clay loam, loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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*	
261:												
Altamont--------	0-3	Silty clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	3-9	Silty clay, clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	9-23	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	23-35	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	35-43	Clay, very gravelly silty clay, clay loam	CH	A-7	0	0	75-100	65-100	65-100	60-95	40-65	20-40
	43-49	Clay, silty clay, very gravelly clay loam	CH	A-7	0	0	60-100	45-100	45-100	45-95	40-65	20-40
	>49	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
270, 271:												
Balcom----------	0-2	Silt loam	CL-ML	A-4	0	0	90-100	75-100	60-100	50-80	20-25	5-10
	2-11	Silt loam	CL-ML	A-4	0	0	90-100	75-100	60-100	50-80	20-25	5-10
	11-18	Silty clay loam, silt loam	CL	A-4	0	0	90-100	75-100	60-100	50-80	25-35	10-15
	18-33	Silt loam	CL	A-4	0	0	90-100	75-100	60-100	50-80	25-35	10-15
	>33	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
Ayar------------	0-9	Clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-65	30-40
	9-25	Clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-65	30-40
	25-36	Clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-65	30-40
	36-46	Clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-65	30-40
	46-58	Clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-65	30-40
	58-72	Clay loam, clay	CH	A-7	0	0	100	95-100	90-100	75-100	50-65	25-40
	>72	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
275:												
Goldeagle-------	0-3	Sandy clay loam	SC	A-7, A-6	0	0	95-100	90-100	75-85	40-50	30-45	10-20
	3-9	Clay loam, clay	CL	A-7	0	0	95-100	90-100	80-100	70-95	40-50	20-30
	9-25	Clay loam, clay	CL	A-7	0	0	95-100	90-100	80-100	70-95	40-50	20-30
	25-33	Clay loam, clay	CL	A-7	0	0	95-100	90-100	80-100	70-95	40-50	20-30
	33-49	Sandy loam, loam	CL	A-6	0	0	95-100	90-100	80-100	70-95	25-35	10-15
	49-59	Loam, sandy loam	CL	A-6	0	0	95-100	90-100	80-100	70-95	25-35	10-15
	>59	Weathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
275:												
Positas	0-2	Gravelly sandy loam	SC	A-2	0	0-5	70-90	65-85	35-55	20-30	25-35	10-20
	2-9	Gravelly loam, gravelly sandy loam	SC	A-2	0	0-5	70-90	65-85	35-55	20-30	25-35	10-20
	9-21	Gravelly loam, gravelly sandy loam	SC	A-2	0	0-5	70-90	65-85	35-55	20-30	25-35	10-20
	21-34	Gravelly clay	CH	A-7	0	0-5	80-90	75-85	65-80	50-70	45-65	25-40
	34-50	Very gravelly clay	CH	A-7	0	0-5	45-75	40-65	35-60	30-55	45-65	25-40
	50-62	Very gravelly clay	CH	A-7	0	0-5	45-75	40-65	35-60	30-55	45-65	25-40
	62-80	Very gravelly clay	CH	A-7	0	0-5	45-75	40-65	35-60	30-55	45-65	25-40
Balcom	0-2	Silt loam	CL-ML	A-4	0	0	90-100	75-100	60-100	50-80	20-25	5-10
	2-11	Silt loam	CL-ML	A-4	0	0	90-100	75-100	60-100	50-80	20-25	5-10
	11-18	Silty clay loam, silt loam	CL	A-4	0	0	90-100	75-100	60-100	50-80	25-35	10-15
	18-33	Silt loam	CL	A-4	0	0	90-100	75-100	60-100	50-80	25-35	10-15
	>33	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
276:												
Positas	0-2	Gravelly sandy loam	SC	A-2	0	0-5	70-90	65-85	35-55	20-30	25-35	10-20
	2-9	Gravelly loam, gravelly sandy loam	SC	A-2	0	0-5	70-90	65-85	35-55	20-30	25-35	10-20
	9-21	Gravelly loam, gravelly sandy loam	SC	A-2	0	0-5	70-90	65-85	35-55	20-30	25-35	10-20
	21-34	Gravelly clay	CH	A-7	0	0-5	80-90	75-85	65-80	50-70	45-65	25-40
	34-50	Very gravelly clay	CH	A-7	0	0-5	45-75	40-65	35-60	30-55	45-65	25-40
	50-62	Very gravelly clay	CH	A-7	0	0-5	45-75	40-65	35-60	30-55	45-65	25-40
	62-80	Very gravelly clay	CH	A-7	0	0-5	45-75	40-65	35-60	30-55	45-65	25-40
280:												
Skyhigh	0-3	Loam	CL	A-6, A-7	0	0	90-100	85-95	75-85	60-70	30-35	10-15
	3-8	Gravelly clay loam	CL	A-7	0	0	70-85	65-80	60-80	55-65	35-40	15-20
	8-25	Gravelly clay, gravelly clay loam	CH	A-7	0	0	70-85	65-80	60-80	55-65	40-55	20-30
	25-37	Gravelly sandy clay loam	SC	A-7	0	0	70-85	65-80	55-75	35-45	35-40	15-20
	>37	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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	
280:												
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Loam, sandy clay loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
300:												
Contra Costa----	0-3	Loam	CL	A-6	0	0	80-100	75-100	70-90	50-70	30-35	10-15
	3-8	Clay loam	CL	A-6, A-7	0	0	80-100	75-100	70-100	50-70	35-40	15-20
	8-16	Clay loam	CL	A-6, A-7	0	0	90-100	85-100	80-100	75-95	35-40	15-20
	16-28	Clay	CH, CL	A-7	0	0	90-100	85-100	80-100	75-95	45-55	25-35
	28-35	Gravelly clay loam, very gravelly clay loam	GC	A-6, A-7	0	0-10	55-70	50-65	45-60	35-45	35-40	15-20
	>35	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Loam, sandy clay loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
305, 311:												
Contra Costa----	0-3	Loam	CL	A-6	0	0	80-100	75-100	70-90	50-70	30-35	10-15
	3-8	Clay loam	CL	A-6, A-7	0	0	80-100	75-100	70-100	50-70	35-40	15-20
	8-16	Clay loam	CL	A-6, A-7	0	0	90-100	85-100	80-100	75-95	35-40	15-20
	16-28	Clay	CH, CL	A-7	0	0	90-100	85-100	80-100	75-95	45-55	25-35
	28-35	Gravelly clay loam, very gravelly clay loam	GC	A-6, A-7	0	0-10	55-70	50-65	45-60	35-45	35-40	15-20
	>35	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
312, 313:												
Saltcanyon------	0-13	Loam	CL, CL-ML	A-4, A-6	0	0-5	95-100	90-100	75-95	55-75	25-35	5-15
	13-25	Clay loam, sandy clay loam, loam	CL	A-7	0	0-5	95-100	90-100	75-95	55-75	30-40	10-15
	25-43	Clay loam, sandy clay loam, loam	CL	A-7	0	0-5	95-100	90-100	75-95	55-75	30-40	10-15
	43-61	Clay loam, sandy clay loam, loam	CL	A-7	0	0-5	95-100	90-100	75-95	55-75	30-40	10-15

Table 21.--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	
315:												
Mallard---------	0-3	Clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	65-80	35-50	15-25
	3-8	Clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	65-80	35-50	15-25
	8-15	Clay	CH	A-7	0	0	100	95-100	90-100	75-95	50-60	25-30
	15-28	Clay	CH	A-7	0	0	100	95-100	90-100	75-95	50-60	25-30
	28-44	Loam, clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	65-80	35-45	15-20
	44-60	Loam, clay loam	CL	A-7, A-6	0	0	100	95-100	90-100	65-80	35-45	15-20
316:												
Hillgate--------	0-3	Loam	CL	A-6	0	0	100	95-100	90-100	60-80	30-40	13-21
	3-11	Loam	CL	A-6	0	0	100	95-100	90-100	60-80	30-40	13-21
	11-19	Loam	CL	A-6	0	0	100	95-100	90-100	60-80	30-40	13-21
	19-37	Clay	CH	A-7	0	0	100	95-100	90-100	70-95	45-60	33-49
	37-52	Clay loam	CL	A-7	0	0	100	95-100	90-100	70-80	35-50	22-31
	52-62	Clay loam	CL	A-7	0	0	100	95-100	90-100	70-80	35-50	22-31
	62-72	Clay loam	CL	A-7	0	0	100	95-100	90-100	70-80	35-50	22-31
320:												
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Loam, sandy clay loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
329:												
Sehorn----------	0-5	Silty clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-70	30-40
	5-9	Clay, silty clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-70	30-40
	9-19	Clay, silty clay	CH	A-7	0	0	95-100	95-100	90-100	85-95	55-70	30-40
	19-26	Clay, gravelly silty clay	CH	A-7	0	0	60-100	50-100	45-100	45-95	55-65	30-35
	26-35	Extremely gravelly silty clay	CH	A-7	0	0	30-100	30-100	25-100	25-95	55-65	30-35
	>35	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Loam, sandy clay loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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	
329:												
Altamont	0-3	Silty clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	3-9	Silty clay, clay	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	9-23	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	23-35	Clay, silty clay, clay loam	CH	A-7	0	0	100	95-100	95-100	75-100	40-65	20-40
	35-43	Clay, very gravelly silty clay, clay loam	CH	A-7	0	0	75-100	65-100	65-100	60-95	40-65	20-40
	43-49	Clay, silty clay, very gravelly clay loam	CH	A-7	0	0	60-100	45-100	45-100	45-95	40-65	20-40
	>49	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
330:												
Millsholm	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Loam, sandy clay loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Contra Costa	0-3	Loam	CL	A-6	0	0	80-100	75-100	70-90	50-70	30-35	10-15
	3-8	Clay loam	CL	A-6, A-7	0	0	80-100	75-100	70-100	50-70	35-40	15-20
	8-16	Clay loam	CL	A-6, A-7	0	0	90-100	85-100	80-100	75-95	35-40	15-20
	16-28	Clay	CH, CL	A-7	0	0	90-100	85-100	80-100	75-95	45-55	25-35
	28-35	Gravelly clay loam, very gravelly clay loam	GC	A-6, A-7	0	0-10	55-70	50-65	45-60	35-45	35-40	15-20
	>35	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
331:												
Sehorn	0-5	Silty clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-70	30-40
	5-9	Clay, silty clay	CH	A-7	0	0	100	95-100	90-100	85-100	55-70	30-40
	9-19	Clay, silty clay	CH	A-7	0	0	95-100	95-100	90-100	85-95	55-70	30-40
	19-26	Clay, gravelly silty clay	CH	A-7	0	0	60-100	50-100	45-100	45-95	55-65	30-35
	26-35	Extremely gravelly silty clay	CH	A-7	0	0	30-100	30-100	25-100	25-95	55-65	30-35
	>35	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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*	
331:												
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Sandy clay loam, loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
332:												
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Loam, sandy clay loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
334:												
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Loam, sandy clay loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Contra Costa----	0-3	Loam	CL	A-6	0	0	80-100	75-100	70-90	50-70	30-35	10-15
	3-8	Clay loam	CL	A-6, A-7	0	0	80-100	75-100	70-100	50-70	35-40	15-20
	8-16	Clay loam	CL	A-6, A-7	0	0	90-100	85-100	80-100	75-95	35-40	15-20
	16-28	Clay	CH, CL	A-7	0	0	90-100	85-100	80-100	75-95	45-55	25-35
	28-35	Gravelly clay loam, very gravelly clay loam	GC	A-6, A-7	0	0-10	55-70	50-65	45-60	35-45	35-40	15-20
	>35	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
337:												
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Sandy clay loam, loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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*	
337:												
Saltcanyon------	0-13	Loam	CL, CL-ML	A-4, A-6	0	0-5	95-100	90-100	75-95	55-75	25-35	5-15
	13-25	Clay loam, sandy clay loam, loam	CL	A-7	0	0-5	95-100	90-100	75-95	55-75	30-40	10-15
	25-43	Clay loam, sandy clay loam, loam	CL	A-7	0	0-5	95-100	90-100	75-95	55-75	30-40	10-15
	43-61	Clay loam, sandy clay loam, loam	CL	A-7	0	0-5	95-100	90-100	75-95	55-75	30-40	10-15
345:												
Skyhigh---------	0-3	Loam	CL	A-6, A-7	0	0	90-100	85-95	75-85	60-70	30-35	10-15
	3-8	Gravelly clay loam	CL	A-7	0	0	70-85	65-80	60-80	55-65	35-40	15-20
	8-25	Gravelly clay, gravelly clay loam	CH	A-7	0	0	70-85	65-80	60-80	55-65	40-55	20-30
	25-37	Gravelly sandy clay loam	SC	A-7	0	0	70-85	65-80	55-75	35-45	35-40	15-20
	>37	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Sleeper---------	0-5	Clay loam	CL	A-7, A-6	0	0	100	100	90-100	70-80	25-40	5-15
	5-9	Clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-80	25-40	5-15
	9-19	Clay	CL, CH	A-7	0	0	100	100	90-100	70-95	40-60	15-35
	19-35	Clay	CH, CL	A-7	0	0	100	100	90-100	70-95	40-60	15-35
	35-53	Very gravelly clay loam, clay loam	CH, CL, GC	A-7	0	0	55-100	50-100	45-95	35-95	40-60	15-35
	>53	Unweathered bedrock		A-7	---	---	---	---	---	---	---	--
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Sandy clay loam, loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
346:												
Skyhigh---------	0-3	Loam	CL	A-6, A-7	0	0	90-100	85-95	75-85	60-70	30-35	10-15
	3-8	Gravelly clay loam	CL	A-7	0	0	70-85	65-80	60-80	55-65	35-40	15-20
	8-25	Gravelly clay, gravelly clay loam	CH	A-7	0	0	70-85	65-80	60-80	55-65	40-55	20-30
	25-37	Gravelly sandy clay loam	SC	A-7	0	0	70-85	65-80	55-75	35-45	35-40	15-20
	>37	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
346:												
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Loam, sandy clay loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Sleeper---------	0-5	Clay loam	CL	A-7, A-6	0	0	100	100	90-100	70-80	25-40	5-15
	5-9	Clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-80	25-40	5-15
	9-19	Clay	CL, CH	A-7	0	0	100	100	90-100	70-95	40-60	15-35
	19-35	Clay	CH, CL	A-7	0	0	100	100	90-100	70-95	40-60	15-35
	35-53	Very gravelly clay loam, clay loam	CH, GC, CL	A-7	0	0	55-100	50-100	45-95	35-95	40-60	15-35
	>53	Unweathered bedrock		A-7	---	---	---	---	---	---	---	---
347, 348:												
Boar------------	0-5	Loam	CL	A-6	0	0	100	100	85-95	60-75	25-35	5-15
	5-12	Loam	CL	A-6	0	0	100	100	85-95	60-75	25-35	5-15
	12-20	Clay loam	CH	A-7	0	0	100	100	85-100	60-95	40-50	40-50
	20-37	Clay loam	CH	A-7	0	0	100	100	85-100	60-95	40-50	40-50
	37-56	Clay	CH	A-7	0	0	100	100	85-100	60-95	40-50	40-50
	56-75	Clay loam	CH	A-7	0	0	100	100	85-100	60-95	40-50	40-50
Sleeper---------	0-5	Clay loam	CL	A-7, A-6	0	0	100	100	90-100	70-80	25-40	5-15
	5-9	Clay loam	CL	A-6, A-7	0	0	100	100	90-100	70-80	25-40	5-15
	9-19	Clay	CL, CH	A-7	0	0	100	100	90-100	70-95	40-60	15-35
	19-35	Clay	CH, CL	A-7	0	0	100	100	90-100	70-95	40-60	15-35
	35-53	Very gravelly clay loam, clay loam	GC, CH, CL	A-7	0	0	55-100	50-100	45-95	35-95	40-60	15-35
	>53	Unweathered bedrock	---	A-7	---	---	---	---	---	---	---	---
350:												
Haploxererts----	0-5	Clay loam	CL	A-6	0	0-5	85-100	80-95	70-95	55-75	35-45	15-20
	5-15	Gravelly clay loam	CL	A-6	0	0-10	85-95	80-90	70-90	55-75	35-45	15-20
	15-28	Clay	CH	A-7	0	0-10	85-95	80-90	70-90	60-85	45-55	20-30
	28-39	Gravelly clay loam	SC	A-6	0	0-10	65-85	60-80	55-80	45-65	35-45	15-20
	39-52	Very gravelly loam	GC	A-2	0	0-10	40-65	35-60	30-55	20-45	30-35	10-15
	>52	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
355:												
Venado----------	0-3	Clay, clay loam, silty clay	CH	A-7	0	0	100	100	90-100	70-95	45-65	30-55
	3-13	Clay loam, silty clay, clay	CH	A-7	0	0	100	100	90-100	70-95	45-65	30-55
	13-30	Silty clay, clay, clay loam	CH	A-7	0	0	100	100	90-100	70-95	45-65	30-55
	30-38	Clay loam, silty clay, silty clay loam, clay, loam	CH, CL	A-7	0	0	100	100	85-100	60-80	35-50	20-35
	38-53	Clay, silty clay, loam, clay loam, silty clay loam	CL, CH	A-7	0	0	100	100	85-100	60-80	35-45	20-35
	53-61	Clay, loam, silty clay, silty clay loam, clay loam	CL, CH	A-7	0	0	100	100	85-100	60-80	35-45	20-35
	61-69	Clay	CH	A-7	0	0	100	100	90-100	75-95	45-65	35-55
360:												
Bearvalley------	0-5	Gravelly sandy loam	SC	A-2	0	0-5	55-80	50-75	30-55	15-30	20-30	5-10
	5-20	Gravelly sandy loam, very gravelly sandy loam	GC	A-2	0	0-5	45-55	40-50	25-35	10-20	20-30	5-10
	20-34	Gravelly sandy loam, very gravelly sandy loam	GC	A-2	0	0-5	45-55	40-50	25-35	10-20	20-30	5-10
	34-60	Very gravelly sandy loam, very gravelly loamy sand	GC, GC-GM	A-2	0	0-5	30-50	25-45	15-35	5-20	10-20	NP-5
	60-75	Very gravelly loamy sand, extremely gravelly loamy sand	GC, GC-GM	A-2	0	0-5	30-50	25-45	15-35	5-20	10-20	NP-5

Table 21.--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	
365, 366:												
Leesville-------	0-3	Clay loam	CL, CL-ML	A-4, A-6	0	0	80-95	75-90	70-85	55-70	20-30	5-15
	3-16	Clay loam	CL-ML, CL	A-4, A-6	0	0	80-95	75-90	70-85	55-70	20-30	5-15
	16-21	Clay loam	CL-ML, CL	A-4, A-6	0	0	80-95	75-90	70-85	55-70	20-30	5-15
	21-30	Extremely gravelly sandy loam, very gravelly sandy loam, gravelly sandy loam	GC-GM, SC-SM, GC, SC	A-2	0	0	30-75	25-70	15-50	10-30	20-25	5-10
	30-46	Gravelly loamy sand, extremely gravelly loamy sand, very gravelly loamy sand	SC, SC-SM, GC, GC-GM	A-2	0	0	30-75	25-70	15-50	10-30	20-25	5-10
	46-60	Gravelly loamy sand, extremely gravelly loamy sand	SC, GC, SC-SM, GC-GM	A-2	0	0	30-75	25-70	15-55	5-20	20-25	5-10
370:												
Livermore-------	0-7	Very gravelly loam	GC, SC	A-2	0	0	30-80	25-75	15-70	10-60	30-35	10-15
	7-19	Very gravelly loam, very gravelly clay loam, very gravelly sandy clay loam	GC	A-2, A-6, A-7	0	0	30-55	25-50	20-50	10-40	30-45	10-20
	19-41	Very gravelly sandy clay loam, very gravelly loam, very gravelly clay loam	GC	A-6, A-2, A-7	0	0	30-55	25-50	20-50	10-40	30-45	10-20
	41-63	Very gravelly sandy loam, very gravelly loam	GC	A-2, A-6	0	0	30-55	25-50	20-50	10-40	30-35	10-15

Table 21.--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	
371:												
Buttes----------	0-2	Gravelly sandy loam	SC-SM	A-2	0	0	55-80	50-75	30-55	15-30	25-35	5-15
	2-7	Gravelly sandy clay loam, gravelly loam	SC-SM	A-2	0	0	55-80	50-75	40-70	20-40	25-35	5-15
	7-12	Very gravelly loam, very gravelly sandy clay loam, very gravelly clay loam	GC-GM, GC	A-2	0	0	40-55	35-50	30-45	10-30	35-45	15-20
	12-19	Very gravelly sandy clay loam, very gravelly loam, very gravelly clay loam	GC, GC-GM	A-2	0	0	40-55	35-50	30-45	10-30	35-45	15-20
	19-24	Very gravelly sandy loam, very gravelly sandy clay loam, very gravelly clay loam	GC, GC-GM	A-1, A-2	0	0	40-55	35-50	20-35	10-20	25-40	5-20
	>24	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
Millsholm-------	0-2	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	2-8	Loam	CL	A-4	0	0	90-100	85-95	65-85	60-70	25-35	5-15
	8-14	Sandy clay loam, loam, gravelly sandy clay loam, gravelly loam	CL	A-4	0	0	70-100	65-95	55-85	45-70	25-35	5-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
519, 520, 521:												
Stonyford-------	0-3	Gravelly loam	GC-GM, SM, GM, SC-SM	A-4	0	0-10	55-80	50-75	45-65	35-50	25-35	5-10
	3-7	Gravelly clay loam	CL, GC, SC	A-6	0	0-10	55-80	50-75	45-70	35-60	30-40	10-15
	7-14	Gravelly clay loam	CL, GC, SC	A-6	0	0-10	55-80	50-75	45-70	35-60	30-40	10-15
	>14	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Guenoc----------	0-4	Loam	CL, CL-ML, ML	A-4	0	0-5	80-100	75-95	70-85	50-60	25-35	5-10
	4-9	Loam	CL, CL-ML, ML	A-4	0	0-5	80-100	75-95	70-85	50-60	25-35	5-10
	9-18	Gravelly clay loam, clay loam	CL	A-6, A-7	0	0-5	80-100	75-95	70-90	60-85	40-55	20-30
	18-31	Gravelly clay, clay	CL	A-6, A-7	0	0-5	80-100	75-95	70-90	60-85	40-55	20-30
	>31	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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	
524:												
Arand-----------	0-8	Very gravelly sandy loam	SC-SM	A-1, A-2	0	0	60-85	55-85	35-55	15-30	15-25	NP-5
	8-18	Very gravelly sandy loam	SC-SM	A-1, A-2	0	0	60-85	55-85	35-55	15-30	15-25	NP-5
	18-24	Very gravelly sandy loam	SC-SM	A-1, A-2	0	0	60-85	55-85	35-55	15-30	15-25	NP-5
	24-65	Extremely gravelly loamy sand, very gravelly sand	SC-SM	A-1	0	0	45-65	40-65	25-45	5-20	10-20	NP-5
Riverwash-------	0-3	Sandy loam	SM	A-2, A-4	0	0	90-100	90-100	50-80	30-45	0-10	NP
	3-60	Stratified gravelly coarse sand to loam	SM, GM	A-1, A-2	0	0	80-95	80-95	45-70	20-35	0-10	NP
526:												
Etsel-----------	0-3	Gravelly sandy loam	GC-GM, SC, GC, SC-SM	A-2	0	0-5	55-80	50-75	40-70	25-50	20-30	5-10
	3-10	Very gravelly loam, very gravelly sandy loam	GC, GC-GM	A-1, A-2	0	0-5	35-55	30-50	20-45	15-35	20-30	5-10
	>10	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Maymen----------	0-3	Sandy loam	CL-ML, SC, CL, SC-SM	A-4, A-6	0	0-5	80-95	75-95	55-85	40-70	20-35	5-15
	3-16	Gravelly sandy loam	GC-GM, GC, SC, SC-SM	A-2, A-4, A-6	0	0-5	60-80	50-75	30-60	25-50	20-35	5-15
	>16	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Marpa-----------	0-2	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	2-5	Very gravelly sandy loam	GM	A-1, A-2	0	0-5	30-55	25-50	15-35	10-20	25-35	NP-10
	5-14	Very gravelly clay loam, very gravelly sandy clay loam	GC	A-2, A-6	0	5-10	30-55	25-50	20-45	10-40	30-40	10-15
	14-25	Very gravelly clay loam, very gravelly sandy clay loam	GC	A-2, A-6	0	5-10	30-55	25-50	20-45	10-40	30-40	10-15
	>25	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
527:												
Maymen----------	0-3	Sandy loam	CL, SC-SM, CL-ML, SC	A-4, A-6	0	0-5	80-95	75-95	55-85	40-70	20-35	5-15
	3-16	Gravelly sandy loam	GC, SC-SM, GC-GM, SC	A-2, A-4, A-6	0	0-5	60-80	50-75	30-60	25-50	20-35	5-15
	>16	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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	
527:												
Etsel-----------	0-3	Gravelly sandy loam	GC-GM, GC, SC, SC-SM	A-2	0	0-5	55-80	50-75	40-70	25-50	20-30	5-10
	3-10	Very gravelly loam, very gravelly sandy loam	GC, GC-GM	A-1, A-2	0	0-5	35-55	30-50	20-45	15-35	20-30	5-10
	>10	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Speaker---------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-10	Gravelly loam	GM, SM	A-4	0	0-5	60-90	55-75	45-70	35-50	25-30	5-10
	10-17	Gravelly clay loam, clay loam	CL, SC, GC	A-6	0	0-5	60-100	55-100	45-90	35-70	30-40	10-20
	17-26	Gravelly clay loam, clay loam	CL, GC, SC	A-6	0	0-5	60-100	55-100	45-90	35-70	30-40	10-20
	>26	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
528:												
Maymen----------	0-3	Sandy loam	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0-5	80-95	75-95	55-85	40-70	20-35	5-15
	3-16	Gravelly sandy loam	GC-GM, SC, GC, SC-SM	A-2, A-4, A-6	0	0-5	60-80	50-75	30-60	25-50	20-35	5-15
	>16	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Etsel-----------	0-3	Gravelly sandy loam	GC-GM, GC, SC, SC-SM	A-2	0	0-5	55-80	50-75	40-70	25-50	20-30	5-10
	3-10	Very gravelly loam, very gravelly sandy loam	GC, GC-GM	A-1, A-2	0	0-5	35-55	30-50	20-45	15-35	20-30	5-10
	>10	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Snook-----------	0-1	Gravelly sandy loam	SC-SM	A-2	0	0-5	60-80	55-75	35-50	15-30	20-30	5-10
	1-8	Gravelly sandy loam	SC-SM	A-2	0	0-5	60-70	55-65	35-45	15-25	20-30	5-10
	>8	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
529:												
Maymen----------	0-3	Sandy loam	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0-5	80-95	75-95	55-85	40-70	20-35	5-15
	3-16	Gravelly sandy loam	GC, SC-SM, GC-GM, SC	A-2, A-4, A-6	0	0-5	60-80	50-75	30-60	25-50	20-35	5-15
	>16	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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	
529:												
Etsel-----------	0-3	Gravelly sandy loam	GC, GC-GM, SC-SM, SC	A-2	0	0-5	55-80	50-75	40-70	25-50	20-30	5-10
	3-10	Very gravelly loam, very gravelly sandy loam	GC, GC-GM	A-1, A-2	0	0-5	35-55	30-50	20-45	15-35	20-30	5-10
	>10	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Mayacama--------	0-10	Gravelly coarse sandy loam	GC	A-2	0	0-5	60-70	55-65	35-45	15-30	20-30	5-10
	10-21	Gravelly sandy clay loam	GC	A-2	0	0-5	60-70	55-65	50-60	20-35	30-35	10-15
	21-30	Very gravelly sandy clay loam	GC	A-2	0	0-5	35-45	30-40	25-35	10-20	30-35	10-15
	30-37	Gravelly sandy loam, very gravelly sandy loam	GC	A-2	0	0-5	35-45	30-40	20-30	10-15	20-30	5-10
	>37	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
542:												
Okiota----------	0-5	Loam	CL	A-4	0	0-5	90-100	80-95	75-85	55-70	30-40	10-20
	5-8	Clay loam	CL	A-6	0	0-5	90-100	80-95	75-85	60-70	40-50	15-25
	8-15	Clay, clay loam	CH	A-6	0	0-5	90-100	80-95	75-85	65-80	50-60	25-35
	>15	Bedrock			---	---	---	---	---	---	---	---
Dubakella-------	0-3	Gravelly clay loam	GC-GM	A-2	0	0-2	20-40	15-35	15-35	10-30	35-45	15-25
	3-10	Very gravelly clay	GC, GC-GM	A-2	0	0-2	40-55	35-50	35-50	25-45	45-60	25-35
	10-16	Very gravelly clay	GC, GC-GM	A-2	0	0-2	40-55	35-50	35-50	25-45	45-60	25-35
	16-26	Very gravelly clay	GC, GC-GM	A-2	0	0-2	40-55	35-50	35-50	25-45	45-60	25-35
	>26	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Henneke---------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-4	Sandy loam	CL-ML	A-4	0-5	0-15	90-100	85-100	75-95	50-75	20-30	5-10
	4-7	Very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-7	0	0-15	25-65	20-60	20-60	15-55	40-55	20-30
	7-16	Very gravelly clay, extremely gravelly clay	GC, SC	A-7	0	0-15	25-65	20-60	20-60	15-55	40-55	20-30
	>16	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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*	
545:												
Henneke---------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-4	Sandy loam	CL-ML	A-4	0-5	0-15	90-100	85-100	75-95	50-75	20-30	5-10
	4-7	Very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-7	0	0-15	25-65	20-60	20-60	15-55	40-55	20-30
	7-16	Very gravelly clay, extremely gravelly clay	GC, SC	A-7	0	0-15	25-65	20-60	20-60	15-55	40-55	20-30
	>16	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Montara---------	0-6	Gravelly sandy loam	SC-SM	A-2	0	0-2	60-85	55-80	35-55	15-30	20-30	5-15
	6-10	Gravelly sandy loam	SC-SM	A-2	0	0-2	60-85	55-80	35-55	15-30	20-30	5-15
	>10	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
548, 549:												
Henneke---------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-4	Sandy loam	CL-ML	A-4	0-5	0-15	90-100	85-100	75-95	50-75	20-30	5-10
	4-7	Very gravelly clay loam, extremely gravelly clay loam	GC, SC	A-7	0	0-15	25-65	20-60	20-60	15-55	40-55	20-30
	7-16	Very gravelly clay, extremely gravelly clay	GC, SC	A-7	0	0-15	25-65	20-60	20-60	15-55	40-55	20-30
	>16	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Okiota----------	0-5	Loam	CL	A-4	0	0-5	90-100	80-95	75-85	55-70	30-40	10-20
	5-8	Clay loam	CL	A-6	0	0-5	90-100	80-95	75-85	60-70	40-50	15-25
	8-15	Clay, clay loam	CH	A-6	0	0-5	90-100	80-95	75-85	65-80	50-60	25-35
	>15	Bedrock			---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
557:												
Neuns-----------	0-2	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	2-7	Very gravelly loam	GC-GM, GM	A-1, A-2	0	0-5	40-55	35-50	25-45	15-35	15-30	NP-10
	7-15	Very gravelly sandy loam, very gravelly loam	GC-GM, GM	A-1, A-2	0	0-5	40-55	35-50	25-45	15-35	15-30	NP-10
	15-29	Extremely gravelly sandy loam, extremely gravelly loam	GC-GM, GM	A-1, A-2	0	0-15	40-55	35-50	25-45	15-35	15-30	NP-10
	>29	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Bamtush---------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-9	Very gravelly loam	GC, GC-GM	A-2	0	0-5	30-55	25-50	20-45	15-35	25-40	5-15
	9-25	Very gravelly loam	GC, GC-GM	A-2	0	0-5	30-55	25-50	20-45	15-35	25-40	5-15
	25-39	Extremely gravelly clay loam, very gravelly clay loam, extremely gravelly loam, very gravelly loam	GC	A-2, A-6	0	0-5	30-55	25-50	20-45	10-40	35-45	15-25
	39-49	Extremely gravelly loam, extremely gravelly clay loam, very gravelly loam, very gravelly sandy clay loam	GC	A-2, A-6	0	0-5	30-55	25-50	20-45	10-40	35-45	15-25
	49-61	Extremely gravelly clay loam, extremely gravelly loam, very gravelly loam, very gravelly sandy clay loam	GC	A-2	0	0-5	30-55	25-50	20-45	10-40	35-45	15-25
	61-68	Gravelly clay loam	GC	A-6	0	0	65-85	55-75	50-65	40-55	35-50	15-25

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
557:												
Speaker---------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-10	Gravelly loam	GM, SM	A-4	0	0-5	60-90	55-75	45-70	35-50	25-30	5-10
	10-17	Gravelly clay loam, clay loam	CL, GC, SC	A-6	0	0-5	60-100	55-100	45-90	35-70	30-40	10-20
	17-26	Gravelly clay loam, clay loam	CL, SC, GC	A-6	0	0-5	60-100	55-100	45-90	35-70	30-40	10-20
	>26	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
564:												
Fouts-----------	0-6	Gravelly loam	CL	A-6	0	0	70-90	65-85	55-80	45-65	25-35	10-15
	6-12	Very gravelly clay, very gravelly clay loam	CH	A-7	0	0	45-70	40-65	35-65	30-55	45-55	25-35
	12-18	Very gravelly clay, very gravelly clay loam	CH	A-7	0	0	45-70	40-65	35-65	30-55	45-55	25-35
	18-26	Very gravelly clay, very gravelly clay loam	CH	A-7	0	0	45-70	40-65	35-65	30-55	45-55	25-35
	>26	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Yorkville-------	0-2	Clay loam	CL	A-6	0	0	95-100	90-100	80-95	65-80	35-45	15-20
	2-15	Clay loam	CL	A-7	0	0	90-100	85-100	75-95	65-80	40-55	20-30
	15-40	Clay	CH, CL	A-7	0	0	90-100	85-100	75-95	65-80	40-55	20-30
	40-55	Clay loam	CH, CL	A-7	0	0	90-100	85-100	75-95	65-80	40-55	20-30
	55-60	Clay loam	CL	A-6	0	0	90-100	85-100	75-95	60-80	35-45	15-20
	>60	Weathered bedrock	---	---	---	---	---	---	---	---	---	---
Squawrock-------	0-2	Gravelly loam	GC, GC-GM, SC-SM, SC	A-4	0	0	55-80	50-75	35-60	20-50	25-40	5-15
	2-9	Very gravelly clay loam	GC	A-6	0	0	35-55	30-50	25-50	20-40	35-45	15-25
	9-18	Very gravelly clay loam	GC	A-6	0	0	35-55	30-50	25-50	20-40	35-45	15-25
	18-23	Gravelly clay	GC	A-7	0	0	35-55	30-50	25-45	20-40	45-55	20-30
	23-26	Gravelly clay	GC	A-7	---	---	55-80	50-75	35-60	20-50	45-55	20-30
	>26	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
570:												
Endoaquolls-----	0-4	Silt loam	CL	A-4	0	0	100	100	90-100	80-95	20-35	5-15
	4-15	Loam	CL	A-4	0	0	100	100	90-100	80-95	20-35	5-15
	15-24	Silty clay loam	CL	A-6	0	0	100	100	90-100	80-95	35-45	15-25
	24-40	Clay loam	CL	A-6	0	0	100	100	90-100	80-95	35-45	15-25
	40-55	Gravelly loam	SC	A-4	0	0	65-90	60-85	50-75	30-50	25-35	5-15
	55-60	Gravelly loam	SC	A-4	0	0	65-90	60-85	50-75	30-50	25-35	5-15

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
590:												
Neuns-----------	0-2	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	2-7	Very gravelly loam	GC-GM, GM	A-1, A-2	0	0-5	40-55	35-50	25-45	15-35	15-30	NP-10
	7-15	Very gravelly sandy loam, very gravelly loam	GC-GM, GM	A-1, A-2	0	0-5	40-55	35-50	25-45	15-35	15-30	NP-10
	15-29	Extremely gravelly sandy loam, extremely gravelly loam	GC-GM, GM	A-1, A-2	0	0-15	40-55	35-50	25-45	15-35	15-30	NP-10
	>29	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Marpa-----------	0-2	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	2-5	Very gravelly sandy loam	GM	A-1, A-2	0	0-5	30-55	25-50	15-35	10-20	25-35	NP-10
	5-14	Very gravelly clay loam, very gravelly sandy clay loam	GC	A-2, A-6	0	5-10	30-55	25-50	20-45	10-40	30-40	10-15
	14-25	Very gravelly clay loam, very gravelly sandy clay loam	GC	A-2, A-6	0	5-10	30-55	25-50	20-45	10-40	30-40	10-15
	>25	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Goulding--------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-4	Very gravelly loam, gravelly loam	GM, SM	A-4	0	0-5	60-90	55-75	45-70	35-50	20-30	NP-5
	4-8	Extremely gravelly loam, extremely gravelly sandy loam, very gravelly sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	20-55	15-45	10-40	5-30	20-30	NP-10
	8-13	Extremely gravelly loam, very gravelly sandy loam, extremely gravelly sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	20-55	15-45	10-40	5-30	20-30	NP-10
	>13	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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	
591:												
Neuns-----------	0-2	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	2-7	Very gravelly loam	GC-GM, GM	A-1, A-2	0	0-5	40-55	35-50	25-45	15-35	15-30	NP-10
	7-15	Very gravelly sandy loam, very gravelly loam	GC-GM, GM	A-1, A-2	0	0-5	40-55	35-50	25-45	15-35	15-30	NP-10
	15-29	Extremely gravelly sandy loam, extremely gravelly loam	GC-GM, GM	A-1, A-2	0	0-15	40-55	35-50	25-45	15-35	15-30	NP-10
	>29	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Sheetiron-------	0-1	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-4	Gravelly sandy loam	GC, SC	A-4	0	0-10	55-75	50-70	45-60	35-50	20-35	5-15
	4-9	Very gravelly sandy loam	GC	A-1, A-2	0	5-20	30-50	25-50	20-45	15-35	20-35	5-15
	9-18	Very gravelly sandy loam	GC	A-1, A-2	0	5-20	30-50	25-50	20-45	15-35	20-35	5-15
	18-30	Extremely gravelly sandy loam	GC	A-1, A-2	0	5-20	25-30	20-25	15-20	10-15	20-35	5-15
	>30	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Goulding--------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-4	Very gravelly loam, gravelly loam	GM, SM	A-4	0	0-5	60-90	55-75	45-70	35-50	20-30	NP-5
	4-8	Extremely gravelly loam, very gravelly sandy loam, extremely gravelly sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	20-55	15-45	10-40	5-30	20-30	NP-10
	8-13	Extremely gravelly sandy loam, extremely gravelly loam, very gravelly sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	20-55	15-45	10-40	5-30	20-30	NP-10
	>13	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
592:												
Neuns-----------	0-2	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	2-7	Very gravelly loam	GC-GM, GM	A-1, A-2	0	0-5	40-55	35-50	25-45	15-35	15-30	NP-10
	7-15	Very gravelly sandy loam, very gravelly loam	GC-GM, GM	A-1, A-2	0	0-5	40-55	35-50	25-45	15-35	15-30	NP-10
	15-29	Extremely gravelly sandy loam, extremely gravelly loam	GC-GM, GM	A-1, A-2	0	0-15	40-55	35-50	25-45	15-35	15-30	NP-10
	>29	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Goulding--------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-4	Very gravelly loam, gravelly loam	GM, SM	A-4	0	0-5	60-90	55-75	45-70	35-50	20-30	NP-5
	4-8	Extremely gravelly loam, extremely gravelly sandy loam, very gravelly sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	20-55	15-45	10-40	5-30	20-30	NP-10
	8-13	Extremely gravelly loam, extremely gravelly sandy loam, very gravelly sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	20-55	15-45	10-40	5-30	20-30	NP-10
	>13	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Sheetiron-------	0-1	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-4	Gravelly sandy loam	GC, SC	A-4	0	0-10	55-75	50-70	45-60	35-50	20-35	5-15
	4-9	Very gravelly sandy loam	GC	A-1, A-2	0	5-20	30-50	25-50	20-45	15-35	20-35	5-15
	9-18	Very gravelly sandy loam	GC	A-1, A-2	0	5-20	30-50	25-50	20-45	15-35	20-35	5-15
	18-30	Extremely gravelly sandy loam	GC	A-1, A-2	0	5-20	25-30	20-25	15-20	10-15	20-35	5-15
	>30	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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*	
596:												
Yollabolly------	0-2	Very gravelly loam	GM	A-1, A-2	0	0-15	25-55	20-50	15-45	5-30	20-35	NP-10
	2-6	Extremely gravelly loam, very gravelly loam	GM	A-1, A-2	0	0-15	25-55	20-50	15-45	5-30	20-35	NP-10
	6-17	Extremely gravelly loam, very gravelly sandy loam, extremely gravelly sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	25-55	20-50	15-45	5-30	20-35	NP-10
	>17	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Rock outcrop----	0-60	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Freezeout-------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-6	Very gravelly sandy loam	GM	A-1	0	0-15	45-55	40-50	25-35	15-25	20-30	NP-10
	6-17	Very gravelly loam, very gravelly sandy loam	GM	A-1	0	0-15	45-55	40-50	25-35	15-25	20-30	NP-10
	17-26	Very gravelly sandy loam	GM	A-1	0	0-30	25-55	20-50	15-35	5-20	20-30	NP-10
	>26	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
597:												
Yollabolly------	0-2	Very gravelly loam	GM	A-1, A-2	0	0-15	25-55	20-50	15-45	5-30	20-35	NP-10
	2-6	Extremely gravelly loam, very gravelly loam	GM	A-1, A-2	0	0-15	25-55	20-50	15-45	5-30	20-35	NP-10
	6-17	Extremely gravelly loam, extremely gravelly sandy loam, very gravelly sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	25-55	20-50	15-45	5-30	20-35	NP-10
	>17	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--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	
597:												
Freezeout	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-6	Very gravelly sandy loam	GM	A-1	0	0-15	45-55	40-50	25-35	15-25	20-30	NP-10
	6-17	Very gravelly loam, very gravelly sandy loam	GM	A-1	0	0-15	45-55	40-50	25-35	15-25	20-30	NP-10
	17-26	Very gravelly sandy loam	GM	A-1	0	0-30	25-55	20-50	15-35	5-20	20-30	NP-10
	>26	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
599, 600:												
Freezeout	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-6	Very gravelly sandy loam	GM	A-1	0	0-15	45-55	40-50	25-35	15-25	20-30	NP-10
	6-17	Very gravelly loam, very gravelly sandy loam	GM	A-1	0	0-15	45-55	40-50	25-35	15-25	20-30	NP-10
	17-26	Very gravelly sandy loam	GM	A-1	0	0-30	25-55	20-50	15-35	5-20	20-30	NP-10
	>26	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Yollabolly	0-2	Very gravelly loam	GM	A-1, A-2	0	0-15	25-55	20-50	15-45	5-30	20-35	NP-10
	2-6	Extremely gravelly loam, very gravelly loam	GM	A-1, A-2	0	0-15	25-55	20-50	15-45	5-30	20-35	NP-10
	6-17	Extremely gravelly loam, extremely gravelly sandy loam, very gravelly sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	25-55	20-50	15-45	5-30	20-35	NP-10
	>17	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
610:												
Neuns-----------	0-2	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	2-7	Very gravelly loam	GC-GM, GM	A-1, A-2	0	0-5	40-55	35-50	25-45	15-35	15-30	NP-10
	7-15	Very gravelly sandy loam, very gravelly loam	GC-GM, GM	A-1, A-2	0	0-5	40-55	35-50	25-45	15-35	15-30	NP-10
	15-29	Extremely gravelly sandy loam, extremely gravelly loam	GC-GM, GM	A-1, A-2	0	0-15	40-55	35-50	25-45	15-35	15-30	NP-10
	>29	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---
Bamtush---------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-9	Very gravelly loam	GC, GC-GM	A-2	0	0-5	30-55	25-50	20-45	15-35	25-40	5-15
	9-25	Very gravelly loam	GC, GC-GM	A-2	0	0-5	30-55	25-50	20-45	15-35	25-40	5-15
	25-39	Extremely gravelly clay loam, very gravelly clay loam, extremely gravelly loam, very gravelly loam	GC	A-2, A-6	0	0-5	30-55	25-50	20-45	10-40	35-45	15-25
	39-49	Extremely gravelly loam, very gravelly loam, extremely gravelly clay loam, very gravelly sandy clay loam	GC	A-2, A-6	0	0-5	30-55	25-50	20-45	10-40	35-45	15-25
	49-61	Extremely gravelly clay loam, extremely gravelly loam, very gravelly loam, very gravelly sandy clay loam	GC	A-2	0	0-5	30-55	25-50	20-45	10-40	35-45	15-25
	61-68	Gravelly clay loam	GC	A-6	0	0	65-85	55-75	50-65	40-55	35-50	15-25

Table 21.--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	
610:												
Goulding--------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-4	Very gravelly loam, gravelly loam	GM, SM	A-4	0	0-5	60-90	55-75	45-70	35-50	20-30	NP-5
	4-8	Extremely gravelly sandy loam, extremely gravelly loam, very gravelly sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	20-55	15-45	10-40	5-30	20-30	NP-10
	8-13	Extremely gravelly loam, extremely gravelly sandy loam, very gravelly sandy loam, very gravelly loam	GM	A-1, A-2	0	0-15	20-55	15-45	10-40	5-30	20-30	NP-10
	>13	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 21.--Engineering Index Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				*Pct*	*Pct*					*Pct*	
650, 651:												
Bamtush---------	0-1	Slightly decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	1-9	Very gravelly loam	GC, GC-GM	A-2	0	0-5	30-55	25-50	20-45	15-35	25-40	5-15
	9-25	Very gravelly loam	GC, GC-GM	A-2	0	0-5	30-55	25-50	20-45	15-35	25-40	5-15
	25-39	Extremely gravelly loam, extremely gravelly clay loam, very gravelly loam, very gravelly clay loam	GC	A-2, A-6	0	0-5	30-55	25-50	20-45	10-40	35-45	15-25
	39-49	Extremely gravelly loam, extremely gravelly clay loam, very gravelly loam, very gravelly sandy clay loam	GC	A-2, A-6	0	0-5	30-55	25-50	20-45	10-40	35-45	15-25
	49-61	Extremely gravelly clay loam, very gravelly loam, extremely gravelly loam, very gravelly sandy clay loam	GC	A-2	0	0-5	30-55	25-50	20-45	10-40	35-45	15-25
	61-68	Gravelly clay loam	GC	A-6	0	0	65-85	55-75	50-65	40-55	35-50	15-25
Marpa-----------	0-2	Moderately decomposed plant material	PT	A-8	0	0	---	---	---	---	0-0	NP
	2-5	Very gravelly sandy loam	GM	A-1, A-2	0	0-5	30-55	25-50	15-35	10-20	25-35	NP-10
	5-14	Very gravelly clay loam, very gravelly sandy clay loam	GC	A-2, A-6	0	5-10	30-55	25-50	20-45	10-40	30-40	10-15
	14-25	Very gravelly clay loam, very gravelly sandy clay loam	GC	A-2, A-6	0	5-10	30-55	25-50	20-45	10-40	30-40	10-15
	>25	Unweathered bedrock	---	---	---	---	---	---	---	---	---	---

Table 22.--Physical Properties of the Soils

(Soil properties are measured or inferred from direct observations in the field or laboratory.)

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	*Pct*	*g/cc*	*um/sec*	*In/in*	*Pct*	*Pct*
100:							
Capay-----------	0-15	30-50	1.40-1.55	1.40-4.00	0.17-0.19	6.0-9.0	1.0-2.0
	15-33	30-50	1.40-1.55	1.40-4.00	0.17-0.19	6.0-9.0	1.0-2.0
	33-39	35-60	1.45-1.60	0.01-0.42	0.14-0.16	6.0-9.0	0.0-1.0
	39-46	35-60	1.45-1.60	0.01-0.42	0.14-0.16	6.0-9.0	0.0-1.0
	46-64	35-60	1.45-1.60	0.01-0.42	0.14-0.16	6.0-9.0	0.0-1.0
101:							
Capay-----------	0-8	30-50	1.40-1.55	0.42-1.40	0.14-0.16	6.0-9.0	1.0-2.0
	8-21	30-50	1.40-1.55	0.42-1.40	0.14-0.16	6.0-9.0	1.0-2.0
	21-36	35-60	1.45-1.60	0.42-1.40	0.14-0.16	6.0-9.0	0.0-1.0
	36-48	35-40	1.45-1.60	1.40-4.00	0.17-0.19	6.0-9.0	0.0-1.0
	48-58	35-40	1.45-1.60	1.40-4.00	0.17-0.19	6.0-9.0	0.0-1.0
102, 103:							
Capay-----------	0-15	30-50	1.40-1.55	1.40-4.00	0.17-0.19	6.0-9.0	1.0-2.0
	15-33	30-50	1.40-1.55	1.40-4.00	0.17-0.19	6.0-9.0	1.0-2.0
	33-39	35-60	1.45-1.60	0.01-0.42	0.14-0.16	6.0-9.0	0.0-1.0
	39-46	35-60	1.45-1.60	0.01-0.42	0.14-0.16	6.0-9.0	0.0-1.0
	46-64	35-60	1.45-1.60	0.01-0.42	0.14-0.16	6.0-9.0	0.0-1.0
104, 105, 106:							
Willows---------	0-5	40-55	1.40-1.50	0.01-0.42	0.14-0.17	6.0-9.0	1.0-3.0
	5-13	40-55	1.40-1.50	0.01-0.42	0.14-0.17	6.0-9.0	1.0-3.0
	13-20	45-60	1.40-1.50	0.01-0.42	0.14-0.17	6.0-9.0	0.5-2.0
	20-39	45-60	1.40-1.50	0.01-0.42	0.14-0.17	6.0-9.0	0.5-2.0
	39-51	45-60	1.40-1.50	0.01-0.42	0.14-0.17	6.0-9.0	0.5-2.0
	51-59	45-60	1.40-1.50	0.01-0.42	0.14-0.17	6.0-9.0	0.4-2.0
	59-72	45-60	1.30-1.50	0.01-0.42	0.14-0.17	9.0-12.0	0.2-1.0
	72-80	45-60	1.30-1.50	0.01-0.42	0.14-0.17	6.0-9.0	0.2-0.5
	80-87	45-70	1.30-1.50	0.01-0.42	0.14-0.17	12.0-15.0	0.1-0.5
107, 108, 109:							
Scribner--------	0-6	18-30	1.25-1.40	4.00-14.00	0.15-0.20	0.0-3.0	2.0-4.0
	6-12	25-35	1.25-1.40	1.40-4.00	0.17-0.21	3.0-6.0	1.0-3.0
	12-20	25-35	1.25-1.40	1.40-4.00	0.17-0.21	3.0-6.0	1.0-3.0
	20-33	18-35	1.25-1.40	4.00-14.00	0.14-0.18	0.0-3.0	0.3-1.0
	33-41	18-35	1.25-1.40	4.00-14.00	0.14-0.18	0.0-3.0	0.3-1.0
	41-60	18-26	1.25-1.40	4.00-14.00	0.14-0.18	0.0-3.0	0.3-1.0
110:							
Hustabel--------	0-3	10-18	1.50-1.60	14.00-42.00	0.10-0.13	0.0-3.0	1.0-2.0
	3-13	10-18	1.50-1.60	14.00-42.00	0.10-0.13	0.0-3.0	1.0-2.0
	13-20	10-18	1.50-1.60	14.00-42.00	0.10-0.13	0.0-3.0	1.0-2.0
	20-31	10-18	1.50-1.60	14.00-42.00	0.10-0.13	0.0-3.0	1.0-2.0
	31-35	10-18	1.20-1.30	4.00-14.00	0.15-0.20	0.0-3.0	0.5-1.0
	35-40	10-18	1.40-1.60	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	40-48	27-35	1.30-1.40	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0
	48-52	27-35	1.40-1.50	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0
	52-61	27-35	1.50-1.60	1.40-4.00	0.14-0.18	3.0-6.0	0.5-1.0

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	Pct	g/cc	um/sec	In/in	Pct	Pct
112, 113:							
Westfan---------	0-4	18-25	1.45-1.65	4.00-14.00	0.14-0.18	3.0-6.0	1.0-2.0
	4-14	18-25	1.45-1.60	4.00-14.00	0.14-0.18	0.0-3.0	1.0-2.0
	14-24	18-30	1.45-1.60	4.00-14.00	0.14-0.18	3.0-6.0	1.0-2.0
	24-33	12-25	1.50-1.70	14.00-42.00	0.13-0.15	0.0-3.0	0.5-1.0
	33-43	12-25	1.50-1.65	14.00-42.00	0.13-0.15	0.0-3.0	0.5-1.0
	43-56	12-25	1.50-1.65	14.00-42.00	0.13-0.15	0.0-3.0	0.0-1.0
	56-69	12-25	1.50-1.65	14.00-42.00	0.13-0.15	0.0-3.0	0.0-1.0
	69-93	23-40	1.40-1.55	4.00-14.00	0.14-0.18	3.0-6.0	0.0-1.0
	93-98	25-40	1.40-1.55	1.40-4.00	0.17-0.21	3.0-6.0	0.0-1.0
114:							
Westfan---------	0-25	27-30	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	1.0-2.0
	25-44	27-40	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0
	44-60	27-40	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0
115, 116, 117, 118:							
Clear Lake-----	0-4	40-60	1.00-1.45	0.42-1.40	0.14-0.16	6.0-9.0	1.0-4.0
	4-10	40-60	1.00-1.45	0.42-1.40	0.14-0.16	6.0-9.0	1.0-4.0
	10-20	40-60	1.00-1.45	0.42-1.40	0.14-0.16	9.0-12.0	1.0-4.0
	20-34	40-60	1.25-1.45	0.42-1.40	0.14-0.16	9.0-12.0	1.0-4.0
	34-47	40-60	1.25-1.45	0.42-1.40	0.14-0.16	9.0-12.0	1.0-4.0
	47-59	40-60	1.35-1.55	0.42-1.40	0.14-0.16	9.0-12.0	0.5-1.0
	59-79	40-60	1.35-1.55	0.42-1.40	0.14-0.16	9.0-12.0	0.5-1.0
124, 125, 126:							
Moonbend--------	0-8	18-27	1.20-1.35	4.00-14.00	0.15-0.20	0.0-3.0	1.0-4.0
	8-19	27-35	1.25-1.40	1.40-4.00	0.17-0.21	3.0-6.0	1.0-3.0
	19-33	27-35	1.25-1.40	1.40-4.00	0.17-0.21	3.0-6.0	1.0-3.0
	33-41	18-27	1.30-1.50	4.00-14.00	0.14-0.18	3.0-6.0	0.5-2.0
	41-51	18-27	1.20-1.30	4.00-14.00	0.15-0.19	3.0-6.0	0.5-2.0
	51-63	18-27	1.20-1.40	4.00-14.00	0.15-0.19	3.0-6.0	0.5-2.0
	63-75	18-27	1.20-1.40	4.00-14.00	0.15-0.19	3.0-6.0	0.5-2.0
	75-85	18-27	1.40-1.50	4.00-14.00	0.14-0.18	3.0-6.0	0.5-2.0
127:							
Mallard---------	0-3	27-40	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	1.0-2.0
	3-8	27-40	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	1.0-2.0
	8-15	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	1.0-2.0
	15-28	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	1.0-2.0
	28-44	27-35	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0
	44-60	27-35	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0
128:							
Mallard---------	0-8	18-27	1.45-1.55	4.00-14.00	0.14-0.18	3.0-6.0	1.0-2.0
	8-25	18-27	1.45-1.55	4.00-14.00	0.14-0.18	3.0-6.0	1.0-2.0
	25-39	27-40	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	1.0-2.0
	39-55	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	1.0-2.0
	55-60	27-35	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0
129:							
Mallard---------	0-3	27-40	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	1.0-2.0
	3-8	27-40	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	1.0-2.0
	8-15	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	1.0-2.0
	15-28	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	1.0-2.0
	28-44	27-35	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0
	44-60	27-35	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	Pct	g/cc	um/sec	In/in	Pct	Pct
130, 131, 133:							
Corbiere--------	0-6	20-27	1.45-1.60	4.00-14.00	0.15-0.20	3.0-6.0	1.0-2.0
	6-13	20-27	1.45-1.60	4.00-14.00	0.15-0.20	3.0-6.0	1.0-2.0
	13-21	27-35	1.35-1.45	1.40-4.00	0.17-0.21	3.0-6.0	1.0-2.0
	21-33	35-55	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	33-46	35-55	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	46-59	35-55	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	59-73	35-55	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	73-94	40-70	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.2-0.5
	94-114	40-70	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.2-0.5
136:							
Colusa----------	0-2	12-15	1.50-1.70	4.00-14.00	0.14-0.18	0.0-3.0	0.5-2.0
	2-9	14-20	1.45-1.55	4.00-14.00	0.14-0.18	3.0-6.0	0.0-0.5
	9-19	14-20	1.45-1.55	4.00-14.00	0.14-0.18	3.0-6.0	0.0-0.5
	19-25	14-20	1.45-1.55	4.00-14.00	0.14-0.18	3.0-6.0	0.0-0.5
	25-35	14-20	1.40-1.55	4.00-14.00	0.14-0.18	3.0-6.0	0.0-0.5
	35-52	14-20	1.40-1.55	4.00-14.00	0.14-0.18	3.0-6.0	0.0-0.5
	52-64	10-14	1.45-1.55	4.00-14.00	0.13-0.15	0.0-3.0	0.0-0.5
	64-79	10-14	1.45-1.55	4.00-14.00	0.13-0.15	0.0-3.0	0.0-0.5
141:							
Myers-----------	0-3	40-60	1.35-1.50	0.42-1.40	0.14-0.16	6.0-9.0	0.5-2.0
	3-25	40-60	1.35-1.50	0.42-1.40	0.14-0.16	6.0-9.0	0.5-2.0
	25-43	40-60	1.35-1.50	0.42-1.40	0.14-0.16	6.0-9.0	0.2-0.5
	43-56	40-60	1.35-1.50	0.42-1.40	0.14-0.16	6.0-9.0	0.2-0.5
	56-71	30-40	1.30-1.45	0.42-1.40	0.15-0.18	6.0-9.0	0.2-0.5
144:							
Hillgate--------	0-10	27-35	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.5-2.0
	10-19	27-35	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.5-2.0
	19-50	40-50	1.30-1.40	0.42-1.00	0.14-0.16	6.0-9.0	0.0-0.5
	50-60	27-40	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.0-0.5
145, 147:							
Hillgate--------	0-3	15-27	1.35-1.60	4.00-14.00	0.14-0.17	0.0-3.0	0.5-4.0
	3-11	15-27	1.35-1.60	4.00-14.00	0.14-0.17	0.0-3.0	0.5-2.0
	11-19	15-27	1.35-1.70	4.00-14.00	0.14-0.17	0.0-3.0	0.1-0.5
	19-37	40-50	1.30-1.60	0.42-1.40	0.14-0.16	6.0-9.0	0.1-0.5
	37-52	27-40	1.30-1.60	1.40-4.00	0.17-0.21	6.0-9.0	0.1-0.5
	52-62	27-40	1.30-1.60	1.40-4.00	0.17-0.21	6.0-9.0	0.1-0.5
	62-72	27-40	1.30-1.60	1.40-4.00	0.17-0.21	3.0-6.0	0.1-0.5
150:							
Arbuckle--------	0-4	10-18	1.50-1.60	14.00-42.00	0.10-0.13	0.0-3.0	0.5-1.0
	4-10	10-18	1.50-1.60	14.00-42.00	0.10-0.13	0.0-3.0	0.5-1.0
	10-17	10-18	1.50-1.60	14.00-42.00	0.10-0.13	0.0-3.0	0.0-0.5
	17-26	10-18	1.50-1.60	14.00-42.00	0.08-0.10	0.0-3.0	0.0-0.5
	26-34	18-32	1.45-1.55	1.40-4.00	0.09-0.12	3.0-6.0	0.0-0.5
	34-44	18-32	1.45-1.55	1.40-4.00	0.09-0.12	3.0-6.0	0.0-0.5
	44-68	5-25	1.45-1.55	1.40-4.00	0.07-0.09	3.0-6.0	0.0-0.5
151:							
Arbuckle--------	0-4	10-18	1.50-1.60	14.00-42.00	0.10-0.13	0.0-3.0	0.5-1.0
	4-10	10-18	1.50-1.60	14.00-42.00	0.10-0.13	0.0-3.0	0.5-1.0
	10-17	10-18	1.50-1.60	14.00-42.00	0.10-0.13	0.0-3.0	0.0-0.5
	17-26	10-18	1.50-1.60	14.00-42.00	0.08-0.10	0.0-3.0	0.0-0.5
	26-34	18-32	1.45-1.55	1.40-4.00	0.09-0.12	3.0-6.0	0.0-0.5
	34-44	18-32	1.45-1.55	1.40-4.00	0.09-0.12	3.0-6.0	0.0-0.5
	44-68	5-25	1.45-1.55	1.40-4.00	0.07-0.09	3.0-6.0	0.0-0.5

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	Pct	g/cc	um/sec	In/in	Pct	Pct
151:							
Hillgate--------	0-3	15-27	1.35-1.60	4.00-14.00	0.14-0.17	0.0-3.0	0.5-4.0
	3-11	15-27	1.35-1.60	4.00-14.00	0.14-0.17	0.0-3.0	0.5-2.0
	11-19	15-27	1.35-1.70	4.00-14.00	0.14-0.17	0.0-3.0	0.1-0.5
	19-37	40-50	1.30-1.60	0.42-1.40	0.14-0.16	6.0-9.0	0.1-0.5
	37-52	27-40	1.30-1.60	1.40-4.00	0.17-0.21	6.0-9.0	0.1-0.5
	52-62	27-40	1.30-1.60	1.40-4.00	0.17-0.21	6.0-9.0	0.1-0.5
	62-72	27-40	1.30-1.60	1.40-4.00	0.17-0.21	3.0-6.0	0.1-0.5
152:							
Arbuckle--------	0-8	10-18	1.40-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-1.0
	8-29	27-40	1.50-1.60	1.40-4.00	0.11-0.14	3.0-6.0	0.0-0.5
	29-51	27-40	1.50-1.60	1.40-4.00	0.11-0.14	3.0-6.0	0.0-0.5
	51-60	27-35	1.50-1.65	1.40-4.00	0.07-0.09	0.0-3.0	0.0-0.5
155:							
Alcapay---------	0-5	40-60	1.40-1.55	0.42-1.40	0.14-0.16	6.0-9.0	1.0-2.0
	5-10	40-60	1.40-1.55	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	10-24	40-60	1.40-1.55	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	24-35	40-60	1.40-1.55	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	35-53	40-60	1.45-1.60	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	53-64	40-60	1.45-1.60	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
160:							
Grandbend-------	0-16	17-26	1.40-1.50	4.00-14.00	0.14-0.18	3.0-6.0	1.0-2.0
	16-27	8-20	1.30-1.60	4.00-14.00	0.10-0.20	3.0-6.0	0.5-1.0
	27-44	8-20	1.30-1.60	4.00-14.00	0.10-0.20	3.0-6.0	0.5-1.0
	44-54	17-26	1.30-1.60	4.00-14.00	0.10-0.20	3.0-6.0	0.5-1.0
	54-64	30-45	1.30-1.40	1.40-4.00	0.14-0.21	6.0-9.0	0.5-1.0
	64-67	30-45	1.30-1.40	1.40-4.00	0.14-0.21	6.0-9.0	0.5-1.0
170, 171:							
Vina------------	0-8	14-20	1.40-1.50	4.00-14.00	0.13-0.18	0.0-3.0	1.0-3.0
	8-14	14-20	1.40-1.50	4.00-14.00	0.13-0.18	0.0-3.0	1.0-3.0
	14-21	14-20	1.40-1.50	4.00-14.00	0.13-0.18	0.0-3.0	1.0-3.0
	21-26	12-18	1.45-1.55	4.00-14.00	0.13-0.18	0.0-3.0	0.0-1.0
	26-46	12-18	1.45-1.55	4.00-14.00	0.13-0.18	0.0-3.0	0.0-1.0
	46-48	12-18	1.45-1.60	4.00-14.00	0.10-0.20	0.0-3.0	0.0-1.0
	48-60	12-18	1.45-1.60	4.00-14.00	0.10-0.20	0.0-3.0	0.0-1.0
172:							
Vina------------	0-15	14-20	1.40-1.50	4.00-14.00	0.13-0.18	0.0-3.0	1.0-3.0
	15-25	12-18	1.45-1.55	4.00-14.00	0.13-0.18	0.0-3.0	1.0-3.0
	25-42	12-18	1.45-1.55	4.00-14.00	0.13-0.18	0.0-3.0	0.0-1.0
	42-52	12-18	1.45-1.60	4.00-14.00	0.10-0.20	0.0-3.0	0.0-1.0
	52-60	12-18	1.45-1.60	4.00-14.00	0.10-0.20	0.0-3.0	0.0-1.0
174:							
Vina------------	0-8	14-20	1.40-1.50	4.00-14.00	0.13-0.18	0.0-3.0	1.0-3.0
	8-14	14-20	1.40-1.50	4.00-14.00	0.13-0.18	0.0-3.0	1.0-3.0
	14-21	14-20	1.40-1.50	4.00-14.00	0.13-0.18	0.0-3.0	1.0-3.0
	21-26	12-18	1.45-1.55	4.00-14.00	0.13-0.18	0.0-3.0	0.0-1.0
	26-46	12-18	1.45-1.55	4.00-14.00	0.13-0.18	0.0-3.0	0.0-1.0
	46-48	12-18	1.45-1.60	4.00-14.00	0.10-0.20	0.0-3.0	0.0-1.0
	48-60	12-18	1.45-1.60	4.00-14.00	0.10-0.20	0.0-3.0	0.0-1.0
175:							
Tujunga---------	0-10	15-25	1.40-1.60	4.00-14.00	0.14-0.17	3.0-6.0	0.0-0.5
	10-17	0-5	1.60-1.70	42.00-141.0	0.03-0.06	0.0-3.0	0.0-0.0
	17-37	0-5	1.60-1.70	42.00-141.0	0.03-0.06	0.0-3.0	0.0-0.0
	37-62	0-5	1.60-1.70	42.00-141.0	0.03-0.06	0.0-3.0	0.0-0.0

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	Pct	g/cc	um/sec	In/in	Pct	Pct
176:							
Columbia--------	0-10	8-18	1.40-1.50	14.00-42.00	0.13-0.18	0.0-3.0	1.0-3.0
	10-14	8-18	1.45-1.55	14.00-42.00	0.13-0.18	0.0-3.0	1.0-3.0
	14-19	10-18	1.45-1.55	14.00-42.00	0.13-0.18	0.0-3.0	0.0-1.0
	19-33	10-18	1.45-1.60	14.00-42.00	0.13-0.18	0.0-3.0	0.0-1.0
	33-38	10-18	1.45-1.60	14.00-42.00	0.13-0.18	0.0-3.0	0.0-1.0
	38-68	10-18	1.45-1.60	4.00-14.00	0.13-0.18	0.0-3.0	0.0-1.0
177:							
Holillipah------	0-8	0-10	1.60-1.70	42.00-141.0	0.06-0.08	0.0-3.0	0.5-1.0
	8-32	0-10	1.60-1.70	42.00-141.0	0.05-0.08	0.0-3.0	0.0-0.5
	32-35	0-10	1.60-1.70	42.00-141.0	0.06-0.08	0.0-3.0	0.0-0.2
	35-47	0-10	1.45-1.60	14.00-42.00	0.10-0.13	0.0-3.0	0.0-0.2
	47-61	0-10	1.60-1.70	42.00-141.0	0.06-0.08	0.0-3.0	0.0-0.2
185:							
Riverwash-------	0-3	0-10	1.35-1.70	14.00-42.00	0.11-0.13	0.0-3.0	0.0-0.1
	3-60	3-10	1.35-1.70	14.00-42.00	0.07-0.09	0.0-3.0	0.0-0.1
187:							
Westfan---------	0-4	18-25	1.45-1.65	4.00-14.00	0.14-0.18	3.0-6.0	1.0-2.0
	4-14	18-25	1.45-1.60	4.00-14.00	0.14-0.18	0.0-3.0	1.0-2.0
	14-24	18-30	1.45-1.60	4.00-14.00	0.14-0.18	3.0-6.0	1.0-2.0
	24-33	12-25	1.50-1.70	14.00-42.00	0.13-0.15	0.0-3.0	0.5-1.0
	33-43	12-25	1.50-1.65	14.00-42.00	0.13-0.15	0.0-3.0	0.5-1.0
	43-56	12-25	1.50-1.65	14.00-42.00	0.13-0.15	0.0-3.0	0.0-1.0
	56-69	12-25	1.50-1.65	14.00-42.00	0.13-0.15	0.0-3.0	0.0-1.0
	69-93	23-40	1.40-1.55	4.00-14.00	0.14-0.18	3.0-6.0	0.0-1.0
	93-98	25-40	1.40-1.55	1.40-4.00	0.17-0.21	3.0-6.0	0.0-1.0
188:							
Westfan---------	0-15	18-27	1.45-1.60	4.00-14.00	0.13-0.17	3.0-6.0	1.0-2.0
	15-41	27-30	1.40-1.50	1.40-4.00	0.16-0.20	3.0-6.0	1.0-2.0
	41-60	40-50	1.35-1.45	0.42-1.40	0.13-0.14	6.0-9.0	0.5-1.0
189:							
Arand-----------	0-8	7-15	1.50-1.60	14.00-42.00	0.07-0.09	0.0-3.0	0.0-1.0
	8-18	7-15	1.50-1.60	14.00-42.00	0.07-0.09	0.0-3.0	0.0-1.0
	18-24	7-15	1.50-1.60	14.00-42.00	0.07-0.09	0.0-3.0	0.0-1.0
	24-65	5-10	1.50-1.60	14.00-42.00	0.02-0.03	0.0-3.0	0.0-0.5
190:							
Arand-----------	0-10	12-27	1.45-1.55	4.00-14.00	0.07-0.09	0.0-3.0	0.5-1.0
	10-32	12-27	1.45-1.55	4.00-14.00	0.05-0.06	0.0-3.0	0.2-0.5
	32-60	3-10	1.55-1.65	14.00-42.00	0.02-0.03	0.0-3.0	0.2-0.5
193:							
Westfan---------	0-4	14-18	1.45-1.60	4.00-14.00	0.11-0.14	0.0-3.0	1.0-2.0
	4-20	18-27	1.45-1.60	4.00-14.00	0.11-0.14	3.0-6.0	1.0-2.0
	20-30	18-27	1.45-1.60	4.00-14.00	0.11-0.14	3.0-6.0	0.5-1.0
	30-60	18-27	1.45-1.60	4.00-14.00	0.11-0.14	3.0-6.0	0.5-1.0
200:							
Clear Lake------	0-4	40-60	1.00-1.45	0.42-1.40	0.14-0.16	6.0-9.0	1.0-4.0
	4-10	40-60	1.00-1.45	0.42-1.40	0.14-0.16	6.0-9.0	1.0-4.0
	10-20	40-60	1.00-1.45	0.42-1.40	0.14-0.16	9.0-12.0	1.0-4.0
	20-34	40-60	1.25-1.45	0.42-1.40	0.14-0.16	9.0-12.0	1.0-4.0
	34-47	40-60	1.25-1.45	0.42-1.40	0.14-0.16	9.0-12.0	1.0-4.0
	47-59	40-60	1.35-1.55	0.42-1.40	0.14-0.16	9.0-12.0	0.5-1.0
	59-79	40-60	1.35-1.55	0.42-1.40	0.14-0.16	9.0-12.0	0.5-1.0

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	*Pct*	*g/cc*	*um/sec*	*In/in*	*Pct*	*Pct*
204, 205, 206:							
Capay-----------	0-4	55-70	1.20-1.50	0.01-0.42	0.14-0.16	9.0-12.0	1.0-3.0
	4-11	55-70	1.20-1.50	0.01-0.42	0.14-0.16	9.0-12.0	1.0-2.0
	11-23	55-70	1.20-1.50	0.01-0.42	0.14-0.16	9.0-12.0	0.5-1.5
	23-30	55-70	1.20-1.50	0.01-0.42	0.14-0.16	9.0-12.0	0.5-1.5
	30-43	55-70	1.20-1.50	0.01-0.42	0.14-0.16	12.0-15.0	0.5-1.5
	43-58	55-70	1.20-1.50	0.01-0.42	0.14-0.16	12.0-15.0	0.5-1.0
	58-74	55-70	1.20-1.50	0.01-0.42	0.14-0.16	12.0-15.0	0.2-1.0
	74-90	55-70	1.20-1.50	0.01-0.42	0.14-0.16	12.0-15.0	0.2-1.0
	90-102	55-70	1.20-1.50	0.01-0.42	0.14-0.16	12.0-15.0	0.2-1.0
210:							
Corval----------	0-8	18-27	1.45-1.55	4.00-14.00	0.14-0.17	3.0-6.0	1.0-2.0
	8-24	27-35	1.40-1.50	1.40-4.00	0.17-0.20	3.0-6.0	1.0-2.0
	24-36	27-35	1.40-1.50	1.40-4.00	0.17-0.20	3.0-6.0	0.0-1.0
	36-46	27-35	1.40-1.50	1.40-4.00	0.17-0.20	3.0-6.0	0.0-1.0
	46-60	27-35	1.40-1.50	1.40-4.00	0.17-0.20	3.0-6.0	0.0-1.0
	60-70	27-35	1.40-1.50	1.40-4.00	0.17-0.20	3.0-6.0	0.0-1.0
211:							
Corval----------	0-10	27-35	1.40-1.50	1.40-4.00	0.17-0.20	3.0-6.0	1.0-2.0
	10-50	27-35	1.40-1.50	1.40-4.00	0.17-0.20	3.0-6.0	1.0-2.0
	50-60	27-35	1.40-1.50	1.40-4.00	0.17-0.20	3.0-6.0	0.0-1.0
212, 213:							
Ayar------------	0-9	40-50	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	1.0-3.0
	9-25	40-50	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	25-36	40-50	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	36-46	40-50	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	46-58	40-50	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	58-72	35-50	1.40-1.50	1.40-4.00	0.14-0.21	6.0-9.0	0.5-1.0
	>72	---	---	---	---	---	---
215, 216:							
Altamont--------	0-3	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	1.0-3.0
	3-9	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	9-23	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	23-35	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	35-43	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	43-49	35-60	1.25-1.50	0.42-1.40	0.14-0.17	3.0-9.0	0.5-1.0
	>49	---	---	---	---	---	---
Sehorn----------	0-5	40-55	1.25-1.45	0.42-1.40	0.14-0.17	12.0-15.0	1.0-3.0
	5-9	40-55	1.30-1.45	0.42-1.40	0.14-0.17	9.0-12.0	1.0-3.0
	9-19	40-55	1.30-1.45	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	19-26	40-50	1.30-1.45	0.42-1.40	0.14-0.17	3.0-6.0	0.5-1.0
	26-35	40-50	1.20-1.45	0.42-1.40	0.14-0.17	3.0-6.0	0.4-1.0
	>35	---	---	---	---	---	---
218:							
Sehorn----------	0-5	40-55	1.25-1.45	0.42-1.40	0.14-0.17	12.0-15.0	1.0-3.0
	5-9	40-55	1.30-1.45	0.42-1.40	0.14-0.17	9.0-12.0	1.0-3.0
	9-19	40-55	1.30-1.45	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	19-26	40-50	1.30-1.45	0.42-1.40	0.14-0.17	3.0-6.0	0.5-1.0
	26-35	40-50	1.20-1.45	0.42-1.40	0.14-0.17	3.0-6.0	0.4-1.0
	>35	---	---	---	---	---	---

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	Pct	g/cc	um/sec	In/in	Pct	Pct
218:							
Altamont--------	0-3	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	1.0-3.0
	3-9	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	9-23	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	23-35	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	35-43	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	43-49	35-60	1.25-1.50	0.42-1.40	0.14-0.17	3.0-9.0	0.5-1.0
	>49	---	---	---	---	---	---
220, 221:							
Altamont--------	0-3	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	1.0-3.0
	3-9	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	9-23	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	23-35	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	35-43	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	43-49	35-60	1.25-1.50	0.42-1.40	0.14-0.17	3.0-9.0	0.5-1.0
	>49	---	---	---	---	---	---
230:							
Corning---------	0-4	27-40	1.40-1.50	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0
	4-9	27-40	1.40-1.50	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0
	9-20	35-60	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.0-0.5
	20-31	35-60	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.0-0.5
	31-39	27-35	1.50-1.60	1.40-4.00	0.10-0.17	3.0-6.0	0.0-0.5
	39-52	10-25	1.50-1.60	4.00-14.00	0.05-0.12	0.0-3.0	0.0-0.5
	52-60	10-25	1.50-1.60	4.00-14.00	0.03-0.07	0.0-3.0	0.0-0.5
232:							
Maywood---------	0-16	12-18	1.45-1.60	4.00-14.00	0.11-0.14	0.0-3.0	0.5-1.0
	16-22	12-18	1.40-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	22-41	12-18	1.40-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	41-57	12-18	1.30-1.40	4.00-14.00	0.15-0.20	0.0-3.0	0.5-1.0
	57-60	12-18	1.35-1.45	14.00-42.00	0.13-0.15	0.0-3.0	1.0-2.0
233:							
Eastpark--------	0-7	27-35	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	1.0-1.0
	7-15	27-40	1.40-1.50	1.40-4.00	0.15-0.18	3.0-6.0	1.0-1.0
	15-26	35-50	1.25-1.35	0.42-1.40	0.07-0.10	6.0-9.0	0.5-1.0
	26-45	27-35	1.30-1.40	1.40-4.00	0.05-0.08	3.0-6.0	0.5-1.0
	45-54	18-27	1.45-1.55	4.00-14.00	0.14-0.18	0.0-3.0	0.2-0.5
	54-60	20-30	1.55-1.65	1.40-4.00	0.03-0.04	3.0-6.0	0.2-0.5
241:							
Contra Costa----	0-3	20-27	1.45-1.55	4.00-14.00	0.14-0.18	3.0-6.0	0.5-1.0
	3-8	27-35	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.0-0.5
	8-16	27-35	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.0-0.5
	16-28	40-50	1.30-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.0-0.5
	28-35	27-35	1.30-1.45	1.40-4.00	0.08-0.11	3.0-6.0	0.0-0.5
	>35	---	---	---	---	---	---
Altamont--------	0-3	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	1.0-3.0
	3-9	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	9-23	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	23-35	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	35-43	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	43-49	35-60	1.25-1.50	0.42-1.40	0.14-0.17	3.0-9.0	0.5-1.0
	>49	---	---	---	---	---	---

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	Pct	g/cc	um/sec	In/in	Pct	Pct
253:							
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
Altamont--------	0-3	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	1.0-3.0
	3-9	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	9-23	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	23-35	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	35-43	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	43-49	35-60	1.25-1.50	0.42-1.40	0.14-0.17	3.0-9.0	0.5-1.0
	>49	---	---	---	---	---	---
Rock outcrop----	0-60	---	---	0.01-0.42	---	---	---
255:							
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
Rock outcrop----	0-60	---	---	0.01-0.42	---	---	---
257:							
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
Capay-----------	0-4	55-70	1.20-1.50	0.01-0.42	0.14-0.16	9.0-12.0	1.0-3.0
	4-11	55-70	1.20-1.50	0.01-0.42	0.14-0.16	9.0-12.0	1.0-2.0
	11-23	55-70	1.20-1.50	0.01-0.42	0.14-0.16	9.0-12.0	0.5-1.5
	23-30	55-70	1.20-1.50	0.01-0.42	0.14-0.16	9.0-12.0	0.5-1.5
	30-43	55-70	1.20-1.50	0.01-0.42	0.14-0.16	12.0-15.0	0.5-1.5
	43-58	55-70	1.20-1.50	0.01-0.42	0.14-0.16	12.0-15.0	0.5-1.0
	58-74	55-70	1.20-1.50	0.01-0.42	0.14-0.16	12.0-15.0	0.2-1.0
	74-90	55-70	1.20-1.50	0.01-0.42	0.14-0.16	12.0-15.0	0.2-1.0
	90-102	55-70	1.20-1.50	0.01-0.42	0.14-0.16	12.0-15.0	0.2-1.0
261:							
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
Altamont--------	0-3	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	1.0-3.0
	3-9	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	9-23	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	23-35	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	35-43	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	43-49	35-60	1.25-1.50	0.42-1.40	0.14-0.17	3.0-9.0	0.5-1.0
	>49	---	---	---	---	---	---
270, 271:							
Balcom----------	0-2	10-17	1.45-1.55	4.00-14.00	0.15-0.20	0.0-3.0	0.2-1.0
	2-11	10-17	1.45-1.55	4.00-14.00	0.15-0.20	0.0-3.0	0.2-1.0
	11-18	18-27	1.40-1.50	1.40-4.00	0.15-0.21	0.0-3.0	0.2-1.0
	18-33	18-27	1.40-1.50	4.00-14.00	0.15-0.20	0.0-3.0	0.2-1.0
	>33	---	---	---	---	---	---

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	*Pct*	*g/cc*	*um/sec*	*In/in*	*Pct*	*Pct*
270, 271:							
Ayar------------	0-9	40-50	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	1.0-3.0
	9-25	40-50	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	25-36	40-50	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	36-46	40-50	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	46-58	40-50	1.35-1.45	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	58-72	35-50	1.40-1.50	1.40-4.00	0.14-0.21	6.0-9.0	0.5-1.0
	>72	---	---	---	---	---	---
275:							
Goldeagle-------	0-3	20-35	1.40-1.60	1.40-4.00	0.14-0.18	3.0-6.0	0.5-1.0
	3-9	35-45	1.30-1.50	1.40-4.00	0.14-0.16	6.0-9.0	0.2-0.5
	9-25	35-45	1.30-1.50	1.40-4.00	0.14-0.16	6.0-9.0	0.2-0.5
	25-33	35-45	1.30-1.50	1.40-4.00	0.14-0.16	6.0-9.0	0.2-0.5
	33-49	15-27	1.40-1.60	4.00-14.00	0.14-0.18	3.0-6.0	0.2-0.5
	49-59	15-27	1.40-1.60	4.00-14.00	0.14-0.18	3.0-6.0	0.2-0.5
	>59	---	---	---	---	---	---
Positas---------	0-2	10-20	1.50-1.70	14.00-42.00	0.09-0.11	0.0-3.0	0.7-2.0
	2-9	10-20	1.50-1.70	14.00-42.00	0.09-0.11	0.0-3.0	0.7-2.0
	9-21	10-20	1.50-1.70	14.00-42.00	0.09-0.11	0.0-3.0	0.7-2.0
	21-34	40-60	1.35-1.55	0.42-1.40	0.07-0.12	6.0-9.0	0.2-0.5
	34-50	40-60	1.40-1.60	0.42-1.40	0.05-0.09	6.0-9.0	0.2-0.5
	50-62	40-60	1.40-1.60	0.42-1.40	0.05-0.09	6.0-9.0	0.2-0.5
	62-80	40-60	0.40-1.60	0.42-1.40	0.05-0.09	6.0-9.0	0.2-0.5
Balcom----------	0-2	10-17	1.45-1.55	4.00-14.00	0.15-0.20	0.0-3.0	0.2-1.0
	2-11	10-17	1.45-1.55	4.00-14.00	0.15-0.20	0.0-3.0	0.2-1.0
	11-18	18-27	1.40-1.50	1.40-4.00	0.15-0.21	0.0-3.0	0.2-1.0
	18-33	18-27	1.40-1.50	4.00-14.00	0.15-0.20	0.0-3.0	0.2-1.0
	>33	---	---	---	---	---	---
276:							
Positas---------	0-2	10-20	1.50-1.70	14.00-42.00	0.09-0.11	0.0-3.0	0.7-2.0
	2-9	10-20	1.50-1.70	14.00-42.00	0.09-0.11	0.0-3.0	0.7-2.0
	9-21	10-20	1.50-1.70	14.00-42.00	0.09-0.11	0.0-3.0	0.7-2.0
	21-34	40-60	1.35-1.55	0.42-1.40	0.07-0.12	6.0-9.0	0.2-0.5
	34-50	40-60	1.40-1.60	0.42-1.40	0.05-0.09	6.0-9.0	0.2-0.5
	50-62	40-60	1.40-1.60	0.42-1.40	0.05-0.09	6.0-9.0	0.2-0.5
	62-80	40-60	0.40-1.60	0.42-1.40	0.05-0.09	6.0-9.0	0.2-0.5
280:							
Skyhigh---------	0-3	20-27	1.45-1.55	4.00-14.00	0.13-0.16	3.0-6.0	2.0-4.0
	3-8	27-35	1.40-1.50	1.40-4.00	0.14-0.17	3.0-6.0	0.2-0.5
	8-25	35-50	1.35-1.45	0.42-1.40	0.10-0.11	6.0-9.0	0.2-0.5
	25-37	27-35	1.40-1.50	1.40-4.00	0.12-0.15	3.0-6.0	0.2-0.5
	>37	---	---	---	---	---	---
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
300:							
Contra Costa----	0-3	20-27	1.45-1.55	4.00-14.00	0.14-0.18	3.0-6.0	0.5-1.0
	3-8	27-35	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.0-0.5
	8-16	27-35	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.0-0.5
	16-28	40-50	1.30-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.0-0.5
	28-35	27-35	1.30-1.45	1.40-4.00	0.08-0.11	3.0-6.0	0.0-0.5
	>35	---	---	---	---	---	---

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	*Pct*	*g/cc*	*um/sec*	*In/in*	*Pct*	*Pct*
300:							
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
305, 311:							
Contra Costa----	0-3	20-27	1.45-1.55	4.00-14.00	0.14-0.18	3.0-6.0	0.5-1.0
	3-8	27-35	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.0-0.5
	8-16	27-35	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.0-0.5
	16-28	40-50	1.30-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.0-0.5
	28-35	27-35	1.30-1.45	1.40-4.00	0.08-0.11	3.0-6.0	0.0-0.5
	>35	---	---	---	---	---	---
312, 313:							
Saltcanyon------	0-13	12-25	1.50-1.60	4.00-14.00	0.13-0.16	0.0-3.0	1.0-2.0
	13-25	18-30	1.50-1.60	4.00-14.00	0.14-0.21	3.0-6.0	0.5-1.0
	25-43	18-30	1.50-1.60	4.00-14.00	0.14-0.21	3.0-6.0	0.2-0.5
	43-61	18-30	1.50-1.60	4.00-14.00	0.14-0.21	3.0-6.0	0.2-0.5
315:							
Mallard---------	0-3	27-40	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	1.0-2.0
	3-8	27-40	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	1.0-2.0
	8-15	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	1.0-2.0
	15-28	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	1.0-2.0
	28-44	27-35	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0
	44-60	27-35	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	0.5-1.0
316:							
Hillgate--------	0-3	15-27	1.35-1.60	4.00-14.00	0.14-0.17	0.0-3.0	0.5-4.0
	3-11	15-27	1.35-1.60	4.00-14.00	0.14-0.17	0.0-3.0	0.5-2.0
	11-19	15-27	1.35-1.70	4.00-14.00	0.14-0.17	0.0-3.0	0.1-0.5
	19-37	40-50	1.30-1.60	0.42-1.40	0.14-0.16	6.0-9.0	0.1-0.5
	37-52	27-40	1.30-1.60	1.40-4.00	0.17-0.21	6.0-9.0	0.1-0.5
	52-62	27-40	1.30-1.60	1.40-4.00	0.17-0.21	6.0-9.0	0.1-0.5
	62-72	27-40	1.30-1.60	1.40-4.00	0.17-0.21	3.0-6.0	0.1-0.5
320:							
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
329:							
Sehorn----------	0-5	40-55	1.25-1.45	0.42-1.40	0.14-0.17	12.0-15.0	1.0-3.0
	5-9	40-55	1.30-1.45	0.42-1.40	0.14-0.17	9.0-12.0	1.0-3.0
	9-19	40-55	1.30-1.45	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	19-26	40-50	1.30-1.45	0.42-1.40	0.14-0.17	3.0-6.0	0.5-1.0
	26-35	40-50	1.20-1.45	0.42-1.40	0.14-0.17	3.0-6.0	0.4-1.0
	>35	---	---	---	---	---	---
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	Pct	g/cc	um/sec	In/in	Pct	Pct
329:							
Altamont--------	0-3	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	1.0-3.0
	3-9	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	9-23	35-60	1.25-1.50	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	23-35	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	35-43	35-60	1.25-1.50	0.42-1.40	0.14-0.17	6.0-9.0	0.5-1.0
	43-49	35-60	1.25-1.50	0.42-1.40	0.14-0.17	3.0-9.0	0.5-1.0
	>49	---	---	---	---	---	---
330:							
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
Contra Costa----	0-3	20-27	1.45-1.55	4.00-14.00	0.14-0.18	3.0-6.0	0.5-1.0
	3-8	27-35	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.0-0.5
	8-16	27-35	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.0-0.5
	16-28	40-50	1.30-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.0-0.5
	28-35	27-35	1.30-1.45	1.40-4.00	0.08-0.11	3.0-6.0	0.0-0.5
	>35	---	---	---	---	---	---
331:							
Sehorn----------	0-5	40-55	1.25-1.45	0.42-1.40	0.14-0.17	12.0-15.0	1.0-3.0
	5-9	40-55	1.30-1.45	0.42-1.40	0.14-0.17	9.0-12.0	1.0-3.0
	9-19	40-55	1.30-1.45	0.42-1.40	0.14-0.17	9.0-12.0	0.5-1.0
	19-26	40-50	1.30-1.45	0.42-1.40	0.14-0.17	3.0-6.0	0.5-1.0
	26-35	40-50	1.20-1.45	0.42-1.40	0.14-0.17	3.0-6.0	0.4-1.0
	>35	---	---	---	---	---	---
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
Rock outcrop----	0-60	---	---	0.01-0.42	---	---	---
332:							
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
Rock outcrop----	0-60	---	---	0.01-0.42	---	---	---
334:							
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
Contra Costa----	0-3	20-27	1.45-1.55	4.00-14.00	0.14-0.18	3.0-6.0	0.5-1.0
	3-8	27-35	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.0-0.5
	8-16	27-35	1.30-1.45	1.40-4.00	0.17-0.21	3.0-6.0	0.0-0.5
	16-28	40-50	1.30-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.0-0.5
	28-35	27-35	1.30-1.45	1.40-4.00	0.08-0.11	3.0-6.0	0.0-0.5
	>35	---	---	---	---	---	---

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	*Pct*	*g/cc*	*um/sec*	*In/in*	*Pct*	*Pct*
337:							
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
Saltcanyon------	0-13	12-25	1.50-1.60	4.00-14.00	0.13-0.16	0.0-3.0	1.0-2.0
	13-25	18-30	1.50-1.60	4.00-14.00	0.14-0.21	3.0-6.0	0.5-1.0
	25-43	18-30	1.50-1.60	4.00-14.00	0.14-0.21	3.0-6.0	0.2-0.5
	43-61	18-30	1.50-1.60	4.00-14.00	0.14-0.21	3.0-6.0	0.2-0.5
345:							
Skyhigh---------	0-3	20-27	1.45-1.55	4.00-14.00	0.13-0.16	3.0-6.0	2.0-4.0
	3-8	27-35	1.40-1.50	1.40-4.00	0.14-0.17	3.0-6.0	0.2-0.5
	8-25	35-50	1.35-1.45	0.42-1.40	0.10-0.11	6.0-9.0	0.2-0.5
	25-37	27-35	1.40-1.50	1.40-4.00	0.12-0.15	3.0-6.0	0.2-0.5
	>37	---	---	---	---	---	---
Sleeper---------	0-5	15-30	1.40-1.50	1.40-4.00	0.17-0.21	3.0-6.0	1.0-1.5
	5-9	15-30	1.40-1.50	1.40-4.00	0.17-0.21	3.0-6.0	1.0-1.5
	9-19	30-55	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	19-35	30-55	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	35-53	30-55	1.40-1.55	1.40-4.00	0.07-0.21	3.0-6.0	0.0-0.5
	>53	---	---	---	---	---	---
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
346:							
Skyhigh---------	0-3	20-27	1.45-1.55	4.00-14.00	0.13-0.16	3.0-6.0	2.0-4.0
	3-8	27-35	1.40-1.50	1.40-4.00	0.14-0.17	3.0-6.0	0.2-0.5
	8-25	35-50	1.35-1.45	0.42-1.40	0.10-0.11	6.0-9.0	0.2-0.5
	25-37	27-35	1.40-1.50	1.40-4.00	0.12-0.15	3.0-6.0	0.2-0.5
	>37	---	---	---	---	---	---
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---
Sleeper---------	0-5	15-30	1.40-1.50	1.40-4.00	0.17-0.21	3.0-6.0	1.0-1.5
	5-9	15-30	1.40-1.50	1.40-4.00	0.17-0.21	3.0-6.0	1.0-1.5
	9-19	30-55	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	19-35	30-55	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	35-53	30-55	1.40-1.55	1.40-4.00	0.07-0.21	3.0-6.0	0.0-0.5
	>53	---	---	---	---	---	---
347, 348:							
Boar------------	0-5	15-26	1.40-1.50	4.00-14.00	0.14-0.18	3.0-6.0	1.0-1.5
	5-12	15-26	1.40-1.50	4.00-14.00	0.14-0.18	3.0-6.0	0.2-1.0
	12-20	35-45	1.35-1.45	0.42-4.00	0.14-0.21	6.0-9.0	0.0-0.5
	20-37	35-45	1.35-1.45	0.42-4.00	0.14-0.21	6.0-9.0	0.0-0.5
	37-56	35-45	1.35-1.45	0.42-4.00	0.14-0.21	6.0-9.0	0.0-0.5
	56-75	35-45	1.35-1.45	0.42-4.00	0.14-0.21	6.0-9.0	0.0-0.5

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	*Pct*	*g/cc*	*um/sec*	*In/in*	*Pct*	*Pct*
347, 348:							
Sleeper---------	0-5	15-30	1.40-1.50	1.40-4.00	0.17-0.21	3.0-6.0	1.0-1.5
	5-9	15-30	1.40-1.50	1.40-4.00	0.17-0.21	3.0-6.0	1.0-1.5
	9-19	30-55	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	19-35	30-55	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	35-53	30-55	1.40-1.55	1.40-4.00	0.07-0.21	3.0-6.0	0.0-0.5
	>53	---	---	---	---	---	---
350:							
Haploxererts----	0-5	30-40	1.40-1.50	1.40-4.00	0.17-0.21	3.0-6.0	1.0-2.0
	5-15	30-40	1.40-1.50	1.40-4.00	0.15-0.19	3.0-6.0	0.5-1.0
	15-28	40-50	1.35-1.45	0.42-1.40	0.13-0.14	6.0-9.0	0.5-1.0
	28-39	27-35	1.40-1.50	1.40-4.00	0.12-0.14	3.0-6.0	0.2-0.8
	39-52	20-27	1.45-1.55	4.00-14.00	0.08-0.11	0.0-3.0	0.2-0.8
	>52	---	---	---	---	---	---
355:							
Venado----------	0-3	35-65	1.35-1.45	0.42-1.40	0.12-0.21	6.0-9.0	1.0-2.0
	3-13	35-65	1.35-1.45	0.42-1.40	0.12-0.21	6.0-9.0	1.0-2.0
	13-30	35-65	1.35-1.45	0.42-1.40	0.12-0.21	6.0-9.0	1.0-2.0
	30-38	25-45	1.35-1.50	0.42-1.40	0.14-0.21	3.0-6.0	0.0-1.0
	38-53	25-45	1.35-1.50	1.40-4.00	0.14-0.21	3.0-6.0	0.0-1.0
	53-61	25-45	1.35-1.50	1.40-4.00	0.14-0.21	3.0-6.0	0.0-1.0
	61-69	40-80	1.35-1.45	0.42-1.40	0.12-0.16	6.0-9.0	0.0-1.0
360:							
Bearvalley------	0-5	10-18	1.45-1.55	14.00-42.00	0.05-0.10	0.0-3.0	1.0-2.0
	5-20	10-18	1.50-1.60	14.00-42.00	0.04-0.07	0.0-3.0	1.0-2.0
	20-34	10-18	1.50-1.60	14.00-42.00	0.04-0.07	0.0-3.0	1.0-2.0
	34-60	5-10	1.55-1.65	14.00-141.0	0.02-0.05	0.0-3.0	0.5-1.0
	60-75	5-10	1.55-1.65	14.00-141.0	0.02-0.05	0.0-3.0	0.5-1.0
365, 366:							
Leesville-------	0-3	5-25	1.45-1.55	1.40-4.00	0.13-0.19	3.0-6.0	2.0-3.0
	3-16	5-25	1.45-1.55	1.40-4.00	0.13-0.19	3.0-6.0	2.0-3.0
	16-21	5-25	1.45-1.55	1.40-4.00	0.13-0.19	3.0-6.0	2.0-3.0
	21-30	5-15	1.50-1.60	14.00-42.00	0.03-0.09	0.0-3.0	1.0-1.5
	30-46	5-15	1.55-1.65	42.00-141.0	0.02-0.06	0.0-3.0	1.0-1.5
	46-60	5-15	1.55-1.65	42.00-141.0	0.02-0.06	0.0-3.0	1.0-1.5
370:							
Livermore-------	0-7	18-27	1.50-1.60	4.00-42.00	0.02-0.16	3.0-6.0	1.0-1.5
	7-19	18-35	1.45-1.65	1.40-14.00	0.03-0.10	3.0-6.0	1.0-1.5
	19-41	18-35	1.45-1.65	1.40-14.00	0.03-0.10	3.0-6.0	0.5-1.0
	41-63	18-27	1.50-1.60	4.00-42.00	0.02-0.09	3.0-6.0	0.5-1.0
371:							
Buttes----------	0-2	15-30	1.50-1.60	14.00-42.00	0.05-0.10	3.0-6.0	1.0-1.5
	2-7	15-30	1.55-1.65	1.40-4.00	0.07-0.14	3.0-6.0	1.0-1.5
	7-12	25-35	1.60-1.70	1.40-4.00	0.05-0.09	3.0-6.0	0.5-1.0
	12-19	25-35	1.60-1.70	1.40-4.00	0.05-0.09	3.0-6.0	0.5-1.0
	19-24	15-30	1.55-1.65	14.00-42.00	0.04-0.07	3.0-6.0	0.0-0.5
	>24	---	---	---	---	---	---
Millsholm-------	0-2	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	2-8	15-27	1.45-1.50	4.00-14.00	0.14-0.18	0.0-3.0	0.5-1.0
	8-14	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.0-0.5
	>14	---	---	---	---	---	---

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	Pct	g/cc	um/sec	In/in	Pct	Pct
519, 520, 521:							
Stonyford-------	0-3	20-27	1.45-1.55	4.00-14.00	0.11-0.14	0.0-3.0	0.5-2.0
	3-7	27-35	1.40-1.50	1.40-4.00	0.15-0.18	3.0-6.0	0.2-1.0
	7-14	27-35	1.40-1.50	1.40-4.00	0.12-0.15	3.0-6.0	0.2-1.0
	>14	---	---	---	---	---	---
Guenoc----------	0-4	18-27	1.35-1.45	4.00-14.00	0.14-0.18	0.0-3.0	0.5-2.0
	4-9	20-27	1.35-1.45	4.00-14.00	0.14-0.18	0.0-3.0	0.5-2.0
	9-18	35-45	1.30-1.40	1.40-4.00	0.17-0.21	3.0-6.0	0.0-0.5
	18-31	35-45	1.30-1.40	0.42-1.40	0.14-0.16	3.0-6.0	0.0-0.5
	>31	---	---	---	---	---	---
524:							
Arand-----------	0-8	7-15	1.50-1.60	14.00-42.00	0.07-0.09	0.0-3.0	0.0-1.0
	8-18	7-15	1.50-1.60	14.00-42.00	0.07-0.09	0.0-3.0	0.0-1.0
	18-24	7-15	1.50-1.60	14.00-42.00	0.07-0.09	0.0-3.0	0.0-1.0
	24-65	5-10	1.50-1.60	14.00-42.00	0.02-0.03	0.0-3.0	0.0-0.5
Riverwash-------	0-3	0-10	1.35-1.70	14.00-42.00	0.11-0.13	0.0-3.0	0.0-0.1
	3-60	3-10	1.35-1.70	14.00-42.00	0.07-0.09	0.0-3.0	0.0-0.1
526:							
Etsel-----------	0-3	12-18	1.35-1.50	14.00-42.00	0.08-0.10	0.0-3.0	1.0-2.0
	3-10	12-18	1.35-1.50	14.00-42.00	0.06-0.07	0.0-3.0	0.0-0.5
	>10	---	---	---	---	---	---
Maymen----------	0-3	10-25	1.45-1.55	14.00-42.00	0.10-0.13	0.0-3.0	0.5-1.0
	3-16	10-25	1.45-1.55	14.00-42.00	0.08-0.10	0.0-3.0	0.2-0.5
	>16	---	---	---	---	---	---
Marpa-----------	0-2	---	---	---	0.20-0.30	0.0-0.0	---
	2-5	12-18	1.35-1.45	14.00-42.00	0.06-0.07	0.0-3.0	0.5-2.0
	5-14	27-35	1.35-1.50	1.40-4.00	0.08-0.11	0.0-3.0	0.0-0.5
	14-25	27-35	1.35-1.50	1.40-4.00	0.08-0.11	0.0-3.0	0.0-0.5
	>25	---	---	---	---	---	---
527:							
Maymen----------	0-3	10-25	1.45-1.55	14.00-42.00	0.10-0.13	0.0-3.0	0.5-1.0
	3-16	10-25	1.45-1.55	14.00-42.00	0.08-0.10	0.0-3.0	0.2-0.5
	>16	---	---	---	---	---	---
Etsel-----------	0-3	12-18	1.35-1.50	14.00-42.00	0.08-0.10	0.0-3.0	1.0-2.0
	3-10	12-18	1.35-1.50	14.00-42.00	0.06-0.07	0.0-3.0	0.0-0.5
	>10	---	---	---	---	---	---
Speaker---------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-10	18-27	1.45-1.55	4.00-14.00	0.11-0.14	0.0-3.0	2.0-4.0
	10-17	27-35	1.40-1.50	1.40-4.00	0.13-0.16	3.0-6.0	0.5-2.0
	17-26	27-35	1.40-1.50	1.40-4.00	0.13-0.16	3.0-6.0	0.5-2.0
	>26	---	---	---	---	---	---
528:							
Maymen----------	0-3	10-25	1.45-1.55	14.00-42.00	0.10-0.13	0.0-3.0	0.5-1.0
	3-16	10-25	1.45-1.55	14.00-42.00	0.08-0.10	0.0-3.0	0.2-0.5
	>16	---	---	---	---	---	---
Etsel-----------	0-3	12-18	1.35-1.50	14.00-42.00	0.08-0.10	0.0-3.0	1.0-2.0
	3-10	12-18	1.35-1.50	14.00-42.00	0.06-0.07	0.0-3.0	0.0-0.5
	>10	---	---	---	---	---	---

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	Pct	g/cc	um/sec	In/in	Pct	Pct
528:							
Snook-----------	0-1	10-25	1.50-1.60	14.00-42.00	0.08-0.10	0.0-3.0	0.5-2.0
	1-8	10-25	1.50-1.60	14.00-42.00	0.07-0.09	0.0-3.0	0.5-2.0
	>8	---	---	---	---	---	---
529:							
Maymen----------	0-3	10-25	1.45-1.55	14.00-42.00	0.10-0.13	0.0-3.0	0.5-1.0
	3-16	10-25	1.45-1.55	14.00-42.00	0.08-0.10	0.0-3.0	0.2-0.5
	>16	---	---	---	---	---	---
Etsel-----------	0-3	12-18	1.35-1.50	14.00-42.00	0.08-0.10	0.0-3.0	1.0-2.0
	3-10	12-18	1.35-1.50	14.00-42.00	0.06-0.07	0.0-3.0	0.0-0.5
	>10	---	---	---	---	---	---
Mayacama--------	0-10	10-20	1.50-1.60	14.00-42.00	0.08-0.10	0.0-3.0	1.0-3.0
	10-21	20-27	1.45-1.55	1.40-4.00	0.10-0.13	0.0-3.0	0.5-1.0
	21-30	20-27	1.45-1.55	1.40-4.00	0.10-0.13	0.0-3.0	0.5-1.0
	30-37	10-20	1.55-1.65	14.00-42.00	0.05-0.07	0.0-3.0	0.2-0.8
	>37	---	---	---	---	---	---
542:							
Okiota----------	0-5	18-27	1.45-1.55	4.00-14.00	0.13-0.17	0.0-3.0	2.0-4.0
	5-8	35-50	1.40-1.50	1.40-4.00	0.15-0.19	3.0-6.0	0.5-2.0
	8-15	35-50	1.40-1.50	0.42-1.40	0.13-0.15	6.0-9.0	0.5-2.0
	>15	---	---	---	---	---	---
Dubakella-------	0-3	27-35	1.35-1.45	1.40-4.00	0.17-0.21	3.0-6.0	1.0-2.0
	3-10	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	10-16	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	16-26	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	>26	---	---	---	---	---	---
Henneke---------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-4	10-18	1.50-1.60	14.00-42.00	0.09-0.12	0.0-3.0	1.0-2.0
	4-7	35-50	1.40-1.50	1.40-4.00	0.07-0.09	6.0-9.0	0.5-1.0
	7-16	35-50	1.35-1.45	0.42-1.40	0.04-0.05	6.0-9.0	0.5-1.0
	>16	---	---	---	---	---	---
545:							
Henneke---------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-4	10-18	1.50-1.60	14.00-42.00	0.09-0.12	0.0-3.0	1.0-2.0
	4-7	35-50	1.40-1.50	1.40-4.00	0.07-0.09	6.0-9.0	0.5-1.0
	7-16	35-50	1.35-1.45	0.42-1.40	0.04-0.05	6.0-9.0	0.5-1.0
	>16	---	---	---	---	---	---
Montara---------	0-6	5-15	1.50-1.60	14.00-42.00	0.08-0.11	0.0-3.0	1.0-2.0
	6-10	5-15	1.50-1.60	14.00-42.00	0.08-0.11	0.0-3.0	1.0-2.0
	>10	---	---	---	---	---	---
Rock outcrop----	0-60	---	---	4.00-14.00	---	---	---
548, 549:							
Henneke---------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-4	10-18	1.50-1.60	14.00-42.00	0.09-0.12	0.0-3.0	1.0-2.0
	4-7	35-50	1.40-1.50	1.40-4.00	0.07-0.09	6.0-9.0	0.5-1.0
	7-16	35-50	1.35-1.45	0.42-1.40	0.04-0.05	6.0-9.0	0.5-1.0
	>16	---	---	---	---	---	---
Okiota----------	0-5	18-27	1.45-1.55	4.00-14.00	0.13-0.17	0.0-3.0	2.0-4.0
	5-8	35-50	1.40-1.50	1.40-4.00	0.15-0.19	3.0-6.0	0.5-2.0
	8-15	35-50	1.40-1.50	0.42-1.40	0.13-0.15	6.0-9.0	0.5-2.0
	>15	---	---	---	---	---	---

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	Pct	g/cc	um/sec	In/in	Pct	Pct
557:							
Neuns-----------	0-2	---	---	---	0.20-0.30	0.0-0.0	---
	2-7	7-18	1.35-1.50	4.00-14.00	0.08-0.11	0.0-3.0	1.0-4.0
	7-15	7-18	1.35-1.50	4.00-14.00	0.08-0.11	0.0-3.0	0.5-1.0
	15-29	7-18	1.35-1.50	4.00-14.00	0.05-0.08	0.0-3.0	0.3-1.0
	>29	---	---	---	---	---	---
Bamtush---------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-9	18-27	1.30-1.45	4.00-14.00	0.07-0.10	0.0-3.0	2.0-4.0
	9-25	18-27	1.30-1.45	4.00-14.00	0.07-0.10	0.0-3.0	2.0-4.0
	25-39	25-35	1.35-1.50	1.40-4.00	0.06-0.10	3.0-6.0	0.2-0.5
	39-49	25-35	1.35-1.50	1.40-4.00	0.06-0.10	3.0-6.0	0.2-0.5
	49-61	20-35	1.35-1.50	1.40-4.00	0.06-0.10	0.0-3.0	0.2-0.5
	61-68	27-40	1.30-1.40	1.40-4.00	0.13-0.16	3.0-6.0	0.2-0.5
Speaker---------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-10	18-27	1.45-1.55	4.00-14.00	0.11-0.14	0.0-3.0	2.0-4.0
	10-17	27-35	1.40-1.50	1.40-4.00	0.13-0.16	3.0-6.0	0.5-2.0
	17-26	27-35	1.40-1.50	1.40-4.00	0.13-0.16	3.0-6.0	0.5-2.0
	>26	---	---	---	---	---	---
564:							
Fouts-----------	0-6	18-27	1.45-1.55	4.00-14.00	0.14-0.18	1.0-3.0	1.0-2.0
	6-12	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	12-18	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	18-26	40-50	1.35-1.45	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	>26	---	---	---	---	---	---
Yorkville-------	0-2	27-40	1.40-1.50	1.40-4.00	0.17-0.20	3.0-6.0	1.0-4.0
	2-15	35-50	1.35-1.50	0.42-1.40	0.14-0.16	6.0-9.0	1.0-4.0
	15-40	35-50	1.35-1.50	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	40-55	35-50	1.35-1.50	0.42-1.40	0.14-0.16	6.0-9.0	0.5-1.0
	55-60	27-40	1.40-1.50	1.40-4.00	0.17-0.20	3.0-6.0	0.2-0.5
	>60	---	---	---	---	---	---
Squawrock-------	0-2	18-27	1.35-1.45	4.00-14.00	0.12-0.15	0.0-3.0	1.0-3.0
	2-9	27-35	1.35-1.45	1.40-4.00	0.09-0.11	3.0-6.0	0.5-1.0
	9-18	27-35	1.35-1.45	1.40-4.00	0.09-0.11	3.0-6.0	0.5-1.0
	18-23	40-45	1.25-1.35	0.42-1.40	0.08-0.09	6.0-9.0	0.2-0.5
	23-26	40-45	1.25-1.35	0.42-1.40	0.08-0.09	6.0-9.0	0.2-0.5
	>26	---	---	---	---	---	---
570:							
Endoaquolls-----	0-4	12-27	1.45-1.55	4.00-14.00	0.16-0.20	3.0-6.0	1.0-4.0
	4-15	15-27	1.45-1.55	4.00-14.00	0.14-0.18	3.0-6.0	1.0-4.0
	15-24	27-40	1.45-1.55	1.40-4.00	0.17-0.21	3.0-6.0	1.0-3.0
	24-40	27-40	1.40-1.50	1.40-4.00	0.17-0.21	3.0-6.0	0.5-2.0
	40-55	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.5-2.0
	55-60	18-27	1.45-1.50	4.00-14.00	0.11-0.14	0.0-3.0	0.5-2.0
590:							
Neuns-----------	0-2	---	---	---	0.20-0.30	0.0-0.0	---
	2-7	7-18	1.35-1.50	4.00-14.00	0.08-0.11	0.0-3.0	1.0-4.0
	7-15	7-18	1.35-1.50	4.00-14.00	0.08-0.11	0.0-3.0	0.5-1.0
	15-29	7-18	1.35-1.50	4.00-14.00	0.05-0.08	0.0-3.0	0.3-1.0
	>29	---	---	---	---	---	---
Marpa-----------	0-2	---	---	---	0.20-0.30	0.0-0.0	---
	2-5	12-18	1.35-1.45	14.00-42.00	0.06-0.07	0.0-3.0	0.5-2.0
	5-14	27-35	1.35-1.50	1.40-4.00	0.08-0.11	0.0-3.0	0.0-0.5
	14-25	27-35	1.35-1.50	1.40-4.00	0.08-0.11	0.0-3.0	0.0-0.5
	>25	---	---	---	---	---	---

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	Pct	g/cc	um/sec	In/in	Pct	Pct
590:							
Goulding--------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-4	10-20	1.35-1.50	4.00-14.00	0.11-0.16	0.0-3.0	1.0-3.0
	4-8	10-20	1.40-1.50	4.00-14.00	0.07-0.09	0.0-3.0	0.5-1.0
	8-13	10-20	1.40-1.50	4.00-14.00	0.07-0.09	0.0-3.0	0.5-1.0
	>13	---	---	---	---	---	---
591:							
Neuns-----------	0-2	---	---	---	0.20-0.30	0.0-0.0	---
	2-7	7-18	1.35-1.50	4.00-14.00	0.08-0.11	0.0-3.0	1.0-4.0
	7-15	7-18	1.35-1.50	4.00-14.00	0.08-0.11	0.0-3.0	0.5-1.0
	15-29	7-18	1.35-1.50	4.00-14.00	0.05-0.08	0.0-3.0	0.3-1.0
	>29	---	---	---	---	---	---
Sheetiron-------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-4	10-25	1.45-1.55	14.00-42.00	0.07-0.09	0.0-3.0	1.0-2.0
	4-9	12-25	1.50-1.60	14.00-42.00	0.05-0.07	0.0-3.0	0.0-0.5
	9-18	12-25	1.50-1.60	14.00-42.00	0.05-0.07	0.0-3.0	0.0-0.5
	18-30	12-25	1.55-1.65	14.00-42.00	0.04-0.05	0.0-3.0	0.0-0.5
	>30	---	---	---	---	---	---
Goulding--------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-4	10-20	1.35-1.50	4.00-14.00	0.11-0.16	0.0-3.0	1.0-3.0
	4-8	10-20	1.40-1.50	4.00-14.00	0.07-0.09	0.0-3.0	0.5-1.0
	8-13	10-20	1.40-1.50	4.00-14.00	0.07-0.09	0.0-3.0	0.5-1.0
	>13	---	---	---	---	---	---
592:							
Neuns-----------	0-2	---	---	---	0.20-0.30	0.0-0.0	---
	2-7	7-18	1.35-1.50	4.00-14.00	0.08-0.11	0.0-3.0	1.0-4.0
	7-15	7-18	1.35-1.50	4.00-14.00	0.08-0.11	0.0-3.0	0.5-1.0
	15-29	7-18	1.35-1.50	4.00-14.00	0.05-0.08	0.0-3.0	0.3-1.0
	>29	---	---	---	---	---	---
Goulding--------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-4	10-20	1.35-1.50	4.00-14.00	0.11-0.16	0.0-3.0	1.0-3.0
	4-8	10-20	1.40-1.50	4.00-14.00	0.07-0.09	0.0-3.0	0.5-1.0
	8-13	10-20	1.40-1.50	4.00-14.00	0.07-0.09	0.0-3.0	0.5-1.0
	>13	---	---	---	---	---	---
Sheetiron-------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-4	10-25	1.45-1.55	14.00-42.00	0.07-0.09	0.0-3.0	1.0-2.0
	4-9	12-25	1.50-1.60	14.00-42.00	0.05-0.07	0.0-3.0	0.0-0.5
	9-18	12-25	1.50-1.60	14.00-42.00	0.05-0.07	0.0-3.0	0.0-0.5
	18-30	12-25	1.55-1.65	14.00-42.00	0.04-0.05	0.0-3.0	0.0-0.5
	>30	---	---	---	---	---	---
596:							
Yollabolly------	0-2	10-25	1.55-1.65	4.00-14.00	0.08-0.10	0.0-3.0	0.5-2.0
	2-6	10-25	1.55-1.65	4.00-14.00	0.08-0.10	0.0-3.0	0.5-2.0
	6-17	10-25	1.55-1.65	4.00-14.00	0.08-0.10	0.0-3.0	0.0-0.5
	>17	---	---	---	---	---	---
Rock outcrop----	0-60	---	---	4.00-14.00	---	---	---
Freezeout-------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-6	10-15	1.25-1.45	14.00-42.00	0.07-0.09	0.0-3.0	2.0-5.0
	6-17	10-15	1.25-1.45	14.00-42.00	0.07-0.09	0.0-3.0	2.0-5.0
	17-26	12-18	1.25-1.45	14.00-42.00	0.04-0.06	0.0-3.0	1.0-3.0
	>26	---	---	---	---	---	---

Table 22.--Physical Properties of the Soils--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Ksat	Available water capacity	Shrink-swell potential	Organic matter
	In	Pct	g/cc	um/sec	In/in	Pct	Pct
597:							
Yollabolly------	0-2	10-25	1.55-1.65	4.00-14.00	0.08-0.10	0.0-3.0	0.5-2.0
	2-6	10-25	1.55-1.65	4.00-14.00	0.08-0.10	0.0-3.0	0.5-2.0
	6-17	10-25	1.55-1.65	4.00-14.00	0.08-0.10	0.0-3.0	0.0-0.5
	>17	---	---	---	---	---	---
Freezeout-------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-6	10-15	1.25-1.45	14.00-42.00	0.07-0.09	0.0-3.0	2.0-5.0
	6-17	10-15	1.25-1.45	14.00-42.00	0.07-0.09	0.0-3.0	2.0-5.0
	17-26	12-18	1.25-1.45	14.00-42.00	0.04-0.06	0.0-3.0	1.0-3.0
	>26	---	---	---	---	---	---
599, 600:							
Freezeout-------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-6	10-15	1.25-1.45	14.00-42.00	0.07-0.09	0.0-3.0	2.0-5.0
	6-17	10-15	1.25-1.45	14.00-42.00	0.07-0.09	0.0-3.0	2.0-5.0
	17-26	12-18	1.25-1.45	14.00-42.00	0.04-0.06	0.0-3.0	1.0-3.0
	>26	---	---	---	---	---	---
Yollabolly------	0-2	10-25	1.55-1.65	4.00-14.00	0.08-0.10	0.0-3.0	0.5-2.0
	2-6	10-25	1.55-1.65	4.00-14.00	0.08-0.10	0.0-3.0	0.5-2.0
	6-17	10-25	1.55-1.65	4.00-14.00	0.08-0.10	0.0-3.0	0.0-0.5
	>17	---	---	---	---	---	---
610:							
Neuns-----------	0-2	---	---	---	0.20-0.30	0.0-0.0	---
	2-7	7-18	1.35-1.50	4.00-14.00	0.08-0.11	0.0-3.0	1.0-4.0
	7-15	7-18	1.35-1.50	4.00-14.00	0.08-0.11	0.0-3.0	0.5-1.0
	15-29	7-18	1.35-1.50	4.00-14.00	0.05-0.08	0.0-3.0	0.3-1.0
	>29	---	---	---	---	---	---
Bamtush---------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-9	18-27	1.30-1.45	4.00-14.00	0.07-0.10	0.0-3.0	2.0-4.0
	9-25	18-27	1.30-1.45	4.00-14.00	0.07-0.10	0.0-3.0	2.0-4.0
	25-39	25-35	1.35-1.50	1.40-4.00	0.06-0.10	3.0-6.0	0.2-0.5
	39-49	25-35	1.35-1.50	1.40-4.00	0.06-0.10	3.0-6.0	0.2-0.5
	49-61	20-35	1.35-1.50	1.40-4.00	0.06-0.10	0.0-3.0	0.2-0.5
	61-68	27-40	1.30-1.40	1.40-4.00	0.13-0.16	3.0-6.0	0.2-0.5
Goulding--------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-4	10-20	1.35-1.50	4.00-14.00	0.11-0.16	0.0-3.0	1.0-3.0
	4-8	10-20	1.40-1.50	4.00-14.00	0.07-0.09	0.0-3.0	0.5-1.0
	8-13	10-20	1.40-1.50	4.00-14.00	0.07-0.09	0.0-3.0	0.5-1.0
	>13	---	---	---	---	---	---
650, 651:							
Bamtush---------	0-1	---	---	---	0.20-0.30	0.0-0.0	---
	1-9	18-27	1.30-1.45	4.00-14.00	0.07-0.10	0.0-3.0	2.0-4.0
	9-25	18-27	1.30-1.45	4.00-14.00	0.07-0.10	0.0-3.0	2.0-4.0
	25-39	25-35	1.35-1.50	1.40-4.00	0.06-0.10	3.0-6.0	0.2-0.5
	39-49	25-35	1.35-1.50	1.40-4.00	0.06-0.10	3.0-6.0	0.2-0.5
	49-61	20-35	1.35-1.50	1.40-4.00	0.06-0.10	0.0-3.0	0.2-0.5
	61-68	27-40	1.30-1.40	1.40-4.00	0.13-0.16	3.0-6.0	0.2-0.5
Marpa-----------	0-2	---	---	---	0.20-0.30	0.0-0.0	---
	2-5	12-18	1.35-1.45	14.00-42.00	0.06-0.07	0.0-3.0	0.5-2.0
	5-14	27-35	1.35-1.50	1.40-4.00	0.08-0.11	0.0-3.0	0.0-0.5
	14-25	27-35	1.35-1.50	1.40-4.00	0.08-0.11	0.0-3.0	0.0-0.5
	>25	---	---	---	---	---	---

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
100:							
Capay	0-15	30-45	5.6-8.4	0-1	0-1	0.0-2.0	0-2
	15-33	30-45	5.6-8.4	0-1	0-1	0.0-2.0	0-2
	33-39	30-50	6.6-8.4	0-1	0-1	0.0-2.0	5-10
	39-46	30-50	6.6-8.4	0-1	0-1	0.0-2.0	5-10
	46-64	30-50	6.6-8.4	0-1	0-1	0.0-2.0	5-10
101:							
Capay	0-8	30-45	5.6-8.4	0-1	0-1	0.0-2.0	0-2
	8-21	30-45	5.6-8.4	0-1	0-1	0.0-2.0	0-2
	21-36	30-50	6.6-8.4	0-1	0-1	0.0-2.0	5-10
	36-48	30-50	6.6-8.4	0-1	0-1	0.0-2.0	5-10
	48-58	30-50	6.6-8.4	0-1	0-1	0.0-2.0	5-10
102, 103:							
Capay	0-15	30-45	5.6-8.4	0-1	0-1	0.0-2.0	0-2
	15-33	30-45	5.6-8.4	0-1	0-1	0.0-2.0	0-2
	33-39	30-50	6.6-8.4	0-1	0-1	0.0-2.0	5-10
	39-46	30-50	6.6-8.4	0-1	0-1	0.0-2.0	5-10
	46-64	30-50	6.6-8.4	0-1	0-1	0.0-2.0	5-10
104, 105, 106:							
Willows	0-5	30-40	6.1-7.8	0-1	0-1	0.0-4.0	0-13
	5-13	30-40	6.6-9.0	0-1	0-1	0.0-4.0	0-13
	13-20	30-40	6.6-9.0	0-1	0-1	2.0-10.0	10-21
	20-39	30-40	6.6-8.4	0-1	0-5	2.0-10.0	10-22
	39-51	30-40	6.6-8.4	0-1	0-5	2.0-10.0	10-20
	51-59	30-40	6.6-8.4	0-1	0-5	2.0-10.0	10-25
	59-72	30-40	6.6-8.4	0-5	0-5	2.0-15.0	10-30
	72-80	30-40	6.6-8.4	0-5	0-10	2.0-15.0	10-30
	80-87	30-40	6.6-9.0	0-5	0-5	2.0-10.0	10-40
107, 108, 109:							
Scribner	0-6	20-35	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	6-12	25-40	6.1-7.8	0-2	0-1	0.0-2.0	0-2
	12-20	25-40	6.1-7.8	0-2	0-1	0.0-2.0	0-2
	20-33	20-35	6.6-7.8	0-2	0-1	0.0-2.0	0-2
	33-41	20-35	6.6-7.8	0-2	0-1	0.0-2.0	0-2
	41-60	20-35	6.6-7.8	0-2	0-1	0.0-2.0	0-2
110:							
Hustabel	0-3	5.0-15	6.6-9.0	0-2	0-1	0.0-2.0	2-8
	3-13	5.0-15	6.6-9.0	0-2	0-1	0.0-2.0	2-8
	13-20	5.0-15	6.6-9.0	0-2	0-1	0.0-2.0	2-8
	20-31	5.0-15	6.6-9.0	0-2	0-1	0.0-2.0	2-8
	31-35	5.0-15	7.9-9.0	1-3	0-1	0.0-2.0	4-8
	35-40	5.0-15	7.9-9.0	1-3	0-1	0.0-2.0	4-8
	40-48	15-25	7.9-9.0	0-3	0-1	0.0-2.0	4-8
	48-52	15-25	7.9-9.0	0-3	0-1	0.0-2.0	4-8
	52-61	15-25	7.9-9.0	0-3	0-1	0.0-2.0	4-8

Table 23.--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 ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
112, 113:							
Westfan--------------	0-4	20-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	4-14	20-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	14-24	20-30	6.6-8.4	0-1	0-1	0.0-2.0	2-6
	24-33	15-25	6.6-8.4	1-5	0-1	0.0-2.0	8-15
	33-43	15-25	6.6-8.4	1-5	0-1	0.0-2.0	8-15
	43-56	15-25	6.6-8.6	1-5	0-1	0.0-2.0	8-15
	56-69	15-25	6.6-8.6	1-5	0-1	0.0-2.0	8-15
	69-93	20-35	7.4-8.8	0-2	0-1	0.0-2.0	10-20
	93-98	20-35	7.4-8.4	0-1	0-1	0.0-2.0	10-20
114:							
Westfan--------------	0-25	15-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	25-44	15-30	7.4-8.4	1-5	0-1	0.0-2.0	8-15
	44-60	15-30	7.4-8.4	1-5	0-1	0.0-2.0	8-15
115, 116, 117, 118:							
Clear Lake-----------	0-4	30-50	5.6-7.3	0-2	0-1	0.0-4.0	0-12
	4-10	30-50	5.6-7.3	0-2	0-1	0.0-4.0	0-12
	10-20	30-55	5.6-7.8	0-2	0-1	0.0-4.0	0-12
	20-34	30-50	5.6-7.8	0-2	0-1	0.0-4.0	0-12
	34-47	30-50	5.6-8.4	0-2	0-1	0.0-4.0	0-12
	47-59	30-45	7.4-9.0	0-2	0-1	0.0-4.0	0-12
	59-79	30-45	7.4-9.0	0-2	0-1	0.0-4.0	0-12
124, 125, 126:							
Moonbend-------------	0-8	20-35	6.6-7.3	0-2	0-2	0.0-2.0	0-2
	8-19	25-40	6.6-7.3	0-2	0-2	0.0-2.0	0-2
	19-33	25-40	6.6-7.3	0-2	0-2	0.0-2.0	0-2
	33-41	20-35	6.6-7.8	0-2	0-2	0.0-4.0	0-2
	41-51	20-35	6.6-7.8	0-2	0-2	0.0-4.0	0-2
	51-63	20-35	6.6-8.4	0-2	0-2	0.0-4.0	0-2
	63-75	20-35	6.6-8.4	0-2	0-2	0.0-4.0	0-2
	75-85	20-35	6.6-8.4	0-2	0-2	0.0-4.0	0-2
127:							
Mallard--------------	0-3	25-30	6.1-8.4	0-1	0-1	0.0-2.0	0-2
	3-8	25-30	6.1-8.4	0-1	0-1	0.0-2.0	0-2
	8-15	25-40	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	15-28	25-40	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	28-44	25-30	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	44-60	25-30	6.6-8.4	0-1	0-1	0.0-2.0	0-2
128:							
Mallard--------------	0-8	20-25	6.1-8.4	0-1	0-1	0.0-2.0	0-2
	8-25	20-25	6.1-8.4	0-1	0-1	0.0-2.0	0-2
	25-39	25-30	6.1-8.4	0-1	0-1	0.0-2.0	0-2
	39-55	25-40	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	55-60	25-30	6.6-8.4	0-1	0-1	0.0-2.0	0-2
129:							
Mallard--------------	0-3	25-30	6.1-8.4	0-1	0-1	0.0-2.0	0-2
	3-8	25-30	6.1-8.4	0-1	0-1	0.0-2.0	0-2
	8-15	25-40	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	15-28	25-40	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	28-44	25-30	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	44-60	25-30	6.6-8.4	0-1	0-1	0.0-2.0	0-2

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
130, 131, 133:							
Corbiere-------------	0-6	25-35	6.6-8.0	0-1	0-2	0.0-4.0	5-13
	6-13	25-35	6.6-8.0	0-1	0-2	0.0-4.0	5-13
	13-21	30-40	6.6-7.8	0-1	0-2	0.0-4.0	5-13
	21-33	35-45	7.4-8.4	0-1	0-2	1.0-8.0	5-13
	33-46	35-45	7.4-8.4	0-1	0-2	4.0-8.0	5-13
	46-59	35-45	7.4-8.4	0-1	0-2	4.0-8.0	5-13
	59-73	35-45	7.4-8.4	0-1	0-2	4.0-8.0	5-13
	73-94	35-45	7.4-9.0	0-5	0-2	2.0-4.0	5-20
	94-114	35-45	7.4-9.0	0-5	0-2	1.0-4.0	10-25
136:							
Colusa---------------	0-2	10-20	8.5-11.0	0-2	0-1	4.0-16.0	50-100
	2-9	15-25	8.5-11.0	0-2	0-1	4.0-16.0	75-175
	9-19	15-25	8.5-11.0	0-2	0-1	4.0-16.0	75-175
	19-25	15-25	8.5-11.0	0-2	0-1	4.0-16.0	75-175
	25-35	15-25	8.5-11.0	0-2	0-1	4.0-16.0	75-175
	35-52	15-25	8.5-11.0	0-2	0-1	0.0-4.0	15-75
	52-64	10-20	8.5-11.0	0-2	0-1	0.0-4.0	15-75
	64-79	10-20	8.5-11.0	0-2	0-1	0.0-4.0	15-75
141:							
Myers----------------	0-3	30-50	6.1-7.8	0-2	0-2	0.0-2.0	0-5
	3-25	30-50	7.4-8.4	0-2	0-2	0.0-2.0	0-5
	25-43	30-50	7.4-8.4	0-2	0-2	0.0-2.0	0-5
	43-56	30-50	7.4-8.4	0-2	0-2	0.0-2.0	0-5
	56-71	30-45	7.4-8.4	0-2	0-2	0.0-2.0	0-5
144:							
Hillgate-------------	0-10	15-30	5.6-6.5	0-2	0-2	0.0-2.0	0-2
	10-19	15-30	5.6-6.5	0-2	0-2	0.0-2.0	0-2
	19-50	25-40	6.1-8.4	0-2	0-2	0.0-2.0	0-2
	50-60	15-30	6.6-8.4	0-2	0-2	0.0-2.0	2-4
145, 147:							
Hillgate-------------	0-3	10-20	5.1-6.5	0-1	0-2	0.0-2.0	0-2
	3-11	10-20	5.1-6.5	0-1	0-2	0.0-2.0	0-2
	11-19	10-20	5.1-6.5	0-1	0-2	0.0-2.0	0-2
	19-37	25-30	6.6-7.8	0-1	0-2	0.0-2.0	0-2
	37-52	25-30	6.6-7.8	0-1	0-2	0.0-2.0	2-4
	52-62	25-35	6.6-8.4	0-1	0-2	0.0-2.0	2-4
	62-72	25-35	6.6-8.4	0-1	0-2	0.0-2.0	2-4
150:							
Arbuckle-------------	0-4	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	4-10	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	10-17	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	17-26	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	26-34	20-30	6.1-7.8	0-1	0-1	0.0-2.0	0-2
	34-44	20-30	6.1-7.8	0-1	0-1	0.0-2.0	0-2
	44-68	20-30	6.1-7.8	0-1	0-1	0.0-2.0	0-2
151:							
Arbuckle-------------	0-4	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	4-10	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	10-17	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	17-26	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	26-34	20-30	6.1-7.8	0-1	0-1	0.0-2.0	0-2
	34-44	20-30	6.1-7.8	0-1	0-1	0.0-2.0	0-2
	44-68	20-30	6.1-7.8	0-1	0-1	0.0-2.0	0-2

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
151:							
Hillgate-------------	0-3	10-20	5.1-6.5	0-1	0-2	0.0-2.0	0-2
	3-11	10-20	5.1-6.5	0-1	0-2	0.0-2.0	0-2
	11-19	10-20	5.1-6.5	0-1	0-2	0.0-2.0	0-2
	19-37	25-30	6.6-7.8	0-1	0-2	0.0-2.0	0-2
	37-52	25-30	6.6-7.8	0-1	0-2	0.0-2.0	2-4
	52-62	25-35	6.6-8.4	0-1	0-2	0.0-2.0	2-4
	62-72	25-35	6.6-8.4	0-1	0-2	0.0-2.0	2-4
152:							
Arbuckle-------------	0-8	15-25	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	8-29	20-30	6.1-7.8	0-1	0-1	0.0-2.0	0-2
	29-51	20-30	6.1-7.8	0-1	0-1	0.0-2.0	0-2
	51-60	15-25	6.1-7.8	0-1	0-1	0.0-2.0	0-2
155:							
Alcapay--------------	0-5	30-50	6.0-8.4	0-2	0-2	0.0-8.0	1-10
	5-10	30-50	6.6-8.4	0-2	0-2	0.0-8.0	1-10
	10-24	30-50	6.6-8.4	0-2	0-2	0.0-8.0	1-10
	24-35	30-50	6.6-8.4	0-10	0-2	0.0-8.0	1-10
	35-53	25-50	7.9-9.5	0-2	0-2	0.0-8.0	25-50
	53-64	25-50	7.9-9.5	0-10	0-2	0.0-8.0	25-50
160:							
Grandbend------------	0-16	10-20	6.6-7.3	0-1	0-1	0.0-2.0	0-4
	16-27	5.0-30	7.4-7.8	0-1	0-1	0.0-2.0	0-4
	27-44	5.0-30	7.4-7.8	0-1	0-1	0.0-2.0	0-4
	44-54	5.0-30	7.4-7.8	0-1	0-1	0.0-2.0	0-4
	54-64	15-25	6.6-7.3	0-1	0-1	0.0-2.0	0-4
	64-67	15-25	6.6-7.3	0-1	0-1	0.0-2.0	0-4
170, 171:							
Vina-----------------	0-8	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	14-21	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	21-26	5.0-15	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	26-46	5.0-15	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	46-48	5.0-15	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	48-60	5.0-15	6.1-7.3	0-1	0-1	0.0-2.0	0-2
172:							
Vina-----------------	0-15	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	15-25	5.0-15	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	25-42	5.0-15	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	42-52	5.0-15	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	52-60	5.0-15	6.1-7.3	0-1	0-1	0.0-2.0	0-2
174:							
Vina-----------------	0-8	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	14-21	10-20	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	21-26	5.0-15	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	26-46	5.0-15	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	46-48	5.0-15	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	48-60	5.0-15	6.1-7.3	0-1	0-1	0.0-2.0	0-2

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
175:							
Tujunga--------------	0-10	10-20	6.1-6.5	0-1	0-1	0.0-2.0	0-1
	10-17	0.0-5.0	6.6-7.3	0-1	0-1	0.0-2.0	0-1
	17-37	0.0-5.0	6.6-7.3	0-1	0-1	0.0-2.0	0-1
	37-62	0.0-5.0	6.6-7.3	0-1	0-1	0.0-2.0	0-1
176:							
Columbia-------------	0-10	10-20	6.6-7.8	0-1	0-1	0.0-2.0	0-1
	10-14	5.0-15	6.6-7.8	0-1	0-1	0.0-2.0	0-1
	14-19	5.0-15	6.6-7.8	0-1	0-1	0.0-2.0	0-1
	19-33	5.0-15	6.6-7.8	0-1	0-1	0.0-2.0	0-1
	33-38	5.0-15	6.6-7.8	0-1	0-1	0.0-2.0	0-1
	38-68	5.0-15	6.6-7.8	0-1	0-1	0.0-2.0	0-1
177:							
Holillipah-----------	0-8	0.0-5.0	6.1-7.3	0-1	0-1	0.0-2.0	0-1
	8-32	0.0-5.0	6.1-7.3	0-1	0-1	0.0-2.0	0-1
	32-35	0.0-5.0	6.1-7.3	0-1	0-1	0.0-2.0	0-1
	35-47	5.0-15	6.1-7.8	0-1	0-1	0.0-2.0	0-1
	47-61	0.0-5.0	6.1-7.3	0-1	0-1	0.0-2.0	0-1
185:							
Riverwash------------	0-3	---	---	---	---	0.0-2.0	---
	3-60	---	---	---	---	0.0-2.0	---
187:							
Westfan--------------	0-4	20-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	4-14	20-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	14-24	20-30	6.6-8.4	0-1	0-1	0.0-2.0	2-6
	24-33	15-25	6.6-8.4	1-5	0-1	0.0-2.0	8-15
	33-43	15-25	6.6-8.4	1-5	0-1	0.0-2.0	8-15
	43-56	15-25	6.6-8.6	1-5	0-1	0.0-2.0	8-15
	56-69	15-25	6.6-8.6	1-5	0-1	0.0-2.0	8-15
	69-93	20-35	7.4-8.8	0-2	0-1	0.0-2.0	10-20
	93-98	20-35	7.4-8.4	0-1	0-1	0.0-2.0	10-20
188:							
Westfan--------------	0-15	20-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	15-41	25-30	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	41-60	30-40	6.6-7.8	0-1	0-1	0.0-2.0	2-6
189:							
Arand----------------	0-8	5.0-10	6.6-7.3	0-1	0-1	0.0-2.0	0-1
	8-18	5.0-10	6.6-7.3	0-1	0-1	0.0-2.0	0-1
	18-24	5.0-10	6.6-7.3	0-1	0-1	0.0-2.0	0-1
	24-65	2.0-5.0	6.6-7.3	0-1	0-1	0.0-2.0	0-1
190:							
Arand----------------	0-10	10-20	6.6-7.3	0-1	0-1	0.0-2.0	0-1
	10-32	10-20	6.6-7.3	0-1	0-1	0.0-2.0	0-1
	32-60	2.0-7.0	6.6-7.3	0-1	0-1	0.0-2.0	0-1
193:							
Westfan--------------	0-4	15-25	6.6-7.8	0-2	0-1	0.0-2.0	0-2
	4-20	20-25	6.6-7.8	0-2	0-1	0.0-2.0	0-2
	20-30	20-25	6.6-7.8	0-2	0-1	0.0-2.0	0-2
	30-60	20-25	6.6-7.8	0-2	0-1	0.0-2.0	2-6

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
200:							
Clear Lake-----------	0-4	30-50	5.6-7.3	0-2	0-1	0.0-4.0	0-12
	4-10	30-50	5.6-7.3	0-2	0-1	0.0-4.0	0-12
	10-20	30-55	5.6-7.8	0-2	0-1	0.0-4.0	0-12
	20-34	30-50	5.6-7.8	0-2	0-1	0.0-4.0	0-12
	34-47	30-50	5.6-8.4	0-2	0-1	0.0-4.0	0-12
	47-59	30-45	7.4-9.0	0-2	0-1	0.0-4.0	0-12
	59-79	30-45	7.4-9.0	0-2	0-1	0.0-4.0	0-12
204, 205, 206:							
Capay----------------	0-4	35-50	5.6-8.4	0	0	0.0-0.5	0-2
	4-11	35-50	5.6-8.4	0	0	0.0-0.5	0-2
	11-23	35-50	6.6-8.4	0	0	0.0-0.5	0-2
	23-30	35-50	6.6-8.4	0	0	0.0-0.5	0-2
	30-43	35-50	6.6-8.4	0	0	0.0-0.5	0-5
	43-58	35-50	6.6-8.4	0-2	0	0.0-1.0	0-5
	58-74	35-50	6.6-9.0	0-2	0	0.0-1.0	0-5
	74-90	35-50	6.6-9.0	0-1	0	0.0-1.0	0-5
	90-102	35-50	6.6-9.0	0-1	0	0.0-1.0	0-5
210:							
Corval---------------	0-8	10-20	6.1-6.5	0-1	0-1	0.0-2.0	0-2
	8-24	15-25	6.1-6.5	0-1	0-1	0.0-2.0	0-2
	24-36	15-25	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	36-46	15-25	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	46-60	15-25	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	60-70	15-25	6.1-7.3	0-1	0-1	0.0-2.0	0-2
211:							
Corval---------------	0-10	15-25	6.1-6.5	0-1	0-1	0.0-2.0	0-2
	10-50	15-25	6.1-6.5	0-1	0-1	0.0-2.0	0-2
	50-60	15-25	6.1-7.3	0-1	0-1	0.0-2.0	0-2
212, 213:							
Ayar-----------------	0-9	30-45	7.4-8.4	2-15	0-2	0.0-2.0	0-2
	9-25	30-45	7.4-8.4	2-15	0-2	0.0-2.0	0-2
	25-36	30-45	7.4-8.4	2-15	0-2	0.0-2.0	0-2
	36-46	30-45	7.4-8.4	2-15	0-2	0.0-2.0	0-2
	46-58	30-45	7.4-8.4	2-15	0-2	0.0-2.0	0-2
	58-72	25-35	7.4-8.4	2-15	0-2	0.0-2.0	0-2
	>72	---	---	---	---	---	---
215, 216:							
Altamont-------------	0-3	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	3-9	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	9-23	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	23-35	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	35-43	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	43-49	30-45	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	>49	---	---	---	---	---	---
Sehorn---------------	0-5	30-45	5.6-7.3	0-2	0-1	0.0-2.0	0-2
	5-9	30-50	5.6-7.3	0-2	0-1	0.0-2.0	0-2
	9-19	30-45	5.6-7.3	0-2	0-1	0.0-2.0	0-2
	19-26	30-50	5.6-7.8	0-2	0-1	0.0-2.0	0-2
	26-35	30-45	5.6-7.8	0-2	0-1	0.0-2.0	0-2
	>35	---	---	---	---	---	---

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
218:							
Sehorn---------------	0-5	30-45	5.6-7.3	0-2	0-1	0.0-2.0	0-2
	5-9	30-50	5.6-7.3	0-2	0-1	0.0-2.0	0-2
	9-19	30-45	5.6-7.3	0-2	0-1	0.0-2.0	0-2
	19-26	30-50	5.6-7.8	0-2	0-1	0.0-2.0	0-2
	26-35	30-45	5.6-7.8	0-2	0-1	0.0-2.0	0-2
	>35	---	---	---	---	---	---
Altamont-------------	0-3	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	3-9	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	9-23	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	23-35	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	35-43	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	43-49	30-45	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	>49	---	---	---	---	---	---
220, 221:							
Altamont-------------	0-3	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	3-9	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	9-23	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	23-35	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	35-43	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	43-49	30-45	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	>49	---	---	---	---	---	---
230:							
Corning--------------	0-4	15-25	5.6-6.5	0-1	0-1	0.0-2.0	0-1
	4-9	15-25	5.6-6.5	0-1	0-1	0.0-2.0	0-1
	9-20	30-45	6.1-6.5	0-1	0-1	0.0-2.0	0-1
	20-31	30-45	6.1-6.5	0-1	0-1	0.0-2.0	0-1
	31-39	20-30	6.6-7.3	0-1	0-1	0.0-2.0	0-1
	39-52	5.0-15	6.6-7.3	0-1	0-1	0.0-2.0	0-1
	52-60	5.0-15	6.6-7.3	0-1	0-1	0.0-2.0	0-1
232:							
Maywood--------------	0-16	15-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	16-22	15-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	22-41	15-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	41-57	5.0-15	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	57-60	5.0-15	6.6-7.8	0-1	0-1	0.0-2.0	0-2
233:							
Eastpark-------------	0-7	10-20	6.6-7.3	0-1	0-1	0.0-2.0	0-2
	7-15	15-30	6.6-7.3	0-1	0-1	0.0-2.0	0-2
	15-26	25-40	6.6-7.3	0-1	0-1	0.0-2.0	0-2
	26-45	15-30	7.4-7.8	0-1	0-1	0.0-2.0	0-2
	45-54	10-20	7.4-7.8	0-1	0-1	0.0-2.0	0-2
	54-60	10-25	7.4-7.8	0-1	0-1	0.0-2.0	0-2
241:							
Contra Costa---------	0-3	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	3-8	15-25	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	8-16	15-25	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	16-28	20-35	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	28-35	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	>35	---	---	---	---	---	---

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
241:							
Altamont-------------	0-3	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	3-9	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	9-23	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	23-35	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	35-43	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	43-49	30-45	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	>49	---	---	---	---	---	---
253:							
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
Altamont-------------	0-3	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	3-9	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	9-23	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	23-35	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	35-43	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	43-49	30-45	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	>49	---	---	---	---	---	---
Rock outcrop---------	0-60	---	---	---	---	---	---
255:							
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
Rock outcrop---------	0-60	---	---	---	---	---	---
257:							
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
Capay----------------	0-4	35-50	5.6-8.4	0	0	0.0-0.5	0-2
	4-11	35-50	5.6-8.4	0	0	0.0-0.5	0-2
	11-23	35-50	6.6-8.4	0	0	0.0-0.5	0-2
	23-30	35-50	6.6-8.4	0	0	0.0-0.5	0-2
	30-43	35-50	6.6-8.4	0	0	0.0-0.5	0-5
	43-58	35-50	6.6-8.4	0-2	0	0.0-1.0	0-5
	58-74	35-50	6.6-9.0	0-2	0	0.0-1.0	0-5
	74-90	35-50	6.6-9.0	0-1	0	0.0-1.0	0-5
	90-102	35-50	6.6-9.0	0-1	0	0.0-1.0	0-5
261:							
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---

Table 23.--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 ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
261:							
Altamont-------------	0-3	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	3-9	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	9-23	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	23-35	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	35-43	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	43-49	30-45	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	>49	---	---	---	---	---	---
270, 271:							
Balcom---------------	0-2	10-15	7.4-8.4	10-15	0-1	0.0-2.0	0-2
	2-11	10-15	7.4-8.4	10-15	0-1	0.0-2.0	0-2
	11-18	15-20	7.9-8.4	15-25	0-1	0.0-2.0	0-2
	18-33	15-20	7.9-8.4	15-25	0-1	0.0-2.0	0-2
	>33	---	---	---	---	---	---
Ayar-----------------	0-9	30-45	7.4-8.4	2-15	0-2	0.0-2.0	0-2
	9-25	30-45	7.4-8.4	2-15	0-2	0.0-2.0	0-2
	25-36	30-45	7.4-8.4	2-15	0-2	0.0-2.0	0-2
	36-46	30-45	7.4-8.4	2-15	0-2	0.0-2.0	0-2
	46-58	30-45	7.4-8.4	2-15	0-2	0.0-2.0	0-2
	58-72	25-35	7.4-8.4	2-15	0-2	0.0-2.0	0-2
	>72	---	---	---	---	---	---
275:							
Goldeagle------------	0-3	15-25	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	3-9	20-25	6.1-7.8	0-1	0-1	0.0-2.0	0-2
	9-25	20-25	6.1-7.8	0-1	0-1	0.0-2.0	0-2
	25-33	20-25	6.1-7.8	0-1	0-1	0.0-2.0	0-2
	33-49	15-25	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	49-59	15-25	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	>59	---	---	---	---	---	---
Positas--------------	0-2	15-20	5.1-7.3	0-1	0-1	0.0-2.0	0-2
	2-9	15-20	5.1-7.3	0-1	0-1	0.0-2.0	0-2
	9-21	15-20	5.1-7.3	0-1	0-1	0.0-2.0	0-2
	21-34	30-40	5.1-6.0	0-1	0-1	0.0-2.0	0-2
	34-50	30-40	5.1-6.0	0-1	0-1	0.0-2.0	0-2
	50-62	30-40	5.1-6.0	0-1	0-1	0.0-2.0	0-2
	62-80	30-40	5.1-6.0	0-1	0-2	0.0-2.0	0-2
Balcom---------------	0-2	10-15	7.4-8.4	10-15	0-1	0.0-2.0	0-2
	2-11	10-15	7.4-8.4	10-15	0-1	0.0-2.0	0-2
	11-18	15-20	7.9-8.4	15-25	0-1	0.0-2.0	0-2
	18-33	15-20	7.9-8.4	15-25	0-1	0.0-2.0	0-2
	>33	---	---	---	---	---	---
276:							
Positas--------------	0-2	15-20	5.1-7.3	0-1	0-1	0.0-2.0	0-2
	2-9	15-20	5.1-7.3	0-1	0-1	0.0-2.0	0-2
	9-21	15-20	5.1-7.3	0-1	0-1	0.0-2.0	0-2
	21-34	30-40	5.1-6.0	0-1	0-1	0.0-2.0	0-2
	34-50	30-40	5.1-6.0	0-1	0-1	0.0-2.0	0-2
	50-62	30-40	5.1-6.0	0-1	0-1	0.0-2.0	0-2
	62-80	30-40	5.1-6.0	0-1	0-2	0.0-2.0	0-2

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
280:							
Skyhigh--------------	0-3	10-20	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	3-8	15-30	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	8-25	20-40	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	25-37	15-30	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	>37	---	---	---	---	---	---
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
300:							
Contra Costa---------	0-3	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	3-8	15-25	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	8-16	15-25	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	16-28	20-35	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	28-35	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	>35	---	---	---	---	---	---
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
305, 311:							
Contra Costa---------	0-3	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	3-8	15-25	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	8-16	15-25	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	16-28	20-35	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	28-35	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	>35	---	---	---	---	---	---
312, 313:							
Saltcanyon-----------	0-13	7.0-22	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	13-25	11-28	6.6-7.3	0-1	0-1	0.0-2.0	0-2
	25-43	11-28	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	43-61	11-28	6.6-7.8	0-1	0-1	0.0-2.0	0-2
315:							
Mallard--------------	0-3	25-30	6.1-8.4	0-1	0-1	0.0-2.0	0-2
	3-8	25-30	6.1-8.4	0-1	0-1	0.0-2.0	0-2
	8-15	25-40	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	15-28	25-40	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	28-44	25-30	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	44-60	25-30	6.6-8.4	0-1	0-1	0.0-2.0	0-2
316:							
Hillgate-------------	0-3	10-20	5.1-6.5	0-1	0-2	0.0-2.0	0-2
	3-11	10-20	5.1-6.5	0-1	0-2	0.0-2.0	0-2
	11-19	10-20	5.1-6.5	0-1	0-2	0.0-2.0	0-2
	19-37	25-30	6.6-7.8	0-1	0-2	0.0-2.0	0-2
	37-52	25-30	6.6-7.8	0-1	0-2	0.0-2.0	2-4
	52-62	25-35	6.6-8.4	0-1	0-2	0.0-2.0	2-4
	62-72	25-35	6.6-8.4	0-1	0-2	0.0-2.0	2-4

Table 23.--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 ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
320:							
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
329:							
Sehorn---------------	0-5	30-45	5.6-7.3	0-2	0-1	0.0-2.0	0-2
	5-9	30-50	5.6-7.3	0-2	0-1	0.0-2.0	0-2
	9-19	30-45	5.6-7.3	0-2	0-1	0.0-2.0	0-2
	19-26	30-50	5.6-7.8	0-2	0-1	0.0-2.0	0-2
	26-35	30-45	5.6-7.8	0-2	0-1	0.0-2.0	0-2
	>35	---	---	---	---	---	---
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
Altamont-------------	0-3	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	3-9	30-50	6.1-8.4	0-2	0-1	0.0-2.0	0-2
	9-23	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	23-35	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	35-43	30-50	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	43-49	30-45	7.4-8.4	0-2	0-1	0.0-2.0	0-2
	>49	---	---	---	---	---	---
330:							
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
Contra Costa---------	0-3	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	3-8	15-25	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	8-16	15-25	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	16-28	20-35	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	28-35	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	>35	---	---	---	---	---	---
331:							
Sehorn---------------	0-5	30-45	5.6-7.3	0-2	0-1	0.0-2.0	0-2
	5-9	30-50	5.6-7.3	0-2	0-1	0.0-2.0	0-2
	9-19	30-45	5.6-7.3	0-2	0-1	0.0-2.0	0-2
	19-26	30-50	5.6-7.8	0-2	0-1	0.0-2.0	0-2
	26-35	30-45	5.6-7.8	0-2	0-1	0.0-2.0	0-2
	>35	---	---	---	---	---	---
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
Rock outcrop---------	0-60	---	---	---	---	---	---
332:							
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
332:							
Rock outcrop---------	0-60	---	---	---	---	---	---
334:							
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
Contra Costa---------	0-3	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	3-8	15-25	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	8-16	15-25	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	16-28	20-35	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	28-35	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	>35	---	---	---	---	---	---
337:							
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
Saltcanyon-----------	0-13	7.0-22	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	13-25	11-28	6.6-7.3	0-1	0-1	0.0-2.0	0-2
	25-43	11-28	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	43-61	11-28	6.6-7.8	0-1	0-1	0.0-2.0	0-2
345:							
Skyhigh--------------	0-3	10-20	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	3-8	15-30	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	8-25	20-40	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	25-37	15-30	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	>37	---	---	---	---	---	---
Sleeper--------------	0-5	10-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	5-9	10-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	9-19	20-45	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	19-35	20-45	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	35-53	20-45	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	>53	---	---	---	---	---	---
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
346:							
Skyhigh--------------	0-3	10-20	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	3-8	15-30	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	8-25	20-40	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	25-37	15-30	5.6-6.5	0-1	0-1	0.0-2.0	0-2
	>37	---	---	---	---	---	---
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
346:							
Sleeper--------------	0-5	10-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	5-9	10-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	9-19	20-45	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	19-35	20-45	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	35-53	20-45	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	>53	---	---	---	---	---	---
347, 348:							
Boar-----------------	0-5	9.0-21	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	5-12	9.0-21	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	12-20	21-36	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	20-37	21-36	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	37-56	21-36	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	56-75	21-36	6.6-8.4	0-1	0-1	0.0-2.0	0-2
Sleeper--------------	0-5	10-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	5-9	10-25	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	9-19	20-45	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	19-35	20-45	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	35-53	20-45	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	>53	---	---	---	---	---	---
350:							
Haploxererts---------	0-5	18-30	7.4-8.4	0-1	0-1	0.0-2.0	0-2
	5-15	18-30	7.4-8.4	0-1	0-1	0.0-2.0	0-2
	15-28	25-40	7.4-8.4	0-1	0-1	0.0-2.0	0-2
	28-39	18-30	7.9-8.4	0-5	0-1	0.0-2.0	0-2
	39-52	12-22	7.9-8.4	0-5	0-1	0.0-2.0	0-2
	>52	---	---	---	---	---	---
355:							
Venado---------------	0-3	21-52	6.6-7.8	0-2	0-2	0.0-2.0	0-2
	3-13	21-52	6.6-7.8	0-2	0-2	0.0-2.0	0-2
	13-30	21-52	7.9-9.0	0-5	0-2	0.0-2.0	0-2
	30-38	15-36	8.5-9.0	0-5	0-2	0.0-2.0	0-8
	38-53	15-32	8.5-9.0	0-10	0-2	0.0-2.0	0-8
	53-61	15-32	8.5-9.0	0-5	0-2	0.0-2.0	0-8
	61-69	24-64	7.9-8.4	0-5	0-2	0.0-2.0	0-2
360:							
Bearvalley-----------	0-5	6.0-14	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	5-20	6.0-14	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	20-34	6.0-14	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	34-60	3.0-8.0	7.4-8.4	0-1	0-1	0.0-2.0	0-2
	60-75	3.0-8.0	7.4-8.4	0-1	0-1	0.0-2.0	0-2
365, 366:							
Leesville------------	0-3	3.0-20	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	3-16	3.0-20	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	16-21	3.0-20	6.6-8.4	0-1	0-1	0.0-2.0	0-2
	21-30	3.0-12	7.9-8.4	0-1	0-1	0.0-2.0	0-2
	30-46	3.0-12	7.9-8.4	0-1	0-1	0.0-2.0	0-2
	46-60	3.0-12	7.9-8.4	0-1	0-1	0.0-2.0	0-2

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
370:							
Livermore------------	0-7	11-22	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	7-19	11-28	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	19-41	11-28	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	41-63	11-22	6.1-7.3	0-1	0-1	0.0-2.0	0-2
371:							
Buttes---------------	0-2	9.0-21	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	2-7	9.0-21	6.1-7.3	0-1	0-1	0.0-2.0	0-2
	7-12	14-28	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	12-19	14-28	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	19-24	9.0-24	6.6-7.8	0-1	0-1	0.0-2.0	0-2
	>24	---	---	---	---	---	---
Millsholm------------	0-2	10-20	5.6-7.3	0-1	0-1	0.0-2.0	0-2
	2-8	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	8-14	10-20	5.6-7.8	0-1	0-1	0.0-2.0	0-2
	>14	---	---	---	---	---	---
519, 520, 521:							
Stonyford------------	0-3	5.0-15	5.6-7.3	0	0	0	0
	3-7	15-25	5.6-7.3	0	0	0	0
	7-14	15-25	5.6-7.3	0	0	0	0
	>14	---	---	---	---	---	---
Guenoc---------------	0-4	10-20	6.6-7.3	0	0	0	0
	4-9	10-20	6.6-7.3	0	0	0	0
	9-18	20-35	6.6-7.3	0	0	0	0
	18-31	20-35	6.6-7.3	0	0	0	0
	>31	---	---	---	---	---	---
524:							
Arand----------------	0-8	5.0-10	6.6-7.3	0-1	0-1	0.0-2.0	0-1
	8-18	5.0-10	6.6-7.3	0-1	0-1	0.0-2.0	0-1
	18-24	5.0-10	6.6-7.3	0-1	0-1	0.0-2.0	0-1
	24-65	2.0-5.0	6.6-7.3	0-1	0-1	0.0-2.0	0-1
Riverwash------------	0-3	---	---	---	---	0.0-2.0	---
	3-60	---	---	---	---	0.0-2.0	---
526:							
Etsel----------------	0-3	5.0-15	5.6-6.5	0	0	0	0
	3-10	5.0-15	5.6-6.5	0	0	0	0
	>10	---	---	---	---	---	---
Maymen---------------	0-3	5.0-20	5.6-6.5	0	0	0	0
	3-16	5.0-20	5.1-6.0	0	0	0	0
	>16	---	---	---	---	---	---
Marpa----------------	0-2	---	---	0	0	---	0
	2-5	5.0-15	5.6-7.3	0	0	0	0
	5-14	10-20	5.1-6.5	0	0	0	0
	14-25	10-20	5.1-6.5	0	0	0	0
	>25	---	---	---	---	---	---
527:							
Maymen---------------	0-3	5.0-20	5.6-6.5	0	0	0	0
	3-16	5.0-20	5.1-6.0	0	0	0	0
	>16	---	---	---	---	---	---

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
527:							
Etsel----------------	0-3	5.0-15	5.6-6.5	0	0	0	0
	3-10	5.0-15	5.6-6.5	0	0	0	0
	>10	---	---	---	---	---	---
Speaker--------------	0-1	---	---	0	0	---	0
	1-10	10-20	5.1-6.5	0	0	0	0
	10-17	15-20	4.5-6.0	0	0	0	0
	17-26	15-20	4.5-6.0	0	0	0	0
	>26	---	---	---	---	---	---
528:							
Maymen---------------	0-3	5.0-20	5.6-6.5	0	0	0	0
	3-16	5.0-20	5.1-6.0	0	0	0	0
	>16	---	---	---	---	---	---
Etsel----------------	0-3	5.0-15	5.6-6.5	0	0	0	0
	3-10	5.0-15	5.6-6.5	0	0	0	0
	>10	---	---	---	---	---	---
Snook----------------	0-1	5.0-15	5.1-6.0	0	0	0	0
	1-8	5.0-15	5.1-6.0	0	0	0	0
	>8	---	---	---	---	---	---
529:							
Maymen---------------	0-3	5.0-20	5.6-6.5	0	0	0	0
	3-16	5.0-20	5.1-6.0	0	0	0	0
	>16	---	---	---	---	---	---
Etsel----------------	0-3	5.0-15	5.6-6.5	0	0	0	0
	3-10	5.0-15	5.6-6.5	0	0	0	0
	>10	---	---	---	---	---	---
Mayacama-------------	0-10	10-15	6.1-7.3	0	0	0	0
	10-21	15-25	5.1-5.5	0	0	0	0
	21-30	15-25	5.1-5.5	0	0	0	0
	30-37	10-15	5.1-5.5	0	0	0	0
	>37	---	---	---	---	---	---
542:							
Okiota---------------	0-5	10-20	6.1-7.8	0	0	0	0
	5-8	15-25	6.1-7.8	0	0	0	0
	8-15	20-30	6.1-7.8	0	0	0	0
	>15	---	---	---	---	---	---
Dubakella------------	0-3	15-30	6.6-7.3	0	0	0	0
	3-10	25-40	6.6-7.3	0	0	0	0
	10-16	25-40	6.6-7.3	0	0	0	0
	16-26	25-40	6.6-7.3	0	0	0	0
	>26	---	---	---	---	---	---
Henneke--------------	0-1	---	---	0	0	---	0
	1-4	5.0-15	5.6-7.3	0	0	0	0
	4-7	20-40	6.6-7.8	0	0	0	0
	7-16	20-40	6.6-7.8	0	0	0	0
	>16	---	---	---	---	---	---

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
545:							
Henneke	0-1	---	---	0	0	---	0
	1-4	5.0-15	5.6-7.3	0	0	0	0
	4-7	20-40	6.6-7.8	0	0	0	0
	7-16	20-40	6.6-7.8	0	0	0	0
	>16	---	---	---	---	---	---
Montara	0-6	5.0-15	6.6-8.4	0	0	0	0
	6-10	5.0-15	6.6-8.4	0	0	0	0
	>10	---	---	---	---	---	---
Rock outcrop	0-60	---	---	---	0	---	---
548, 549:							
Henneke	0-1	---	---	0	0	---	0
	1-4	5.0-15	5.6-7.3	0	0	0	0
	4-7	20-40	6.6-7.8	0	0	0	0
	7-16	20-40	6.6-7.8	0	0	0	0
	>16	---	---	---	---	---	---
Okiota	0-5	10-20	6.1-7.8	0	0	0	0
	5-8	15-25	6.1-7.8	0	0	0	0
	8-15	20-30	6.1-7.8	0	0	0	0
	>15	---	---	---	---	---	---
557:							
Neuns	0-2	---	---	0	0	---	0
	2-7	15-25	5.1-6.5	0	0	0	0
	7-15	15-25	5.1-6.5	0	0	0	0
	15-29	15-25	5.1-6.5	0	0	0	0
	>29	---	---	---	---	---	---
Bamtush	0-1	---	---	0	0	---	0
	1-9	10-20	5.1-6.5	0	0	0	0
	9-25	10-20	5.1-6.5	0	0	0	0
	25-39	10-20	5.1-6.5	0	0	0	0
	39-49	10-20	5.1-6.5	0	0	0	0
	49-61	10-20	5.1-6.5	0	0	0	0
	61-68	15-20	5.1-6.5	0	0	0	0
Speaker	0-1	---	---	0	0	---	0
	1-10	10-20	5.1-6.5	0	0	0	0
	10-17	15-20	4.5-6.0	0	0	0	0
	17-26	15-20	4.5-6.0	0	0	0	0
	>26	---	---	---	---	---	---
564:							
Fouts	0-6	10-18	6.1-7.8	0	0	0	0
	6-12	16-30	6.1-7.8	0	0	0	0
	12-18	16-30	6.1-7.8	0	0	0	0
	18-26	16-30	6.1-7.8	0	0	0	0
	>26	---	---	---	---	---	---
Yorkville	0-2	10-25	6.1-7.8	0	0	0	0
	2-15	10-35	6.6-8.4	0-2	0	0	0
	15-40	10-35	6.6-8.4	0-2	0	0	0
	40-55	10-35	6.6-8.4	0-2	0	0	0
	55-60	10-25	6.6-8.4	0-2	0	0	0
	>60	---	---	---	---	---	---

Table 23.--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 ratio
	In	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
564:							
Squawrock------------	0-2	10-20	5.6-7.3	0	0	0	0
	2-9	10-20	6.1-7.8	0	0	0	0
	9-18	10-20	6.1-7.8	0	0	0	0
	18-23	20-40	6.1-7.8	0	0	0	0
	23-26	20-40	6.1-7.8	0	0	0	0
	>26	---	---	---	---	---	---
570:							
Endoaquolls----------	0-4	20-35	5.6-6.5	0	0	0	0
	4-15	20-35	5.6-6.5	0	0	0	0
	15-24	25-40	5.6-8.4	0-2	0	0	0
	24-40	25-40	5.6-8.4	0-2	0	0	0
	40-55	20-35	5.6-8.4	0-2	0	0	0
	55-60	20-35	5.6-8.4	0-2	0	0	0
590:							
Neuns----------------	0-2	---	---	0	0	---	0
	2-7	15-25	5.1-6.5	0	0	0	0
	7-15	15-25	5.1-6.5	0	0	0	0
	15-29	15-25	5.1-6.5	0	0	0	0
	>29	---	---	---	---	---	---
Marpa----------------	0-2	---	---	0	0	---	0
	2-5	5.0-15	5.6-7.3	0	0	0	0
	5-14	10-20	5.1-6.5	0	0	0	0
	14-25	10-20	5.1-6.5	0	0	0	0
	>25	---	---	---	---	---	---
Goulding-------------	0-1	---	---	0	0	---	0
	1-4	10-20	5.1-6.0	0	0	0	0
	4-8	5.0-10	5.1-6.0	0	0	0	0
	8-13	5.0-10	5.1-6.0	0	0	0	0
	>13	---	---	---	---	---	---
591:							
Neuns----------------	0-2	---	---	0	0	---	0
	2-7	15-25	5.1-6.5	0	0	0	0
	7-15	15-25	5.1-6.5	0	0	0	0
	15-29	15-25	5.1-6.5	0	0	0	0
	>29	---	---	---	---	---	---
Sheetiron------------	0-1	---	---	0	0	---	0
	1-4	5.0-15	5.1-6.0	0	0	0	0
	4-9	5.0-15	5.1-6.0	0	0	0	0
	9-18	5.0-15	5.1-6.0	0	0	0	0
	18-30	5.0-15	5.1-6.0	0	0	0	0
	>30	---	---	---	---	---	---
Goulding-------------	0-1	---	---	0	0	---	0
	1-4	10-20	5.1-6.0	0	0	0	0
	4-8	5.0-10	5.1-6.0	0	0	0	0
	8-13	5.0-10	5.1-6.0	0	0	0	0
	>13	---	---	---	---	---	---

Table 23.--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 ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
592:							
Neuns----------------	0-2	---	---	0	0	---	0
	2-7	15-25	5.1-6.5	0	0	0	0
	7-15	15-25	5.1-6.5	0	0	0	0
	15-29	15-25	5.1-6.5	0	0	0	0
	>29	---	---	---	---	---	---
Goulding-------------	0-1	---	---	0	0	---	0
	1-4	10-20	5.1-6.0	0	0	0	0
	4-8	5.0-10	5.1-6.0	0	0	0	0
	8-13	5.0-10	5.1-6.0	0	0	0	0
	>13	---	---	---	---	---	---
Sheetiron------------	0-1	---	---	0	0	---	0
	1-4	5.0-15	5.1-6.0	0	0	0	0
	4-9	5.0-15	5.1-6.0	0	0	0	0
	9-18	5.0-15	5.1-6.0	0	0	0	0
	18-30	5.0-15	5.1-6.0	0	0	0	0
	>30	---	---	---	---	---	---
596:							
Yollabolly-----------	0-2	5.0-15	4.5-6.0	0	0	0	0
	2-6	5.0-15	4.5-6.0	0	0	0	0
	6-17	5.0-15	4.5-6.0	0	0	0	0
	>17	---	---	---	---	---	---
Rock outcrop---------	0-60	---	---	---	---	---	---
Freezeout------------	0-1	---	---	0	0	---	0
	1-6	5.0-15	4.5-6.5	0	0	0	0
	6-17	5.0-15	4.5-6.5	0	0	0	0
	17-26	5.0-15	4.5-6.5	0	0	0	0
	>26	---	---	---	---	---	---
597:							
Yollabolly-----------	0-2	5.0-15	4.5-6.0	0	0	0	0
	2-6	5.0-15	4.5-6.0	0	0	0	0
	6-17	5.0-15	4.5-6.0	0	0	0	0
	>17	---	---	---	---	---	---
Freezeout------------	0-1	---	---	0	0	---	0
	1-6	5.0-15	4.5-6.5	0	0	0	0
	6-17	5.0-15	4.5-6.5	0	0	0	0
	17-26	5.0-15	4.5-6.5	0	0	0	0
	>26	---	---	---	---	---	---
599, 600:							
Freezeout------------	0-1	---	---	0	0	---	0
	1-6	5.0-15	4.5-6.5	0	0	0	0
	6-17	5.0-15	4.5-6.5	0	0	0	0
	17-26	5.0-15	4.5-6.5	0	0	0	0
	>26	---	---	---	---	---	---
Yollabolly-----------	0-2	5.0-15	4.5-6.0	0	0	0	0
	2-6	5.0-15	4.5-6.0	0	0	0	0
	6-17	5.0-15	4.5-6.0	0	0	0	0
	>17	---	---	---	---	---	---

Table 23.--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 ratio
	In	meq/100 g	pH	Pct	Pct	mmhos/cm	
610:							
Neuns----------------	0-2	---	---	0	0	---	0
	2-7	15-25	5.1-6.5	0	0	0	0
	7-15	15-25	5.1-6.5	0	0	0	0
	15-29	15-25	5.1-6.5	0	0	0	0
	>29	---	---	---	---	---	---
Bamtush--------------	0-1	---	---	0	0	---	0
	1-9	10-20	5.1-6.5	0	0	0	0
	9-25	10-20	5.1-6.5	0	0	0	0
	25-39	10-20	5.1-6.5	0	0	0	0
	39-49	10-20	5.1-6.5	0	0	0	0
	49-61	10-20	5.1-6.5	0	0	0	0
	61-68	15-20	5.1-6.5	0	0	0	0
Goulding-------------	0-1	---	---	0	0	---	0
	1-4	10-20	5.1-6.0	0	0	0	0
	4-8	5.0-10	5.1-6.0	0	0	0	0
	8-13	5.0-10	5.1-6.0	0	0	0	0
	>13	---	---	---	---	---	---
650, 651:							
Bamtush--------------	0-1	---	---	0	0	---	0
	1-9	10-20	5.1-6.5	0	0	0	0
	9-25	10-20	5.1-6.5	0	0	0	0
	25-39	10-20	5.1-6.5	0	0	0	0
	39-49	10-20	5.1-6.5	0	0	0	0
	49-61	10-20	5.1-6.5	0	0	0	0
	61-68	15-20	5.1-6.5	0	0	0	0
Marpa----------------	0-2	---	---	0	0	---	0
	2-5	5.0-15	5.6-7.3	0	0	0	0
	5-14	10-20	5.1-6.5	0	0	0	0
	14-25	10-20	5.1-6.5	0	0	0	0
	>25	---	---	---	---	---	---

Table 24.--Erosion 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.)

Map symbol and soil name	Depth	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
		K	Kf	T		
	In					
100:						
Capay------------------------	0-15	.28	.28	5	4	86
	15-33	.28	.28			
	33-39	.24	.24			
	39-46	.24	.24			
	46-64	.24	.24			
101:						
Capay------------------------	0-8	.24	.28	5	4	86
	8-21	.24	.24			
	21-36	.24	.24			
	36-48	.28	.28			
	48-58	.28	.28			
102, 103:						
Capay------------------------	0-15	.28	.28	5	4	86
	15-33	.28	.28			
	33-39	.24	.24			
	39-46	.24	.24			
	46-64	.24	.24			
104, 105, 106:						
Willows----------------------	0-5	.28	.28	5	4	86
	5-13	.28	.28			
	13-20	.28	.28			
	20-39	.28	.28			
	39-51	.28	.28			
	51-59	.28	.28			
	59-72	.28	.28			
	72-80	.28	.28			
	80-87	.28	.28			
107, 108, 109:						
Scribner---------------------	0-6	.43	.43	5	6	48
	6-12	.37	.37			
	12-20	.37	.37			
	20-33	.37	.37			
	33-41	.37	.37			
	41-60	.37	.37			
110:						
Hustabel---------------------	0-3	.37	.37	5	3	86
	3-13	.37	.37			
	13-20	.37	.37			
	20-31	.37	.37			
	31-35	.43	.43			
	35-40	.37	.37			
	40-48	.37	.37			
	48-52	.32	.32			
	52-61	.20	.20			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In					
112, 113:						
Westfan	0-4	.32	.32	5	6	48
	4-14	.32	.32			
	14-24	.32	.32			
	24-33	.37	.37			
	33-43	.37	.37			
	43-56	.37	.37			
	56-69	.37	.37			
	69-93	.32	.32			
	93-98	.32	.32			
114:						
Westfan	0-25	.32	.32	5	4	86
	25-44	.32	.32			
	44-60	.32	.32			
115, 116, 117, 118:						
Clear Lake	0-4	.24	.24	5	4	86
	4-10	.24	.24			
	10-20	.24	.24			
	20-34	.24	.24			
	34-47	.24	.24			
	47-59	.24	.24			
	59-79	.24	.24			
124, 125, 126:						
Moonbend	0-8	.43	.43	5	6	48
	8-19	.37	.37			
	19-33	.37	.37			
	33-41	.32	.32			
	41-51	.43	.43			
	51-63	.43	.43			
	63-75	.43	.43			
	75-85	.32	.32			
127:						
Mallard	0-3	.32	.32	5	4	86
	3-8	.32	.32			
	8-15	.28	.28			
	15-28	.28	.28			
	28-44	.32	.32			
	44-60	.32	.32			
128:						
Mallard	0-8	.32	.32	5	6	48
	8-25	.32	.32			
	25-39	.32	.32			
	39-55	.28	.28			
	55-60	.32	.32			
129:						
Mallard	0-3	.32	.32	5	4	86
	3-8	.32	.32			
	8-15	.28	.28			
	15-28	.28	.28			
	28-44	.32	.32			
	44-60	.32	.32			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In					
130, 131, 133:						
Corbiere	0-6	.43	.43	5	6	48
	6-13	.43	.43			
	13-21	.43	.43			
	21-33	.32	.32			
	33-46	.32	.32			
	46-59	.32	.32			
	59-73	.32	.32			
	73-94	.32	.32			
	94-114	.32	.32			
136:						
Colusa	0-2	.49	.49	5	5	56
	2-9	.49	.49			
	9-19	.49	.49			
	19-25	.49	.49			
	25-35	.49	.49			
	35-52	.49	.49			
	52-64	.43	.43			
	64-79	.43	.43			
141:						
Myers	0-3	.28	.28	5	4	86
	3-25	.28	.28			
	25-43	.28	.28			
	43-56	.28	.28			
	56-71	.28	.28			
144:						
Hillgate	0-10	.28	.28	5	4	86
	10-19	.28	.28			
	19-50	.24	.24			
	50-60	.28	.28			
145:						
Hillgate	0-3	.28	.28	5	6	48
	3-11	.28	.28			
	11-19	.28	.28			
	19-37	.24	.24			
	37-52	.28	.28			
	52-62	.28	.28			
	62-72	.28	.28			
147:						
Hillgate	0-3	.28	.28	5	6	48
	3-11	.28	.28			
	11-19	.28	.28			
	19-37	.24	.24			
	37-52	.28	.28			
	52-62	.28	.28			
	62-72	.28	.28			
150:						
Arbuckle	0-4	.32	.32	5	3	86
	4-10	.32	.32			
	10-17	.32	.32			
	17-26	.24	.28			
	26-34	.20	.24			
	34-44	.20	.24			
	44-68	.10	.17			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In					
151:						
Arbuckle	0-4	.32	.32	5	3	86
	4-10	.32	.32			
	10-17	.32	.32			
	17-26	.24	.28			
	26-34	.20	.24			
	34-44	.20	.24			
	44-68	.10	.17			
Hillgate	0-3	.28	.28	5	6	48
	3-11	.28	.28			
	11-19	.28	.28			
	19-37	.24	.24			
	37-52	.28	.28			
	52-62	.28	.28			
	62-72	.28	.28			
152:						
Arbuckle	0-8	.32	.43	5	6	48
	8-29	.24	.43			
	29-51	.24	.43			
	51-60	.10	.49			
155:						
Alcapay	0-5	.32	.32	5	4	86
	5-10	.32	.32			
	10-24	.32	.32			
	24-35	.32	.32			
	35-53	.32	.32			
	53-64	.32	.32			
160:						
Grandbend	0-16	.37	.37	5	6	48
	16-27	.10	.10			
	27-44	.10	.10			
	44-54	.10	.10			
	54-64	.37	.37			
	64-67	.37	.37			
170, 171:						
Vina	0-8	.32	.32	5	5	56
	8-14	.32	.32			
	14-21	.32	.32			
	21-26	.32	.32			
	26-46	.32	.32			
	46-48	.37	.37			
	48-60	.37	.37			
172:						
Vina	0-15	.32	.32	5	3	86
	15-25	.32	.32			
	25-42	.32	.32			
	42-52	.37	.37			
	52-60	.37	.37			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In					
174:						
Vina	0-8	.32	.32	5	5	56
	8-14	.32	.32			
	14-21	.32	.32			
	21-26	.32	.32			
	26-46	.32	.32			
	46-48	.37	.37			
	48-60	.37	.37			
175:						
Tujunga	0-10	.32	.32	5	5	56
	10-17	.10	.10			
	17-37	.10	.10			
	37-62	.10	.10			
176:						
Columbia	0-10	.32	.32	5	3	86
	10-14	.32	.32			
	14-19	.32	.32			
	19-33	.32	.32			
	33-38	.32	.32			
	38-68	.32	.32			
177:						
Holillipah	0-8	.10	.10	5	2	134
	8-32	.10	.10			
	32-35	.10	.10			
	35-47	.32	.32			
	47-61	.10	.10			
185:						
Riverwash	0-3	.15	.20	5	---	---
	3-60	.10	.15			
187:						
Westfan	0-4	.32	.32	5	6	48
	4-14	.32	.32			
	14-24	.32	.32			
	24-33	.37	.37			
	33-43	.37	.37			
	43-56	.37	.37			
	56-69	.37	.37			
	69-93	.32	.32			
	93-98	.32	.32			
188:						
Westfan	0-15	.32	.32	5	6	48
	15-41	.28	.28			
	41-60	.24	.24			
189:						
Arand	0-8	.28	.32	5	4	86
	8-18	.28	.32			
	18-24	.28	.32			
	24-65	.10	.10			
190:						
Arand	0-10	.10	.32	5	6	48
	10-32	.10	.32			
	32-60	.05	.17			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors			Wind erodibility group	Wind erodibility index
		K	Kf	T		
	In					
193:						
Westfan	0-4	.32	.37	5	6	48
	4-20	.28	.32			
	20-30	.28	.32			
	30-60	.28	.32			
200:						
Clear Lake	0-4	.24	.24	5	4	86
	4-10	.24	.24			
	10-20	.24	.24			
	20-34	.24	.24			
	34-47	.24	.24			
	47-59	.24	.24			
	59-79	.24	.24			
204, 205, 206:						
Capay	0-4	.24	.24	5	4	86
	4-11	.24	.24			
	11-23	.24	.24			
	23-30	.24	.24			
	30-43	.24	.24			
	43-58	.24	.24			
	58-74	.24	.24			
	74-90	.24	.24			
	90-102	.24	.24			
210:						
Corval	0-8	.32	.32	5	6	48
	8-24	.28	.28			
	24-36	.28	.28			
	36-46	.28	.28			
	46-60	.28	.28			
	60-70	.28	.28			
211:						
Corval	0-10	.28	.28	5	6	48
	10-50	.28	.28			
	50-60	.28	.28			
212, 213:						
Ayar	0-9	.28	.28	5	4	86
	9-25	.28	.28			
	25-36	.28	.28			
	36-46	.28	.28			
	46-58	.28	.28			
	58-72	.28	.28			
	>72	---	---			
215, 216:						
Altamont	0-3	.24	.24	4	4	86
	3-9	.24	.24			
	9-23	.24	.24			
	23-35	.24	.24			
	35-43	.24	.24			
	43-49	.24	.24			
	>49	---	---			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In					
215, 216:						
Sehorn	0-5	.28	.28	2	4	86
	5-9	.28	.28			
	9-19	.28	.24			
	19-26	.28	.20			
	26-35	.28	.05			
	>35	---	---			
218:						
Sehorn	0-5	.28	.28	2	4	86
	5-9	.28	.28			
	9-19	.28	.24			
	19-26	.28	.20			
	26-35	.28	.05			
	>35	---	---			
Altamont	0-3	.24	.24	4	4	86
	3-9	.24	.24			
	9-23	.24	.24			
	23-35	.24	.24			
	35-43	.24	.24			
	43-49	.24	.24			
	>49	---	---			
220, 221:						
Altamont	0-3	.24	.24	4	4	86
	3-9	.24	.24			
	9-23	.24	.24			
	23-35	.24	.24			
	35-43	.24	.24			
	43-49	.24	.24			
	>49	---	---			
230:						
Corning	0-4	.24	.28	3	4	86
	4-9	.24	.28			
	9-20	.20	.24			
	20-31	.20	.24			
	31-39	.24	.43			
	39-52	.10	.49			
	52-60	.10	.49			
232:						
Maywood	0-16	.20	.37	5	6	48
	16-22	.20	.37			
	22-41	.20	.37			
	41-57	.43	.43			
	57-60	.28	.28			
233:						
Eastpark	0-7	.32	.32	5	4	86
	7-15	.24	.28			
	15-26	.10	.24			
	26-45	.05	.28			
	45-54	.32	.43			
	54-60	.05	.28			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In					
241:						
Contra Costa	0-3	.37	.37	2	6	48
	3-8	.28	.28			
	8-16	.28	.28			
	16-28	.24	.24			
	28-35	.20	.28			
	>35	---	---			
Altamont	0-3	.24	.24	4	4	86
	3-9	.24	.24			
	9-23	.24	.24			
	23-35	.24	.24			
	35-43	.24	.24			
	43-49	.24	.24			
	>49	---	---			
253:						
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
Altamont	0-3	.24	.24	4	4	86
	3-9	.24	.24			
	9-23	.24	.24			
	23-35	.24	.24			
	35-43	.24	.24			
	43-49	.24	.24			
	>49	---	---			
Rock outcrop	0-60	---	---	---	8	0
255:						
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
Rock outcrop	0-60	---	---	---	8	0
257:						
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
Capay	0-4	.24	.24	5	4	86
	4-11	.24	.24			
	11-23	.24	.24			
	23-30	.24	.24			
	30-43	.24	.24			
	43-58	.24	.24			
	58-74	.24	.24			
	74-90	.24	.24			
	90-102	.24	.24			
261:						
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In					
261:						
Altamont	0-3	.24	.24	4	4	86
	3-9	.24	.24			
	9-23	.24	.24			
	23-35	.24	.24			
	35-43	.24	.24			
	43-49	.24	.24			
	>49	---	---			
270, 271:						
Balcom	0-2	.43	.43	2	5	56
	2-11	.43	.43			
	11-18	.43	.43			
	18-33	.43	.43			
	>33	---	---			
Ayar	0-9	.28	.28	4	7	38
	9-25	.28	.28			
	25-36	.28	.28			
	36-46	.28	.28			
	46-58	.28	.28			
	58-72	.28	.28			
	>72	---	---			
275:						
Goldeagle	0-3	.32	.37	5	4	86
	3-9	.32	.32			
	9-25	.32	.32			
	25-33	.32	.32			
	33-49	.37	.37			
	49-59	.37	.37			
	>59	---	---			
Positas	0-2	.20	.24	4	4	86
	2-9	.20	.24			
	9-21	.20	.24			
	21-34	.15	.17			
	34-50	.10	.15			
	50-62	.10	.15			
	62-80	.10	.15			
Balcom	0-2	.43	.43	2	5	56
	2-11	.43	.43			
	11-18	.43	.43			
	18-33	.43	.43			
	>33	---	---			
276:						
Positas	0-2	.20	.24	4	4	86
	2-9	.20	.24			
	9-21	.20	.24			
	21-34	.15	.17			
	34-50	.10	.15			
	50-62	.10	.15			
	62-80	.10	.15			
280:						
Skyhigh	0-3	.37	.37	2	6	48
	3-8	.28	.32			
	8-25	.20	.24			
	25-37	.28	.32			
	>37	---	---			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In					
280:						
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
300:						
Contra Costa	0-3	.37	.37	2	6	48
	3-8	.28	.28			
	8-16	.28	.28			
	16-28	.24	.24			
	28-35	.20	.28			
	>35	---	---			
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
305, 311:						
Contra Costa	0-3	.37	.37	2	6	48
	3-8	.28	.28			
	8-16	.28	.28			
	16-28	.24	.24			
	28-35	.20	.28			
	>35	---	---			
312:						
Saltcanyon	0-13	.32	.32	5	5	56
	13-25	.32	.32			
	25-43	.32	.32			
	43-61	.32	.32			
313:						
Saltcanyon	0-13	.32	.32	5	5	56
	13-25	.32	.32			
	25-43	.32	.32			
	43-61	.32	.32			
315:						
Mallard	0-3	.32	.32	5	4	86
	3-8	.32	.32			
	8-15	.28	.28			
	15-28	.28	.28			
	28-44	.32	.32			
	44-60	.32	.32			
316:						
Hillgate	0-3	.28	.28	5	6	48
	3-11	.28	.28			
	11-19	.28	.28			
	19-37	.24	.24			
	37-52	.28	.28			
	52-62	.28	.28			
	62-72	.28	.28			
320:						
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In					
329:						
Sehorn	0-5	.28	.28	2	4	86
	5-9	.28	.28			
	9-19	.28	.24			
	19-26	.28	.20			
	26-35	.28	.05			
	>35	---	---			
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
Altamont	0-3	.24	.24	4	4	86
	3-9	.24	.24			
	9-23	.24	.24			
	23-35	.24	.24			
	35-43	.24	.24			
	43-49	.24	.24			
	>49	---	---			
330:						
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
Contra Costa	0-3	.37	.37	2	6	48
	3-8	.28	.28			
	8-16	.28	.28			
	16-28	.24	.24			
	28-35	.20	.28			
	>35	---	---			
331:						
Sehorn	0-5	.28	.28	2	4	86
	5-9	.28	.28			
	9-19	.28	.24			
	19-26	.28	.20			
	26-35	.28	.05			
	>35	---	---			
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
Rock outcrop	0-60	---	---	---	8	0
332:						
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
Rock outcrop	0-60	---	---	---	8	0
334:						
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In					
334:						
Contra Costa	0-3	.37	.37	2	6	48
	3-8	.28	.28			
	8-16	.28	.28			
	16-28	.24	.24			
	28-35	.20	.28			
	>35	---	---			
337:						
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
Saltcanyon	0-13	.32	.32	5	5	56
	13-25	.32	.32			
	25-43	.32	.32			
	43-61	.32	.32			
345:						
Skyhigh	0-3	.37	.37	2	6	48
	3-8	.28	.32			
	8-25	.20	.24			
	25-37	.28	.32			
	>37	---	---			
Sleeper	0-5	.32	.32	3	4	86
	5-9	.32	.32			
	9-19	.32	.32			
	19-35	.32	.32			
	35-53	.32	.32			
	>53	---	---			
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
346:						
Skyhigh	0-3	.37	.37	2	6	48
	3-8	.28	.32			
	8-25	.20	.24			
	25-37	.28	.32			
	>37	---	---			
Millsholm	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
Sleeper	0-5	.32	.32	3	4	86
	5-9	.32	.32			
	9-19	.32	.32			
	19-35	.32	.32			
	35-53	.32	.32			
	>53	---	---			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In					
347, 348:						
Boar	0-5	.28	.28	5	6	48
	5-12	.28	.28			
	12-20	.28	.28			
	20-37	.28	.28			
	37-56	.28	.28			
	56-75	.28	.28			
Sleeper	0-5	.32	.32	3	4	86
	5-9	.32	.32			
	9-19	.32	.32			
	19-35	.32	.32			
	35-53	.32	.32			
	>53	---	---			
350:						
Haploxererts	0-5	.28	.32	3	4	86
	5-15	.20	.32			
	15-28	.17	.24			
	28-39	.15	.32			
	39-52	.15	.37			
	>52	---	---			
355:						
Venado	0-3	.32	.32	5	4	86
	3-13	.32	.32			
	13-30	.32	.32			
	30-38	.32	.32			
	38-53	.32	.32			
	53-61	.32	.32			
	61-69	.32	.32			
360:						
Bearvalley	0-5	.15	.24	5	4	86
	5-20	.10	.24			
	20-34	.10	.24			
	34-60	.05	.17			
	60-75	.05	.17			
365:						
Leesville	0-3	.20	.28	5	4	86
	3-16	.20	.28			
	16-21	.20	.28			
	21-30	.05	.20			
	30-46	.05	.17			
	46-60	.05	.17			
366:						
Leesville	0-3	.20	.28	5	4	86
	3-16	.20	.28			
	16-21	.20	.28			
	21-30	.05	.20			
	30-46	.05	.17			
	46-60	.05	.17			
370:						
Livermore	0-7	.10	.24	5	4	86
	7-19	.10	.28			
	19-41	.10	.28			
	41-63	.05	.24			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In					
371:						
Buttes-----------------------	0-2	.17	.24	3	4	86
	2-7	.24	.32			
	7-12	.24	.32			
	12-19	.24	.32			
	19-24	.17	.24			
	>24	---	---			
Millsholm--------------------	0-2	.37	.37	1	6	48
	2-8	.37	.37			
	8-14	.32	.37			
	>14	---	---			
519:						
Stonyford--------------------	0-3	.24	.37	1	5	56
	3-7	.24	.32			
	7-14	.15	.32			
	>14	---	---			
Guenoc-----------------------	0-4	.32	.37	2	5	56
	4-9	.32	.37			
	9-18	.28	.37			
	18-31	.28	.37			
	>31	---	---			
520, 521:						
Stonyford--------------------	0-3	.24	.37	1	5	56
	3-7	.24	.32			
	7-14	.15	.32			
	>14	---	---			
Guenoc-----------------------	0-4	.32	.37	2	5	56
	4-9	.32	.37			
	9-18	.28	.37			
	18-31	.28	.37			
	>31	---	---			
524:						
Arand------------------------	0-8	.28	.32	5	4	86
	8-18	.28	.32			
	18-24	.28	.32			
	24-65	.10	.10			
Riverwash--------------------	0-3	.15	.20	5	---	---
	3-60	.10	.15			
526:						
Etsel------------------------	0-3	.15	.24	1	3	86
	3-10	.10	.24			
	>10	---	---			
Maymen-----------------------	0-3	.24	.32	1	3	86
	3-16	.20	.24			
	>16	---	---			
Marpa------------------------	0-2	---	---	2	3	86
	2-5	.20	.24			
	5-14	.15	.37			
	14-25	.15	.37			
	>25	---	---			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In					
527:						
Maymen	0-3	.24	.32	1	3	86
	3-16	.20	.24			
	>16	---	---			
Etsel	0-3	.15	.24	1	3	86
	3-10	.10	.24			
	>10	---	---			
Speaker	0-1	---	---	3	5	56
	1-10	.20	.32			
	10-17	.20	.32			
	17-26	.20	.32			
	>26	---	---			
528:						
Maymen	0-3	.24	.32	1	3	86
	3-16	.20	.24			
	>16	---	---			
Etsel	0-3	.15	.24	1	3	86
	3-10	.10	.24			
	>10	---	---			
Snook	0-1	.20	.32	1	3	86
	1-8	---	.32			
	>8	---	---			
529:						
Maymen	0-3	.24	.32	1	3	86
	3-16	.20	.24			
	>16	---	---			
Etsel	0-3	.15	.24	1	3	86
	3-10	.10	.24			
	>10	---	---			
Mayacama	0-10	.10	.20	2	3	86
	10-21	.10	.17			
	21-30	.10	.17			
	30-37	.05	.24			
	>37	---	---			
542:						
Okiota	0-5	.32	.37	1	5	56
	5-8	.24	.32			
	8-15	.15	.20			
	>15	---	---			
Dubakella	0-3	.17	.32	2	4	86
	3-10	.10	.24			
	10-16	.10	.24			
	16-26	.10	.24			
	>26	---	---			
Henneke	0-1	---	---	2	3	86
	1-4	.32	.37			
	4-7	.15	.28			
	7-16	.15	.28			
	>16	---	---			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Kf	T	Wind erodi- bility group	Wind erodi- bility index
	In					
545:						
Henneke	0-1	---	---	2	3	86
	1-4	.32	.37			
	4-7	.15	.28			
	7-16	.15	.28			
	>16	---	---			
Montara	0-6	.20	.28	1	3	86
	6-10	.15	.28			
	>10	---	---			
Rock outcrop	0-60	---	---	---	8	0
548, 549:						
Henneke	0-1	---	---	2	3	86
	1-4	.32	.37			
	4-7	.15	.28			
	7-16	.15	.28			
	>16	---	---			
Okiota	0-5	.32	.37	1	6	48
	5-8	.24	.32			
	8-15	.15	.20			
	>15	---	---			
557:						
Neuns	0-2	---	---	2	5	56
	2-7	.10	.24			
	7-15	.10	.24			
	15-29	.10	.24			
	>29	---	---			
Bamtush	0-1	---	---	5	5	56
	1-9	.10	.37			
	9-25	.10	.37			
	25-39	.10	.32			
	39-49	.10	.32			
	49-61	.10	.32			
	61-68	.20	.37			
Speaker	0-1	---	---	3	5	56
	1-10	.20	.32			
	10-17	.20	.32			
	17-26	.20	.32			
	>26	---	---			
564:						
Fouts	0-6	.24	.37	2	5	56
	6-12	.10	.24			
	12-18	.10	.24			
	18-26	.10	.24			
	>26	---	---			
Yorkville	0-2	.32	.32	5	4	86
	2-15	.24	.24			
	15-40	.24	.24			
	40-55	.24	.24			
	55-60	.32	.32			
	>60	---	---			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Kf	T	Wind erodi-bility group	Wind erodi-bility index
	In					
564:						
Squawrock-------------------	0-2	.24	.37	2	5	56
	2-9	.15	.32			
	9-18	.15	.32			
	18-23	.17	.24			
	23-26	.15	.24			
	>26	---	---			
570:						
Endoaquolls-----------------	0-4	.49	.49	5	6	48
	4-15	.49	.49			
	15-24	.43	.43			
	24-40	.43	.43			
	40-55	.37	.43			
	55-60	.37	.43			
590:						
Neuns-----------------------	0-2	---	---	2	5	56
	2-7	.10	.24			
	7-15	.10	.24			
	15-29	.10	.24			
	>29	---	---			
Marpa-----------------------	0-2	---	---	2	3	86
	2-5	.20	.24			
	5-14	.15	.37			
	14-25	.15	.37			
	>25	---	---			
Goulding--------------------	0-1	---	---	1	5	56
	1-4	.17	.28			
	4-8	.10	.28			
	8-13	.10	.28			
	>13	---	---			
591:						
Neuns-----------------------	0-2	---	---	2	5	56
	2-7	.10	.24			
	7-15	.10	.24			
	15-29	.10	.24			
	>29	---	---			
Sheetiron-------------------	0-1	---	---	2	3	86
	1-4	.15	.24			
	4-9	.10	.24			
	9-18	.10	.24			
	18-30	.05	.20			
	>30	---	---			
Goulding--------------------	0-1	---	---	1	5	56
	1-4	.17	.28			
	4-8	.10	.28			
	8-13	.10	.28			
	>13	---	---			
592:						
Neuns-----------------------	0-2	---	---	2	5	56
	2-7	.10	.24			
	7-15	.10	.24			
	15-29	.10	.24			
	>29	---	---			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Kf	T	Wind erodibility group	Wind erodibility index
	In					
592:						
Goulding	0-1	---	---	1	5	56
	1-4	.17	.28			
	4-8	.10	.28			
	8-13	.10	.28			
	>13	---	---			
Sheetiron	0-1	---	---	2	3	86
	1-4	.15	.24			
	4-9	.10	.24			
	9-18	.10	.24			
	18-30	.05	.20			
	>30	---	---			
596:						
Yollabolly	0-2	.10	.24	1	5	56
	2-6	.10	.24			
	6-17	.10	.24			
	>17	---	---			
Rock outcrop	0-60	---	---	---	8	0
Freezeout	0-1	---	---	2	3	86
	1-6	.10	.24			
	6-17	.10	.24			
	17-26	.10	.24			
	>26	---	---			
597:						
Yollabolly	0-2	.10	.24	1	5	56
	2-6	.10	.24			
	6-17	.10	.24			
	>17	---	---			
Freezeout	0-1	---	---	2	3	86
	1-6	.10	.24			
	6-17	.10	.24			
	17-26	.10	.24			
	>26	---	---			
599, 600:						
Freezeout	0-1	---	---	2	3	86
	1-6	.10	.24			
	6-17	.10	.24			
	17-26	.10	.24			
	>26	---	---			
Yollabolly	0-2	.10	.24	1	5	56
	2-6	.10	.24			
	6-17	.10	.24			
	>17	---	---			
610:						
Neuns	0-2	---	---	2	5	56
	2-7	.10	.24			
	7-15	.10	.24			
	15-29	.10	.24			
	>29	---	---			

Table 24.--Erosion Properties of the Soils--Continued

Map symbol and soil name	Depth	Erosion factors K	Erosion factors Kf	Erosion factors T	Wind erodi-bility group	Wind erodi-bility index
	In					
610:						
Bamtush----------------------	0-1	---	---	5	5	56
	1-9	.10	.37			
	9-25	.10	.37			
	25-39	.10	.32			
	39-49	.10	.32			
	49-61	.10	.32			
	61-68	.20	.37			
Goulding---------------------	0-1	---	---	1	5	56
	1-4	.17	.28			
	4-8	.10	.28			
	8-13	.10	.28			
	>13	---	---			
650, 651:						
Bamtush----------------------	0-1	---	---	5	5	56
	1-9	.10	.37			
	9-25	.10	.37			
	25-39	.10	.32			
	39-49	.10	.32			
	49-61	.10	.32			
	61-68	.20	.37			
Marpa------------------------	0-2	---	---	2	3	86
	2-5	.20	.24			
	5-14	.15	.37			
	14-25	.15	.37			
	>25	---	---			

Table 25.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
100, 101, 102, 103:					
Capay	---	---	None	High	Moderate
104, 105, 106:					
Willows	---	---	None	High	High
107, 108, 109:					
Scribner	---	---	None	Moderate	Low
110:					
Hustabel	---	---	None	Moderate	Low
112, 113, 114:					
Westfan	---	---	None	Low	Low
115, 116, 117, 118:					
Clear Lake	---	---	None	High	High
124, 125, 126:					
Moonbend	---	---	None	Moderate	Low
127, 128, 129:					
Mallard	---	---	None	Moderate	Low
130, 131, 133:					
Corbiere	---	---	None	High	Low
136:					
Colusa	Natric	2-15	None	High	Moderate
141:					
Myers	---	---	None	High	Low
144, 145, 147:					
Hillgate	Abrupt textural change	6-32	None	Low	Moderate
150:					
Arbuckle	---	---	None	Moderate	Moderate
151:					
Arbuckle	---	---	None	Moderate	Moderate
Hillgate	Abrupt textural change	9-30	None	High	Moderate
152:					
Arbuckle	---	---	None	Moderate	Moderate
155:					
Alcapay	---	---	None	High	Low
160:					
Grandbend	---	---	None	High	Low

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
170, 171, 172, 174:					
Vina	---	---	None	Moderate	Low
175:					
Tujunga	---	---	None	Low	Low
176:					
Columbia	---	---	None	Moderate	Low
177:					
Holillipah	---	---	None	Low	Low
185:					
Riverwash	---	---	None	---	---
187, 188:					
Westfan	---	---	None	Low	Low
189, 190:					
Arand	---	---	None	Low	Low
193:					
Westfan	---	---	None	Low	Low
200:					
Clear Lake	---	---	None	High	High
204, 205, 206:					
Capay	---	---	None	High	Moderate
210, 211:					
Corval	---	---	None	Low	Low
212, 213:					
Ayar	Bedrock (paralithic)	60-80	None	High	Low
215, 216:					
Altamont	Bedrock (paralithic)	40-60	None	High	Low
Sehorn	Bedrock (lithic)	20-40	None	High	Low
218:					
Sehorn	Bedrock (lithic)	20-40	None	High	Low
Altamont	Bedrock (paralithic)	40-60	None	High	Low
220, 221:					
Altamont	Bedrock (paralithic)	40-60	None	High	Low
230:					
Corning	Abrupt textural change	9-34	None	Moderate	Moderate
232:					
Maywood	---	---	None	Moderate	Low

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
233:					
Eastpark	---	---	None	Moderate	Low
241:					
Contra Costa	Bedrock (lithic)	20-40	None	Moderate	Moderate
Altamont	Bedrock (paralithic)	40-60	None	High	Low
253:					
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
Altamont	Bedrock (paralithic)	40-60	None	High	Low
Rock outcrop	Bedrock (lithic)	0	---	---	---
255:					
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
Rock outcrop	Bedrock (lithic)	0	---	---	---
257:					
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
Capay	---	---	None	High	Moderate
261:					
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
Altamont	Bedrock (paralithic)	40-60	None	High	Low
270, 271:					
Balcom	Bedrock (paralithic)	26-40	None	Moderate	Low
Ayar	Bedrock (paralithic)	60-80	None	High	Low
275:					
Goldeagle	Bedrock (paralithic)	40-80	None	Low	Moderate
Positas	---	---	None	High	Moderate
Balcom	Bedrock (paralithic)	26-40	None	Moderate	Low
276:					
Positas	---	---	None	High	Moderate
280:					
Skyhigh	Bedrock (lithic)	20-40	None	Moderate	Moderate
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
300:					
Contra Costa	Bedrock (lithic)	20-40	None	Moderate	Moderate

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In			
300:					
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
305, 311:					
Contra Costa	Bedrock (lithic)	20-40	None	Moderate	Moderate
312, 313:					
Saltcanyon	---	---	None	Low	Moderate
315:					
Mallard	---	---	None	High	Low
316:					
Hillgate	Abrupt textural change	6-32	None	High	Moderate
320:					
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
329:					
Sehorn	Bedrock (lithic)	20-40	None	High	Low
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
Altamont	Bedrock (paralithic)	40-60	None	High	Low
330:					
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
Contra Costa	Bedrock (lithic)	20-40	None	Moderate	Moderate
331:					
Sehorn	Bedrock (lithic)	20-40	None	High	Low
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
Rock outcrop	Bedrock (lithic)	0	---	---	---
332:					
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
Rock outcrop	Bedrock (lithic)	0	---	---	---
334:					
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
Contra Costa	Bedrock (lithic)	20-40	None	Moderate	Moderate
337:					
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
Saltcanyon	---	---	None	Low	Moderate
345:					
Skyhigh	Bedrock (lithic)	20-40	None	Moderate	Moderate
Sleeper	Bedrock (lithic)	40-60	None	Moderate	Moderate
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In			
346:					
Skyhigh	Bedrock (lithic)	20-40	None	Moderate	Moderate
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
Sleeper	Bedrock (lithic)	40-60	None	Moderate	Moderate
347, 348:					
Boar	Bedrock (lithic)	60-80	None	High	Moderate
Sleeper	Bedrock (lithic)	40-60	None	Moderate	Moderate
350:					
Haploxererts	---	---	None	High	Moderate
355:					
Venado	---	---	None	High	Low
360:					
Bearvalley	---	---	None	Low	Low
365, 366:					
Leesville	---	---	None	Low	Low
370:					
Livermore	---	---	None	Low	Low
371:					
Buttes	Bedrock (paralithic)	20-40	None	Moderate	Low
Millsholm	Bedrock (lithic)	10-20	None	Moderate	Moderate
519, 520, 521:					
Stonyford	Bedrock (lithic)	10-20	None	Low	Moderate
Guenoc	Bedrock (lithic)	20-40	None	Moderate	Moderate
524:					
Arand	---	---	None	Low	Low
Riverwash	---	---	None	---	---
526:					
Etsel	Bedrock (lithic)	4-10	Low	Low	Moderate
Maymen	Bedrock (lithic)	10-18	Low	Low	Moderate
Marpa	Bedrock (lithic)	20-40	Low	Low	Moderate
527:					
Maymen	Bedrock (lithic)	10-18	Low	Low	Moderate
Etsel	Bedrock (lithic)	4-10	Low	Low	Moderate
Speaker	Bedrock (paralithic)	20-40	Low	Moderate	Moderate
528:					
Maymen	Bedrock (lithic)	10-18	Low	Low	Moderate

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer		Potential for frost action	Risk of corrosion	
	Kind	Depth to top		Uncoated steel	Concrete
		In			
528:					
Etsel	Bedrock (lithic)	4-10	Low	Low	Moderate
Snook	Bedrock (lithic)	4-10	Low	Low	Moderate
529:					
Maymen	Bedrock (lithic)	10-18	Low	Low	Moderate
Etsel	Bedrock (lithic)	4-10	Low	Low	Moderate
Mayacama	Dense material Bedrock (lithic)	20-40	Low	Low	Moderate
542:					
Okiota	Bedrock (lithic)	10-20	Low	Low	Moderate
Dubakella	Bedrock (lithic)	20-40	Low	Moderate	Moderate
Henneke	Bedrock (lithic)	10-20	Low	Low	Moderate
545:					
Henneke	Bedrock (lithic)	10-20	None	Low	Moderate
Montara	Bedrock (lithic)	10-20	Low	Low	Moderate
Rock outcrop	Bedrock (lithic)	0	---	---	---
548, 549:					
Henneke	Bedrock (lithic)	10-20	Low	Low	Moderate
Okiota	Bedrock (lithic)	10-20	Low	Low	Moderate
557:					
Neuns	Bedrock (lithic)	20-40	Low	Moderate	Moderate
Bamtush	Bedrock (lithic)	60-80	Low	Moderate	Moderate
Speaker	Bedrock (paralithic)	20-40	Low	Moderate	Moderate
564:					
Fouts	Bedrock (lithic)	20-40	Low	Moderate	Moderate
Yorkville	Bedrock (paralithic)	60-80	Low	Moderate	Moderate
Squawrock	Bedrock (lithic)	20-40	Low	Moderate	Moderate
570:					
Endoaquolls	---	---	Low	High	Low
590:					
Neuns	Bedrock (lithic)	20-40	Low	Moderate	Moderate
Marpa	Bedrock (lithic)	20-40	Low	Low	Moderate
Goulding	Bedrock (lithic)	10-20	Low	Low	Moderate
591:					
Neuns	Bedrock (lithic)	20-40	Low	Moderate	Moderate

Table 25.--Soil Features--Continued

Map symbol and soil name	Restrictive layer: Kind	Restrictive layer: Depth to top	Potential for frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
		In			
591:					
Sheetiron	Bedrock (lithic)	20-40	Low	Moderate	Moderate
Goulding	Bedrock (lithic)	10-20	Low	Low	Moderate
592:					
Neuns	Bedrock (lithic)	20-40	Low	Moderate	Moderate
Goulding	Bedrock (lithic)	10-20	Low	Low	Moderate
Sheetiron	Bedrock (lithic)	20-40	Low	Moderate	Moderate
596:					
Yollabolly	Bedrock (lithic)	10-20	Moderate	High	Moderate
Rock outcrop	Bedrock (lithic)	0	---	---	---
Freezeout	Bedrock (lithic)	20-40	Moderate	High	Moderate
597:					
Yollabolly	Bedrock (lithic)	10-20	Moderate	High	Moderate
Freezeout	Bedrock (lithic)	20-40	Moderate	High	Moderate
599, 600:					
Freezeout	Bedrock (lithic)	20-40	Moderate	High	Moderate
Yollabolly	Bedrock (lithic)	10-20	Moderate	High	Moderate
610:					
Neuns	Bedrock (lithic)	20-40	Low	Moderate	Moderate
Bamtush	Bedrock (lithic)	60-80	Low	Moderate	Moderate
Goulding	Bedrock (lithic)	10-20	Low	Low	Moderate
650, 651:					
Bamtush	Bedrock (lithic)	60-80	Low	Moderate	Moderate
Marpa	Bedrock (lithic)	20-40	Low	Low	Moderate
651:					
Bamtush	Bedrock (lithic)	60-80	Low	Moderate	Moderate
Marpa	Bedrock (lithic)	20-40	Low	Low	Moderate

Table 26.--Water Features

(See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated.)

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	*Ft*	*Ft*				
100:									
Capay clay loam, occasionally flooded----	D								
		January	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		February	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		March	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		April	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		December	4.0-6.0	>6.0	---	---	None	Brief	Occasional
101:									
Capay silty clay, frequently flooded-----	D								
		January	4.0-6.0	>6.0	---	---	None	Brief	Frequent
		February	4.0-6.0	>6.0	---	---	None	Brief	Frequent
		March	4.0-6.0	>6.0	---	---	None	Brief	Frequent
		April	4.0-6.0	>6.0	---	---	None	Brief	Frequent
		December	4.0-6.0	>6.0	---	---	None	Brief	Frequent
102:									
Capay clay loam-------------------------	D								
		January	4.0-6.0	>6.0	---	---	None	Brief	Rare
		February	4.0-6.0	>6.0	---	---	None	Brief	Rare
		March	4.0-6.0	>6.0	---	---	None	Brief	Rare
		April	4.0-6.0	>6.0	---	---	None	Brief	Rare
		December	4.0-6.0	>6.0	---	---	None	Brief	Rare
103:									
Capay clay loam, frequently flooded------	D								
		January	4.0-6.0	>6.0	---	---	None	Brief	Frequent
		February	4.0-6.0	>6.0	---	---	None	Brief	Frequent
		March	4.0-6.0	>6.0	---	---	None	Brief	Frequent
		April	4.0-6.0	>6.0	---	---	None	Brief	Frequent
		December	4.0-6.0	>6.0	---	---	None	Brief	Frequent
104:									
Willows silty clay, frequently flooded---	D								
		January	4.0-6.0	>6.0	---	---	None	Long	Frequent
		February	4.0-6.0	>6.0	---	---	None	Long	Frequent
		March	4.0-6.0	>6.0	---	---	None	Long	Frequent
		April	4.0-6.0	>6.0	---	---	None	Long	Frequent
		December	4.0-6.0	>6.0	---	---	None	Long	Frequent
105:									
Willows silty clay, occasionally flooded	D								
		January	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		February	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		March	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		April	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		December	4.0-6.0	>6.0	---	---	None	Brief	Occasional
106:									
Willows silty clay-----------------------	D								
		January	4.0-6.0	>6.0	---	---	None	Brief	Rare
		February	4.0-6.0	>6.0	---	---	None	Brief	Rare
		March	4.0-6.0	>6.0	---	---	None	Brief	Rare
		April	4.0-6.0	>6.0	---	---	None	Brief	Rare
		December	4.0-6.0	>6.0	---	---	None	Brief	Rare

Table 26.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
107:									
Scribner silt loam, occasionally flooded	D								
		January	1.5-3.0	>6.0	---	---	None	Brief	Occasional
		February	1.5-3.0	>6.0	---	---	None	Brief	Occasional
		March	1.5-3.0	>6.0	---	---	None	Brief	Occasional
		April	1.5-3.0	>6.0	---	---	None	Brief	Occasional
		December	1.5-3.0	>6.0	---	---	None	Brief	Occasional
108:									
Scribner silt loam-----------------------	D								
		January	1.5-3.0	>6.0	---	---	None	Brief	Rare
		February	1.5-3.0	>6.0	---	---	None	Brief	Rare
		March	1.5-3.0	>6.0	---	---	None	Brief	Rare
		April	1.5-3.0	>6.0	---	---	None	Brief	Rare
		December	1.5-3.0	>6.0	---	---	None	Brief	Rare
109:									
Scribner silt loam, frequently flooded---	D								
		January	1.5-3.0	>6.0	---	---	None	Long	Frequent
		February	1.5-3.0	>6.0	---	---	None	Long	Frequent
		March	1.5-3.0	>6.0	---	---	None	Long	Frequent
		April	1.5-3.0	>6.0	---	---	None	Long	Frequent
		December	1.5-3.0	>6.0	---	---	None	Long	Frequent
110:									
Hustabel sandy loam---------------------	B								
		January	3.0-5.0	>6.0	---	---	None	Brief	Rare
		February	3.0-5.0	>6.0	---	---	None	Brief	Rare
		March	3.0-5.0	>6.0	---	---	None	Brief	Rare
		April	3.0-5.0	>6.0	---	---	None	Brief	Rare
		December	3.0-5.0	>6.0	---	---	None	Brief	Rare
112, 113, 114:									
Westfan----------------------------------	B								
		January	---	---	---	---	None	Brief	Rare
		February	---	---	---	---	None	Brief	Rare
		March	---	---	---	---	None	Brief	Rare
		April	---	---	---	---	None	Brief	Rare
		December	---	---	---	---	None	Brief	Rare
115, 116:									
Clear Lake, occasionally flooded---------	D								
		January	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		February	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		March	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		April	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		December	4.0-6.0	>6.0	---	---	None	Brief	Occasional
117, 118:									
Clear Lake, frequently flooded-----------	D								
		January	4.0-6.0	>6.0	---	---	None	Long	Frequent
		February	4.0-6.0	>6.0	---	---	None	Long	Frequent
		March	4.0-6.0	>6.0	---	---	None	Long	Frequent
		April	4.0-6.0	>6.0	---	---	None	Long	Frequent
		December	4.0-6.0	>6.0	---	---	None	Long	Frequent

Table 26.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
124:									
Moonbend silt loam, occasionally flooded	C								
		January	---	---	---	---	None	Brief	Occasional
		February	---	---	---	---	None	Brief	Occasional
		March	---	---	---	---	None	Brief	Occasional
		April	---	---	---	---	None	Brief	Occasional
		December	---	---	---	---	None	Brief	Occasional
125:									
Moonbend silt loam-----------------------	C								
		January	---	---	---	---	None	Brief	Rare
		February	---	---	---	---	None	Brief	Rare
		March	---	---	---	---	None	Brief	Rare
		April	---	---	---	---	None	Brief	Rare
		December	---	---	---	---	None	Brief	Rare
126:									
Moonbend silt loam, frequently flooded---	C								
		January	---	---	---	---	None	Brief	Frequent
		February	---	---	---	---	None	Brief	Frequent
		March	---	---	---	---	None	Brief	Frequent
		April	---	---	---	---	None	Brief	Frequent
		December	---	---	---	---	None	Brief	Frequent
127, 128:									
Mallard, rarely flooded------------------	C								
		January	3.0-5.0	>6.0	---	---	None	Brief	Rare
		February	3.0-5.0	>6.0	---	---	None	Brief	Rare
		March	3.0-5.0	>6.0	---	---	None	Brief	Rare
		April	3.0-5.0	>6.0	---	---	None	Brief	Rare
		December	3.0-5.0	>6.0	---	---	None	Brief	Rare
129:									
Mallard clay loam, occasionally flooded--	C								
		January	3.0-5.0	>6.0	---	---	None	Brief	Occasional
		February	3.0-5.0	>6.0	---	---	None	Brief	Occasional
		March	3.0-5.0	>6.0	---	---	None	Brief	Occasional
		April	3.0-5.0	>6.0	---	---	None	Brief	Occasional
		December	3.0-5.0	>6.0	---	---	None	Brief	Occasional
130:									
Corbiere silt loam-----------------------	C								
		January	2.0-4.0	>6.0	---	---	None	Brief	Rare
		February	2.0-4.0	>6.0	---	---	None	Brief	Rare
		March	2.0-4.0	>6.0	---	---	None	Brief	Rare
		April	2.0-4.0	>6.0	---	---	None	Brief	Rare
		December	2.0-4.0	>6.0	---	---	None	Brief	Rare
131:									
Corbiere silt loam, frequently flooded---	C								
		January	2.0-4.0	>6.0	---	---	None	Long	Frequent
		February	2.0-4.0	>6.0	---	---	None	Long	Frequent
		March	2.0-4.0	>6.0	---	---	None	Long	Frequent
		April	2.0-4.0	>6.0	---	---	None	Long	Frequent
		December	2.0-4.0	>6.0	---	---	None	Long	Frequent

Table 26.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
133:									
Corbiere silt loam, occasionally flooded	C								
		January	2.0-4.0	>6.0	---	---	None	Long	Occasional
		February	2.0-4.0	>6.0	---	---	None	Long	Occasional
		March	2.0-4.0	>6.0	---	---	None	Long	Occasional
		April	2.0-4.0	>6.0	---	---	None	Long	Occasional
		December	2.0-4.0	>6.0	---	---	None	Long	Occasional
136:									
Colusa loam------------------------------	C								
		January	4.0-6.0	>6.0	---	---	None	Brief	Rare
		February	4.0-6.0	>6.0	---	---	None	Brief	Rare
		March	4.0-6.0	>6.0	---	---	None	Brief	Rare
		April	4.0-6.0	>6.0	---	---	None	Brief	Rare
		December	4.0-6.0	>6.0	---	---	None	Brief	Rare
141:									
Myers clay-------------------------------	D								
		January	---	---	---	---	None	Brief	Rare
		February	---	---	---	---	None	Brief	Rare
		March	---	---	---	---	None	Brief	Rare
		April	---	---	---	---	None	Brief	Rare
		December	---	---	---	---	None	Brief	Rare
144, 145, 147:									
Hillgate clay loam-----------------------	D	Jan-Dec	---	---	---	---	None	---	None
150:									
Arbuckle sandy loam----------------------	B	Jan-Dec	---	---	---	---	None	---	None
151:									
Arbuckle sandy loam----------------------	B	Jan-Dec	---	---	---	---	None	---	None
Hillgate loam----------------------------	D	Jan-Dec	---	---	---	---	None	---	None
152:									
Arbuckle gravelly loam-------------------	B	Jan-Dec	---	---	---	---	None	---	None
155:									
Alcapay clay-----------------------------	D								
		January	4.0-6.0	>6.0	---	---	None	Brief	Rare
		February	4.0-6.0	>6.0	---	---	None	Brief	Rare
		March	4.0-6.0	>6.0	---	---	None	Brief	Rare
		April	4.0-6.0	>6.0	---	---	None	Brief	Rare
		December	4.0-6.0	>6.0	---	---	None	Brief	Rare
160:									
Grandbend loam---------------------------	B								
		January	2.5-4.0	>6.0	---	---	None	Brief	Rare
		February	2.5-4.0	>6.0	---	---	None	Brief	Rare
		March	2.5-4.0	>6.0	---	---	None	Brief	Rare
		April	2.5-4.0	>6.0	---	---	None	Brief	Rare
		December	2.5-4.0	>6.0	---	---	None	Brief	Rare
170:									
Vina loam, frequently flooded------------	B								
		January	---	---	---	---	None	Long	Frequent
		February	---	---	---	---	None	Long	Frequent
		March	---	---	---	---	None	Long	Frequent
		April	---	---	---	---	None	Long	Frequent
		December	---	---	---	---	None	Long	Frequent

Table 26.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
171:									
Vina loam	B								
		January	---	---	---	---	None	Brief	Rare
		February	---	---	---	---	None	Brief	Rare
		March	---	---	---	---	None	Brief	Rare
		April	---	---	---	---	None	Brief	Rare
		December	---	---	---	---	None	Brief	Rare
172:									
Vina fine sandy loam, frequently flooded	B								
		January	---	---	---	---	None	Long	Frequent
		February	---	---	---	---	None	Long	Frequent
		March	---	---	---	---	None	Long	Frequent
		April	---	---	---	---	None	Long	Frequent
		December	---	---	---	---	None	Long	Frequent
174:									
Vina loam, occasionally flooded	B								
		January	---	---	---	---	None	Brief	Occasional
		February	---	---	---	---	None	Brief	Occasional
		March	---	---	---	---	None	Brief	Occasional
		April	---	---	---	---	None	Brief	Occasional
		December	---	---	---	---	None	Brief	Occasional
175:									
Tujunga loam, overwash, frequently flooded	A								
		January	---	---	---	---	None	Long	Frequent
		February	---	---	---	---	None	Long	Frequent
		March	---	---	---	---	None	Long	Frequent
		April	---	---	---	---	None	Long	Frequent
		December	---	---	---	---	None	Long	Frequent
176:									
Columbia fine sandy loam, frequently flooded	B								
		January	---	---	---	---	None	Long	Frequent
		February	---	---	---	---	None	Long	Frequent
		March	---	---	---	---	None	Long	Frequent
		April	---	---	---	---	None	Long	Frequent
		December	---	---	---	---	None	Long	Frequent
177:									
Holillipah loamy sand, channeled	A								
		January	---	---	---	---	None	Long	Frequent
		February	---	---	---	---	None	Long	Frequent
		March	---	---	---	---	None	Long	Frequent
		April	---	---	---	---	None	Long	Frequent
		December	---	---	---	---	None	Long	Frequent
185:									
Riverwash	D	Jan-Dec	0.0-2.0	>6.0	---	---	None	Very long	Frequent
187:									
Westfan loam, occasionally flooded	B								
		January	---	---	---	---	None	Brief	Occasional
		February	---	---	---	---	None	Brief	Occasional
		March	---	---	---	---	None	Brief	Occasional
		April	---	---	---	---	None	Brief	Occasional
		December	---	---	---	---	None	Brief	Occasional

Table 26.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
188:									
Westfan loam, clay substratum	B								
		January	---	---	---	---	None	Brief	Rare
		February	---	---	---	---	None	Brief	Rare
		March	---	---	---	---	None	Brief	Rare
		April	---	---	---	---	None	Brief	Rare
		December	---	---	---	---	None	Brief	Rare
189, 190:									
Arand	B								
		January	---	---	---	---	None	Brief	Rare
		February	---	---	---	---	None	Brief	Rare
		March	---	---	---	---	None	Brief	Rare
		April	---	---	---	---	None	Brief	Rare
		December	---	---	---	---	None	Brief	Rare
193:									
Westfan gravelly loam	B								
		January	---	---	---	---	None	Brief	Rare
		February	---	---	---	---	None	Brief	Rare
		March	---	---	---	---	None	Brief	Rare
		April	---	---	---	---	None	Brief	Rare
		December	---	---	---	---	None	Brief	Rare
200:									
Clear Lake clay, occasionally flooded	D								
		January	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		February	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		March	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		April	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		December	4.0-6.0	>6.0	---	---	None	Brief	Occasional
204:									
Capay clay, occasionally flooded	D								
		January	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		February	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		March	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		April	4.0-6.0	>6.0	---	---	None	Brief	Occasional
		December	4.0-6.0	>6.0	---	---	None	Brief	Occasional
205:									
Capay clay	D								
		January	4.0-6.0	>6.0	---	---	None	Brief	Rare
		February	4.0-6.0	>6.0	---	---	None	Brief	Rare
		March	4.0-6.0	>6.0	---	---	None	Brief	Rare
		April	4.0-6.0	>6.0	---	---	None	Brief	Rare
		December	4.0-6.0	>6.0	---	---	None	Brief	Rare
206:									
Capay clay	D								
		January	4.0-6.0	>6.0	---	---	None	---	None
		February	4.0-6.0	>6.0	---	---	None	---	None
		March	4.0-6.0	>6.0	---	---	None	---	None
		April	4.0-6.0	>6.0	---	---	None	---	None
		December	4.0-6.0	>6.0	---	---	None	---	None

Table 26.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
210, 211:									
Corval loam	B								
		January	---	---	---	---	None	Brief	Rare
		February	---	---	---	---	None	Brief	Rare
		March	---	---	---	---	None	Brief	Rare
		April	---	---	---	---	None	Brief	Rare
		December	---	---	---	---	None	Brief	Rare
212, 213:									
Ayar clay	D	Jan-Dec	---	---	---	---	None	---	None
215, 216:									
Altamont silty clay	D	Jan-Dec	---	---	---	---	None	---	None
Sehorn silty clay	D	Jan-Dec	---	---	---	---	None	---	None
218:									
Sehorn silty clay	D	Jan-Dec	---	---	---	---	None	---	None
Altamont silty clay	D	Jan-Dec	---	---	---	---	None	---	None
220, 221:									
Altamont silty clay	D	Jan-Dec	---	---	---	---	None	---	None
230:									
Corning clay loam	D	Jan-Dec	---	---	---	---	None	---	None
232:									
Maywood gravelly loam, occasionally flooded	B								
		January	---	---	---	---	None	Brief	Occasional
		February	---	---	---	---	None	Brief	Occasional
		March	---	---	---	---	None	Brief	Occasional
		November	---	---	---	---	None	Brief	Occasional
		December	---	---	---	---	None	Brief	Occasional
233:									
Eastpark clay loam	D	Jan-Dec	---	---	---	---	None	---	None
241:									
Contra Costa loam	C	Jan-Dec	---	---	---	---	None	---	None
Altamont silty clay	D	Jan-Dec	---	---	---	---	None	---	None
253:									
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
Altamont silty clay	D	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Jan-Dec	---	---	---	---	None	---	None
255:									
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Jan-Dec	---	---	---	---	None	---	None
257:									
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None

Table 26.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	*Ft*	*Ft*				
257:									
Capay clay	D								
		January	4.0-6.0	>6.0	---	---	None	Brief	Rare
		February	4.0-6.0	>6.0	---	---	None	Brief	Rare
		March	4.0-6.0	>6.0	---	---	None	Brief	Rare
		April	4.0-6.0	>6.0	---	---	None	Brief	Rare
		December	4.0-6.0	>6.0	---	---	None	Brief	Rare
261:									
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
Altamont silty clay	D	Jan-Dec	---	---	---	---	None	---	None
270, 271:									
Balcom silt loam	B	Jan-Dec	---	---	---	---	None	---	None
Ayar clay	D	Jan-Dec	---	---	---	---	None	---	None
275:									
Goldeagle clay loam	C	Jan-Dec	---	---	---	---	None	---	None
Positas gravelly sandy loam	D	Jan-Dec	---	---	---	---	None	---	None
Balcom silt loam	B	Jan-Dec	---	---	---	---	None	---	None
276:									
Positas gravelly sandy loam	D	Jan-Dec	---	---	---	---	None	---	None
280:									
Skyhigh gravelly clay loam	C	Jan-Dec	---	---	---	---	None	---	None
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
300:									
Contra Costa loam	C	Jan-Dec	---	---	---	---	None	---	None
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
305, 311:									
Contra Costa loam	C	Jan-Dec	---	---	---	---	None	---	None
312, 313:									
Saltcanyon loam	B								
		January	---	---	---	---	None	Brief	Rare
		February	---	---	---	---	None	Brief	Rare
		March	---	---	---	---	None	Brief	Rare
		April	---	---	---	---	None	Brief	Rare
		December	---	---	---	---	None	Brief	Rare
315:									
Mallard clay loam	C	Jan-Dec	---	---	---	---	None	---	None
316:									
Hillgate loam	D	Jan-Dec	---	---	---	---	None	---	None
320:									
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
329:									
Sehorn silty clay	D	Jan-Dec	---	---	---	---	None	---	None

Table 26.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
329:									
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
Altamont silty clay	D								
		Jan-Dec	---	---	---	---	None	---	None
330:									
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
Contra Costa loam	C	Jan-Dec	---	---	---	---	None	---	None
331:									
Sehorn silty clay	D	Jan-Dec	---	---	---	---	None	---	None
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Jan-Dec	---	---	---	---	None	---	None
332:									
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Jan-Dec	---	---	---	---	None	---	None
334:									
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
Contra Costa loam	C	Jan-Dec	---	---	---	---	None	---	None
337:									
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
Saltcanyon loam	B	Jan-Dec	---	---	---	---	None	---	None
345:									
Skyhigh gravelly clay loam	C	Jan-Dec	---	---	---	---	None	---	None
Sleeper clay loam	C	Jan-Dec	---	---	---	---	None	---	None
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
346:									
Skyhigh gravelly clay loam	C	Jan-Dec	---	---	---	---	None	---	None
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
Sleeper clay loam	C	Jan-Dec	---	---	---	---	None	---	None
347, 348:									
Boar loam	C	Jan-Dec	---	---	---	---	None	---	None
Sleeper clay loam	C	Jan-Dec	---	---	---	---	None	---	None
350:									
Haploxererts	C	Jan-Dec	---	---	---	---	None	---	None

Table 26.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	Ft	Ft				
355:									
Venado clay	C								
		January	2.0-3.0	>6.0	---	---	None	---	None
		February	2.0-3.0	>6.0	---	---	None	---	None
		March	2.0-3.0	>6.0	---	---	None	---	None
		April	2.0-3.0	>6.0	---	---	None	---	None
		December	2.0-3.0	>6.0	---	---	None	---	None
360:									
Bearvalley gravelly sandy loam	B	Jan-Dec	---	---	---	---	None	---	None
365, 366:									
Leesville clay loam	B	Jan-Dec	---	---	---	---	None	---	None
370:									
Livermore very gravelly loam	B	Jan-Dec	---	---	---	---	None	---	None
371:									
Buttes gravelly sandy loam	C	Jan-Dec	---	---	---	---	None	---	None
Millsholm loam	D	Jan-Dec	---	---	---	---	None	---	None
519, 520, 521:									
Stonyford gravelly loam	D	Jan-Dec	---	---	---	---	None	---	None
Guenoc loam	C	Jan-Dec	---	---	---	---	None	---	None
524:									
Arand, frequently flooded	B								
		January	---	---	---	---	None	Brief	Frequent
		February	---	---	---	---	None	Brief	Frequent
		March	---	---	---	---	None	Brief	Frequent
		April	---	---	---	---	None	Brief	Frequent
		May	---	---	---	---	None	Brief	Frequent
		June	---	---	---	---	None	Brief	Frequent
		November	---	---	---	---	None	Brief	Frequent
		December	---	---	---	---	None	Brief	Frequent
Riverwash	D	Jan-Dec	0.0-2.0	>6.0	---	---	None	Very long	Frequent
526:									
Etsel gravelly sandy loam	D	Jan-Dec	---	---	---	---	None	---	None
Maymen sandy loam	D	Jan-Dec	---	---	---	---	None	---	None
Marpa very gravelly sandy loam	C	Jan-Dec	---	---	---	---	None	---	None
527:									
Maymen sandy loam	D	Jan-Dec	---	---	---	---	None	---	None
Etsel gravelly sandy loam	D	Jan-Dec	---	---	---	---	None	---	None
Speaker gravelly loam	C	Jan-Dec	---	---	---	---	None	---	None
528:									
Maymen sandy loam	D	Jan-Dec	---	---	---	---	None	---	None
Etsel gravelly sandy loam	D	Jan-Dec	---	---	---	---	None	---	None
Snook gravelly sandy loam	D	Jan-Dec	---	---	---	---	None	---	None

Table 26.--Water Features--Continued

Map symbol and soil name	Hydro- logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	*Ft*	*Ft*				
529:									
Maymen sandy loam	D	Jan-Dec	---	---	---	---	None	---	None
Etsel gravelly sandy loam	D	Jan-Dec	---	---	---	---	None	---	None
Mayacama gravelly coarse sandy loam	C	Jan-Dec	---	---	---	---	None	---	None
542:									
Okiota loam	C	Jan-Dec	---	---	---	---	None	---	None
Dubakella gravelly clay loam	C	Jan-Dec	---	---	---	---	None	---	None
Henneke sandy loam	C	Jan-Dec	---	---	---	---	None	---	None
545:									
Henneke sandy loam	C	Jan-Dec	---	---	---	---	None	---	None
Montara gravelly sandy loam	D	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Jan-Dec	---	---	---	---	None	---	None
548, 549:									
Henneke sandy loam	C	Jan-Dec	---	---	---	---	None	---	None
Okiota loam	C	Jan-Dec	---	---	---	---	None	---	None
557:									
Neuns very gravelly loam	C	Jan-Dec	---	---	---	---	None	---	None
Bamtush very gravelly loam	B								
		Jan-Dec	---	---	---	---	None	---	None
Speaker gravelly loam	C	Jan-Dec	---	---	---	---	None	---	None
564:									
Fouts gravelly loam	D	Jan-Dec	---	---	---	---	None	---	None
Yorkville clay loam	D	Jan-Dec	---	---	---	---	None	---	None
Squawrock gravelly loam	D	Jan-Dec	---	---	---	---	None	---	None
570:									
Endoaquolls, frequently ponded	D								
		January	1.0-2.0	>6.0	---	---	None	---	None
		Feb-Jun	0.0-2.0	>6.0	0.0-1.0	Long	Frequent	---	None
		July-Dec	1.0-2.0	>6.0	---	---	None	---	None
590:									
Neuns very gravelly loam	C	Jan-Dec	---	---	---	---	None	---	None
Marpa very gravelly sandy loam	C	Jan-Dec	---	---	---	---	None	---	None
Goulding gravelly loam	D	Jan-Dec	---	---	---	---	None	---	None
591:									
Neuns very gravelly loam	C	Jan-Dec	---	---	---	---	None	---	None
Sheetiron gravelly sandy loam	C	Jan-Dec	---	---	---	---	None	---	None
Goulding gravelly loam	D	Jan-Dec	---	---	---	---	None	---	None

Table 26.--Water Features--Continued

Map symbol and soil name	Hydro-logic group	Month	Water table: Upper limit	Water table: Lower limit	Ponding: Surface water depth	Ponding: Duration	Ponding: Frequency	Flooding: Duration	Flooding: Frequency
			Ft	*Ft*	*Ft*				
592:									
Neuns very gravelly loam	C	Jan-Dec	---	---	---	---	None	---	None
Goulding gravelly loam	D	Jan-Dec	---	---	---	---	None	---	None
Sheetiron gravelly sandy loam	C	Jan-Dec	---	---	---	---	None	---	None
596:									
Yollabolly very gravelly loam	D	Jan-Dec	---	---	---	---	None	---	None
Rock outcrop	D	Jan-Dec	---	---	---	---	None	---	None
Freezeout very gravelly sandy loam	B	Jan-Dec	---	---	---	---	None	---	None
597:									
Yollabolly very gravelly loam	D	Jan-Dec	---	---	---	---	None	---	None
Freezeout very gravelly sandy loam	B	Jan-Dec	---	---	---	---	None	---	None
599, 600:									
Freezeout very gravelly sandy loam	B	Jan-Dec	---	---	---	---	None	---	None
Yollabolly very gravelly loam	D	Jan-Dec	---	---	---	---	None	---	None
610:									
Neuns very gravelly loam	C	Jan-Dec	---	---	---	---	None	---	None
Bamtush very gravelly loam	B	Jan-Dec	---	---	---	---	None	---	None
Goulding gravelly loam	D	Jan-Dec	---	---	---	---	None	---	None
650, 651:									
Bamtush very gravelly loam	B	Jan-Dec	---	---	---	---	None	---	None
Marpa very gravelly sandy loam	C	Jan-Dec	---	---	---	---	None	---	None

Table 27.--Physical Analyses of Selected Soils

(See text for the laboratory procedures used to obtain the data in this table. An asterisk (*) following the pedon number indicates that the pedon is at the series modal location.)

Map symbol, soil name, and NSSL pedon number	Horizon	Depth	Sand	Silt	Clay	Db 1/3 bar	1/3 bar water	15 bar water	LEP
		In	*Pct*	*Pct*	*Pct*		*Pct*	*Pct*	*Pct*
104:									
Willows (S93CA-011-008)	Ap1	0-5	2.9	45.6	51.5	---	---	17.7	7.5
	Ap2	5-13	2.9	43.8	53.3	1.50	26.0	18.3	8.4
	Bw	13-20	2.9	43.8	53.3	1.49	25.7	18.1	8.4
	Bssy1	20-39	4.2	44.5	51.3	1.46	26.0	18.5	8.2
	Bssy2	39-51	4.5	46.2	49.3	1.47	25.6	19.5	8.0
	Bssy3	51-59	4.8	46.0	49.2	1.44	28.4	20.0	8.7
	Bssy4	59-72	6.0	38.5	55.5	1.38	31.4	20.8	11.6
	Bssy5	72-80	6.0	46.5	47.5	1.43	30.1	20.4	7.2
	Bkssy	80-87	4.0	31.0	65.0	1.37	32.0	22.5	13.1
112:									
Westfan (S89CA-011-004)*	Ap1	0-4	43.0	35.8	21.2	1.65	18.4	10.1	3.8
	Ap2	4-14	44.3	34.7	21.0	1.47	19.7	9.7	2.8
	ABt	14-24	35.5	40.1	24.4	1.50	21.9	12.7	4.8
	Btk	24-33	53.5	28.1	18.4	1.68	17.7	9.6	2.5
	Ck1	33-43	59.1	26.6	14.3	1.62	16.0	8.3	1.6
	Ck2	43-56	58.1	27.7	14.2	1.52	17.9	8.2	1.7
	C1	56-69	60.1	26.4	13.5	1.50	16.5	7.8	1.5
	C2	69-93	30.2	46.8	23.0	1.45	25.9	14.9	4.2
	2C	93-98	9.5	52.8	37.7	1.48	---	23.5	4.5
115:									
Clear Lake (S89CA-011-005)	Ap1	0-4	0.9	39.8	59.3	1.00	43.4	23.1	8.0
	Ap2	4-10	1.0	39.4	59.6	1.15	39.7	24.7	8.5
	Bss1	10-20	0.9	38.6	60.0	1.17	42.4	27.2	11.0
	Bss2	20-34	1.3	46.2	52.5	1.31	34.5	23.5	9.9
	Bss3	34-47	1.4	42.7	55.9	1.33	32.9	21.5	10.0
	Bssk1	47-59	1.7	41.7	56.6	1.39	31.2	20.8	10.0
	Bssk2	59-79	1.6	42.2	56.2	1.36	31.2	20.7	10.0
125:									
Moonbend (S89CA-011-002)*	Ap	0-8	16.0	58.4	25.6	1.31	27.4	12.1	3.0
	Bw1	8-19	6.5	63.6	29.9	1.25	29.8	14.3	4.1
	Bw2	19-33	14.2	51.1	34.7	1.28	28.1	16.4	5.4
	Bw3	33-41	24.9	49.6	25.5	1.31	25.8	13.5	4.6
	BC	41-51	19.6	55.4	25.0	1.25	27.6	13.2	3.9
	C	51-63	17.9	57.6	24.5	1.39	27.5	13.2	3.0
	Ab	63-75	27.1	50.3	22.6	1.40	25.6	12.2	3.5
	C'	75-85	35.8	46.2	18.0	1.45	---	10.5	4.5
130:									
Corbiere (S89CA-011-003)*	Ap	0-6	20.3	53.8	25.9	1.47	25.3	12.6	4.1
	Bw1	6-13	16.8	56.5	26.7	1.60	24.1	13.6	3.6
	Bw2	13-21	5.1	63.0	31.8	1.37	31.3	16.4	5.3
	2Bw	21-33	2.1	46.5	51.4	1.37	29.1	20.0	8.1
	3Ab	33-46	2.2	48.2	49.6	1.35	30.0	20.1	8.0
	3Bssb1	46-59	2.2	46.4	51.4	1.44	27.2	19.8	8.1
	3Bssb2	59-73	2.5	43.0	54.5	1.43	27.8	20.0	8.4
	3C1	73-94	1.5	37.0	61.5	1.40	---	21.3	8.5
	3C2	94-114	1.2	32.6	66.2	1.40	---	---	8.5

Table 27.--Physical Analyses of Selected Soils--Continued

Map symbol, soil name, and NSSL pedon number	Horizon	Depth	Sand	Silt	Clay	Db 1/3 bar	1/3 bar water	15 bar water	LEP
		In	*Pct*	*Pct*	*Pct*		*Pct*	*Pct*	*Pct*
136:									
Colusa (S89CA-011-001)*	A	0-2	42.3	43.9	13.8	1.69	19.8	9.5	2.7
	Btn1	2-9	38.4	43.8	17.8	1.49	23.6	11.4	3.7
	Btn2	9-19	44.3	39.6	16.1	1.47	22.4	10.4	3.1
	Btn3	19-25	42.4	39.5	18.1	1.46	23.2	10.7	3.7
	Btn4	25-35	41.4	41.1	17.5	1.43	23.0	11.4	3.2
	Btn5	35-52	44.0	39.4	16.6	1.41	23.7	11.0	3.9
	Bn1	52-64	57.4	29.6	13.0	1.48	23.1	9.4	2.8
	Bn2	64-79	62.2	25.4	12.4	1.49	21.2	8.7	2.4
145:									
Hillgate (S89CA-011-006)*	A1	0-3	43.3	38.8	17.9	1.46	24.1	7.8	2.0
	A2	3-11	43.2	37.3	19.5	1.58	16.5	7.1	0.9
	A3	11-19	42.7	35.9	21.4	1.70	15.9	7.8	1.7
	2Bt1	19-37	30.4	27.1	42.5	1.55	21.7	16.3	7.2
	2Bt2	37-52	32.6	31.0	36.4	1.52	23.4	14.6	6.8
	2Bt3	52-62	33.7	31.7	34.6	1.53	23.0	15.4	6.7
	2Bt4	62-72	36.1	29.8	34.1	1.50	24.8	15.4	5.7
204:									
Capay (S93CA-011-005)	A1	0-4	3.8	36.9	59.3	1.32	32.8	22.2	10.9
	A2	4-11	3.0	35.7	61.3	1.33	32.2	21.0	11.8
	Bss1	11-23	3.2	35.2	61.6	1.35	32.2	20.7	10.7
	Bss2	23-30	3.0	34.1	62.9	1.32	33.1	21.9	11.3
	Bss3	30-43	3.0	34.3	62.7	1.28	34.6	22.4	12.8
	Bss4	43-58	3.3	33.6	63.1	1.30	33.3	22.2	12.5
	Bss5	58-74	3.6	33.3	63.1	1.31	34.3	22.4	12.2
	Bss6	74-90	4.0	33.5	62.5	1.31	34.8	22.2	13.2
	Bss7	90-102	3.7	34.7	61.6	1.28	34.2	21.7	14.0
215:									
Altamont (S93CA-011-004)	A	0-3	5.4	41.9	52.7	1.33	27.1	18.4	9.0
	Bw	3-9	5.3	40.5	54.2	1.41	25.3	18.9	9.3
	Bss1	9-23	5.1	40.9	54.0	1.46	24.0	19.1	9.2
	Bss2	23-35	5.5	42.4	52.1	1.44	26.0	19.7	8.5
	BC1	35-43	7.1	47.9	45.0	1.26	34.1	19.1	6.3
	BC2	43-49	8.1	50.9	41.0	1.27	29.8	18.1	3.7
	Cr	>49	---	---	---	---	---	---	---
Sehorn (S93CA-011-002)	A	0-5	6.1	40.5	53.4	1.25	29.0	19.7	12.3
	Bw	5-9	5.8	40.3	53.9	1.39	28.6	18.5	9.4
	Bss1	9-19	5.9	43.3	50.8	1.34	31.1	18.7	9.9
	Bss2	19-26	6.9	46.6	46.5	1.31	33.1	18.7	5.1
	BC	26-35	9.5	48.0	42.5	1.20	36.3	18.6	3.2
	R	>35	---	---	---	---	---	---	---

Table 28.--Chemical Analyses of Selected Soils

(See text for the laboratory procedures used to obtain the data in this table. An asterisk (*) following the pedon number indicates that the pedon is at the series modal location.)

Map symbol, soil name, and NSSL pedon number	Horizon	Depth	Organic matter	pH 1:1 water	CEC NH4OAc pH 7	SAR	EC	Calcium carbonate
		In	*Pct*	*Pct*	*meq/100g*		*dS/m*	*Pct*
104:								
Willows (S93CA-011-008)	Ap1	0-5	2.80	7.7	38.6	4	0.8	---
	Ap2	5-13	1.50	8.7	38.0	13	1.1	---
	Bw	13-20	1.20	8.7	36.7	19	2.1	---
	Bssy1	20-39	0.70	8.1	33.5	18	8.7	---
	Bssy2	39-51	0.50	8.4	31.6	20	9.2	---
	Bssy3	51-59	0.40	8.0	31.6	20	9.2	---
	Bssy4	59-72	0.30	8.2	32.8	25	11.3	3
	Bssy5	72-80	0.30	8.1	35.0	26	12.2	---
	Bkssy	80-87	0.20	8.7	36.5	38	6.8	4
112:								
Westfan (S89CA-011-004)*	Ap1	0-4	1.60	7.4	22.3	1	2.0	1
	Ap2	4-14	1.50	7.5	22.9	1	0.8	1
	ABt	14-24	1.10	7.9	26.7	4	0.7	1
	Btk	24-33	0.80	8.3	21.9	8	1.0	2
	Ck1	33-43	0.50	8.4	19.0	12	1.0	2
	Ck2	43-56	0.40	8.6	18.4	13	1.4	2
	C1	56-69	0.30	8.6	16.3	15	1.7	2
	C2	69-93	0.40	8.7	23.7	20	1.6	2
	2C	93-98	0.50	8.2	34.3	18	1.3	1
115:								
Clear Lake (S89CA-011-005)	Ap1	0-4	3.99	6.8	48.5	6	0.9	1
	Ap2	4-10	3.66	6.4	48.6	6	0.5	1
	Bss1	10-20	2.15	7.6	51.3	6	0.9	1
	Bss2	20-34	1.68	7.6	45.5	6	1.8	1
	Bss3	34-47	1.10	8.3	41.9	6	1.8	1
	Bssk1	47-59	0.77	8.5	38.8	6	1.6	1
	Bssk2	59-79	0.58	8.5	36.6	6	1.5	1
125:								
Moonbend (S89CA-011-002)*	Ap	0-8	2.80	7.1	24.7	1	0.5	0
	Bw1	8-19	2.30	7.0	29.5	1	0.3	0
	Bw2	19-33	2.30	7.2	34.0	1	0.2	0
	Bw3	33-41	1.30	7.0	28.8	1	0.4	1
	BC	41-51	1.22	7.0	28.4	1	1.0	1
	C	51-63	0.70	7.9	27.5	1	2.9	1
	Ab	63-75	0.90	7.9	25.4	1	1.5	1
	C'	75-85	0.55	8.2	21.7	1	0.6	1
130:								
Corbiere (S89CA-011-003)*	Ap	0-6	1.99	7.9	25.4	5	1.1	---
	Bw1	6-13	1.78	7.9	26.8	7	1.2	---
	Bw2	13-21	1.34	7.7	31.6	9	1.3	---
	2Bw	21-33	0.95	8.1	41.2	12	1.7	---
	3Ab	33-46	0.89	8.0	40.5	10	5.4	1
	3Bssb1	46-59	0.84	7.7	38.8	8	5.3	---
	3Bssb2	59-73	0.65	8.0	36.8	8	5.6	1
	3C1	73-94	0.44	8.6	36.9	16	2.9	3
	3C2	94-114	0.33	8.1	40.9	20	1.8	2

Table 28.--Chemical Analyses of Selected Soils--Continued

Map symbol, soil name, and NSSL pedon number	Horizon	Depth	Organic matter	pH 1:1 water	CEC NH4OAc pH 7	SAR	EC	Calcium carbonate
		In	*Pct*	*Pct*	*meq/100g*		*dS/m*	*Pct*
136:								
Colusa (S89CA-011-001)*	A	0-2	0.94	9.3	15.6	79	8.9	1
	Btn1	2-9	0.34	10.2	18.7	75	6.8	1
	Btn2	9-19	0.22	10.5	17.7	166	9.8	1
	Btn3	19-25	0.22	10.5	18.9	116	6.9	1
	Btn4	25-35	0.18	10.6	19.4	97	7.0	1
	Btn5	35-52	0.17	10.5	20.5	54	3.9	1
	Bn1	52-64	0.11	10.3	16.0	33	1.2	1
	Bn2	64-79	0.11	10.0	15.0	27	1.3	1
145:								
Hillgate (S89CA-011-006)*	A1	0-3	3.47	6.0	14.2	0	0.8	0
	A2	3-11	0.60	6.1	12.8	1	0.2	0
	A3	11-19	0.43	6.1	12.3	1	0.1	0
	2Bt1	19-37	0.50	6.8	28.0	2	0.2	0
	2Bt2	37-52	0.29	7.8	26.7	2	0.2	0
	2Bt3	52-62	0.17	7.9	30.8	4	0.2	0
	2Bt4	62-72	0.17	8.1	30.2	4	0.2	0
204:								
Capay (S93CA-011-005)	A1	0-4	2.27	6.9	43.4	0	0.1	0
	A2	4-11	1.26	7.2	45.8	0	0.1	0
	Bss1	11-23	1.10	7.6	45.7	0	0.1	0
	Bss2	23-30	1.06	8.1	46.1	0	0.1	0
	Bss3	30-43	0.85	8.3	45.9	3	0.1	0
	Bss4	43-58	0.60	8.1	45.9	5	0.5	1
	Bss5	58-74	0.49	8.5	46.8	4	0.4	1
	Bss6	74-90	0.51	8.6	46.1	5	0.4	0
	Bss7	90-102	0.48	8.5	45.4	4	0.3	0
215:								
Altamont (S93CA-011-004)	A	0-3	1.77	7.3	46.7	0	1.0	0
	Bw	3-9	0.98	7.2	46.8	0	1.0	0
	Bss1	9-23	0.84	7.4	46.6	0	1.0	0
	Bss2	23-35	0.82	7.7	46.3	0	1.0	0
	BC1	35-43	0.60	7.9	45.3	0	1.0	0
	BC2	43-49	0.57	8.0	44.3	0	1.0	0
	Cr	>49	---	---	---	---	---	---
Sehorn (S93CA-011-002)	A	0-5	1.63	7.2	44.5	0	0.0	0
	Bw	5-9	1.05	7.2	45.1	0	0.0	0
	Bss1	9-19	0.82	7.2	44.5	0	0.0	0
	Bss2	19-26	0.76	7.4	45.2	0	0.0	0
	BC	26-35	0.46	7.7	44.6	0	0.0	0
	R	>35	---	---	---	---	---	---

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (USDA, 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 29 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 Alfisol.

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 Xeralf (*Xer,* meaning dry, plus *alf,* from Alfisol).

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 Haploxeralfs (*Hapl,* meaning minimal horizonation, plus *xeralf,* the suborder of the Alfisols that has a xeric moisture regime).

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

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 Typic Haplxeralfs.

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” (USDA, 1993). Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” (USDA, 1999) and in “Keys to Soil Taxonomy” (USDA, 1998). Unless otherwise indicated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section “Detailed Soil Map Units.”

Alcapay Series

The Alcapay series consists of very deep, somewhat poorly drained soils in basins. These soils are artificially drained. They formed in alluvium derived from mixed sources. Slope is 0 to 1 percent. The annual precipitation is 14 to 16 inches, and the mean annual air temperature is 58 to 62 degrees F.

Table 29.--Classification of the Soils

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

Soil name	Family or higher taxonomic class
Alcapay	Fine, smectitic, thermic Sodic Haploxererts
Altamont	Fine, smectitic, thermic Aridic Haploxererts
Arand	Loamy-skeletal, mixed, superactive, nonacid, thermic Mollic Xerofluvents
Arbuckle	Fine-loamy, mixed, superactive, thermic Typic Haploxeralfs
Ayar	Fine, smectitic, thermic Typic Haploxererts
Balcom	Fine-loamy, mixed, superactive, thermic Typic Calcixerepts
Bamtush	Loamy-skeletal, mixed, superactive, mesic Ultic Palexeralfs
Bearvalley	Loamy-skeletal, magnesic, thermic Pachic Haploxerolls
Boar	Fine, smectitic, thermic Mollic Haploxeralfs
Buttes	Loamy-skeletal, mixed, superactive, thermic Mollic Haploxeralfs
Capay	Fine, smectitic, thermic Typic Haploxererts
*Capay	Very-fine, smectitic, thermic Typic Haploxererts
Clear Lake	Fine, smectitic, thermic Xeric Endoaquerts
Columbia	Coarse-loamy, mixed, superactive, nonacid, thermic Oxyaquic Xerofluvents
Colusa	Coarse-loamy, mixed, superactive, thermic Typic Natrixeralfs
Contra Costa	Fine, mixed, superactive, thermic Mollic Haploxeralfs
Corbiere	Fine, mixed, superactive, thermic Cumulic Vertic Endoaquolls
Corning	Fine, mixed, active, thermic Typic Palexeralfs
Corval	Fine-silty, mixed, superactive, thermic Pachic Haploxerolls
Dubakella	Clayey-skeletal, magnesic, mesic Mollic Haploxeralfs
Eastpark	Clayey-skeletal, magnesic, thermic Mollic Haploxeralfs
Endoaquolls	Endoaquolls
Etsel	Loamy-skeletal, mixed, active, nonacid, mesic Lithic Xerorthents
Fouts	Clayey-skeletal, mixed, superactive, thermic Ultic Argixerolls
Freezeout	Loamy-skeletal, mixed, superactive, frigid Humic Dystroxerepts
Goldeagle	Fine, mixed, superactive, thermic Typic Haploxeralfs
Goulding	Loamy-skeletal, mixed, active, mesic Lithic Dystroxerepts
Grandbend	Coarse-loamy, mixed, superactive, thermic Oxyaquic Haploxerolls
Guenoc	Fine, kaolinitic, thermic Typic Rhodoxeralfs
Haploxererts	Haploxererts
Henneke	Clayey-skeletal, magnesic, thermic Lithic Argixerolls
Hillgate	Fine, smectitic, thermic Typic Palexeralfs
Holillipah	Sandy, mixed, thermic Typic Xerofluvents
Hustabel	Coarse-loamy, mixed, superactive, thermic Cumulic Haploxerolls
Leesville	Fine-loamy over sandy or sandy-skeletal, magnesic, thermic Pachic Haploxerolls
Livermore	Loamy-skeletal, mixed, superactive, thermic Typic Haploxerolls
Mallard	Fine, mixed, superactive, thermic Pachic Argixerolls
Marpa	Loamy-skeletal, mixed, active, mesic Ultic Haploxeralfs
Mayacama	Loamy-skeletal, mixed, active, mesic Typic Dystroxerepts
Maymen	Loamy, mixed, active, mesic Lithic Dystroxerepts
Maywood	Coarse-loamy, mixed, superactive, nonacid, thermic Typic Xerofluvents
Millsholm	Loamy, mixed, superactive, thermic Lithic Haploxerepts
Montara	Loamy, magnesic, thermic Lithic Haploxerolls
Moonbend	Fine-silty, mixed, superactive, thermic Pachic Haploxerolls
Myers	Fine, smectitic, thermic Aridic Haploxererts
Neuns	Loamy-skeletal, mixed, active, mesic Typic Dystroxerepts
Okiota	Clayey, magnesic, thermic Lithic Argixerolls
*Positas	Clayey-skeletal, smectitic, thermic Mollic Palexeralfs
Saltcanyon	Fine-loamy, mixed, superactive, thermic Pachic Argixerolls
Scribner	Fine-loamy, mixed, superactive, thermic Cumulic Endoaquolls
Sehorn	Fine, smectitic, thermic Aridic Haploxererts
Sheetiron	Loamy-skeletal, mixed, active, mesic Typic Dystroxerepts
Skyhigh	Fine, smectitic, thermic Mollic Haploxeralfs
Sleeper	Fine, smectitic, thermic Mollic Haploxeralfs
Snook	Loamy, mixed, superactive, nonacid, thermic Lithic Xerorthents
Speaker	Fine-loamy, mixed, active, mesic Ultic Haploxeralfs
*Squawrock	Clayey-skeletal, mixed, superactive, thermic Typic Haploxeralfs
Stonyford	Loamy, mixed, superactive, thermic Lithic Mollic Haploxeralfs
Tujunga	Mixed, thermic Typic Xeropsamments
Venado	Very-fine, magnesic, thermic Aridic Endoaquerts

Table 29.--Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
Vina	Coarse-loamy, mixed, superactive, thermic Pachic Haploxerolls
Westfan	Fine-loamy, mixed, superactive, thermic Pachic Haploxerolls
Willows	Fine, smectitic, thermic Sodic Endoaquerts
Yollabolly	Loamy-skeletal, mixed, active, acid, frigid Lithic Xerorthents
Yorkville	Fine, mixed, superactive, thermic Typic Argixerolls

Taxonomic class: Fine, smectitic, thermic Sodic Haploxererts

Typical Pedon

Alcapay clay, 0 to 1 percent slopes, fallow. When described on April 25, 1988, the soil was dry to a depth of 5 inches and moist below that depth.

Ap1—0 to 5 inches; olive gray (5Y 4/2) clay, dark brown (10YR 3/3) moist; massive; hard, friable, sticky and plastic; many very fine roots; few fine interstitial pores; many fine prominent yellowish red (5YR 4/6) accumulations of iron; slightly acid (pH 6.1); abrupt wavy boundary.

Ap2—5 to 10 inches; brown (10YR 5/3) clay, brown (10YR 4/3) moist; strong coarse prismatic structure; very hard, friable, sticky and plastic; many very fine roots; few very fine interstitial pores; common fine distinct yellowish brown (10YR 5/6) and pale brown (10YR 6/3) accumulations of iron; moderately alkaline (pH 8.0); clear wavy boundary.

Bw—10 to 24 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong coarse prismatic structure; very hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; white crystals in seams and accumulations; many fine distinct very pale brown (10YR 7/4) accumulations of iron; moderately alkaline (pH 8.2); clear wavy boundary.

Bssz—24 to 35 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; white crystals in seams and accumulations; slickensides tilted 60 degrees from vertical; effervescent; common fine lime accumulations in filaments; few fine faint dark brown (10YR 3/3) accumulations of iron; slightly alkaline (pH 7.8); clear smooth boundary.

Bnz1—35 to 53 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; many very fine tubular pores; white crystals in seams and accumulations; effervescent; few fine lime accumulations in filaments; strongly alkaline (pH 8.3); clear smooth boundary.

Bnz2—53 to 64 inches; yellowish brown (10YR 5/6) clay, brown (7.5YR 4/4) moist; massive; very hard, friable, sticky and plastic; few very fine tubular pores; white crystals in seams and accumulations; strongly effervescent; many fine rounded lime accumulations in small masses; many manganese accumulations in fine rounded small masses; many fine distinct dark brown (10YR 3/3) accumulations of iron; very strongly alkaline (pH 8.8).

Type location: Colusa County, California; about 7 miles northwest of Maxwell, California; 4,400 feet south and 5,700 feet east of the northwest corner of section 32, T. 18 N., R. 3 W., MDB&M; 39 degrees, 22 minutes, 24 seconds north latitude and 122 degrees, 13 minutes, 39 seconds west longitude; USGS Maxwell, California, topographic quadrangle.

Range in Characteristics

Depth to the Bnz horizon ranges from 10 to 40 inches. Slickensides and pressure faces are common below the plow zone, from a depth of about 10 to 40 inches. Unless irrigated, these soils have cracks 30 to 50 inches deep. The cracks open in May and June and remain open until November. The mean annual soil temperature is 62 to 64 degrees F. Unless the soils are irrigated, the soil moisture control section, from a depth of 7 to 20 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15.

The Ap horizon has dry color of 10YR 4/2 or 5/3 or 5Y 4/2 and moist color of 10YR 3/3 or 4/3 or 5Y 3/2. The texture is clay. Reaction is slightly acid to moderately alkaline.

The Bw and Bssz horizons have dry color of 10YR 5/4 and moist color of 10YR 3/3, 3/4, or 4/4. The texture is clay. Reaction is slightly acid to moderately alkaline. Carbonates are segregated in the lower part.

The Bnz horizon has dry color of 10YR 5/4 or 5/6 and moist color of 10YR 4/3 or 4/4 or 7.5YR 4/4. The texture is clay. Reaction is strongly alkaline or very strongly alkaline.

Carbonates occur in soft seams. The sodium adsorption ratio is more than 13, ranging to as high as 50.

Altamont Series

The Altamont series consists of deep, well drained soils on foothills (figure 12). These soils formed in residuum and colluvium weathered from calcareous sandstone, shale, and schist. Slope ranges from 5 to 50 percent. The mean annual precipitation is 14 to 18 inches, and the mean annual air temperature is about 60 to 62 degrees F.

Taxonomic class: Fine, smectitic, thermic Aridic Haploxererts

Typical Pedon

Altamont clay, in an area of Altamont-Sehorn complex, 15 to 30 percent slopes, rangeland. When described on September 21, 1993, the soil was dry throughout.

A—0 to 3 inches; light olive brown (2.5Y 5/3) silty clay, dark grayish brown (2.5Y 4/3) moist; moderate coarse subangular blocky structure parting to weak fine subangular blocky; hard, firm, sticky and plastic; common very fine roots; common very fine tubular pores; noneffervescent; neutral (pH 7.3); clear smooth boundary.

Bw—3 to 9 inches; light olive brown (2.5Y 5/3) silty clay, dark grayish brown (2.5Y 4/3) moist; strong very coarse prismatic structure parting to moderate very coarse angular blocky; very hard, very firm, sticky and plastic; common very fine roots; few very fine discontinuous tubular pores; few prominent patchy pressure faces on peds; noneffervescent; neutral (pH 7.2); abrupt smooth boundary.

Bss1—9 to 29 inches; light olive brown (2.5Y 5/3) silty clay, dark grayish brown (2.5Y 4/3) moist; strong very coarse prismatic structure parting to moderate and strong very coarse angular blocky; very hard, very firm, sticky and plastic; few very fine roots; few very fine discontinuous tubular pores; common prominent discontinuous intersecting slickensides on faces of peds and common prominent discontinuous pressure faces on peds; noneffervescent; 3 percent gravel; slightly alkaline (pH 7.4); abrupt wavy boundary.

Bss2—29 to 35 inches; light olive brown (2.5Y 5/3) silty clay, dark grayish brown (2.5Y 4/3) moist; strong very coarse prismatic structure parting to moderate and strong very coarse angular blocky; very hard, very firm, sticky and plastic; few very fine roots; few very fine discontinuous tubular pores; many prominent discontinuous intersecting slickensides on faces of peds and common prominent discontinuous pressure faces on peds; noneffervescent; 7 percent gravel; slightly alkaline (pH 7.7); clear wavy boundary.

BC1—35 to 43 inches; light olive brown (2.5Y 5/3) very gravelly silty clay, olive brown (2.5Y 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine discontinuous tubular pores; noneffervescent; 40 percent gravel; moderately alkaline (pH 7.9); clear wavy boundary.

BC2—43 to 49 inches; light yellowish brown (2.5Y 6/4) very gravelly silty clay, olive brown (2.5Y 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine discontinuous tubular pores; noneffervescent; 50 percent gravel; moderately alkaline (pH 8.0); abrupt wavy boundary.

Cr—49 inches; highly fractured and weathered shale.

Type location: Colusa County, California; about 6 miles northwest of Sites, California; 1,500 feet east and 500 feet south of the northwest corner of section 8, T. 7 N., R. 4 W., MDB&M; 39 degrees, 20 minutes, 44 seconds north latitude and 122 degrees, 19 minutes, 23 seconds west longitude; USGS Sites, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 7 to 21 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The weighted average clay content in the textural control section, from a depth of 10 to 40 inches, is 35 to 60 percent. The depth to weathered shale ranges from 40 to 60 inches.

The A horizon has dry color of 10YR 5/3 or 4/4 or 2.5Y 5/3 and moist color of 10YR 4/3, 3/3, 3/4, or 4/4 or 2.5Y 4/3. Reaction is slightly acid to moderately alkaline. The texture is clay, silty clay, or clay loam.

The B horizon has dry color of 10YR 5/3 or 5/4 or 2.5Y 5/3 or 6/4 and moist color of 10YR 4/3 or 4/4 or 2.5Y 4/3 or 4/4. The texture is clay, silty clay, or clay loam. In some pedons the lower part of the horizon is very gravelly. Reaction is slightly acid to moderately alkaline.

Arand Series

The Arand series consists of very deep, somewhat excessively drained soils on flood plains and alluvial fans. These soils formed in coarse textured alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 21 inches, and the mean annual air temperature is 58 to 62 degrees F.

Taxonomic class: Loamy-skeletal, mixed, superactive, nonacid, thermic Mollic Xerofluvents

Typical Pedon

Arand very gravelly sandy loam, 0 to 2 percent slopes, on a northeast-facing slope of 2 percent, under annual grasses and forbs, and at an elevation of 345 feet. When described on September 16, 1992, the soil was moist below a depth of 30 inches.

A—0 to 8 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; strong fine and medium granular structure; soft, very friable, slightly sticky and nonplastic; many very fine roots; many very fine interstitial pores; 40 percent gravel; neutral (pH 6.9); abrupt smooth boundary.

C1—8 to 18 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and nonplastic; few very fine roots; many very fine interstitial and few fine tubular pores; 45 percent gravel; neutral (pH 6.8); clear smooth boundary.

C2—18 to 24 inches; brown (10YR 5/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and nonplastic; few very fine roots; many very fine interstitial and few fine tubular pores; 50 percent gravel; neutral (pH 6.8); abrupt smooth boundary.

C3—24 to 65 inches; brown (10YR 5/3) very gravelly sand, brown (10YR 4/3) moist; massive; loose, nonsticky and nonplastic; few very fine roots; many very fine interstitial and few very fine tubular pores; 70 percent gravel; neutral (pH 6.8).

Type location: Colusa County, California; about 6 miles west of Arbuckle, California; 1,200 feet west and 1,900 feet north of the southeast corner of section 35, T. 14 N., R. 3 W., MDB&M; 39 degrees, 01 minute, 02 seconds north latitude and 122 degrees, 09 minutes, 21 seconds west longitude; USGS Cortina Creek, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F, and the soil temperature is above 47 degrees F all year. The soil moisture control section, from a depth of 12 to 33 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The content of organic matter decreases irregularly with increasing depth and is assumed to be less than 1 percent on the basis of data from similar soils in similar geomorphic positions. The textural control section is 10 to 40 inches. By weighted average, it has a clay content of 5 to 15 percent and a gravel content of 35 to 50 percent. Reaction is neutral throughout the profile.

The A horizon has dry color of 10YR 5/3 and moist color of 10YR 3/3. The texture is gravelly sandy loam, gravelly loam, very gravelly sandy loam, or very gravelly loam. The content of clay is 7 to 15 percent.

The C horizon has dry color of 10YR 6/4, 6/3, 6/2, 5/4, 5/3, or 5/2 and moist color of 10YR 4/4, 4/3, 4/2, 3/4, 3/3, or 3/2. The texture is very gravelly loamy sand or very gravelly sand. The content of clay is 7 to 15 percent.

Arbuckle Series

The Arbuckle series consists of very deep, well drained soils on low terraces (figure 13). These soils formed in alluvium derived from conglomerate and metasedimentary rocks. Slope ranges from 1 to 5 percent. The mean annual precipitation is 14 to 21 inches, and the mean annual air temperature is 57 to 63 degrees F.

Taxonomic class: Fine-loamy, mixed, superactive, thermic Typic Haploxeralfs

Typical Pedon

Arbuckle sandy loam, 1 to 5 percent slopes, under annual grasses and forbs. When described on September 15, 1992, the soil was dry to a depth of 34 inches and slightly moist below that depth.

A1—0 to 4 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, very friable, slightly sticky and nonplastic; many very fine roots; many very fine interstitial and few very fine tubular pores; 10 percent gravel; slightly acid (pH 6.2); abrupt smooth boundary.

A2—4 to 10 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine interstitial and few very fine tubular pores; 10 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

A3—10 to 17 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine interstitial and few very fine tubular pores; 10 percent gravel; slightly acid (pH 6.1); clear smooth boundary.

Bt1—17 to 26 inches; yellowish brown (10YR 5/4) gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; moderate medium angular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; common thin clay films on faces of peds; 25 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

Bt2—26 to 34 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; few thin clay films on faces of peds; 30 percent gravel; slightly acid (pH 6.3); clear smooth boundary.

Bt3—34 to 44 inches; yellowish brown (10YR 5/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, firm, sticky and slightly plastic; few very fine roots; common very fine tubular pores; many thin clay films on faces of peds; 30 percent gravel; carbonate pendants on the underside of pebbles; slightly acid (pH 6.3); clear smooth boundary.

BC—44 to 68 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; massive; loose when dry and moist, nonsticky and nonplastic when wet; many very fine interstitial pores; 50 percent gravel; carbonate pendants on the underside of pebbles; slightly acid (pH 6.5).

Type location: Colusa County, California; about 6 miles west of Arbuckle, California; 2,100 feet west and 1,200 feet north of the southeast corner of section 35, T. 13 N., R. 3 W., MDB&M; 39 degrees, 00 minutes, 55 seconds north latitude and 122 degrees, 09 minutes, 32 seconds west longitude; USGS Cortina Creek, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 60 to 65 degrees F, and the soil temperature is above 47 degrees F all year. The soil moisture control section, from a depth of 8 to 26 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The content of organic matter is assumed to be less than 1 percent on the basis of data from similar soils in similar geomorphic positions. The solum is more than 40 inches thick.

The A horizon has dry color of 10YR 6/4, 6/3, or 5/4 or 7.5YR 6/4, 6/3, or 5/4 and moist color of 10YR 4/4 or 4/3 or 7.5YR 6/4, 5/4, or 4/4. The texture is sandy loam or gravelly loam. The content of rock fragments ranges from 3 to 35 percent. Reaction is slightly acid or neutral.

The Bt1, Bt2, and Bt3 horizons have dry color of 10YR 6/4 or 5/4 or 7.5YR 6/4 or 5/4 and moist color of 10YR 4/4 or 3/4 or 7.5YR 4/4 or 3/4. The texture is gravelly loam, gravelly sandy loam, gravelly sandy clay loam, gravelly clay loam, sandy clay loam, or loam. The content of gravel ranges from 3 to 35 percent. The content of clay ranges from 18 to 32 percent, and the content of coarse and very coarse sand is less than 20 percent. Reaction is slightly acid to slightly alkaline, and the horizons are not calcareous.

The BC horizon has dry color of 10YR 6/4, 6/3, 5/4, or 5/3 and moist color of 10YR 5/4, 5/3, 4/4, or 4/3. The texture is stratified gravelly sandy clay loam to very gravelly clay loam. Reaction is slightly acid to slightly alkaline.

Ayar Series

The Ayar series consists of very deep, well drained soils on hills. These soils formed in residuum weathered from calcareous sandstone, siltstone, and shale. Slope ranges from 5 to 50 percent. The mean annual precipitation is 14 to 18 inches, and the mean annual air temperature is 60 to 63 degrees F.

Taxonomic class: Fine, smectitic, thermic Typic Haploxererts

Typical Pedon

Ayar clay, 5 to 15 percent slopes, in an area of rangeland. When described on October 6, 1989, the soil was moist to a depth of 9 inches and dry below that depth.

A1—0 to 9 inches; brown (10YR 4/3) clay, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; extremely hard, friable, sticky and plastic; common very fine roots; few very fine interstitial and tubular pores; disseminated lime and lime occurring in soft masses throughout the horizon; strongly effervescent (7 percent calcium carbonate, HCl, 1 normal); slightly alkaline (pH 7.5); clear smooth boundary.

A2—9 to 25 inches; brown (10YR 4/3) clay, dark brown (10YR 3/3) moist; strong coarse prismatic structure; extremely hard, firm, sticky and plastic; many very fine roots; few very fine interstitial and tubular pores; disseminated lime; strongly effervescent (9 percent calcium carbonate, HCl, 1 normal); slightly alkaline (pH 7.5); clear smooth boundary.

Bss1—25 to 36 inches; brown (10YR 4/3) clay, dark brown (10YR 3/3) moist; strong coarse prismatic structure; extremely hard, firm, sticky and plastic; common very fine roots; many very fine tubular pores; common intersecting slickensides; disseminated lime; strongly effervescent (9 percent calcium carbonate, HCl, 1 normal); slightly alkaline (pH 7.5); clear smooth boundary.

Bss2—36 to 46 inches; brown (10YR 5/3) clay, brown (10YR 4/3) moist; strong fine prismatic structure; extremely hard, friable, moderately sticky and moderately plastic; few very fine roots; common very fine tubular pores; many intersecting slickensides; disseminated lime; strongly effervescent (10 percent calcium carbonate, HCl, 1 normal); slightly alkaline (pH 7.7); abrupt smooth boundary.

Bw—46 to 58 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; moderate fine prismatic structure; hard, friable, slightly sticky and plastic; few very fine roots; common very fine tubular pores; disseminated lime and lime occurring in soft seams and soft masses throughout the horizon; violently effervescent (15 percent calcium carbonate, HCl, 1 normal); slightly alkaline (pH 7.8); abrupt smooth boundary.

C—58 to 72 inches; brownish yellow (10YR 6/6) clay loam, yellowish brown (10YR 5/6) moist; massive; hard, very friable, slightly sticky and slightly plastic; few very fine tubular pores; disseminated lime and lime occurring in soft seams and soft masses throughout the horizon; violently effervescent (9 percent calcium carbonate, HCl, 1 normal); slightly alkaline (pH 7.8); abrupt smooth boundary.

Cr—72 inches; weathered, calcareous, fine grained sandstone.

Type location: Colusa County, California; about 6$^{1}/_{2}$ miles north-northwest of Sites, California; 110 feet north and 200 feet east of the southwest corner of section 35, T. 18 N., R. 4 W., MBD&M; 39 degrees, 22 minutes, 00 seconds north latitude and 122 degrees, 16 minutes, 40 seconds west longitude; USGS Sites, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 64 to 66 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 7 to 21 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The weighted average clay content in the textural control section, from a depth of 10 to 40 inches, ranges from 40 to 55 percent. The depth to highly weathered bedrock ranges from 60 to 80 inches.

The A horizon has dry color of 10YR 4/3 and moist color of 10YR 3/3 or 3/4. The texture is clay. Reaction is slightly alkaline or moderately alkaline. Effervescence is none to strong.

The Bss horizon has dry color of 10YR 5/3 or 4/3 and moist color of 10YR 4/3 or 3/3. The texture is clay. Reaction is slightly alkaline or moderately alkaline. Effervescence is strong to violent.

The Bw horizon has dry color of 10YR 5/4 and moist color of 10YR 4/4. The texture is clay. Reaction is slightly alkaline or moderately alkaline. Effervescence is strong to violent.

The C horizon has dry color of 10YR 6/6 and moist color of 10YR 5/6. The texture is clay loam or clay. Reaction is slightly alkaline or moderately alkaline. Effervescence is strong to violent.

Balcom Series

The Balcom series consists of moderately deep, well drained soils on hills. These soils formed in residuum weathered from soft, interbedded sandstone, siltstone, and shale. Slope ranges from 5 to 75 percent. The mean annual precipitation is 14 to 18 inches, and the mean annual air temperature is 57 to 63 degrees F.

Taxonomic class: Fine-loamy, mixed, superactive, thermic Typic Calcixerepts

Typical Pedon

Balcom silt loam, in an area of Balcom-Ayar complex, 15 to 30 percent slopes, rangeland; described on November 7, 1989.

A1—0 to 2 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; strong medium platy structure; hard, friable, nonsticky and nonplastic; common very fine roots throughout; few very fine and fine tubular pores; common fine rounded soft masses of carbonate; discontinuous violent effervescence (HCl, 1 normal); slightly alkaline (pH 7.5); abrupt smooth boundary.

A2—2 to 11 inches; grayish brown (2.5Y 5/2) silt loam, dark grayish brown (2.5Y 4/2) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots throughout; few very fine tubular pores; common fine rounded soft masses of carbonate; discontinuous violent effervescence (HCl, 1 normal); slightly alkaline (pH 7.6); clear smooth boundary.

Bk1—11 to 18 inches; light brownish gray (2.5Y 6/2) silty clay loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots throughout; few very fine tubular pores; common fine carbonate threads; discontinuous violent effervescence (HCl, 1 normal); moderately alkaline (pH 7.7); clear smooth boundary.

Bk2—18 to 33 inches; light brownish gray (2.5Y 6/2) silt loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots throughout; few very fine tubular pores; common fine rounded soft masses of carbonate; discontinuous violent effervescence (HCl, 1 normal); moderately alkaline (pH 7.7); abrupt smooth boundary.

Cr—33 to 46 inches; highly fractured and weathered siltstone with carbonate seams in cracks.

Type location: Colusa County, California; about 9 miles southwest of Williams, California; 1,820 feet south and 1,420 feet west of the northeast corner of section 15, T. 14 N., R. 4 W., MBD&M; 39 degrees, 04 minutes, 09 seconds north latitude and 122 degrees, 17 minutes, 09 seconds west longitude; USGS Salt Canyon, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 64 to 66 degrees F. Unless the soils are irrigated, the soil moisture control section, from a depth of 6 to 18 inches, is dry in all parts from May 15 to October 31 and moist in some parts from November 1 to May 15. The weighted average clay content in the textural control section, from a depth of 10 to 33 inches, is 18 to 34 percent. The depth to paralithic contact of siltstone or shale is 26 to 40 inches.

The A horizon has dry color of 2.5Y 6/3, 6/2, 5/3, or 5/2 or 10YR 5/3, 5/2, 4/3, or 4/2 and moist color of 2.5Y 4/3 or 4/2 or 10YR 4/3 or 4/2. The texture is silt loam. Reaction is slightly alkaline or moderately alkaline. Effervescence is slight to violent.

The B horizon has dry color of 2.5Y 7/2, 6/4, 6/3, 6/2, 5/3, or 4/3 or 10YR 6/3 or 4/3 and moist color of 2.5Y 5/2, 4/4, 4/3, or 4/2. It is silty clay loam or silt loam. Reaction is moderately alkaline. Effervescence is violent. Some pedons have no B horizon but instead have a C horizon with seams of soft, powdery lime.

Bamtush Series

The Bamtush series consists of very deep, well drained soils on mountain side slopes (figure 14). These soils formed in residuum and colluvium weathered from sedimentary rocks. Slope ranges from 15 to 75 percent. The mean annual precipitation is about 42 inches, and the mean annual air temperature is about 49 degrees F.

Taxonomic class: Loamy-skeletal, mixed, superactive, mesic Ultic Palexeralfs

Typical Pedon

Bamtush very gravelly sandy loam, in a forested area of Bamtush-Marpa complex, 15 to 30 percent slopes. When described on July 18, 1995, the soil was dry throughout.

Oi—0 to 1 inch; forest litter, including pine and fir needles and oak and manzanita leaves.

A—1 to 9 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 3/3) moist; weak very fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine, common medium, and very few coarse roots; common very fine tubular pores; 50 percent gravel; strongly acid (pH 5.5); clear smooth boundary.

AB—9 to 25 inches; very pale brown (10YR 7/3) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; very few fine and coarse, few medium, and common very fine tubular pores; few thin clay films on faces of peds; 50 percent gravel and 5 percent cobbles; strongly acid (pH 5.5); clear smooth boundary.

Bt1—25 to 39 inches; reddish yellow (7.5YR 6/6) very gravelly clay loam, strong brown (7.5YR 5/6) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; few fine interstitial pores; few thin clay films on faces of peds; 50 percent gravel; strongly acid (pH 5.5); clear smooth boundary.

Bt2—39 to 49 inches; yellowish red (5YR 5/6) very gravelly sandy clay loam, yellowish red (5YR 4/6) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; few fine interstitial pores; many thin clay films on faces of peds; 40 percent gravel; strongly acid (pH 5.5); abrupt smooth boundary.

Bw—49 to 61 inches; very pale brown (10YR 7/4) very gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; few fine interstitial pores; 45 percent gravel; strongly acid (pH 5.5); abrupt smooth boundary.

2Bt—61 to 68 inches; reddish yellow (7.5YR 6/6) gravelly clay loam, strong brown (7.5YR 5/6) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; few fine interstitial pores; few thin clay films on faces of peds; 25 percent gravel; strongly acid (pH 5.5).

Type location: Colusa County, California; about 1/5 mile west of the Old Mill Campground entrance on the south side of Mendocino National Forest Service Road M5, 90 feet up the hill from the fire sign; 2,500 feet east and 700 feet south of the northwest corner of section 28, T. 17 N., R. 7 W., MDB&M; 39 degrees, 18 minutes, 26 seconds north latitude and 122 degrees, 38 minutes, 38 seconds west longitude; USGS Fouts Springs, California, topographic quadrangle.

Range in Characteristics

The depth to bedrock is more than 60 inches. Reaction is slightly acid to strongly acid throughout the profile. The mean annual soil temperature is 54 to 59 degrees F. The 6- to 20-inch soil moisture control section is dry in all parts from June 1 to October 31 and moist in some part the rest of the year.

The A horizon has dry color of 10YR 7/3, 6/3, 5/4, 5/2, 4/4, or 4/3 and moist color of 10YR 4/4, 4/3, 3/3, or 3/2. This horizon is very gravelly loam and has 35 to 50 percent rock fragments.

The Bt, Bw, and 2Bt horizons have dry color of 10YR 7/4; 7.5YR 6/6, 5/6, 5/4, 4/4; or 5YR 6/6, or 5/6. They have moist color of 10YR 5/4, 7.5YR 5/6, or 5YR 4/6. They are very gravelly loam, extremely gravelly loam, very gravelly clay loam, extremely gravelly clay loam, very gravelly sandy clay loam, or extremely gravelly sandy clay loam and have 40 to 70 percent rock fragments.

Bearvalley Series

The Bearvalley series consists of very deep, somewhat excessively drained soils on alluvial fans. These soils formed in coarse textured alluvium weathered dominantly from serpentinitic rocks. Slope ranges from 2 to 5 percent. The mean annual precipitation is 18 to 20 inches, and the mean annual air temperature is 57 to 61 degrees F.

Taxonomic class: Loamy-skeletal, magnesic, thermic Pachic Haploxerolls

Typical Pedon

Bearvalley gravelly sandy loam, 2 to 5 percent slopes, in an area of rangeland. When described on August 19, 1996, the soil was dry throughout.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark brown (10YR 2/2) moist; strong very thick platy structure; soft, very friable, slightly sticky and nonplastic; common very fine roots; many very fine interstitial pores; 25 percent gravel; neutral (pH 6.6); abrupt smooth boundary.

A2—5 to 20 inches; dark grayish brown (10YR 4/2) very gravelly sandy loam, very dark brown (10YR 2/2) moist; massive; soft, very friable, slightly sticky and nonplastic; few very fine roots; many very fine and fine interstitial pores; 35 percent gravel; neutral (pH 7.2); clear smooth boundary.

A3—20 to 34 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and nonplastic; many very fine and fine interstitial pores; 40 percent gravel; slightly alkaline (pH 7.5); abrupt smooth boundary.

2C1—34 to 60 inches; brown (10YR 5/3) very gravelly loamy sand, dark brown (10YR 3/3) moist; massive; loose, slightly sticky and nonplastic; many very fine and fine interstitial pores; 55 percent gravel; slightly alkaline (pH 7.8); clear smooth boundary.

2C2—60 to 75 inches; brown (10YR 5/3) extremely gravelly loamy sand, dark brown (10YR 3/3) moist; massive; loose, slightly sticky and nonplastic; many very fine and fine interstitial pores; 65

percent gravel; thin discontinuous pendants on the underside of rock fragments; moderately alkaline (pH 8.3).

Type location: Colusa County, California; about 6 1/2 miles southwest of Leesville, California; 1,300 feet east and 200 feet north of the southwest corner of section 33, T. 15 N., R. 5 W., MDB&M; 39 degrees, 06 minutes, 05 seconds north latitude and 122 degrees, 25 minutes, 20 seconds west longitude; USGS Leesville, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 60 to 63 degrees F. Ca to Mg ratios are 1:3 to 1:6. The soil moisture control section, from a depth of 9 to 27 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts from November 1 to May 31.

The A horizon has dry color of 10YR 5/3, 5/2, or 4/2 and moist color of 10YR 3/3, 3/2, or 2/2. The texture is gravelly sandy loam or very gravelly sandy loam. The content of clay ranges from 10 to 18 percent. Reaction is neutral or slightly alkaline. The content of gravel ranges from 15 to 35 percent in the upper part of the horizon and from 35 to 45 percent in the rest of the horizon.

The 2C horizon has dry color of 10YR 5/3 and moist color of 10YR 3/3. The texture is very gravelly loamy sand, extremely gravelly loamy sand, or very gravelly coarse sandy loam. The content of gravel ranges from 40 to 65 percent. The content of clay ranges from 5 to 10 percent. Reaction is slightly alkaline or moderately alkaline.

Boar Series

The Boar series consists of very deep, well drained soils on hills. These soils formed in residuum weathered from sandstone, shale, and siltstone. Slope ranges from 5 to 50 percent. The mean annual precipitation is 18 to 22 inches, and the mean annual air temperature is 55 to 60 degrees F.

Taxonomic class: Fine, smectitic, thermic Mollic Haploxeralfs

Typical Pedon

Boar loam, in an area of rangeland.

A1—0 to 5 inches; light brownish gray (10YR 6/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; few very fine tubular and many very fine interstitial pores; slightly acid; abrupt wavy boundary.

A2—5 to 12 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak coarse and very coarse prismatic structure; hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine and few fine and medium tubular pores; neutral; clear wavy boundary.

Bt1—12 to 20 inches; dark grayish brown (2.5Y 4/2) clay loam, dark brown (10YR 3/3) moist; weak coarse and very coarse prismatic structure; hard, firm, sticky and plastic; few very fine roots; many very fine and few fine and medium tubular pores; few thin clay films lining pores and bridging mineral grains; 3 percent gravel; neutral; abrupt wavy boundary.

Bt2—20 to 37 inches; variegated olive (5Y 5/3) and light olive brown (2.5Y 5/6) clay loam, dark grayish brown (2.5Y 4/2) and light olive brown (2.5Y 5/4) moist; weak coarse prismatic structure; hard, firm, sticky and plastic; many very fine tubular pores; many moderately thick clay films lining pores; 30 percent soft saprolite masses; 7 percent gravel; slightly alkaline; clear wavy boundary.

Bt3—37 to 56 inches; olive gray (5Y 5/2) clay, olive gray (5Y 4/2) moist; weak coarse and very coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; common moderately thick clay films lining pores; many pressure faces and few slickensides; 25 percent soft saprolite fragments; slightly effervescent; disseminated lime; moderately alkaline; clear wavy boundary.

Btk—56 to 75 inches; olive gray (5Y 5/2) clay loam, gray (5Y 5/1) moist; weak coarse and very coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; few moderately thick clay films lining pores; common pressure faces; 70 percent soft saprolite fragments; strongly effervescent; disseminated lime; moderately alkaline.

Type location: Lake County, California; about 5 miles north of Lakeport, California; 2,125 feet north and 1,812 feet west of the southeast corner of section 25, T. 15 N., R. 10 W., MDB&M; 39 degrees, 07 minutes, 10 seconds north latitude and 122 degrees, 54 minutes, 55 seconds west longitude; USGS Lakeport, California, topographic quadrangle.

Range in Characteristics

The solum 60 inches or more inches thick. The mean annual soil temperature is 59 to 63 degrees F. The soil moisture control section, from a depth of 8 to 24 inches, is dry in all parts from July 1 to October 15 and moist in all parts from December 1 to April 30. Slickensides are not evident in all pedons. Base saturation (sum of cations) is 75 to 95 percent throughout the profile.

The A horizon has dry color of 10YR 5/2, 5/3, 5/4, 6/2, 6/3, or 6/4 and moist color of 10YR 3/2, 3/3, or 3/4. The content of organic matter is 0.25 to 1.0 percent below a depth of 10 inches. The texture is loam. The content of clay is 15 to 26 percent. Reaction is slightly acid or neutral.

The Bt horizon has dry color of 10YR or 5Y 4/2, 4/3, 5/2, or 5/3 or 2.5Y 4/2, 5/2, or 5/6 and moist color of 10YR or 5Y 3/1, 3/2, 3/3, 4/1, 4/2, 4/3, 4/4, 5/1, or 5/2 or 2.5Y 3/2, 4/2, 5/2, or 5/4. This horizon is clay loam or clay and has 35 to 45 percent clay. Reaction is neutral to moderately alkaline. Disseminated lime is not evident in all pedons.

Buttes Series

The Buttes series consists of moderately deep, somewhat excessively drained soils on mountains. These soils formed in residuum and colluvium weathered from conglomerate rocks. Slope ranges from 30 to 50 percent. The mean annual precipitation is 19 to 22 inches, and the mean annual air temperature is 57 to 61 degrees F.

Taxonomic class: Loamy-skeletal, mixed, superactive, thermic Mollic Haploxeralfs

Typical Pedon

Buttes gravelly sandy loam, in an area of Buttes-Millsholm complex, 30 to 50 percent slopes, rangeland. When described on August 19, 1996, the soil was dry throughout.

A1—0 to 2 inches; brown (7.5YR 4/3) gravelly sandy loam, dark brown (7.5YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine tubular pores; 20 percent gravel; neutral (pH 6.8); clear wavy boundary.

A2—2 to 7 inches; brown (7.5YR 4/4) gravelly sandy clay loam, dark brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common fine and medium tubular pores; 30 percent gravel; neutral (pH 6.8); clear smooth boundary.

Bt—7 to 12 inches; brown (7.5YR 4/4) very gravelly sandy clay loam, brown (7.5YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common fine and medium and few coarse tubular pores; few clay films between sand grains; 40 percent gravel; neutral (pH 6.8); clear smooth boundary.

BCt—12 to 19 inches; strong brown (7.5YR 4/6) very gravelly sandy clay loam, strong brown (7.5YR 4/6) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium and few coarse roots; few fine and medium tubular pores; many clay films between sand grains and on faces of peds; 40 percent gravel; neutral (pH 6.8); clear smooth boundary.

C—19 to 24 inches; strong brown (7.5YR 4/6) very gravelly sandy loam, strong brown (7.5YR 4/6) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few fine and medium roots; few fine interstitial pores; many clay films between sand grains; 45 percent gravel; neutral (pH 7.0); clear smooth boundary.

Cr—24 inches; weathered conglomerate rock.

Type location: Colusa County, California; about 1 mile west of Leesville, California; 1,800 feet east and 600 feet south of the northwest corner of section 5, T. 15 N., R. 5 W., MDB&M; 39 degrees, 11 minutes, 30 seconds north latitude and 122 degrees, 26 minutes, 25 seconds west longitude; USGS Leesville, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 58 to 60 degrees F. The 7- to 19-inch soil moisture control section is dry in all parts from June 1 to October 31 and moist in some or all parts from November 1 to May 31.

The A horizon has dry color of 10YR 6/3 or 5/4 or 7.5YR 4/4 or 4/3 and moist color of 10YR 4/3, 3/4, or 3/3 or 7.5YR 3/4 or 3/3. The texture is gravelly sandy loam, gravelly sandy clay loam, or gravelly loam. The content of rounded gravel 0.08 to 1.0 inch in size ranges from 15 to 35 percent. The content of clay ranges from 15 to 26 percent. Reaction is slightly acid or neutral.

The Bt and BCt horizons have dry color of 10YR 5/4 or 7.5YR 4/6 or 4/4 and moist color of 10YR 4/4 or 3/4 or 7.5YR 4/6 or 4/3. The texture is very gravelly sandy clay loam, very gravelly loam, or very gravelly clay loam. The content of rounded gravel 0.08 to 1.0

inch in size ranges from 35 to 60 percent. The content of clay ranges from 24 to 35 percent. Reaction is neutral or slightly alkaline.

The C horizon has dry color of 10YR 5/6 or 5/3 or 7.5YR 4/6 and moist color of 10YR 4/6 or 7.5YR 4/6. The texture is very gravelly sandy clay loam, very gravelly sandy loam, or very gravlly clay loam. The content of rounded gravel 0.08 to 1.0 inch in size ranges from 35 to 60 percent. The content of clay ranges from 15 to 30 percent. Reaction is neutral or slightly alkaline.

Capay Series

The Capay series consists of very deep, moderately well drained soils in interfan basins and other basins. These soils formed in alluvium derived from mixed rock sources. Slope ranges from 0 to 9 percent. The mean annual precipitation is 14 to 28 inches, and the mean annual air temperature is 58 to 62 degrees F.

Taxonomic class: Fine, smectitic, thermic Typic Haploxererts

Typical Pedon

Capay clay loam, 0 to 1 percent slopes, in an area of cropland. When described on September 28, 1987, the soil was dry to a depth of 12 inches and moist below that depth.

Ap—0 to 15 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; massive; hard, firm, very sticky and very plastic; few very fine roots; few very fine tubular and interstitial pores; slightly acid (pH 6.4); clear smooth boundary.

AB—15 to 33 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; massive; hard, firm, very sticky and very plastic; few very fine roots; few very fine tubular and interstitial pores; intersecting slickensides; slightly acid (pH 6.3); clear smooth boundary.

Bss1—33 to 39 inches; brown (10YR 4/3) clay, dark brown (10YR 3/3) moist; moderate medium prismatic structure; very hard, firm, very sticky and very plastic; few very fine roots; many very fine tubular pores; common intersecting slickensides; neutral (pH 6.6); clear smooth boundary.

Bss2—39 to 46 inches; brown (10YR 4/3) clay, dark brown (10YR 3/3) moist; moderate medium prismatic structure; very hard, firm, very sticky and very plastic; few very fine roots; many very fine tubular pores; common intersecting slickensides; common medium distinct very dark grayish brown (2.5Y 5/2) accumulations of iron; neutral (pH 6.9); clear smooth boundary.

Bssk—46 to 64 inches; brown (10YR 4/3) clay, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; very hard, firm, very sticky and very plastic; few very fine roots; many very fine tubular pores; common intersecting slickensides; lime occurring in common fine soft masses and concretions; few fine distinct grayish brown (2.5Y 5/2) masses of iron depletion and common medium prominent dark gray (5Y 4/1) accumulations of iron; neutral (pH 7.2).

Type location: Colusa County, California; about 3/4 mile east of the intersection of East Camp Road and Hawkins Road; 1,000 feet east and 200 feet south of the northwest corner of section 28, T. 15 N., R. 3 W., MDB&M; 39 degrees, 07 minutes, 48 seconds north latitude and 122 degrees, 12 minutes, 03 seconds west longitude; USGS Williams, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 5 to 15 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The weighted average clay content in the textural control section is 35 to 60 percent. A water table is at a depth of 36 to more than 60 inches.

The A horizon has dry color of 10YR 5/3, 5/2, 4/3, or 4/2 or 2.5Y 5/2 or 4/2 and moist color of 10YR 4/2, 3/3, or 3/2 or 2.5Y 3/2. The texture is clay loam, silty clay, or clay. Reaction is slightly acid to moderately alkaline.

The Bss and Bssk horizons have dry color of 10YR 6/4, 6/3, 5/4, 5/3, 4/3, or 5/2; 2.5Y 6/2, 5/4, or 5/2; or 5Y 5/2. They have moist color of 10YR 4/4, 4/3, 3/4, 3/3, or 3/2; 2.5Y 4/2, 3/4, or 3/2; or 5Y 3/2. The texture is clay or silty clay. Reaction is neutral to moderately alkaline.

Capay Taxadjunct

The Capay taxadjunct consists of very deep, moderately well drained soils in interfan basins and other basins. These soils formed in alluvium derived from sandstone and siltstone. Slope ranges from 0 to 9 percent. The mean annual precipitation is 16 to 28 inches, and the mean annual air temperature is 58 to 60 degrees F.

Taxonomic class: Very-fine, smectitic, thermic Typic Haploxererts

Typical Pedon

Capay clay, 0 to 3 percent slopes, in an area of rangeland. When described on September 22, 1993, the soil was dry throughout.

A1—0 to 4 inches; light olive brown (2.5Y 5/3) clay, dark grayish brown (2.5Y 4/3) moist; moderate medium subangular blocky structure parting to moderate fine subangular blocky; very hard, firm; many very fine to medium roots; few very fine and fine continuous tubular pores; very slightly effervescent; neutral (pH 6.9); clear smooth boundary.

A2—4 to 11 inches; light olive brown (2.5Y 5/3) clay, dark olive brown (2.5Y 3/3) moist; moderate coarse subangular blocky structure parting to moderate medium subangular blocky and very coarse prismatic; very hard, firm; few very fine and fine roots; few very fine and fine continuous tubular pores; few pressure faces; very slightly effervescent; neutral (pH 7.2); clear wavy boundary.

Bss1—11 to 24 inches; light olive brown (2.5Y 5/3) clay, dark grayish brown (2.5Y 4/3) moist; moderate medium angular blocky and very coarse prismatic structure; very hard, firm; few very fine and fine roots; few very fine and fine continuous tubular pores; very slightly effervescent; slightly alkaline (pH 7.6); clear wavy boundary.

Bss2—24 to 30 inches; clay that is dark grayish brown (10YR 4/2) moist; moderate medium angular blocky and very coarse prismatic structure; very hard, firm; few very fine and fine roots; few very fine and fine continuous tubular pores; very slightly effervescent; moderately alkaline (pH 8.1); gradual wavy boundary.

Bss3—30 to 43 inches; clay that is dark olive brown (2.5Y 3/3) moist; strong coarse angular blocky structure; very hard, firm; few very fine and fine roots; few very fine and fine continuous tubular pores; wedge-shaped blocks; strongly effervescent concretions scattered throughout the horizon; noneffervescent soil matrix; very slightly effervescent; moderately alkaline (pH 8.3); gradual wavy boundary.

Bss4—43 to 59 inches; clay that is dark yellowish brown (10YR 4/4) moist; very hard, firm; few very fine and fine roots; few very fine and fine continuous tubular pores; wedge-shaped blocks; strongly effervescent concretions scattered throughout the horizon; noneffervescent soil matrix; very slightly effervescent; moderately alkaline (pH 8.1); gradual wavy boundary.

Bss5—59 to 75 inches; clay that is dark yellowish brown (10YR 4/6) moist; strong coarse angular blocky structure; very hard, firm; few very fine and fine roots; few very fine and fine continuous tubular pores; wedge-shaped blocks; strongly effervescent concretions scattered throughout the horizon; noneffervescent soil matrix; very slightly effervescent; strongly alkaline (pH 8.5); gradual wavy boundary.

Bss6—75 to 90 inches; clay that is dark yellowish brown (10YR 4/4) moist; strong coarse angular blocky structure; very hard, firm; few very fine and fine roots; few very fine and fine continuous tubular pores; wedge-shaped blocks; strongly effervescent concretions scattered throughout the horizon; noneffervescent soil matrix; very slightly effervescent; strongly alkaline (pH 8.6); gradual wavy boundary.

Bss7—90 to 102 inches; clay that is dark yellowish brown (10YR 4/4) moist; strong coarse angular blocky structure; very hard, firm; few very fine and fine roots; few very fine and fine continuous tubular pores; wedge-shaped blocks; strongly effervescent concretions scattered throughout the horizon; noneffervescent soil matrix; very slightly effervescent; strongly alkaline (pH 8.5).

Type location: Colusa County, California; about 2.5 miles north of Sites; 39 degrees, 20 minutes, 45 seconds north latitude and 122 degrees, 19 minutes, 53 seconds west longitude; USGS Sites, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 6 to 19 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The weighted average clay content in the textural control section is 60 to 65 percent.

The A horizon has dry color of 10YR 5/3, 5/2, 4/3, or 4/2 or 2.5Y 5/3, 5/2, or 4/2 and moist color of 10YR 4/2, 3/3, or 3/2 or 2.5Y 4/3 or 3/3. The texture is silty clay or clay. Reaction is slightly acid to moderately alkaline.

The Bss horizon has dry color of 10YR 6/4, 6/3, 5/4, 5/3, or 5/2 or 2.5Y 6/2, 5/4, 5/3, or 5/2 and moist color of 10YR 4/4, 4/3, 4/2, 3/4, 3/3, or 3/2 or 2.5Y 4/3, 4/2, 3/4, or 3/3. The texture is clay or silty clay. Reaction is neutral to strongly alkaline.

These soils are a taxadjunct to the Capay series because of the very-fine textural family.

Clear Lake Series

The Clear Lake series consists of very deep, poorly drained soils on basin floors (figure 15). These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 20 inches, and the mean annual air temperature is 57 to 62 degrees F.

Taxonomic class: Fine, smectitic, thermic Xeric Endoaquerts

Typical Pedon

Clear Lake clay, 0 to 1 percent slopes, occasionally flooded, in an area of cropland. When described on October 25, 1988, the soil was dry to a depth of 10 inches and moist below that depth and had a water table at a depth of 6 feet.

Ap1—0 to 4 inches; gray (10YR 5/1) clay, very dark gray (10YR 3/1) moist; moderate fine subangular blocky structure; very hard, firm, very sticky and very plastic; many very fine roots; common very fine and many fine tubular pores; slightly acid (pH 6.1); clear smooth boundary.

Ap2—4 to 10 inches; gray (10YR 5/1) clay, very dark gray (10YR 3/1) moist; moderate fine subangular blocky structure; very hard, firm, very sticky and very plastic; common very fine roots; many very fine tubular pores; common fine prominent olive brown (2.5Y 4/4) accumulations of iron; slightly acid (pH 6.1); clear wavy boundary.

Bss1—10 to 20 inches; gray (10YR 5/1) clay, very dark gray (10YR 3/1) moist; strong very coarse prismatic structure; very hard, firm, very sticky and very plastic; common very fine roots; many very fine tubular pores; many intersecting slickensides; common fine prominent light olive brown (2.5Y 5/4) accumulations of iron; neutral (pH 6.9); gradual wavy boundary.

Bss2—20 to 34 inches; gray (10YR 5/1) clay, very dark gray (10YR 3/1) moist; moderate medium prismatic structure; very hard, firm, very sticky and very plastic; common very fine roots; many very fine tubular pores; many intersecting slickensides; common fine prominent light olive brown (2.5Y 5/4) accumulations of iron; slightly alkaline (pH 7.4); gradual wavy boundary.

Bss3—34 to 48 inches; gray (10YR 5/1) clay, dark grayish brown (2.5Y 4/2) moist; moderate coarse angular blocky structure; very hard, firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many intersecting slickensides; common coarse prominent light olive brown (2.5Y 5/4) accumulations of iron; slightly alkaline (pH 7.8); clear smooth boundary.

Bssk1—48 to 60 inches; gray (5Y 5/1) clay, dark gray (5Y 4/1) moist; moderate medium angular blocky structure; very hard, firm, very sticky and very plastic; few very fine roots; common very fine tubular pores; many intersecting slickensides; common medium distinct light brownish gray (2.5Y 6/2) accumulations of iron; strongly effervescent; moderately alkaline (pH 7.9); clear smooth boundary.

Bssk2—60 to 80 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; moderate medium angular blocky structure; very hard, firm, very sticky and very plastic; few very fine roots; common very fine tubular pores; many intersecting slickensides; strongly effervescent; common large distinct light olive brown (2.5Y 5/3) accumulations of iron; moderately alkaline (pH 8.0).

Type location: Colusa County, California; about 7$^1/_2$ miles northeast of Dunnigan, California, in an unsectionalized area, 1,710 feet west and 525 feet south of the southwest corner of section 6, T. 13 N., R. 1 E., MDB&M; 38 degrees, 59 minutes, 45 seconds north latitude and 121 degrees, 55 minutes, 15 seconds west longitude; USGS Dunnigan, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 6 to 17 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The weighted average clay content in the textural control section ranges from 40 to 60 percent.

The Ap horizon has dry color of 10YR 5/1, 4/1, or 3/1; 5Y 5/1; or N 3/0. It has moist color of 10YR 3/1, 5Y 3/1, or N 2/0. The texture is clay. Effervescence is slight to violent. Some pedons have free carbonates in seams and dispersed throughout the matrix. Reaction is slightly acid to slightly alkaline.

The Bss and Bssk horizons have dry color of 10YR 5/1; 2.5Y 5/2; 5Y 6/2, 5/2, 5/1, or 4/1; or N 5/0. They have moist color of 10YR 4/4, 3/2, or 3/1; 2.5Y 4/2 or 3/2; 5Y 5/3, 4/3, 4/2, 4/1, 3/2, or 3/1; or N 3/0 or 2/0. The texture is clay. Reaction is neutral to strongly alkaline. Effervescence is slight to violent. Some pedons have free carbonates in seams and dispersed throughout the matrix. Some have manganese concretions and iron accumulations.

Columbia Series

The Columbia series consists of very deep, moderately well drained soils on flood plains. These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 16 inches, and the mean annual air temperature is 60 to 62 degrees F.

Taxonomic class: Coarse-loamy, mixed, superactive, nonacid, thermic Oxyaquic Xerofluvents

Typical Pedon

Columbia fine sandy loam, frequently flooded, 0 to 2 percent slopes (soil survey of Sutter County, California, 1988).

Ap—0 to 10 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine interstitial pores; neutral; clear smooth boundary.

AC—10 to 14 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; common coarse and very fine tubular pores; neutral; abrupt wavy boundary.

C1—14 to 19 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; massive; loose, very friable, nonsticky and nonplastic; many very fine interstitial pores; neutral; abrupt smooth boundary.

C2—19 to 33 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and common coarse roots; few coarse tubular pores; neutral; abrupt wavy boundary.

C3—33 to 38 inches; light yellowish brown (10YR 6/4) fine sandy loam, dark brown (10YR 3/3) moist; massive; loose, very friable, nonsticky and nonplastic; few fine and common coarse roots; few coarse tubular pores; common medium distinct strong brown (7.5YR 5/6) accumulations of iron; neutral; abrupt smooth boundary.

C4—38 to 68 inches; light yellowish brown (10YR 6/4) very fine sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and common coarse roots; few fine tubular pores; common medium distinct strong brown (7.5YR 5/6) accumulations of iron; slightly alkaline.

Type location: Sutter County, California; about 2.2 miles northeast of Live Oak; 2,500 feet south and 4,900 feet east of the intersection of Rivera Road and Meteer Road; about 300 feet from the Feather River, in the Boga Land Grant; T. 17 N., R. 3 E. (not sectionizaled), MDB&M; 39 degrees, 17 minutes, 44 seconds north latitude and 121 degrees, 37 minutes, 32 seconds west longitude; Gridley, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. Unless the soils are irrigated, the soil moisture control section, from a depth of 7 to 21 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. Redoximorphic features are 10 to 34 inches from the surface. Stratification is weak to distinct, and strata of contrasting textures 0.25 to 0.5 inches thick are in some pedons. The weighted average clay content in the textural control section, from a depth of 10 to 40 inches, is 10 to 18 percent. The content of fine sand and coarser sand is 68 to 70 percent. The texture is stratified fine sandy loam, very fine sandy loam, silt loam, loam, or loamy sand. The content of organic matter decreases irregularly with increasing depth.

The A horizon has dry color of 10YR 7/4, 7/2, 6/2, 6/3, 5/3, or 6/4 and moist color of 10YR 4/2, 4/3, 4/4, or 3/3. The texture is loam or fine sandy loam.

The C horizon has dry color of 10YR 7/4, 7/2, 6/2, 6/3, or 6/4 and moist color of 10YR 5/2, 5/4, 4/3, 4/4, or 3/3. Some pedons have a buried layer of clay, silty clay, silty clay loam, or clay loam at a depth of 40 to 60 inches.

Colusa Series

The Colusa series consists of very deep, somewhat poorly drained soils on flood plains (figure 16). These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 16 inches, and the mean annual air temperature is 60 to 62 degrees F.

Taxonomic class: Coarse-loamy, mixed, superactive, thermic Typic Natrixeralfs

Typical Pedon

Colusa loam, 0 to 2 percent slopes, in an area of rangeland. When described on October 24, 1988, the soil was dry throughout.

A—0 to 2 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; strong medium platy structure; very hard, friable, slightly sticky and slightly plastic; many coarse roots; many very fine tubular pores; very strongly alkaline (pH 9.3); clear smooth boundary.

Btn1—2 to 9 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; strong fine prismatic structure parting to strong fine angular blocky; very hard, firm, slightly sticky and slightly plastic; many coarse roots; few coarse and many very fine tubular pores; few thin clay films lining pores; very strongly alkaline (pH 10.2); clear smooth boundary.

Btn2—9 to 20 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate coarse and medium prismatic structure; hard, friable, slightly sticky and slightly plastic; common coarse roots; common coarse, many very fine, and few fine and medium tubular pores; few thin clay films lining pores; very strongly alkaline (pH 10.5); clear smooth boundary.

Btn3—20 to 26 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; hard, friable, slightly sticky and slightly plastic; few coarse roots; common very fine, fine, and medium tubular pores; few thin clay films lining pores and on faces of peds; very strongly alkaline (pH 10.5); clear smooth boundary.

Btn4—26 to 37 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; hard, friable, slightly sticky and slightly plastic; common coarse and many fine tubular pores; few thin clay films lining pores and on faces of peds and many moderately thick clay films lining planes of strata; very strongly alkaline (pH 10.6); abrupt smooth boundary.

Btn5—37 to 53 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few medium tubular pores; few thin clay films lining pores and on faces of peds; very strongly alkaline (pH 10.5); clear smooth boundary.

Bn1—53 to 65 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium tubular pores; very strongly alkaline (pH 10.3); clear smooth boundary.

Bn2—65 to 80 inches; brown (10YR 5/3) fine sandy loam, olive brown (2.5YR 4/3) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and few very fine and medium tubular pores; very strongly alkaline (pH 10.0).

Type location: Colusa County, California; about 1 mile south of Colusa, California, in an unsectionalized area, 1,200 feet north and 2,180 feet east of the southwest corner of section 33, T. 16 N., R. 1 W., MDB&M; 39 degrees, 11 minutes, 35 seconds north latitude and 121 degrees, 59 minutes, 40 seconds west longitude; USGS Meridian, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 6 to 17 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The weighted average clay content in the 2- to 22-inch textural control section ranges from 14 to 18 percent. Depth to the natric horizon ranges from 0 to 10 inches.

The A horizon has dry color of 10YR 6/3, 6/2, or 5/2 and moist color of 10YR 4/2, 3/3, or 3/2. The texture is loam. Reaction is slightly alkaline to very strongly alkaline. SAR ranges from 50 to 100.

The Btn horizon has dry color of 10YR 6/3, 5/3, or 4/3 and moist color of 10YR 3/2 or 3/3. The texture is loam or silt loam. Reaction is strongly alkaline or very strongly alkaline. SAR ranges from 75 to 175.

The Bn horizon has dry color of 2.5Y 6/4 or 6/2 or 10YR 6/3, 6/4, or 5/3 and moist color of 2.5Y 5/4, 5/2, or 4/3. The texture is fine sandy loam or loam. Reaction is strongly alkaline or very strongly alkaline. SAR ranges from 15 to 75.

Contra Costa Series

The Contra Costa series consists of moderately deep, well drained soils on hills and mountains (figure 17). These soils formed in residuum derived from fine grained sandstone. Slope ranges from 9 to 75 percent. The mean annual precipitation is 14 to 26 inches, and the mean annual air temperature is 57 to 63 degrees F.

Taxonomic class: Fine, mixed, superactive, thermic Mollic Haploxeralfs

Typical Pedon

Contra Costa loam, in an area of Millsholm-Contra Costa association, 30 to 75 percent slopes, rangeland. When described on November 16, 1995, the soil was dry throughout.

A—0 to 3 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine interstitial pores; 1 percent gravel; slightly acid (pH 6.5); clear smooth boundary.

Bt1—3 to 8 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; 1 percent gravel; slightly acid (pH 6.5); clear smooth boundary.

Bt2—8 to 16 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; strong coarse angular blocky structure; slightly hard, friable, sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; common thin clay films bridging sand grains; 1 percent gravel; neutral (pH 6.7); clear smooth boundary.

Bt3—16 to 28 inches; brown (7.5YR 5/4) clay, brown (7.5YR 4/4) moist; strong coarse angular blocky structure; slightly hard, friable, sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; many thin clay films on faces of peds; 5 percent gravel; neutral (pH 6.7); abrupt smooth boundary.

Bt4—28 to 35 inches; brown (7.5YR 5/4) very gravelly clay loam, brown (7.5YR 4/4) moist; weak coarse angular blocky structure; slightly hard, friable, sticky and slightly plastic; few very fine tubular pores; many thin clay films on faces of peds; 45 percent gravel; neutral (pH 7.0); abrupt wavy boundary.

R—35 inches; hard, fine grained sandstone; cracks as much as 1 inch wide filled with soil material.

Type location: Colusa County, California; about 11 1/2 miles west of Williams, California; 500 feet west and 1,600 feet north of the southeast corner of section 6, T. 14 N., R. 4 W., MDB&M; 39 degrees, 05 minutes, 28 seconds north latitude and 122 degrees, 20 minutes, 09 seconds west longitude; USGS Salt Canyon, California, topographic quadrangle.

Range in Characteristics

The depth to lithic contact of sandstone ranges from 20 to 40 inches. The mean annual soil temperature is 64 to 66 inches. Unless the soils are irrigated, the soil moisture control section, from a depth of 6 to 16 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts from November 1 to May 31. The weighted average clay content in the 3- to 23-inch particle-size control section ranges from 35 to 45 percent. The content of rock fragments ranges from 2 to 45 percent, by volume.

The A horizon has dry color of 10YR 6/4, 6/3, 5/4, 5/3, or 4/4 and moist color of 10YR 4/4, 3/4, or 3/3. The texture is loam. Reaction is slightly acid. The content of gravel ranges from about 1 to 10 percent.

The Bt horizon has dry color of 10YR 5/6, 5/4, 5/3, or 4/4 or 7.5YR 5/4, 4/4, or 4/6 and moist color of 10YR 5/6, 4/4, or 3/4 or 7.5YR 4/4 or 3/4. The texture is dominantly clay loam or clay, but in some pedons the lower part is gravelly clay loam or very gravelly clay loam. Reaction is neutral to moderately acid. The content of gravel ranges from 0 to 10 percent in the upper part and 10 to 45 percent in the lower part.

Corbiere Series

The Corbiere series consists of very deep, somewhat poorly drained soils on basin rims. These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 16 inches, and the mean annual air temperature is 61 to 63 degrees F.

Taxonomic class: Fine, mixed, superactive, thermic Cumulic Vertic Endoaquolls

Typical Pedon

Corbiere silt loam, 0 to 1 percent slopes, in an area of cropland. When described on October 25, 1988, the soil was dry to a depth of 20 inches and moist below that depth.

Ap—0 to 7 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, very sticky and very plastic; many very fine and few fine roots; common fine interstitial pores; strongly effervescent; disseminated lime; neutral (pH 7.3); clear smooth boundary.

Bw1—7 to 14 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; strongly effervescent; disseminated lime; few fine prominent very dark grayish brown (2.5Y 3/2) (moist) accumulations of iron; slightly alkaline (pH 7.4); clear smooth boundary.

Bw2—14 to 22 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, firm, sticky and slightly plastic; few very fine roots; common very fine tubular pores; strongly effervescent; disseminated lime; common fine prominent very dark grayish brown (2.5Y 3/2) (moist) accumulations of iron; neutral (pH 7.3); gradual smooth boundary.

2Bw—22 to 35 inches; brown (10YR 5/3) silty clay, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; strongly effervescent; disseminated lime; common fine prominent dark yellowish brown (10YR 4/4) (moist) accumulations of iron; slightly alkaline (pH 7.6); abrupt smooth boundary.

3Ab—35 to 46 inches; grayish brown (2.5Y 5/2) silty clay, very dark grayish brown (2.5Y 3/2) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; strongly effervescent; disseminated lime; common fine faint dark yellowish brown (10YR 4/6) accumulations of iron; slightly alkaline (pH 7.4); clear smooth boundary.

3Bssb1—46 to 60 inches; grayish brown (2.5Y 5/2) silty clay, very dark grayish brown (2.5Y 3/2) moist; moderate medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine interstitial and tubular pores; slightly effervescent; lime segregated in fine soft masses; many slickensides and common distinct pressure faces; common fine white sulfate crystals; slightly alkaline (pH 7.4); gradual smooth boundary.

3Bssb2—60 to 74 inches; grayish brown (2.5Y 5/2) silty clay, very dark grayish brown (2.5Y 3/2) moist; moderate medium subangular blocky structure; very hard, very firm, sticky and plastic; few very fine roots; few very fine interstitial and tubular pores; strongly effervescent; lime segregated in fine soft masses; many slickensides and many fine distinct pressure faces; common fine white sulfate crystals; slightly alkaline (pH 7.5).

3C1—74 to 96 inches; grayish brown (2.5Y 5/2) clay, olive brown (2.5Y 4/4) moist; moderate medium subangular blocky structure; very hard, very firm, sticky and plastic; few very fine roots; few very fine interstitial and tubualar pores; strongly effervescent; dark gray (10YR 4/1) redoximorphic depletions; moderately alkaline (pH 8.0).

3C2—96 to 114 inches; light olive brown (2.5Y 5/4) clay; gray (10YR 5/1) redoximorphic depletions; moderately alkaline (pH 8.0).

Type location: Colusa County, California; about 4 1/2 miles northwest of Grimes, California; 1.25 miles west on Sachreiter Basin Road from Dry Slough Road, 200 feet north into a field; 1,260 feet west and 2,585 feet north of the southeast corner of section 4, T. 14 N., R. 1 W., MDB&M; 39 degrees, 05 minutes, 00 seconds north latitude and 121 degrees, 58 minutes, 15 seconds west longitude; USGS Grimes, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F, and the soil temperature remains above 47 degrees F all year. The weighted average clay content in the 10- to 40-inch textural control section ranges from 35 to 50 percent. The sodium adsorption ratio ranges from 5 to 13 throughout the profile. The 5- to 16-inch soil moisture control section is dry in all parts from May 15 to October 31 and moist in all parts from November 15 to May 1.

The Ap horizon has dry color of 10YR 5/2 or 5/3 or 2.5Y 5/2 and moist color of 10YR 3/2 or 3/3 or 2.5Y 3/2. The texture is silt loam. The content of clay ranges from 20 to 27 percent. Reaction is neutral or slightly alkaline.

The Bw horizon has dry color of 10YR 5/3 or 5/2 or 2.5Y 5/3 or 5/2 and moist color of 10YR 4/2, 3/3, or 3/2. It is silt loam or silty clay loam and averages 20 to 35 percent clay. Reaction is neutral or slightly alkaline.

The 2Bw horizon has dry color of 10YR 5/3, 5/2, or 4/3 or 2.5Y 5/3 or 5/2 and moist color of 10YR 4/2, 3/3, or 3/2 or 2.5Y 4/2. It is silty clay and ranges from 40 to 55 percent clay. Reaction is slightly alkaline or moderately alkaline.

The 3Ab horizon has dry color of 2.5Y 5/2 or 10YR 5/3 or 5/2 and moist color of 2.5Y 3/2 or 10YR 3/3 or 3/2. It is silty clay and has 40 to 50 percent clay. Reaction is slightly alkaline or moderately alkaline.

The 3Bssb horizon has dry color of 10YR 5/3 or 5/2 or 2.5Y 6/3, 5/3, or 5/2 and moist color of 10YR 4/2 or 3/2 or 2.5Y 4/3, 4/2, or 3/2. It is silty clay and has 40 to 55 percent clay. Reaction is slightly alkaline or moderately alkaline.

Corning Series

The Corning series consists of very deep, well drained soils on dissected terraces. These soils formed in alluvium derived from mixed rock sources. Slope ranges from 1 to 5 percent. The mean annual precipitation is 14 to 22 inches, and the mean annual air temperature is 57 to 63 degrees F.

Taxonomic class: Fine, mixed, active, thermic Typic Palexeralfs

Typical Pedon

Corning clay loam, 1 to 5 percent slopes, in an area of rangeland. When described on September 8, 1995, the soil was dry throughout.

A1—0 to 4 inches; reddish brown (5YR 4/4) clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots throughout; common fine tubular pores; moderately acid (pH 5.9); 5 percent gravel; clear smooth boundary.

A2—4 to 9 inches; dark reddish brown (5YR 3/4) clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine and medium roots; few fine tubular pores; slightly acid (pH 6.2); 10 percent gravel; abrupt smooth boundary.

Bt1—9 to 20 inches; dark reddish brown (5YR 3/4) clay, dark reddish brown (5YR 3/4) moist; strong fine and medium prismatic structure; very hard, firm, sticky and plastic; few fine and medium roots; many very fine tubular pores; many thin clay films on faces of peds and pressure faces; slightly acid (pH 6.3); 5 percent gravel; gradual smooth boundary.

Bt2—20 to 31 inches; dark reddish brown (5YR 3/4) clay, dark reddish brown (5YR 3/4) moist; weak fine and medium prismatic structure; very hard, firm, sticky and plastic; few fine and medium roots; many very fine tubular pores; many thin clay films on faces of peds and pressure faces; slightly acid (pH 6.3); 5 percent gravel; abrupt wavy boundary.

2BC1—31 to 39 inches; reddish brown (5YR 4/4) gravelly clay loam, dark reddish brown (5YR 3/4) moist; weak fine angular blocky structure; soft, very friable, slightly sticky and slightly plastic; few medium roots; common fine tubular pores; neutral (pH 6.8); 20 percent gravel; clear smooth boundary.

2BC2—39 to 52 inches; reddish brown (5YR 4/4) very cobbly sandy clay loam, dark reddish brown (5YR 3/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; many fine interstitial pores; neutral (pH 7.0); 40 percent gravel and 20 percent cobbles; clear smooth boundary.

3BC3—52 to 60 inches; reddish brown (5YR 4/4) very gravelly sandy loam, reddish brown (5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few roots; many fine interstitial pores; neutral (pH 7.3); 55 percent gravel and 5 percent cobbles.

Type location: Colusa County, California; about 1$^3/_4$ miles northwest of Stonyford, California; 2,550 feet north and 2,660 feet west of the southeast corner of section 31, T. 18 N., R. 6 W., MDB&M; 39 degrees, 23 minutes, 04 seconds north latitude and 122 degrees, 34 minutes, 08 seconds west longitude; USGS Stonyford, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 60 to 64 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 5 to 18 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15.

The A horizon has dry color of 10YR 5/6, 5/4, or 5/3; 7.5YR 5/4 or 4/4; or 5YR 5/4, 4/4, or 3/4. It has moist color of 10YR 4/4, 3/4, or 3/3; 7.5YR 3/4 or 3/3; or 5YR 3/4. The texture is clay loam. The content of gravel ranges from 0 to 15 percent. Reaction is moderately acid to neutral.

The Bt horizon has dry color of 5YR 5/6, 5/4, 4/4, or 3/4 or 7.5YR 5/6 or 4/6 and moist color of 5YR 4/6, 4/4, or 3/4 or 7.5YR 4/6. The texture is clay loam, clay, gravelly clay loam, gravelly clay, or gravelly sandy clay loam. The content of clay is 35 to 55 percent clay in the upper part of the horizon. The content of rock fragments is 5 to 35 percent, including 0 to 15 percent cobbles. Reaction is moderately acid to neutral.

The BC horizon has dry color of 5YR 4/4 or 7.5YR 4/4 and moist color of 5YR 4/4 or 3/4 or 7.5YR 4/4 or 3/4. The texture is gravelly loamy sand, very gravelly loamy sand, gravelly sandy loam, very gravelly sandy loam, gravelly loam, or very gravelly loam. In some pedons this horizon has discontinuous, weak cementation. Reaction is slightly acid to slightly alkaline.

Corval Series

The Corval series consists of very deep, well drained soils on nearly level high flood plains in narrow upland valleys and on alluvial fans. These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 3 percent. The mean annual precipitation is 14 to 22 inches, and the mean annual air temperature is 57 to 63 degrees F.

Taxonomic class: Fine-silty, mixed, superactive, thermic Pachic Haploxerolls

Typical Pedon

Corval loam, 0 to 3 percent slopes, on an east-facing slope of 1 percent, under annual grasses, and at an elevation of 250 feet. When described on October 5, 1992, the soil was dry to a depth of 50 inches and moist below that depth.

A—0 to 8 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; slightly acid (pH 6.2); abrupt smooth boundary.

Bw1—8 to 24 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine and few fine tubular pores; slightly acid (pH 6.3); clear smooth boundary.

Bw2—24 to 36 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; moderate fine angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; slightly acid (pH 6.5); clear smooth boundary.

Bw3—36 to 46 inches; dark yellowish brown (10YR 4/4) clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many fine tubular pores; neutral (pH 6.6); clear smooth boundary.

Bw4—46 to 60 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; moderate fine angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; neutral (pH 6.6); clear smooth boundary.

Bw5—60 to 70 inches; dark yellowish brown (10YR 4/4) clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine tubular pores; neutral (pH 6.8).

Type location: Colusa County, California; about 7 1/2 miles southwest of Williams, California; 2,900 feet west and 1,500 feet north of the southeast corner of section 16, T. 14 N., R. 3 W.; 39 degrees, 03 minutes, 50 seconds north latitude and 122 degrees, 11 minutes, 50 seconds west longitude; USGS Cortina Creek, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 59 to 63 degrees F. The soil moisture control section, from a depth of 6 to 17 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The weighted average clay content in the 10- to 40-inch textural control section ranges from 27 to 35 percent.

The A horizon has dry color of 10YR 5/3 or 4/3 and moist color of 10YR 3/3 or 3/2. The texture is loam or clay loam. Reaction is slightly acid.

The upper part of the Bw horizon, to a depth of at least 20 inches, has dry color of 10YR 4/3 and moist color of 10YR 3/3, and the lower part has dry color of 10YR 5/4, 4/4, or 4/3 and moist color of 10YR 4/4, 3/4, or 3/3. This horizon is silty clay loam or clay loam. Reaction is slightly acid or neutral.

Dubakella Series

The Dubakella series consists of moderately deep, well drained soils on mountains. These soils formed in residuum weathered from serpentinitic rocks. Slope ranges from 15 to 50 percent. The mean annual precipitation is 35 to 50 inches, and the mean annual air temperature is 48 to 59 degrees F.

Taxonomic class: Clayey-skeletal, magnesic, mesic Mollic Haploxeralfs

Typical Pedon

Dubakella clay loam, in an area of Okiota-Dubakella-Henneke complex, 15 to 50 percent slopes, chaparral. When described on August 16, 1996, the soil was dry throughout.

A—0 to 3 inches; very dark brown (7.5YR 2.5/2) gravelly clay loam, very dark brown (7.5YR 2.5/2) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; few very fine interstitial pores; 20 percent gravel; neutral (pH 7.0); abrupt smooth boundary.

Bt—3 to 10 inches; dark brown (7.5YR 3/4) very gravelly clay, dark brown (7.5YR 3/4) moist; strong medium and coarse angular blocky structure; hard, firm, moderately sticky and moderately plastic; few medium roots; few very fine interstitial pores; few pressure faces on peds; many thin clay films on faces of peds; 35 percent gravel; neutral (pH 7.0); clear smooth boundary.

Btss1—10 to 16 inches; dark yellowish brown (10YR 3/4) very gravelly clay, dark yellowish brown (10YR 3/4) moist; strong medium and coarse angular blocky structure; hard, firm, moderately sticky and moderately plastic; few medium roots; few very fine interstitial pores; many pressure faces on peds; common intersecting slickensides; many thin clay films on faces of peds; 35 percent gravel; neutral (pH 7.3); abrupt smooth boundary.

Btss2—16 to 26 inches; dark yellowish brown (10YR 4/4) very gravelly clay, dark yellowish brown (10YR 3/4) moist; strong coarse angular blocky structure; hard, firm, moderately sticky and moderately plastic; few medium roots; few very fine interstitial pores; few pressure faces on peds; common intersecting slickensides; common thin clay films on faces of peds; 35 percent gravel; neutral (pH 7.3); abrupt smooth boundary.

R—26 inches; hard peridotite rock.

Type location: Colusa County, California; about 6 miles southwest of Leesville, California; 2,600 feet east and 100 feet north of the southwest corner of section 23, T. 15 N., R. 6 W., MDB&M; 39 degrees, 07 minutes, 34 seconds north latitude and 122 degrees, 29 minutes, 03 seconds west longitude; USGS Leesville, California, topographical quadrangle.

Range in Characteristics

About 30 percent of the surface is covered with gravel and cobbles. The depth to hard peridotite bedrock ranges from 20 to 40 inches. The mean annual soil temperature is 50 to 52 degrees F. The soil moisture control section, from a depth of 8 to 28 inches, is dry in all parts from June 1 to October 31 and moist in some part the rest of the year.

The A horizon has dry color of 7.5YR 2.5/2 and moist color of 7.5YR 2.5/2. The texture is gravelly clay loam. The content of rock fragments is 15 to 35 percent. Reaction is neutral.

The B horizon has dry color of 7.5YR 3/4 or 10YR 3/4 or 4/4 and moist color of 7.5YR 3/4 or 10YR 3/4. The texture is very gravelly clay. The content of rock fragments is 35 to 65 percent. Reaction is neutral.

Eastpark Series

The Eastpark series consists of very deep, well drained soils on alluvial fan terraces. These soils formed in alluvium derived from serpentinitic rocks. Slope ranges from 0 to 2 percent. The mean annual precipitation is 20 to 24 inches, and the mean annual air temperature is 57 to 61 degrees F.

Taxonomic class: Clayey-skeletal, magnesic, thermic Mollic Haploxeralfs

Typical Pedon

Eastpark clay loam, 0 to 2 percent slopes, in an area of rangeland. When described on November 2, 1995, the soil was dry throughout.

A—0 to 7 inches; brown (7.5YR 4/4) clay loam, dark brown (7.5YR 3/4) moist; strong medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common fine interstitial pores; 5 percent gravel; neutral (pH 6.7); clear smooth boundary.

Bt—7 to 15 inches; dark brown (7.5YR 3/4) gravelly clay loam, dark brown (7.5YR 3/4) moist; strong medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common fine interstitial pores; very few clay films on faces of peds; 15 percent gravel and 5 percent cobbles; neutral (pH 7.0); clear smooth boundary.

BCt—15 to 26 inches; brown (7.5YR 4/4) very gravelly clay, dark brown (7.5YR 3/4) moist; massive; hard, friable, sticky and plastic; few very fine interstitial pores; few clay films on rock fragments; 50 percent gravel and 5 percent peridotite cobbles; neutral (pH 7.2); clear smooth boundary.

C1—26 to 45 inches; light yellowish brown (2.5Y 6/3) extremely gravelly clay loam, olive brown (2.5Y 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine interstitial pores; 65 percent gravel and 5 percent peridotite cobbles; neutral (pH 7.5); abrupt smooth boundary.

C2—45 to 54 inches; light yellowish brown (2.5Y 6/3) loam, light olive brown (2.5Y 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine interstitial pores; 10 percent peridotite gravel; slightly alkaline (pH 7.5); abrupt smooth boundary.

C3—54 to 60 inches; light yellowish brown (2.5Y 6/3) extremely gravelly sandy clay loam, light olive brown (2.5Y 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine interstitial pores; 60 percent peridotite gravel; slightly alkaline (pH 7.5).

Type location: Colusa County, California; about 1 mile south and 3/4 mile west of the southern dam of East Park Reservoir; 2,150 feet west and 1,500 feet south of the northeast corner of section 9, T. 17 N., R. 6 W., MDB&M; 39 degrees, 20 minutes, 38 seconds north latitude and 122 degrees, 31 minutes, 55 seconds west longitude; USGS Gilmore Peak, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 58 to 63 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 5 to 15 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15.

The A horizon has dry color of 10YR 5/4 or 4/4 or 7.5YR 4/4 or 3/4 and moist color of 10YR 3/4 or 7.5YR 3/4 or 3/3. The texture is clay loam or gravelly clay loam. The content of rock fragments is 0 to 35 percent, including 0 to 10 percent cobbles. Reaction is neutral.

The Bt horizon has dry color of 7.5YR 4/4, 4/3, or 3/4 and moist color of 7.5YR 3/4 or 3/3. The texture is gravelly clay loam, gravelly sandy clay loam, very gravelly sandy clay loam, very gravelly clay loam, very gravelly clay, extremely gravelly sandy clay loam, extremely gravelly clay loam, or extremely gravelly clay. The content of rock fragments is 35 to 65 percent, including 5 to 15 percent cobbles. Reaction is neutral or slightly alkaline.

The C horizon has dry color of 2.5Y 6/3 and moist color of 2.5Y 5/3 or 4/3. The texture is very gravelly loam, very gravelly clay loam, very gravelly sandy clay loam, extremely gravelly loam, extremely gravelly clay loam, or extremely gravelly sandy clay loam. The content of rock fragments is 35 to 70 percent, including 0 to 10 percent cobbles. Reaction is slightly alkaline.

Endoaquolls

Endoaquolls consist of very deep, very poorly drained soils in meadows. These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 45 to 50 inches, and the mean annual air temperature is 46 to 50 degrees F.

Taxonomic class: Endoaquolls

Typical Pedon

Endoaquolls, 0 to 2 percent slopes, frequently ponded. When described on July 19, 1995, the soil was moist and had a water table at a depth of 55 inches.

A1—0 to 4 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine interstitial pores; common fine distinct dark yellowish brown (10YR 3/4) (moist) accumulations of iron; slightly acid (pH 6.2); clear smooth boundary.

A2—4 to 15 inches; grayish brown (10YR 5/2) loam, very dark gray (10YR 3/1) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common very fine and fine interstitial pores; many fine distinct dark yellowish brown (10YR 4/4) (moist) accumulations of iron; slightly acid (pH 6.5); clear smooth boundary.

2Bw1—15 to 24 inches; grayish brown (10YR 5/2) silty clay loam, very dark gray (10YR 3/1) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common very fine and fine interstitial pores; many fine distinct dark yellowish brown (10YR 4/4) (moist) accumulations of iron; few very fine and fine manganese concretions; slightly acid (pH 6.5); abrupt smooth boundary.

2Bw2—24 to 40 inches; pale brown (10YR 6/3) clay loam, mixed brown (10YR 4/3) and dark gray (10YR 4/1) moist; weak fine angular blocky structure; slightly hard, very friable, sticky and plastic; few fine interstitial pores; few very fine manganese concretions; 2 percent gravel; moderately alkaline (pH 8.0); clear smooth boundary.

3C1—40 to 55 inches; pale brown (10YR 6/3) gravelly loam, dark gray (10YR 4/1) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine interstitial pores; common coarse dark yellowish brown (10YR 3/4) (moist) iron accumulations; 30 percent gravel; moderately alkaline (pH 8.0); clear smooth boundary.

3C2—55 to 60 inches; dark brownish gray (10YR 6/2) gravelly loam, greenish gray (10BG 5/1) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine interstitial pores; common medium dark yellowish brown (10YR 4/6) (moist) iron accumulations; 20 percent gravel; moderately alkaline (pH 8.0).

Type location: Colusa County, California; about 10$^1/_2$ miles west of Stonyford, California; 2,700 feet north and 950 feet west of the southeast corner of section 24, T. 17 N., R. 8 W., MDB&M; 39 degrees, 18 minutes, 43 seconds north latitude and 122 degrees, 42 minutes, 16 seconds west longitude; USGS Fouts Springs, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 46 to 50 degrees F. The soil moisture control section, from a depth of 7 to 20 inches, is dry in all parts from August 1 to October 1 and moist in some or all parts from October 15 to July 15.

The A horizon has dry color of 10YR 5/2 or 4/1 and moist color of 10YR 3/2, 3/1, or 2/1. The texture is silt loam or loam. Reaction is moderately acid or slightly acid.

The 2Bw horizon has dry color of 10YR 6/3, 6/2, or 7/1 and moist color of 10YR 4/3, 4/1, 5/2, 5/1, or 4/4. The texture is clay loam or silty clay loam. Reaction is moderately acid to moderately alkaline.

The 3C horizon has dry color of 10YR 6/3 or 6/2 and moist color of 10YR 4/1 or 10BG 5/1. The texture is gravelly loam. Reaction is moderately acid to moderately alkaline.

Etsel Series

The Etsel series consists of very shallow, somewhat excessively drained soils on mountain side slopes. These soils formed in residuum weathered from sandstone and shale. Slope ranges from 30 to 75 percent. The mean annual precipitation is 30 to 50 inches, and the mean annual air temperature is 52 to 57 degrees F.

Taxonomic class: Loamy-skeletal, mixed, active, nonacid, mesic Lithic Xerorthents

Typical Pedon

Etsel gravelly sandy loam, in an area of Etsel-Maymen-Marpa association, 30 to 50 percent slopes, chaparral. When described on September 4, 1980, the soil was dry throughout.

A1—0 to 3 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 20 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

A2—3 to 10 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; 45 percent gravel; moderately acid (pH 5.8); abrupt wavy boundary.

R—10 inches; highly fractured metasedimentary sandstone and shale.

Type location: Colusa County, California; about 3 miles southeast of Cedar Camp Campground, along Mendocino National Forest Service Roads 17N02 and M5, east on Road 17N02 approximately 3 1/2 miles; 600 feet west and 500 feet north of the southeast corner of section 10, T. 17 N., R. 7 W., MDB&M; 39 degrees, 14 minutes, 47 seconds north latitude and 122 degrees, 37 minutes, 12 seconds west longitude; USGS Bartlett Springs, California, topographic quadrangle.

Range in Characteristics

The thickness of the solum and the depth to bedrock range from 4 to 10 inches. The mean annual soil temperature is 56 to 59 degrees F. The soil moisture control section, from a depth of 8 to 10 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year.

The A horizon has dry color of 10YR 6/3, 6/4, or 7/4 or 7.5YR 6/4 or 7/4 and moist color of 10YR 5/4, 4/4, or 3/4 or 7.5YR 5/4 or 4/4. The content of gravel ranges from 15 to 35 percent in the A1 horizon and from 35 to 50 percent in the A2 horizon. The texture is gravelly sandy loam, very gravelly loam, or very gravelly sandy loam. Reaction is slightly acid or moderately acid.

Fouts Series

The Fouts series consists of moderately deep, well drained soils on mountain side slopes. These soils formed in residuum weathered from schist and shale. Slope ranges from 15 to 50 percent. The mean annual precipitation is 25 to 45 inches, and the mean annual air temperature is 48 to 60 degrees F.

Taxonomic class: Clayey-skeletal, mixed, superactive, thermic Ultic Argixerolls

Typical Pedon

Fouts gravelly loam, in a wooded area of Fouts-Yorkville-Squawrock association, 15 to 50 percent slopes. When described on September 3, 1980, the soil was dry to a depth of 18 inches and slightly moist below that depth.

A—0 to 6 inches; gray (10YR 5/1) gravelly loam, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine interstitial pores; 20 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt1—6 to 12 inches; dark gray (10YR 4/1) very gravelly clay, very dark gray (10YR 3/1) moist; strong medium angular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; common very fine interstitial pores; 35 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt2—12 to 18 inches; dark gray (10YR 4/1) very gravelly clay, very dark gray (10YR 3/1) moist; strong medium angular blocky structure; few very fine roots; few very fine interstitial pores; 35 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt3—18 to 26 inches; dark gray (10YR 4/1) very gravelly clay, very dark gray (10YR 3/1) moist; strong medium angular blocky structure; few very fine roots; few very fine interstitial pores; 35 percent gravel; neutral (pH 7.0); abrupt wavy boundary.

R—26 inches; hard, dark schist.

Type location: Colusa County, California; about 1 1/2 miles northeast of Fouts Springs, California; 1,800 feet north and 1,200 feet west of the southeast corner of section 32, T. 18 N., R. 7 W., MDB&M; 39 degrees, 22 minutes, 07 seconds north latitude and 122 degrees, 39 minutes, 30 seconds west longitude; USGS Fouts Springs, California, topographic quadrangle.

Range in Characteristics

The thickness of the solum and the depth to bedrock range from 20 to 40 inches. The mean annual soil temperature is 58 to 61 degrees F. The soil moisture control section, from a depth of 6 to 20 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year.

The A horizon has dry color of 10YR 4/2, 5/1, 5/2, or 5/3 or 2.5Y 5/2 and moist color of 10YR 2/2, 3/1, 3/2, or 3/3 or 2.5Y 3/2. The texture is gravelly loam. Reaction is slightly acid to slightly alkaline.

The Bt horizon has dry color of 10YR 5/1, 5/2, 5/3, 5/4, 4/1, 4/2, or 4/3 or 2.5Y 5/2 or 5/3 and moist color of 10YR 3/1, 3/2, 3/3, 3/4, 4/1, or 4/4 or 2.5Y 3/2, 4/2, or 4/4. The texture is very gravelly clay or very gravelly clay loam. The content of clay ranges from 35 to 50 percent. Reaction is slightly acid to slightly alkaline.

Freezeout Series

The Freezeout series consists of moderately deep, well drained soils on mountain side slopes. These soils formed in residuum weathered from schist and metasedimentary rocks. Slope ranges from 30 to 75 percent. The mean annual precipitation is 50 to 70 inches, and the mean annual air temperature is 43 to 48 degrees F.

Taxonomic class: Loamy-skeletal, mixed, superactive, frigid Humic Dystroxerepts

Typical Pedon

Freezeout very gravelly sandy loam, in a forested area of Freezeout-Yollabolly complex, 30 to 50 percent slopes.

Oi—0 to 1 inch; decomposed and partially decomposed conifer litter consisting of twigs, bark, needles, and cones.

A—1 to 5 inches; dark grayish brown (10YR 4/2) very gravelly sandy loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine and few medium and coarse roots; many very fine and fine interstitial pores; 45 percent gravel and 10 percent cobbles; moderately acid (pH 5.7); clear wavy boundary.

Bw1—5 to 16 inches; brown (10YR 4/3) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many fine, common medium, and few coarse roots; many very fine and fine interstitial pores; 30 percent gravel and 10 percent cobbles; moderately acid (pH 5.6); gradual wavy boundary.

Bw2—16 to 25 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; weak subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 40 percent gravel and 15 percent cobbles; strongly acid (pH 5.4); abrupt irregular boundary.

R—25 inches; hard, fractured metasedimentary rocks.

Type location: Colusa County, California; in Mendocino National Forest, about 800 feet east of the Lake County line, 450 feet downslope from Road 16N03, at a point about 1/2 mile south of its junction with the Horse Glade turnoff; 2,650 feet south and 100 feet west of the northeast corner of section 2, T. 16 N., R. 8 W., MDB&M; 39 degrees, 15 minutes, 57 seconds north latitude and 122 degrees, 43 minutes, 12 seconds west longitude; USGS Fouts Springs, California, topographic quadrangle.

Range in Characteristics

The depth to lithic contact is 20 to 40 inches. The mean annual soil temperature is 44 to 47 degrees F. The soil temperature exceeds 41 degrees F from March 15 to November 15 and exceeds 47 degrees F from April 15 to October 15. The umbric epipedon is

10 to 20 inches thick. The soil moisture control section, from a depth of 12 to 25 inches, is dry in all parts from late July to early October and moist in all parts from December 15 to May 30. The solum is slightly acid to very strongly acid, and base saturation ranges from 35 to 50 percent. The particle-size control section (from a depth of 10 to 25 inches) ranges from 10 to 18 percent clay.

The A horizon has dry color of 10YR 5/4, 5/3, or 4/2 and moist color of 10YR 3/3, 3/2, or 2/2. The texture is very gravelly sandy loam. The content of rock fragments ranges from 20 to 55 percent, including 0 to 10 percent stones and cobbles and 20 to 45 percent gravel.

The B horizon has dry color of 10YR 6/3, 6/4, 5/4, or 4/3 or 7.5YR 6/4 or 5/4 and moist color of 10YR 5/4, 4/4, 4/3, 3/4, or 3/2 or 7.5YR 5/4 or 4/4. The texture is very gravelly sandy loam, very gravelly loam, or extremely gravelly sandy loam. The content of rock fragments ranges from 35 to 80 percent, including 0 to 20 percent stones and cobbles and 35 to 65 percent gravel.

Goldeagle Series

The Goldeagle series consists of deep, well drained soils on dissected terrace side slopes. These soils formed in material weathered from sandstone, siltstone, or shale. Slope ranges from 30 to 75 percent. The mean annual precipitation is 16 to 18 inches, and the mean annual air temperature is 58 to 60 degrees F.

Taxonomic class: Fine, mixed, superactive, thermic Typic Haploxeralfs

Typical Pedon

Goldeagle sandy clay loam, in an area of Goldeagle-Positas-Balcom complex, 30 to 75 percent slopes; described on November 19, 1990.

A—0 to 3 inches; grayish brown (10YR 5/2) sandy clay loam, brown (10YR 4/3) moist; strong thick platy structure; hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial and tubular and few fine tubular pores; moderately acid (pH 5.7); abrupt wavy boundary.

Bt1—3 to 9 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; strong coarse subangular blocky structure parting to strong coarse prismatic; hard, friable, sticky and plastic; many very fine roots; common very fine tubular and interstitial and few fine tubular pores; few thin clay films on faces of peds; slightly acid (pH 6.1); clear smooth boundary.

Bt2—9 to 25 inches; brown (10YR 4/3) clay loam, brown (10YR 4/3) moist; strong coarse prismatic structure parting to strong coarse subangular blocky; very hard, friable, sticky and plastic; common very fine and few fine roots; common very fine interstitial and few very fine tubular pores; common thin clay films lining pores and on faces of peds; slightly acid (pH 6.5); clear smooth boundary.

Btk—25 to 33 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; strong coarse prismatic structure parting to strong coarse subangular blocky; hard, friable, sticky, and plastic; common very fine and few fine roots; common very fine interstitial and few very fine tubular pores; common moderately thick clay films lining pores and on faces of peds; strongly effervescent (6 percent calcium carbonate, HCl, 1 normal); common medium carbonates occurring as irregular soft masses and few medium carbonates occurring as rounded concretions; slightly alkaline (pH 7.4); abrupt wavy boundary.

2Ck1—33 to 49 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine interstitial and very fine and fine tubular pores; strongly effervescent (6 percent calcium carbonate, HCl, 1 normal); common carbonates occurring as fine filaments or threads and few fine carbonates occurring as rounded concretions; slightly alkaline (pH 7.8); abrupt wavy boundary.

2Ck2—49 to 59 inches; light gray (2.5Y 7/2) loam, light yellowish brown (2.5Y 6/4) moist; massive; hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular and interstitial pores; violently effervescent (12 percent calcium carbonate, HCl, 1 normal); many carbonates occurring as large seams on faces of peds; slightly alkaline (pH 7.8); clear smooth boundary.

2Cr—59 to 80 inches; light gray (2.5Y 7/2) siltstone; compact, massive, hard and brittle; few very fine roots along fracture planes; violently effervescent (5 percent calcium carbonate, HCl, 1 normal); common carbonates occurring as large seams along fracture planes; not effervescent in the weathered bedrock matrix.

Type location: Colusa County, California; about $8^1/_2$ miles southwest of Williams, California; 2,200 feet east and 600 feet south of the northeast corner of section 19, T. 14 N., R. 3 W., MDB&M; 39 degrees, 03 minutes, 20 seconds north latitude and 122 degrees, 13 minutes, 50 seconds west longitude; USGS Cortina Creek, California, topographic quadrangle.

Range in Characteristics

The depth to paralithic contact of soft siltstone, sandstone, or shale is 40 to 80 inches. The mean annual soil temperature is about 62 degrees F, and the soil temperature is above 47 degrees F the entire year. The soil moisture control section, from a depth of 4 to 12 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts from November 1 to May 31. The weighted average clay content in the textural control section, the top 20 inches of the argillic horizon, is 36 percent.

The A horizon has dry color of 10YR 4/3, 4/4, 5/2, 5/3, or 6/2 and moist color of 10YR 3/3, 3/4, 4/2, 4/3, or 4/4 or 2.5Y 4/2. In some pedons this horizon has moist value of 3 in the top 3 inches. The texture is sandy clay loam. The content of clay ranges from 20 to 35 percent. Reaction is moderately acid to neutral.

The Bt and Btk horizons have dry color of 10YR 4/3, 4/4, 5/2, 5/3, 5/4 or 6/3; 2.5Y 5/2 or 5/4; or 7.5YR 5/2, 5/4, or 4/4. They have moist color of 10YR 4/3, 4/4, or 5/3; 2.5Y 4/3 or 4/4; or 7.5YR 4/4 or 4/6. The texture is clay loam or clay. The content of clay ranges from 35 to 45 percent. Reaction is slightly acid to slightly alkaline. Carbonates may occur in the lower part.

The Ck horizon has dry color of 10YR 5/3, 5/2, 5/4, 6/3, or 6/4; 7.5YR 4/4; or 2.5YR 7/2. It has moist color of 10YR 5/4 or 4/4 or 2.5Y 4/3 or 6/4. The texture is sandy loam or loam. The content of clay ranges from 15 to 27 percent. Reaction is neutral to moderately alkaline.

The Cr is weathered, soft sandstone, siltstone, or shale.

Goulding Series

The Goulding series consists of shallow, somewhat excessively drained soils on mountain side slopes (figure 18). These soils formed in residuum derived from metasedimentary rocks. Slope ranges from 30 to 75 percent. The mean annual precipitation is 40 to 60 inches, and the mean annual air temperature is 46 to 54 degrees F.

Taxonomic class: Loamy-skeletal, mixed, active, mesic Lithic Dystroxerepts

Typical Pedon

Goulding gravelly loam, in a forested area of Neuns-Marpa-Goulding complex, 30 to 50 percent slopes. When described on July 18, 1995, the soil was dry throughout.

Oi—0 to 1 inch; manzanita and live oak litter.

A—1 to 4 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine interstitial pores; 30 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

Bw1—4 to 8 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common fine and medium and few coarse roots; many very fine interstitial pores; 55 percent gravel; moderately acid (pH 5.8); clear smooth boundary.

Bw2—8 to 13 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium, common coarse, and few very coarse roots; many very fine interstitial pores; 5 percent cobbles and 50 percent gravel; strongly acid (pH 5.5); abrupt wavy boundary.

R—13 inches; hard, fractured metasedimentary bedrock with soil material in cracks.

Type location: Colusa County, California; about 75 feet down the south slope from Mendocino National Forest Service Road 18N07, 210 feet east of the intersection of Forest Service Roads 18N07 and 17N02; 250 feet north and 1,000 feet west of the southeast corner of section 31, T. 17 N., R. 7 W., MDB&M; 39 degrees, 16 minutes, 40 seconds north latitude and 122 degrees, 40 minutes, 39 seconds west longitude; USGS Fouts Springs, California, topographic quadrangle.

Range in Characteristics

The thickness of the solum and the depth to bedrock are 10 to 20 inches. The mean annual soil temperature is 49 to 55 degrees F. The soil moisture control section, from a depth of 6 to 12 inches, is dry in all parts from June 1 to October 31 and moist in some part the rest of the year.

The A horizon has dry color of 10YR 5/3, 5/4, 6/3, or 6/4 and moist color of 10YR 3/3, 3/4, 4/3, or 4/4. The content of gravel is 25 to 55 percent. Reaction is moderately acid or strongly acid.

The B horizon has dry color of 10YR 6/3, 6/4, or 6/6 and moist color of 10YR 3/4, 3/3, or 4/4. The texture is very gravelly sandy loam, extremely gravelly sandy loam, very gravelly loam, or extremely gravelly loam. The content of gravel is 35 to 70 percent. Reaction is moderately acid or strongly acid.

Grandbend Series

The Grandbend series consists of very deep, somewhat poorly drained soils on nearly level flood plains. These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 16 inches, and the mean annual air temperature is 60 to 62 degrees F.

Taxonomic class: Coarse-loamy, mixed, superactive, thermic Oxyaquic Haploxerolls

Typical Pedon

Grandbend loam, 0 to 2 percent slopes, in a field of safflower stubble. When described on November 3, 1989, the soil was moist to a depth of 16 inches and slightly moist below that depth.

Ap—0 to 16 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine interstitial pores; neutral (pH 6.9); abrupt smooth boundary.

C1—16 to 27 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine interstitial pores; slightly alkaline (pH 7.4); gradual smooth boundary.

C2—27 to 44 inches; light brownish gray (2.5Y 6/2) sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine interstitial pores; few fine prominent light olive brown (2.5Y 5/6) accumulations of iron; slightly alkaline (pH 7.5); clear smooth boundary.

C3—44 to 54 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine interstitial pores; common medium prominent light olive brown (2.5Y 5/4) and light yellowish brown (2.5Y 6/4) accumulations of iron; slightly alkaline (pH 7.4); abrupt smooth boundary.

2Ab—54 to 64 inches; dark gray (10YR 4/1) silty clay loam, black (N 2/0) moist; weak fine subangular blocky structure parting to weak medium subangular blocky; hard, firm, slightly sticky and moderately plastic; common very fine roots; few very fine tubular pores; common fine prominent pale yellow (2.5Y 7/4) accumulations of iron; slightly alkaline (pH 7.3); clear smooth boundary.

2Bb—64 to 67 inches; gray (5Y 5/1) silty clay loam, very dark gray (5Y 3/1) moist; weak fine subangular blocky structure parting to weak medium subangular blocky; hard, firm, slightly sticky and moderately plastic; few very fine roots; few very fine tubular pores; few fine faint light yellowish brown (2.5Y 6/4) accumulations of iron; neutral (pH 7.2).

Type location: Colusa County, California; about 2$^{1}/_{4}$ miles southwest of Grimes, California; 1,250 feet east and 300 feet south of the northwest corner of section 15, T. 14 N., R. 1 E., MDB&M; 39 degrees, 03 minutes, 28 seconds north latitude and 121 degrees, 51 minutes, 07 seconds west longitude; USGS Tisdale Weir, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The soil temperature is above 47 degrees F the entire year. The soil moisture control section, from a depth of 6 to 18 inches, is dry in all parts from May 15 to October 31 and moist in some part from November 1 to May 15. The weighted average clay content in the textural control section, from a depth of 10 to 40 inches, is 8 to 17 percent.

The Ap horizon has dry color of 10YR 5/3 or 5/2 or 2.5 5/2 and moist color of 10YR 3/3 or 3/2 or 2.5Y 3/2. Reaction is neutral.

The C horizon has dry color of 10YR 6/3 or 2.5Y 6/2 and moist color of 10YR 3/3, 4/2, or 5/3; 2.5Y 5/2, 3/2, 4/2, or 4/4; or 5Y 2.5/2. The texture is silt loam, loam, or sandy loam. Reaction is slightly alkaline.

The 2Ab horizon has dry color of 10YR 4/1, 5/1, or 6/1 or 2.5Y 6/2 and moist color of 10YR 2/1, 3/1, or 4/1; N 2/0; or 2.5Y 3/2. The texture is silt loam, silty clay loam, or silty clay. Reaction is slightly alkaline or neutral.

The 2Bb horizon has dry color of 5Y 5/1 or 2.5Y 6/2 and moist color of 5Y 3/1 or 2.5Y 4/2. The texture is silty clay loam or silty clay. Reaction is neutral.

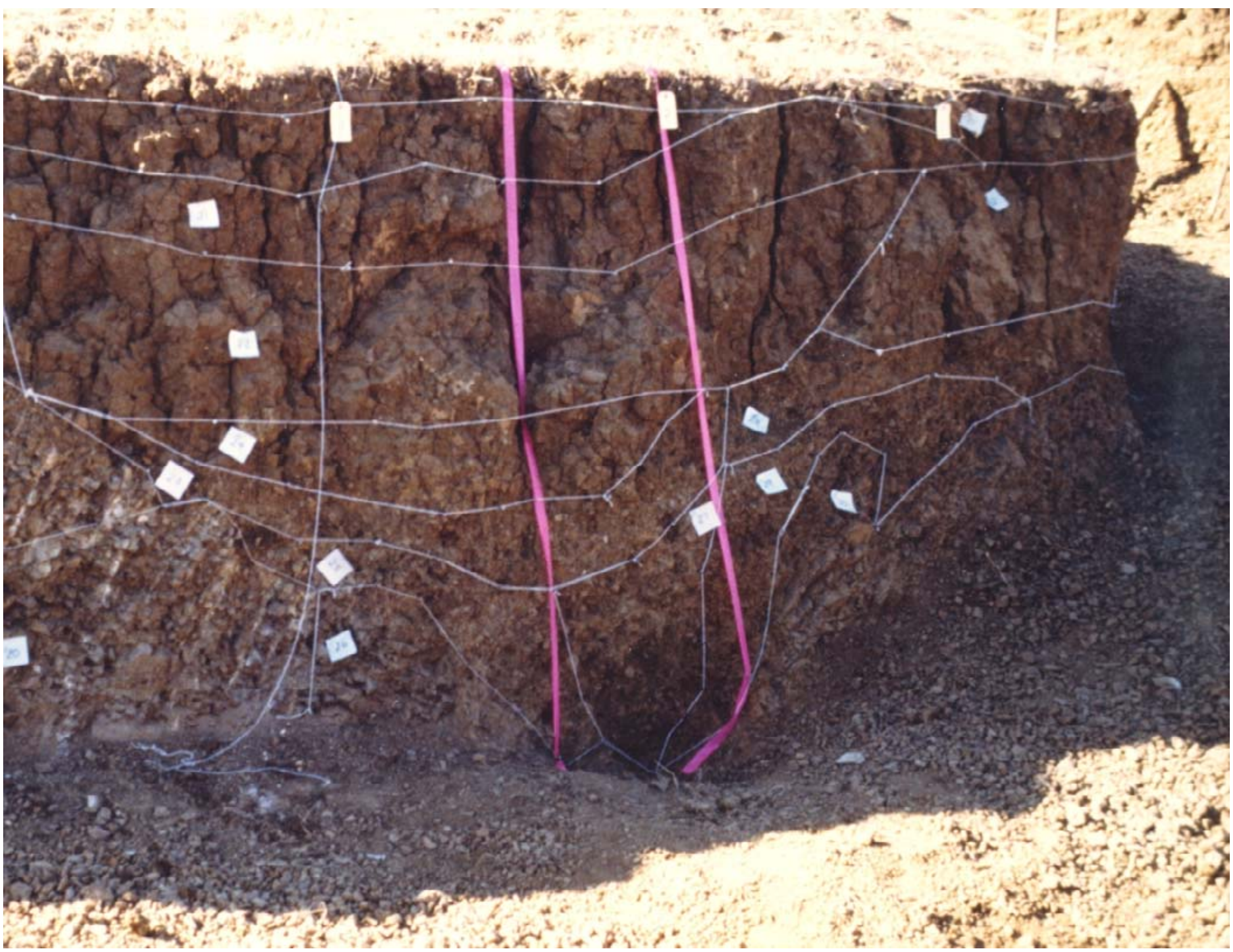

Figure 12.—An area of the deep Altamont and moderately deep Sehorn soils along a research trench near Sites. Vertical cracks and smooth slickensides are evident. Altamont soils are between the flagging.

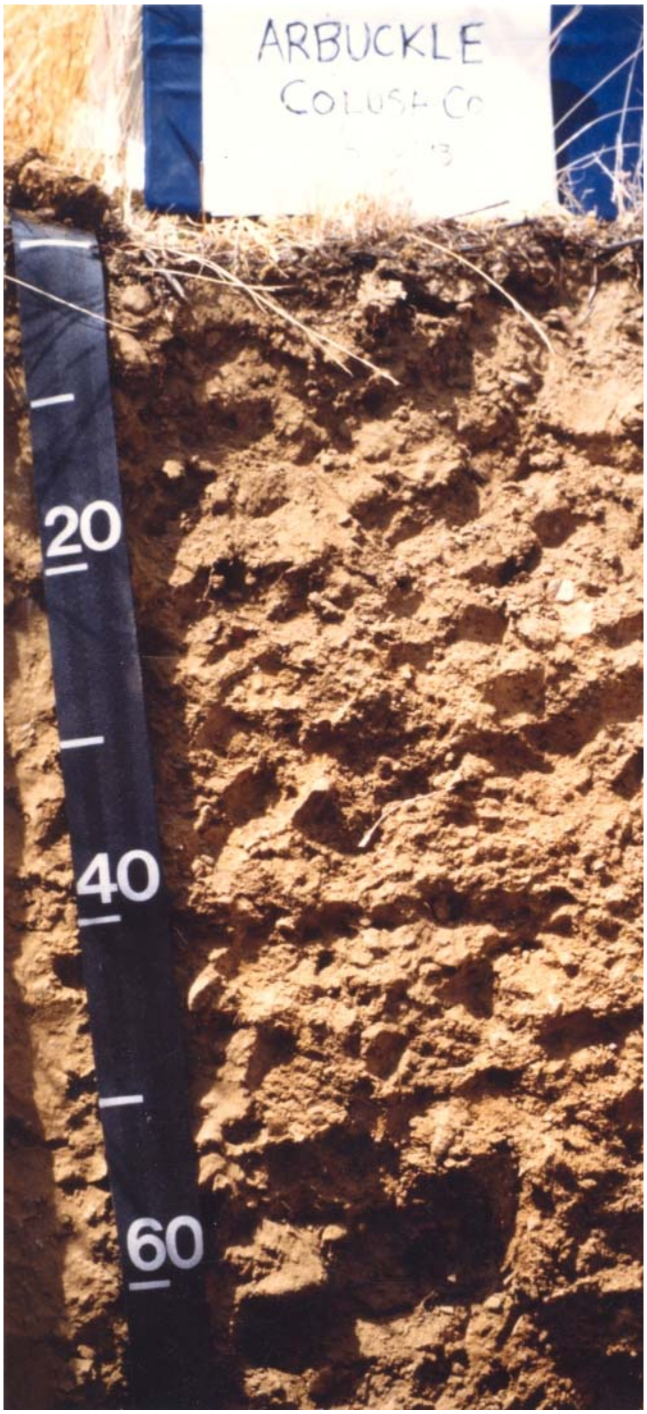

Figure 13.—Profile of the very deep Arbuckle soils, which have gravel throughout. The scale is in centimeters.

Figure 14.—Road cut in an area of the very deep Bamtush soils. The spade is about 40 inches long.

Figure 15.—Profile of the very deep Clear Lake soils, which have deep vertical cracks and slickensides. The scale is in feet.

Figure 16.—Profile of the very deep Colusa soils, which have prismatic structure in the upper part of the subsoil. The scale is in feet.

Figure 17.—Profile of Contra Costa soils, which are moderately deep over sandstone. The scale is in feet.

Figure 18.—Profile of Goulding soils, which are shallow over metasedimentary bedrock. The knife is 8 inches long.

Figure 19.—Profile of Millsholm soils, which are shallow over sandstone. The knife is 8 inches long.

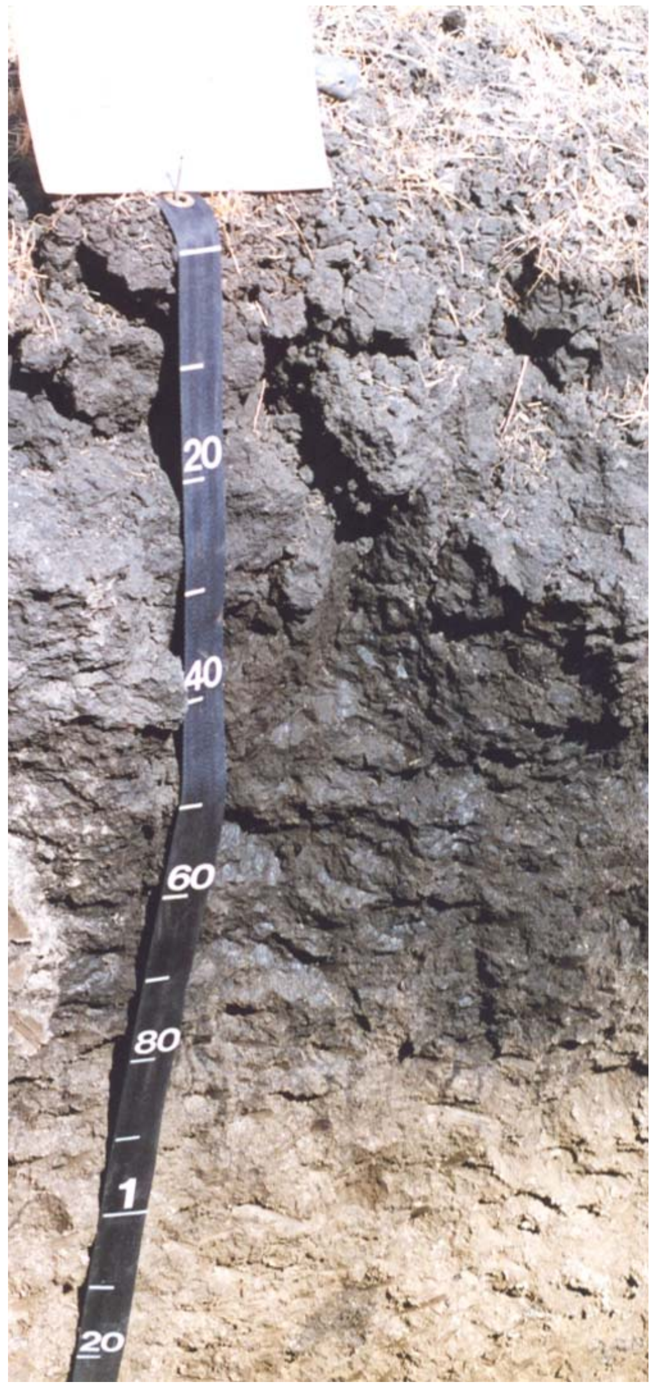

Figure 20.—Profile of the very deep Venado soils in Bear Valley. The scale is in centimeters.

Figure 21.—Profile of the very deep Westfan soils near Williams. The scale is in feet.

Figure 22.—The very deep Willows soils along a research trench. Exposed slickensides appear as smooth areas in the subsoil.

Guenoc Series

The Guenoc series consists of moderately deep, well drained soils on side slopes on mountains and foothills. These soils formed in residuum weathered from basalt. Slope ranges from 5 to 50 percent. The mean annual precipitation is 22 to 28 inches, and the mean annual air temperature is 58 to 60 degrees F.

Taxonomic class: Fine, kaolinitic, thermic Typic Rhodoxeralfs

Typical Pedon

Guenoc loam, in an area of Stonyford-Guenoc loams, 30 to 50 percent slopes, rangeland. When described on July 16, 1980, the soil was dry to a depth of 11 inches and moist below that depth.

A1—0 to 4 inches; reddish brown (5YR 4/4) loam, dark reddish brown (5YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many very fine roots; common fine and medium interstitial pores; neutral (pH 7.0); clear wavy boundary.

A2—4 to 9 inches; reddish brown (2.5YR 4/4) loam, reddish brown (2.5YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common very fine and few fine roots; common fine and medium interstitial pores; 10 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt1—9 to 18 inches; reddish brown (2.5YR 4/4) clay loam, dark reddish brown (2.5YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common thin clay films on faces of peds and lining pores; few fine and very fine roots; common fine interstitial pores; 10 percent gravel; neutral (pH 6.8); gradual wavy boundary.

Bt2—18 to 31 inches; reddish brown (2.5YR 5/4) clay, reddish brown (2.5YR 4/4) moist; strong medium and coarse subangular blocky structure; hard, friable, sticky and plastic; few moderately thick and common thin clay films on faces of peds and lining pores; few fine roots; common fine interstitial pores; 5 percent gravel; neutral (pH 6.8); abrupt irregular boundary.

R—31 inches; hard, fractured basalt; some soil material in fractures 2 to 4.5 inches long and 0.05 to 0.3 inch wide.

Type location: Colusa County, California; about 1 1/2 miles west of Stonyford, California; 300 feet north and 700 feet west of the southeast corner of section 25, T. 18 N., R. 7 W., MDB&M; 39 degrees, 22 minutes, 43 seconds north latitude and 122 degrees, 34 minutes, 51 seconds west longitude; USGS Stonyford, California, topographic quadrangle.

Range in Characteristics

The thickness of the solum and the depth to bedrock are 20 to 40 inches. The particle-size control section, from a depth of 9 to 29 inches, has 35 to 45 percent clay and less than 35 percent gravel. Reaction is neutral throughout the profile. The mean annual soil temperature is 58 to 60 degrees F. The soil moisture control section, from a depth of 6 to 19 inches, is dry in all parts from June 1 to October 31 and moist in all or some parts the rest of the year.

The A horizon has dry color of 5YR 5/4, 5/3, 4/4, or 4/3 or 2.5YR 4/4 and moist color of 5YR 3/3 or 3/4 or 2.5YR 4/4. The texture is loam. The content of rock fragments ranges from 0 to 15 percent.

The Bt horizon has dry color of 2.5YR 5/4, 4/4, 4/3, or 3/4 and moist color of 2.5YR 3/4 or 4/4. The texture is clay loam, clay, gravelly clay loam, or gravelly clay.

Haploxererts

Haploxererts consist of deep or very deep, well drained soils on mountain side slopes. These soils formed in residuum and colluvium weathered from serpentinitic rocks. Slope ranges from 15 to 50 percent. The mean annual precipitation is 18 to 22 inches, and the mean annual air temperature is 58 to 60 degrees F.

Taxonomic class: Haploxererts

Typical Pedon

Haploxererts, 30 to 50 percent slopes, in an area of rangeland. When described on August 28, 1996, the soil was dry throughout.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; strong fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many fine interstitial pores; 5 percent gravel; slightly alkaline (pH 7.4); clear smooth boundary.

A2—5 to 15 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; strong coarse subangular blocky structure; hard, friable, moderately sticky and moderately plastic; common very fine and few fine roots; many fine interstitial pores; 5 percent cobbles and 10 percent gravel; slightly alkaline (pH 7.8); clear smooth boundary.

Bss—15 to 28 inches; dark grayish brown (2.5Y 4/2) clay, very dark grayish brown (2.5Y 3/2) moist; moderate coarse angular blocky structure; hard, firm, sticky and plastic; few very fine roots; few very fine interstitial pores; many intersecting slickensides on faces of peds; 5 percent cobbles and 5 percent gravel; slightly alkaline (pH 7.8); abrupt smooth boundary.

C1—28 to 39 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine interstitial pores; 5 percent cobbles and 25 percent gravel; moderately alkaline (pH 8.0); abrupt smooth boundary.

C2—39 to 52 inches; light olive gray (5Y 6/2) very gravelly loam, olive gray (5Y 4/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine interstitial pores; 5 percent cobbles and 35 percent gravel; moderately alkaline (pH 8.1); abrupt smooth boundary.

Cr—52 inches; highly weathered serpentinitic rock.

Type location: Colusa County, California; about 3/4 mile northwest of the intersection of Highway 16 and Highway 20 at the southern entrance to Bear Valley; 20 feet west and 1,900 feet north of the southeast corner of section 35, T. 14 N., R. 5 W., MDB&M; 39 degrees, 00 minutes, 52 seconds north latitude and 122 degrees, 22 minutes, 20 seconds west longitude; USGS Salt Canyon, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 58 to 63 degrees F. The depth to a highly weathered paralithic contact of serpentinitic rock ranges from 40 to 80 inches. The soil moisture control section, from a depth of 6 to 19 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts from November 1 to May 31. When the soils are dry, cracks form at the surface. The cracks are 1 to 2 centimeters wide and extend to a depth of about 25 inches.

The A horizon has dry color of 10YR 5/1 or 4/2, 2.5Y 4/2, or 5Y 5/1 or 5/2 and moist color of 10YR 3/2 or 3/1 or 5Y 3/1. The texture is clay loam. Reaction is slightly alkaline or moderately alkaline.

The Bss horizon has dry color of 10YR 5/1, 2.5Y 5/2 or 4/2, or 5Y 5/2 or 4/2 and moist color of 10YR 4/1, 2.5Y 3/2, or 5Y 4/2, 4/1, or 3/2. The texture is clay. Reaction is slightly alkaline or moderately alkaline.

The C horizon has dry color of 10YR 5/3, 2.5Y 6/2 or 5/2, or 5Y 6/2 and moist color of 10YR 3/3, 2.5Y 4/2 or 3/2, or 5Y 4/2. The texture is gravelly clay loam or very gravelly loam. Reaction is moderately alkaline.

Henneke Series

The Henneke series consists of shallow, well drained soils on mountain side slopes. These soils formed in residuum weathered from serpentinitic rocks. Slope ranges from 15 to 75 percent. The mean annual precipitation is 24 to 50 inches, and the mean annual air temperature is 48 to 60 degrees F.

Taxonomic class: Clayey-skeletal, magnesic, thermic Lithic Argixerolls.

Typical Pedon

Henneke sandy loam, in a wooded area of Okiota-Dubakella-Henneke complex, 15 to 30 percent slopes. When described on March 29, 1991, the soil was moist throughout.

Oi—0 to 1 inch; manzanita leaves and foothill pine needles, twigs, and branches.

A—1 to 4 inches; brown (7.5YR 4/3) sandy loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; many very fine interstitial pores; 10 percent angular peridotite gravel; neutral (pH 6.7); clear smooth boundary.

Bt1—4 to 7 inches; dark brown (7.5YR 3/3) extremely gravelly clay loam, dark brown (7.5YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few coarse roots; common very fine interstitial pores; 60 percent angular peridotite gravel; neutral (pH 7.0); clear smooth boundary.

Bt2—7 to 16 inches; brown (7.5YR 4/3) extremely gravelly clay, dark brown (7.5YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine interstitial pores; common thin clay films on faces of peds; 75 percent angular peridotite gravel; neutral (pH 7.0); clear abrupt boundary.

R—16 inches; hard, fractured peridotite.

Type location: Colusa County, California; about 2 miles north of Cold Springs Mountain; 2,400 feet west and 600 feet north of the southeast corner of section 23, T. 15 N., R. 6 W., MDB&M; 39 degrees, 07 minutes, 35 seconds and 122 degrees, 29 minutes, 30 seconds west longitude; USGS Wilbur Springs, California, topographic quadrangle.

Range in Characteristics

The depth to peridotite bedrock is 10 to 20 inches. In most pedons, 75 to 95 percent of the surface is covered with slightly weathered peridotite gravel and about 15 percent is covered with cobbles. The mean annual soil temperature is 48 to 62 degrees F. The soil moisture control section, from a depth of 6 to 19 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year.

The A horizon has dry color of 7.5YR 4/3 or 4/4, 5YR 2.5/2, or 2.5YR 3/4 and moist color of 7.5YR 3/3 or 3/2 or 5YR 2.5/2. The texture is sandy loam. The content of rock fragments ranges from 5 to 15 percent, by volume. In some pedons the horizon is gravelly, very gravelly, or cobbly. Reaction is moderately acid to neutral.

The Bt horizon has dry color of 7.5YR 3/2, 3/3, 4/3, or 4/4 or 5YR 3/3 and moist color of 7.5YR 3/2, 3/3, or 3/4 or 5YR 3/3 or 2.5/2. It is very gravelly clay loam, extremely gravelly clay loam, very gravelly clay, or extemely gravelly clay and has 35 to 50 percent clay. The content of weathered angular serpentinitic gravel ranges from 40 to 80 percent, by volume. Reaction is neutral or slightly alkaline.

Hillgate Series

The Hillgate series consists of very deep, well drained soils on old terraces. These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 9 percent. The mean annual precipitation is 14 to 22 inches, and the mean annual air temperature is 58 to 62 degrees F.

Taxonomic class: Fine, smectitic, thermic Typic Palexeralfs

Typical Pedon

Hillgate loam, 0 to 2 percent slopes, in an area of rangeland. When described on November 21, 1988, the soil was dry throughout.

A1—0 to 3 inches; yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; few fine distinct light brownish gray (10YR 6/2) iron depletions; slightly acid (pH 6.2); abrupt smooth boundary.

A2—3 to 11 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine and few fine tubular pores; common fine distinct light brownish gray (10YR 6/2) iron depletions; moderately acid (pH 5.6); clear smooth boundary.

A3—11 to 19 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, friable, slightly sticky, and slightly plastic; few very fine roots; common very fine and few fine tubular pores; common fine faint very pale brown (10YR 7/3) iron depletions; moderately acid (pH 5.6); abrupt smooth boundary.

2Bt1—19 to 38 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 3/4) moist; strong coarse prismatic structure; extremely hard, firm, moderately sticky and moderately plastic; few very fine roots; common very fine and few fine tubular pores; many moderately thick clay films; slightly acid (pH 6.2); clear smooth boundary.

2Bt2—38 to 53 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 3/4) moist; strong coarse prismatic structure; extremely hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; many moderately thick clay films; neutral (pH 7.2); clear smooth boundary.

2Bt3—53 to 63 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; many moderately thick clay films; slightly alkaline (pH 7.5); clear smooth boundary.

2Bt4—63 to 73 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; many moderately thick clay films; slightly alkaline (pH 7.4).

Type location: Colusa County, California; about $4^1/_2$ miles west of Maxwell, California; 2,400 feet south and 2,500 feet east of the northwest corner of section 2, T. 16 N., R. 4 W., MDB&M; 39 degrees, 16 minutes, 10 seconds north latitude and 121 degrees, 16 minutes, 20 seconds west longitude; USGS Sites, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The soil temperature is above 47 degrees F the entire year. The soil moisture control section is dry in all parts from May 15 to Oct. 31 and moist in some or all parts from November 1 to May 15.

The A horizon has dry color of 10YR 6/3, 6/4, 5/3, 5/4, or 7/2 or 7.5YR 5/4 and moist color of 10YR 4/3, 4/4, or 5/3 or 7.5YR 4/4. Bleaching occurs in the lower part of the A horizon, resulting in a of color difference of one chip. This horizon is loam or clay loam and is gravelly in some pedons. Scattered manganese accumulations are in the upper 10 inches. Reaction is moderately acid or slightly acid.

The Bt horizon has dry color of 7.5YR 4/6, 5/4, 5/5, 5/6, or 5/8 or 10YR 5/3, 5/4, 5/6, 5/8, or 6/3 and moist color of 7.5YR 3/4, 4/3, 4/4, 4/6, or 5/4 or 10YR 3/3, 3/4, 4/3, 4/4, 4/6, 5/4, or 5/6. The texture is clay loam or clay. This horizon has an abrupt upper boundary with an absolute clay increase of at least 15 percent. Reaction is slightly acid to moderately alkaline. The horizon has few very small white calcium carbonate masses that effervesce strongly. Base saturation is more than 75 percent in some part of the horizon.

Holillipah Series

The Holillipah series consists of very deep, somewhat excessively drained soils on flood plains. These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 16 inches, and the mean annual air temperature is 60 to 62 degrees F.

Taxonomic class: Sandy, mixed, thermic Typic Xerofluvents

Typical Pedon

Holillipah loamy sand, channeled, 0 to 2 percent slopes, under annual grasses and forbs (soil survey of Sutter County, California, 1988).

A—0 to 8 inches; pale brown (10YR 6/3) loamy sand, brown (10YR 4/3) moist; weak coarse granular structure; soft, loose, nonsticky and nonplastic; many very fine and fine interstitial pores; slightly acid (pH 6.5); clear smooth boundary.

C1—8 to 32 inches; white (10YR 8/1) sand, light gray (10YR 7/1) moist; massive; loose, nonsticky and nonplastic; many very fine and fine and common medium roots; many very fine and fine interstitial pores; neutral (pH 7.0); abrupt wavy boundary.

C2—32 to 35 inches; light yellowish brown (10YR 6/4) loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine interstitial pores; common medium distinct strong brown (7.5YR 4/6) masses of iron; neutral (pH 7.0); abrupt wavy boundary.

C3—35 to 47 inches; gray (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine tubular pores; many medium distinct brown (7.5YR 5/4) masses of iron; neutral (pH 7.0); gradual irregular boundary.

C4—47 to 61 inches; pale brown (10YR 6/3) loamy fine sand, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine tubular pores; neutral (pH 7.0).

Type location: Sutter County, California; about 6.5 miles south of Yuba City; 2,100 feet north and 3,000 feet east of the intersection of O'Banion Road and Garden Highway, in the New Helvetia Land Grant (not sectionalized), T. 14 N., R. 3 W., MDB&M; 39 degrees, 1 minute, 56 seconds north latitude and 121 degrees, 36 minutes, 25 seconds west longitude; USGS Olivehurst, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The 15- to 48-inch soil moisture control section is dry in all parts from May 15 to October 31 and moist in some or all parts from November 15 to May 1. The soils are commonly stratified with thick layers of sand, loamy fine sand, loamy sand, fine sandy loam, sandy loam, or silt loam. The particle-size control section is loamy sand or coarser sand. The content of organic carbon decreases irregularly with increasing depth. Reaction is slightly acid or neutral.

The A horizon has dry color of 10YR 6/3 or 6/2 and moist color of 10YR 4/3, 4/2, or 3/3. The texture is loamy sand or sandy loam.

The C horizon has dry color of 10YR 8/1, 7/2, 7/3, 6/3, 6/4, or 5/3 and moist color of 10YR 7/1, 7/2, 5/2, 5/3, 4/2, 4/3, 4/4, or 3/3.

Hustabel Series

The Hustabel series consists of very deep, moderately well drained soils on alluvial fans. These soils formed in alluvium derived from mixed sources. Slope is 0 to 1 percent. The mean annual precipitation is 14 to 16 inches, and the mean annual air temperature is 60 to 62 degrees F.

Taxonomic class: Coarse-loamy, mixed, superactive, thermic Cumulic Haploxerolls

Typical Pedon

Hustabel sandy loam, 0 to 1 percent slopes, under annual forbs and grasses. When described on May 19, 1987, the soil was moist to a depth of 20 inches and slightly moist from a depth 20 inches to a water table at a depth of 61 inches.

Ap1—0 to 3 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; few very fine tubular pores; neutral (pH 6.8); clear smooth boundary.

Ap2—3 to 13 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular pores; neutral (pH 6.9); abrupt wavy boundary.

A1—13 to 20 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak coarse subangular blocky structure; slightly hard, friable, very sticky and slightly plastic; many very fine roots; many very fine tubular pores; strongly effervescent; disseminated lime; moderately alkaline (pH 8.2); abrupt smooth boundary.

A2—20 to 31 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; massive; slightly hard, very friable, slightly sticky and nonplastic; many very fine roots; many very fine tubular pores; strongly effervescent; disseminated lime; strongly alkaline (pH 8.7); abrupt smooth boundary.

C1—31 to 35 inches; yellowish brown (10YR 5/4) and light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; hard, friable, very sticky and slightly plastic; many very fine roots; no pores; strongly effervescent; disseminated lime; strongly alkaline (pH 9.0); abrupt smooth boundary.

C2—35 to 40 inches; yellowish brown (10YR 5/4) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; few very fine tubular pores; strongly effervescent; disseminated lime; strongly alkaline (pH 8.8); abrupt smooth boundary.

C3—40 to 48 inches; light yellowish brown (10YR 6/4) silty clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, very sticky and slightly plastic; few very fine roots; common very fine tubular pores; strongly effervescent; disseminated lime; common fine distinct yellowish brown (10YR 5/6) accumulations of iron and common fine prominent strong brown (7.5YR 4/6) (moist) and common medium prominent dark grayish brown (2.5YR 4/2) (moist) iron depletions; strongly alkaline (pH 8.5); abrupt smooth boundary.

2Ab1—48 to 52 inches; dark brown (10YR 3/3) clay loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, very sticky and slightly plastic; few very fine roots; few very fine tubular pores; strongly effervescent; disseminated lime; few fine distinct gray (10YR 5/1) accumulations of iron, common fine faint very dark gray (10YR 3/1) moist; moderately alkaline (pH 8.2); clear smooth boundary.

2Ab2—52 to 61 inches; brown (10YR 4/3) sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; strongly effervescent; disseminated lime; few fine distinct gray (10YR 5/1) iron depletions, common fine faint very dark gray (10YR 3/1) moist; moderately alkaline (pH 7.9).

Type location: Colusa County, California; about 1 mile east of Williams, California; 3,340 feet west and 100 feet north of the southeast corner of section 18, T. 15 N., R. 2 W., MDB&M; 39 degrees, 08 minutes, 39 seconds north latitude and 122 degrees, 07 minutes, 25 seconds west longitude; USGS Williams, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 8 to 23 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The weighted average clay content in the textural control section, from a depth of 10 to 40 inches, is 12 to 18 percent. Depth to the water table is 36 to more than 60 inches.

The A horizon has dry color of 10YR 5/3, 5/2, or 4/3 and moist color of 10YR 3/3, 3/2, or 4/3. The texture is sandy loam. Reaction is neutral to strongly alkaline.

The C and 2Ab horizons have dry color of 10YR 6/4, 6/3, 5/4, 5/3, 5/2, or 4/3 and moist color of 10YR 4/4, 4/3, 3/3, or 3/2. The texture is stratified loam, silt loam, sandy clay loam, silty clay loam, or clay loam. Reaction is neutral to strongly alkaline.

Leesville Series

The Leesville series consists of very deep, well drained soils on alluvial fans. These soils formed in alluvium derived from serpentinitic rocks. Slope ranges from 0 to 5 percent. The mean annual precipitation is 18 to 20 inches, and the mean annual air temperature is 58 to 60 degrees F.

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, magnesic, thermic Pachic Haploxerolls

Typical Pedon

Leesville clay loam, 2 to 5 percent slopes, in an area of rangeland. When described on August 5, 1996, the soil was dry throughout.

A1—0 to 3 inches; dark gray (10YR 4/1) clay loam, very dark gray (10YR 3/1) moist; moderate fine subangular blocky structure; hard, friable, sticky and slightly plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; 5 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—3 to 16 inches; dark gray (10YR 4/1) clay loam, very dark gray (10YR 3/1) moist; moderate fine and coarse subangular blocky structure; hard, friable, sticky and slightly plastic; few fine and medium roots; common very fine and fine tubular pores; 10 percent gravel; slightly alkaline (pH 7.8); clear smooth boundary.

A3—16 to 21 inches; dark gray (10YR 4/1) clay loam, very dark gray (10YR 3/1) moist; moderate fine subangular blocky structure; hard, friable, sticky and slightly plastic; few fine and medium roots; common very fine and fine tubular pores; 10 percent gravel; moderately alkaline (pH 8.0); abrupt smooth boundary.

2C1—21 to 30 inches; grayish brown (10YR 5/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine and medium roots; common fine and medium interstitial and few fine tubular pores; 20 percent gravel; moderately alkaline (pH 8.2); abrupt smooth boundary.

3C2—30 to 46 inches; grayish brown (10YR 5/2) very gravelly loamy sand, very dark grayish brown (10YR 3/2) moist; massive; loose when dry and moist, nonsticky and nonplastic when wet; few fine and medium roots; common fine and medium interstitial pores; 40 percent gravel; moderately alkaline (pH 8.2); clear smooth boundary.

3C3—46 to 60 inches; grayish brown (10YR 5/2) extremely gravelly loamy sand, very dark grayish brown (10YR 3/2) moist; massive; loose when dry and moist, nonsticky and nonplastic when wet; few fine and medium roots; many fine and medium interstitial and few fine tubular pores; moderately alkaline (pH 8.3).

Type location: Colusa County, California; about 4 miles southwest of Leesville, California; 1,300 feet east and 500 feet south of the northwest corner of section 20, T. 15 N., R. 5 W., MDB&M; 39 degrees, 08 minutes, 20 seconds north latitude and 122 degrees, 26 minutes, 30 seconds west longitude; USGS Leesville, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 58 to 60 degrees F. Ca to Mg ratios are 1:3 to 1:6. The 5- to 16-inch soil moisture control section is dry in all parts from June 1 to October 31 and moist in some or all parts from November 1 to May 31.

The A horizon has dry color of 10YR 4/2, 4/1, or 3/2 and moist color of 10YR 3/1 or 2/2. The texture is clay loam. The content of rock fragments ranges from 5 to 15 percent. The content of clay ranges from 25 to 35 percent. Reaction is neutral to moderately alkaline.

The C horizon has dry color of 10YR 5/2 or 4/2 and moist color of 10YR 4/2 or 3/2. The texture is gravelly, very gravelly, or extremely gravelly sandy loam or gravelly, very gravelly, or extremely gravelly loamy sand. The content of rock fragments ranges from 20 to 60 percent and averages 35 to 50 percent. The content of clay ranges from 5 to 15 percent. Reaction is moderately alkaline.

Livermore Series

The Livermore series consists of very deep, somewhat excessively drained soils on alluvial fans. These soils formed in alluvium weathered from sedimentary rocks. Slope ranges from 5 to 9 percent. The mean annual precipitation is 19 to 22 inches, and the mean annual air temperature is 58 to 60 degrees F.

Taxonomic class: Loamy-skeletal, mixed, superactive, thermic Typic Haploxerolls

Typical Pedon

Livermore loam, 5 to 9 percent slopes, in an area of rangeland. When described on August 6, 1996, the soil was dry throughout.

Ap—0 to 7 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; few fine tubular and common very fine and fine interstitial pores; 50 percent gravel; slightly acid (pH 6.1); clear smooth boundary.

Bw1—7 to 19 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many fine and medium interstitial pores; 50 percent gravel; slightly acid (pH 6.3); clear smooth boundary.

Bw2—19 to 41 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many fine and medium interstitial pores; 50 percent gravel; neutral (pH 6.6); clear smooth boundary.

C—41 to 63 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many fine interstitial pores; 50 percent gravel; neutral (pH 6.9).

Type location: Colusa County, California; about 1/2 mile west of Leesville, California; 1,750 feet west and 350 feet north of the southeast corner of section 32, T. 16 N., R. 5 W., MDB&M; 39 degrees, 11 minutes, 24 seconds north latitude and 122 degrees, 26 minutes, 13 seconds west longitude; USGS Leesville, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 60 to 63 degrees F. Unless the soils are irrigated, the soil moisture control section, from a depth of 7 to 12 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts from November 1 to May 31. The content of rock fragments ranges from 35 to 50 percent throughout the profile. The thickness of the solum ranges from 40 to 60 inches.

The A horizon has dry color of 10YR 5/3, 5/2, or 4/3 and moist color of 10YR 3/3, 3/2, or 2/2. The texture is very gravelly loam. The content of clay ranges from 18 to 27 percent. Reaction is slightly acid or neutral.

The Bw horizon has dry color of 10YR 6/4, 5/4, or 5/3 or 7.5YR 6/4, 5/4, or 4/4 and moist color of 10YR 4/6, 4/4, 4/3, 3/4, or 3/3 or 7.5YR 4/6, 4/4, or 3/4. The texture is very gravelly loam, very gravelly clay loam, or very gravelly sandy clay loam. The content of clay ranges from 18 to 35 percent. Reaction is slightly acid or neutral.

The C horizon, if it occurs, has dry color of 10YR 6/3 or 5/4 and moist color of 10YR 4/4, 4/3, or 3/4. The texture is very gravelly sandy loam or very gravelly loam. The content of clay is 18 to 27 percent. Reaction is slightly acid or neutral.

Mallard Series

The Mallard series consists of very deep, somewhat poorly drained soils on alluvial fans. These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 5 percent. The mean annual precipitation is 14 to 22 inches, and the mean annual air temperature is 58 to 62 degrees F.

Taxonomic class: Fine, mixed, superactive, thermic Pachic Argixerolls

Typical Pedon

Mallard clay loam, 0 to 1 percent slopes, in an area of cropland. When described on July 1, 1987, the soil was dry to a depth of 3 inches and moist from a depth of 3 inches to a water table at a depth of 50 inches.

Ap—0 to 3 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; strong medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; neutral (pH 6.8); clear smooth boundary.

Bt1—3 to 8 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; strong medium subangular blocky structure; hard, friable, sticky and slightly plastic; common very fine roots; few very fine interstitial pores; many moderately thick clay films on faces of peds and bridging sand grains; neutral (pH 7.0); gradual smooth boundary.

Bt2—8 to 15 inches; dark grayish brown (10YR 4/2) clay, very dark grayish brown (10YR 3/2) moist; strong medium subangular blocky structure; very hard, friable, very sticky and slightly plastic; common very fine roots; few very fine interstitial pores; many moderately thick clay films on faces of peds and bridging sand grains; neutral (pH 7.2); clear smooth boundary.

Bt3—15 to 28 inches; brown (10YR 4/3) clay, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular and interstitial pores; common thin clay films on faces of peds and bridging sand grains; slightly alkaline (pH 7.4); clear smooth boundary.

C1—28 to 44 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; slightly alkaline (pH

7.8); strongly effervescent; disseminated lime; clear smooth boundary.

C2—44 to 60 inches; yellowish brown (10YR 5/4) clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine and few fine tubular pores; few fine distinct light brownish gray (2.5Y 6/2) accumulations of iron, few fine prominent grayish brown (10YR 5/2) moist; strongly effervescent; segregated lime in seams and disseminated lime; moderately alkaline (pH 8.0).

Type location: Colusa County, California; about 1 1/2 miles east of Williams, California; 1,000 feet south and 1,000 feet west of the northeast corner of section 19, T. 15 N., R. 2 W., MDB&M; 39 degrees, 08 minutes, 38 seconds north latitude and 122 degrees, 07 minutes, 07 seconds west longitude; USGS Colusa, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 5 to 15 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15.

The A horizon has dry color of 10YR 5/3, 5/2, 4/3, or 4/2 and moist color of 10YR 3/3 or 3/2. The texture is clay loam or loam. Reaction is slightly acid to moderately alkaline.

The Bt horizon has dry color of 10YR 5/3, 5/2, 4/4, 4/3, or 4/2 and moist color of 10YR 4/4, 4/3, 3/4, 3/3, or 3/2. The texture is clay or clay loam. The weighted average clay content in the textural control section, the upper 20 inches of the Bt horizon, is 35 to 40 percent. Reaction is neutral to moderately alkaline.

The C horizon has dry color of 10YR 5/4, 5/3, or 4/3 or 5Y 5/2 and moist color of 10YR 4/4, 4/3, or 3/3 or 5Y 4/2. The texture is clay loam or loam. Reaction is neutral to moderately alkaline.

Marpa Series

The Marpa series consists of moderately deep, well drained soils on mountain side slopes. These soils formed in residuum derived from schist. Slope ranges from 15 to 50 percent. The mean annual precipitation is 30 to 60 inches, and the mean annual air temperature is 47 to 58 degrees F.

Taxonomic class: Loamy-skeletal, mixed, active, mesic Ultic Haploxeralfs

Typical Pedon

Marpa very gravelly sandy loam, in a forested area of Neuns-Marpa-Goulding complex, 30 to 50 percent slopes. When described on July 19, 1995, the soil was dry throughout.

Oe—0 to 2 inches; partially decomposed pine needles and oak leaves.

A—2 to 5 inches; strong brown (7.5YR 4/6) very gravelly sandy loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few coarse and common fine roots; few very fine tubular pores; 45 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

Bt1—5 to 14 inches; strong brown (7.5YR 5/6) very gravelly sandy clay loam, strong brown (7.5YR 4/6) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; common very fine tubular pores; few thin clay films on faces of peds and between sand grains; 45 percent gravel; slightly acid (pH 6.2); gradual smooth boundary.

Bt2—14 to 25 inches; strong brown (7.5YR 5/6) very gravelly sandy clay loam, strong brown (7.5YR 4/6) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and few coarse roots; common very fine tubular pores; few thin clay films on faces of peds and between sand grains; 40 percent gravel; slightly acid (pH 6.2); abrupt wavy boundary.

R—25 inches; hard, fractured schist bedrock.

Type location: Colusa County, California; about 200 feet uphill from the intersection of Mendocino Forest Service Roads 17NO2 and M10; about 2,500 feet west and 1,770 feet north of the southeast corner of section 14, T. 17 N., R. 8 W., MDB&M; 39 degrees, 19 minutes, 27 seconds north latitude and 122 degrees, 43 minutes, 42 seconds west longitude; USGS Fouts Springs, California, topographic quadrangle.

Range in Characteristics

The thickness of the solum and the depth to bedrock are 20 to 40 inches. The control section averages 35 to 50 percent rock fragments. The mean annual soil temperature is 56 to 59 degrees F. The 5- to 18-inch soil moisture control section is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year.

The A horizon has dry color of 10YR 6/4, 6/3, or 5/3 or 7.5YR 6/4, 5/4, 4/6, or 4/4 and moist color of 10YR 4/4, 4/3, 3/4, or 3/3 or 7.5YR 4/4, 4/2, or 3/4. The texture is very gravelly sandy loam. The content of clay ranges from 12 to 18 percent. Reaction is moderately acid to neutral.

The Bt horizon has dry color of 10YR 6/4, 6/3, 5/6, or 5/4 or 7.5YR 6/4, 5/6, or 5/4 and moist color of 10YR 5/4, 4/4, or 4/3 or 7.5YR 5/4, 4/6, or 4/4. The texture is very gravelly clay loam or very gravelly sandy clay loam. The content of clay ranges from 27 to 35 percent. It averages at least 1.2 times that of the A horizon. Reaction is strongly acid to slightly acid.

Mayacama Series

The Mayacama series consists of moderately deep, somewhat excessively drained soils on mountains. These soils formed in residuum weathered from metamorphosed sandstone or other sandstone. Slope ranges from 30 to 75 percent. The mean annual precipitation is 30 to 50 inches, and the mean annual air temperature is 54 to 57 degrees F.

Taxonomic class: Loamy-skeletal, mixed, active, mesic Typic Dystroxerepts

Typical Pedon

Mayacama gravelly coarse sandy loam, in an area of Maymen-Etsel-Mayacama complex, 30 to 75 percent slopes. When described on August 28, 1996, the soil was dry throughout.

A—0 to 10 inches; yellowish brown (10YR 5/4) gravelly coarse sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine and coarse and many fine and medium roots; many very fine interstitial pores; 25 percent gravel; slightly acid (pH 6.3); clear smooth boundary.

Bw1—10 to 21 inches; light brown (7.5YR 6/4) gravelly sandy clay loam, brown (7.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few fine and medium roots; many very fine tubular pores; 30 percent gravel; strongly acid (pH 5.5); gradual smooth boundary.

Bw2—21 to 30 inches; mixed light brown (7.5YR 6/4) and strong brown (7.5YR 5/6) very gravelly sandy clay loam, brown (7.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine tubular pores; 35 percent gravel; strongly acid (pH 5.5); abrupt smooth boundary.

Cd—30 to 37 inches; brown (7.5YR 5/4) very gravelly sandy loam, brown (7.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine tubular pores; 50 percent gravel; strongly acid (pH 5.5).

R—37 inches; hard, highly fractured fine grained sandstone.

Type location: Colusa County, California; about 1¼ miles north of Cold Springs Mountain; 2,480 feet east and 750 feet north of the southwest corner of section 26, T. 15 N., R. 6 W., MDB&M; 39 degrees, 01 minute, and 49 seconds north latitude and 122 degrees, 29 minutes, and 38 seconds west longitude; USGS Clear Lake Oaks, California, topographic quadrangle.

Range in Characteristics

The depth to lithic contact is 20 to 40 inches. The textural control section has 15 to 27 percent clay and 35 to 60 percent coarse gravel. Base saturation is 40 to 60 percent throughout the profile. The mean annual soil temperature is 56 to 59 degrees F. The soil moisture control section, from a depth of 11 to 19 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year.

The A horizon has dry color of 10YR 5/4 and moist color of 10YR 3/4. The texture is gravelly coarse sandy loam. Reaction is slightly acid or neutral.

The B horizon has dry color of 7.5YR 6/4, 5/4, or 5/6 and moist color of 7.5YR 4/4. The texture is gravelly or very gravelly sandy clay loam. Reaction is strongly acid.

The C horizon, if it occurs, has dry color of 7.5YR 5/4 and moist color of 7.5YR 4/4. The texture is very gravelly sandy loam. Reaction is strongly acid.

Maymen Series

The Maymen series consists of shallow, somewhat excessively drained soils on mountain side slopes. These soils formed in residuum weathered from sandstone and shale. Slope ranges from 30 to 75 percent. The mean annual precipitation is 30 to 50 inches, and the mean annual air temperature is 52 to 57 degrees F.

Taxonomic class: Loamy, mixed, active, mesic Lithic Dystroxerepts

Typical Pedon

Maymen sandy loam, in an area of Etsel-Maymen-

Marpa association, 30 to 50 percent slopes, chaparral. When described on September 4, 1980, the soil was dry throughout.

A—0 to 3 inches; brown (10YR 5/3) sandy loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; many very fine and fine tubular pores; 5 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

Bw—3 to 16 inches; pink (7.5YR 7/4) gravelly sandy loam, strong brown (7.5YR 5/6) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine and fine tubular roots; 15 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

R—16 inches; hard, highly fractured sandstone and shale.

Type location: Colusa County, California; go about 3 miles southeast from Cedar Camp Campground on Mendocino National Forest Service Road M5, turn east on Road 17NO2 and go 4.2 miles to the site, which is on the north side of road; 300 feet south and 1,700 feet east of the northwest corner of section 14, T. 16 N., R. 7 W., MDB&M; 39 degrees, 14 minutes, 39 seconds north latitude and 122 degrees, 36 minutes, 12 seconds west longitude; USGS Hough Springs, California, topographic quadrangle.

Range in Characteristics

The thickness of the solum and the depth to bedrock range from 10 to 18 inches. The mean annual soil temperature is 56 to 59 degrees F. The soil moisture control section, from a depth of 8 to 13 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year.

The A horizon has dry color of 10YR 6/3, 6/4, or 5/3 or 7.5YR 6/4 and moist color of 10YR 5/4, 4/2, 4/3, 3/4, or 2/2 or 7.5YR 4/3, 4/2, 5/4, or 4/4. The texture is sandy loam. Reaction is slightly acid or moderately acid.

The B horizon has dry color of 10YR 6/4 or 7.5YR 7/4, 6/4, or 5/6 and moist color of 10YR 5/4 or 4/3 or 7.5YR 5/6, 4/3, 4/4, or 5/4. The texture is gravelly sandy loam. The horizon has a base saturation of 50 to 75 percent. Reaction is moderately acid or strongly acid.

Maywood Series

The Maywood series consists of very deep, well drained soils on flood plains. These soils formed in alluvium derived from mixed rock sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 19 to 22 inches, and the mean annual air temperature is 58 to 60 degrees F.

Taxonomic class: Coarse-loamy, mixed, superactive, nonacid, thermic Typic Xerofluvents

Typical Pedon

Maywood gravelly loam, 0 to 2 percent slopes, occasionally flooded, in an area of abandoned cropland. When described on September 13, 1995, the soil was dry throughout.

A—0 to 16 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few medium roots; few fine tubular pores; 25 percent gravel; neutral (pH 6.7); clear smooth boundary.

C1—16 to 22 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; few fine and medium tubular and common fine interstitial pores; 5 percent gravel; slightly alkaline (pH 7.7); clear smooth boundary.

C2—22 to 41 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (2.5Y 4/2) moist; common fine and medium distinct dark yellowish brown (10YR 3/4) (moist) accumulations of iron; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; few fine and medium tubular and common fine interstitial pores; 5 percent gravel; slightly alkaline (pH 7.5); clear smooth boundary.

C3—41 to 57 inches; light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; common fine distinct dark yellowish brown (10YR 3/4) (moist) accumulations of iron; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine to coarse roots; few fine and medium tubular and common fine interstitial pores; 5 percent gravel; slightly alkaline (pH 7.8); abrupt smooth boundary.

2Ab—57 to 60 inches; grayish brown (10YR 5/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine interstitial pores; slightly alkaline (pH 7.8).

Type location: Colusa County, California; about 1 1/2 miles northwest of Stonyford, California; 2,000 feet north and 550 feet west of the southeast corner of section 30, T. 18 N., R. 6 W., MDB&M; 39 degrees, 23 minutes, 01 second north latitude and 122 degrees, 33 minutes, 42 seconds west longitude; USGS Stonyford, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 64 to 66 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 6 to 18 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15.

The A horizon has dry color of 10YR 6/3 or 6/2 and moist color of 10YR 4/3 or 4/2. The texture is gravelly loam. The content of gravel ranges from 0 to 35 percent. The content of clay ranges from 12 to 18 percent. Reaction is neutral.

The C horizon has dry color of 10YR 6/3 or 5/2 or 2.5Y 6/2 and moist color of 10YR 4/3 or 3/2 or 2.5Y 4/2. The texture is loam or silt loam. The content of gravel ranges from 0 to 15 percent. It is less than 35 percent in the particle-size control section. The content of clay ranges from 12 to 18 percent. Reaction is slightly acid to slightly alkaline.

The 2Ab horizon, if it occurs, has dry color of 10YR 5/2 or 2.5Y 5/2 and moist color of 10YR 3/2 or 2.5Y 4/2. The texture is fine sandy loam. Reaction is slightly acid to slightly alkaline.

Millsholm Series

The Millsholm series consists of shallow, well drained soils on hills (figure 19). These soils formed in residuum derived from sandstone. Slope ranges from 3 to 75 percent. The mean annual precipitation is 14 to 28 inches, and the mean annual air temperature is 58 to 62 degrees F.

Taxonomic class: Loamy, mixed, superactive, thermic Lithic Haploxererts

Typical Pedon

Millsholm loam, in an area of Millsholm-Contra Costa association, 30 to 75 percent slopes, rangeland. When described on November 15, 1995, the soil was dry throughout.

A—0 to 2 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine interstitial pores; 5 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bt1—2 to 8 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine interstitial pores; 5 percent gravel; slightly alkaline (pH 7.5); clear smooth boundary.

Bt2—8 to 14 inches; light yellowish brown (10YR 6/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine interstitial pores; 30 percent gravel; slightly alkaline (pH 7.5); abrupt smooth boundary.

R—14 inches; hard, highly fractured, fine grained sandstone.

Type location: Colusa County, California; about 11 1/2 miles west of Williams, California; 950 feet north and 200 feet east of the southwest corner of section 5, T. 14 N., R. 4 W., MDB&M; 39 degrees, 05 minutes, 24 seconds north latitude and 122 degrees, 20 minutes, 02 seconds west longitude; USGS Salt Canyon, California, topographic quadrangle.

Range in Characteristics

The thickness of solum and the depth to bedrock range from 10 to 20 inches. The mean annual soil temperature is 59 to 64 degrees F. The soil temperature is above 47 degrees F from February 28 to December 15. The soil moisture control section, from a depth of 6 to 14 inches, is dry in all parts between June 1 and October 31 and moist in all or some parts the rest of the year.

The A horizon has dry color of 10YR 6/4, 6/3, 6/2, 5/4, or 5/3 or 7.5YR 5/4, 4/6, 4/4, or 4/3 and moist color of 10YR 4/4, 4/3, 4/2, 3/4, or 3/3 or 7.5YR 3/4. The texture is loam. The content of gravel ranges from 5 to 15 percent. The content of clay typically ranges from 15 to 25 percent. Reaction ranges from moderately acid to neutral.

The Bt horizon has dry color of 10YR 6/4, 5/6, 5/4, 5/3, or 4/4; 7.5YR 5/6 or 4/6; or 5YR 4/4. It has moist color of 10YR 4/4, 4/3, or 3/3; 7.5YR 4/6, 4/4, or 3/4; or 5YR 3/4. The texture is loam, sandy clay loam, gravelly loam, or gravelly sandy clay loam. The content of gravel ranges from 5 to 35 percent. The content of clay ranges from 18 to 27 percent. Reaction is moderately acid to slightly alkaline.

Montara Series

The Montara series consists of shallow, well drained soils on uplands. These soils formed in residuum derived from serpentinitic rocks. Slope ranges from 15 to 50 percent. The mean annual precipitation is 25 to 40 inches, and the mean annual air temperature is 55 to 60 degrees F.

Taxonomic class: Loamy, magnesic, thermic Lithic Haploxerolls

Typical Pedon

Montara gravelly sandy loam, in an area of Henneke-Montara-Rock outcrop complex, 30 to 50 percent slopes. When described on August 26, 1996, the soil was dry throughout.

A1—0 to 6 inches; grayish brown (10YR 5/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; massive; loose, very friable, nonsticky and nonplastic; many fine and medium and few coarse roots; many very fine interstitial pores; 20 percent gravel; moderately alkaline (pH 8.0); abrupt wavy boundary.

A2—6 to 10 inches; brown (10YR 4/3) gravelly sandy loam, dark brown (10YR 3/3) moist; massive; loose, very friable, nonsticky and nonplastic; few fine and medium and common coarse roots; many very fine pores; 30 percent gravel; moderately alkaline (pH 8.0); abrupt wavy boundary.

R—10 inches; hard, fractured serpentinitic rock; fractures at intervals of less than 1 inch.

Type location: Colusa County, California; about 1 mile south of the radio transmitter on Cook Springs Mountain; 1,000 feet west and 1,250 feet south of the northeast corner of section 2, T. 14 N., R. 6 W., MDB&M; 39 degrees, 05 minutes, 41 seconds north latitude and 122 degrees, 29 minutes, 18 seconds west longitude; USGS Wilbur Springs, California, topographic quadrangle.

Range in Characteristics

The depth to bedrock is 10 to 20 inches. The content of weathered serpentinitic rock fragments ranges from 5 to 35 percent. Aboout 1 to 35 percent of the soil surface is covered with rock fragments. The calcium to magnesium ratio is 1:1 or less. The mean annual soil temperature is 54 to 60 degrees F. The soil moisture control section, from a depth of 5 to 17 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year.

The A horizon has dry color of 2.5Y 5/2 or 10YR 4/1, 5/1, 5/2, 4/3, or 5/3 and moist color of 2.5Y 3/2 or 10YR 2/1, 3/1, 2/2, 3/3, or 3/2. The texture is gravelly sandy loam. The content of clay ranges from 10 to 25 percent. Reaction is neutral to moderately alkaline. This horizon is 6 to 17 inches thick.

Moonbend Series

The Moonbend series consists of very deep, somewhat poorly drained soils on flood plains. These soils formed in alluvium weathered from mixed rock sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 16 inches, and the mean annual air temperature is 60 to 62 degrees F.

Taxonomic class: Fine-silty, mixed, superactive, thermic Pachic Haploxerolls

Typical Pedon

Moonbend silt loam, 0 to 2 percent slopes, in an area of cropland. When described on October 24, 1988, the soil was moist throughout.

Ap—0 to 8 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common fine tubular pores; neutral (pH 7.1); clear smooth boundary.

Bw1—8 to 19 inches; grayish brown (10YR 5/2) silty clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to subangular blocky; hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine, medium, and coarse and few very fine tubular pores; few thin silt coatings lining pores; neutral (pH 7.0); clear smooth boundary.

Bw2—19 to 34 inches; grayish brown (10YR 5/2) silty clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; very hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine and common fine and medium tubular pores; common thin silt coatings lining pores; neutral (pH 7.2); clear smooth boundary.

Bw3—34 to 42 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; very hard, friable, slightly sticky and slightly plastic; few very fine roots; many fine and medium and common very fine tubular pores; neutral (pH 7.0); clear smooth boundary.

BC—42 to 52 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine and medium tubular pores; neutral (pH 7.0); clear smooth boundary.

C—52 to 64 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular pores; slightly effervescent; moderately alkaline (pH 7.9); clear smooth boundary.

Ab—64 to 76 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine tubular pores; slightly effervescent; moderately alkaline (pH 7.9); clear smooth boundary.

C′—76 to 86 inches; light yellowish brown (10YR 6/4) loam, brown (7.5YR 4/4) moist; massive; hard, friable, nonsticky and nonplastic; many very fine tubular pores; slightly effervescent; slightly alkaline (pH 7.7).

Type location: Colusa County, California; about 1 1/2 miles southeast of Colusa, California, in an unsectionalized area; 1,900 feet east and 450 feet north of the southwest corner of section 33, T. 16 N., R. 1 W., MDB&M; 39 degrees, 11 minutes, 15 seconds north latitude and 121 degrees, 58 minutes, 45 seconds west longitude; USGS Meridian, California, topographic quadrangle.

Range in Characteristics

The solum is 40 to 80 inches thick. The mean annual soil temperature is 63 to 65 degrees F, and the soil temperature is not below 47 degrees F at any time. The soil moisture control section, from a depth of 6 to 17 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 15 to May 1. The weighted average clay content in the 10- to 40-inch textural control section is 27 to 35 percent. The content of fine sand or coarser sand is 2 to 6 percent. The mollic epipedon is 25 to 42 inches thick.

The Ap horizon has dry color of 10YR 5/2 and moist color of 10YR 3/3 or 3/2. The texture is silt loam. Reaction is neutral.

The Bw horizon has dry color of 10YR 6/3, 6/2, 5/3, or 5/2 and moist color of 10YR 4/3, 3/3, or 3/2. It is loam, silt loam, silty clay loam, or clay loam and has 18 to 35 percent clay. Reaction is neutral to moderately alkaline.

The C horizon has dry color of 10YR 6/4, 6/3, or 5/3 and moist color of 10YR 4/4, 4/3, or 3/3 or 7.5YR 4/4. The texture is loam or silt loam. Reaction is slightly alkaline or moderately alkaline.

Myers Series

The Myers series consists of very deep, well drained soils in basins. These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 16 inches, and the mean annual air temperature is 60 to 62 degrees F.

Taxonomic class: Fine, smectitic, thermic Aridic Haploxererts

Typical Pedon

Myers clay, 0 to 2 percent slopes, in a fallowed field. When described on September 28, 1987, the soil was dry to a depth of 3 inches and moist below that depth.

Ap—0 to 3 inches; brown (10YR 4/3) clay, brown (10YR 4/3) moist; moderate fine subangular blocky structure; extremely hard, very firm, very sticky and very plastic; few very fine roots; few very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

Bss1—3 to 25 inches; brown (10YR 4/3) clay, brown (10YR 4/3) moist; strong medium subangular blocky structure; extremely hard, very firm, very sticky and very plastic; few very fine roots; few very fine tubular pores; common intersecting slickensides tilted 40 to 60 degrees from vertical; many moderately thick clay films on faces of peds; neutral (pH 7.0); clear smooth boundary.

Bss2—25 to 43 inches; brown (10YR 4/3) clay, brown (10YR 4/3) moist; weak medium subangular blocky structure; extremely hard, firm, very sticky and very plastic; few very fine roots; few very fine tubular pores; common intersecting slickensides tilted 40 to 60 degrees from vertical; slightly alkaline (pH 7.5); clear smooth boundary.

Bss3—43 to 56 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; very hard, friable, very sticky and very plastic; few very fine roots; few very fine tubular pores; common intersecting slickensides tilted 40 to 60 degrees from vertical; moderately alkaline (pH 8.0); clear smooth boundary.

B—56 to 71 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; hard, friable, very sticky and very plastic; common very fine tubular roots; many moderately thick clay films on faces of peds; strongly effervescent; moderately alkaline (pH 8.0).

Type location: Colusa County, California; about 4 miles southwest of Williams, California; 2,300 feet north and 1,600 feet west of the southeast corner of section 33, T. 15 N., R. 3 W., MDB&M; 39 degrees, 06 minutes, 15 seconds north latitude and 122 degrees, 12 minutes, 10 seconds west longitude; USGS Cortina Creek, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 64 to 66 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 6 to 17 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The weighted average clay content in the textural control section, from a depth of 10 to 40 inches, is 40 to 50 percent.

The Ap horizon has dry color of 10YR 5/3 or 4/3 and moist color of 10YR 4/3. The texture is clay. Reaction is slightly acid to slightly alkaline.

The Bss and B horizons have dry color of 10YR 6/4, 5/4, 5/3, or 4/3 and moist color of 10YR 4/4 or 4/3. The texture is clay or clay loam. Reaction is neutral to moderately alkaline.

Neuns Series

The Neuns series consists of moderately deep, well drained soils on mountain side slopes. These soils formed in residuum derived from schist. Slope ranges from 30 to 75 percent. The mean annual precipitation is 35 to 60 inches, and the mean annual air temperature is 47 to 53 degrees F.

Taxonomic class: Loamy-skeletal, mixed, active, mesic Typic Dystroxerepts

Typical Pedon

Neuns very gravelly loam, in a forested area of Neuns-Bamtush-Goulding association, 30 to 50 percents slopes. When described on July 24, 1995, the soil was dry throughout.

Oe—0 to 2 inches; partially decomposed pine needles and oak leaves; abrupt smooth boundary.

A—2 to 7 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine interstitial pores; 40 percent gravel; strongly acid (pH 5.5); clear smooth boundary.

Bt—7 to 15 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine to medium roots; common very fine interstitial pores; 35 percent gravel and 5 percent schist cobbles; moderately acid (pH 5.8); clear smooth boundary.

BC—15 to 29 inches; yellowish brown (10YR 5/4) extremely gravelly loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common fine and medium and few coarse roots; many very fine interstitial pores; 40 percent gravel and 20 percent cobbles; moderately acid (pH 6.0); abrupt wavy boundary.

R—29 inches; hard, fractured schist.

Type location: Colusa County, California; about 200 feet west of Mendocino National Forest Road 17NO2, south of drainage on north slope; 2,100 feet north and 1,400 feet west of the southeast corner of section 36, T. 17 N., R. 8 W., MDB&M; 39 degrees, 16 minutes, 55 seconds north latitude and 122 degrees, 42 minutes, 20 seconds west longitude; USGS Fouts Springs, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 48 to 54 degrees F. The soil moisture control section, from a depth of 6 to 18 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year. The thickness of the solum and the depth to bedrock are 20 to 40 inches. The textural control section ranges from 7 to 18 percent clay.

The A horizon has dry color of 7.5YR 6/2, 6/3, 6/4, or 6/6 or 10YR 5/3, 6/2 6/3, or 6/4 and moist color of 7.5YR 4/3, 4/4, 4/6 or 10YR 3/3, 3/2, 4/4, or 4/6. The texture is very gravelly loam. The content of gravel is 35 to 50 percent. Reaction is slightly acid or moderately acid.

The B horizon has dry color of 7.5YR 7/6 or 6/6 or 10YR 5/4, 6/3, 6/4, or 7/4 and moist color of 7.5YR 5/6 or 6/6 or 10YR 3/4, 4/3, 4/4, or 5/4. The texture is very gravelly or extremely gravelly sandy loam or very gravelly or extremely gravelly loam. The content of gravel is 35 to 70 percent. Reaction is slightly acid or moderately acid.

Okiota Series

The Okiota series consists of shallow, well drained soils on mountain side slopes. These soils formed in residuum weathered from serpentinitic rocks. Slope ranges from 15 to 75 percent. The mean annual precipitation is 24 to 50 inches, and the mean annual air temperature is 49 to 60 degrees F.

Taxonomic class: Clayey, magnesic, thermic Lithic Argixerolls

Typical Pedon

Okiota loam, in an area of Okiota-Dubakella-Henneke complex, 15 to 50 percent slopes, under McNab cypress and manzanita. When described on May 13, 1991, the soil was moist throughout.

A—0 to 5 inches; dark reddish brown (5YR 3/2) loam, dark reddish brown (5YR 3/2) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many fine interstitial pores; 5 percent gravel; slightly acid (pH 6.3); clear smooth boundary.

Bt1—5 to 8 inches; dark reddish brown (5YR 3/3) clay loam, dark reddish brown (5YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and coarse roots; common fine interstitial pores; few thin clay films on faces of peds; 10 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

Bt2—8 to 15 inches; dark reddish brown (5YR 3/3) clay, dark reddish brown (5YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few coarse roots; few very fine interstitial pores; 10 percent gravel; slightly acid (pH 6.1); abrupt wavy boundary.

R—15 inches; fractured, slightly weathered peridotite; rock fractures filled with material from the Bt2 horizon.

Type location: Colusa County, California; about 2 miles north of Cold Springs Mountain; 2,300 feet west and 300 feet north of the southeast corner of section 23, T. 15 N., R. 6 W., MDB&M; 39 degrees, 07 minutes, 20 seconds north latitude and 122 degrees, 29 minutes, 35 seconds west longitude; USGS Leesville, California, topographic quadrangle.

Range in Characteristics

The thickness of the solum and the depth to bedrock are 10 to 20 inches. About 10 to 40 percent of the soil surface is covered with gravel. The content of rock fragments is less than 15 percent in the control section. The mean annual soil temperature is 58 to 62 degrees F. The soil moisture control section, from a depth of 6 to 15 inches is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year.

The A horizon has dry color of 7.5YR 4/4, 3/4, or 3/2 or 5YR 4/4, 3/4, or 3/2 and moist color of 7.5YR 4/3, 4/2, 3/3, or 3/2 or 5YR 4/3, 4/2, 3/3, or 3/2. The texture is loam. The content of organic carbon is 2 to 4 percent. Base saturation is more than 90 percent. Reaction is slightly acid to slightly alkaline.

The Bt horizon has dry color of 5YR 3/3, 4/4, or 5/4 and moist color of 5YR 3/3, 3/4, or 4/4. This horizon is clay or clay loam and has 35 to 50 percent clay and 5 to 15 percent gravel. Reaction is slightly acid to slightly alkaline.

Positas Taxadjunct

The Positas taxadjunct consists of very deep, well drained soils on dissected stream terraces. These soils formed in alluvium weathered from mixed rock sources. Slope ranges from 30 to 75 percent. The mean annual precipitation is 14 to 18 inches, and the mean annual air temperature is 58 to 60 degrees F.

Taxonomic class: Clayey-skeletal, smectitic, thermic Mollic Palexeralfs

Typical Pedon

Positas gravelly sandy loam, in an area of Goldeagle-Positas-Balcom complex, 30 to 75 percent slopes; described on November 6, 1990.

A1—0 to 2 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark brown (10YR 2/2) moist; weak medium platy structure; slightly hard, friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial and common very fine tubular pores; 25 percent gravel; strongly acid (pH 5.5); clear smooth boundary.

A2—2 to 9 inches; brown (10YR 4/3) gravelly sandy loam, very dark brown (10YR 2/2) moist; massive; slightly hard, friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial and common very fine tubular pores; 25 percent gravel; strongly acid (pH 5.5); gradual smooth boundary.

A3—9 to 21 inches; brown (10YR 5/3) gravelly sandy loam, dark brown (10YR 3/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial and common very fine tubular pores; 30 percent gravel; moderately acid (pH 5.6); abrupt wavy boundary.

2Bt1—21 to 34 inches; yellowish brown (10YR 5/4) gravelly clay, brown (7.5YR 4/4) moist; strong coarse prismatic structure; very hard, firm, very sticky and plastic; common very fine and few fine roots; common very fine interstitial and tubular pores; common moderately thick reddish brown (5YR 4/4) and brown (7.5YR 4/4) clay films on faces of peds and lining pores; 20 percent gravel; strongly acid (pH 5.5); clear wavy boundary.

2Bt2—34 to 50 inches; dark yellowish brown (10YR 4/4) very gravelly clay, brown (7.5YR 4/4) moist; massive; very hard, firm, very sticky and plastic; few very fine roots; few very fine interstitial and tubular pores; common moderately thick reddish brown (5YR 4/4) and brown (7.5YR 4/4) clay films on faces of peds and lining pores; 45 percent gravel; strongly acid (pH 5.4); gradual smooth boundary.

2Bt3—50 to 62 inches; yellowish brown (10YR 5/4) very gravelly clay, brown (7.5YR 4/4) moist; massive; very hard, firm, very sticky and plastic; few very fine roots; few very fine interstitial and tubular pores; few moderately thick reddish brown (5YR 4/4) clay films on faces of peds and lining pores; black, 1- to 2-inch manganese stains at the lower boundary; 50 percent gravel; strongly acid (pH 5.5); gradual smooth boundary.

2Bt4—62 to 80 inches; yellowish brown (10YR 5/4) very gravelly clay, brown (7.5YR 4/4) moist; massive; very hard, firm, very sticky and plastic; few very fine roots; few very fine interstitial and tubular pores; few moderately thick reddish brown (5YR 4/4) clay films on faces of peds and lining pores; 35 percent gravel; moderately acid (pH 6.0).

Type location: Colusa County, California; about 8 miles west-southwest of Arbuckle, California; 1,500 feet east and 1,800 feet north of the southwest corner of section 16, T. 13 N., R. 3 W., MDB&M; 38 degrees, 58 minutes, 22 seconds north latitude and 122 degrees, 12 minutes, 7 seconds west longitude; USGS Rumsey, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is about 62 degrees F, and the soil temperature is above 47 degrees F the entire year. The soil moisture control section, from a depth of 4 to 12 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts from November 1 to May 31. The thickness of the solum ranges from 40 to 80 inches.

The A horizon has dry color of 10YR 4/2, 4/3, or 5/3 and moist color of 10YR 2/2 or 3/3 or 7.5YR 3/4. The texture is gravelly sandy loam or gravelly loam in the lower part. The content of gravel ranges from 15 to 35 percent. Reaction is strongly acid to neutral.

The Bt horizon has dry color of 10YR 4/4 or 5/4, 7.5YR 4/4 or 4/6, or 5YR 4/3 or 4/4 and moist color of 10YR 3/3, 4/3, or 4/4; 7.5YR 3/4, 4/4, or 4/6; or 5YR 3/3 or 3/4. The 5YR hue does not occur in some pedons. The texture is gravelly or very gravelly clay. The content of gravel ranges from 20 to 50 percent. By weighted average, the content of rock fragments in the textural control section ranges from 35 to 50 percent. The content of clay ranges from 40 to 60 percent. The upper boundary of the Bt horizon is abrupt and has 20 to 30 percent more total clay than the overlying A horizon. Reaction is strongly acid or moderately acid.

The Positas soils mapped in Colusa County are a taxadjunct to the Positas series because of the clayey-skeletal textural family.

Riverwash

Riverwash consists of very deep alluvial material in areas of stream channels that are frequently flooded. These areas are highly dynamic and change with each flood. They support little or no vegetation because of the flooding. Because of instability, no attempt is made to classify the material. These areas are subject to constant erosion and deposition during floods.

Riverwash consists of erratically deposited and stratified layers of sand, gravel, and cobbles. Small layers of finer textured soil material may be stratified with the coarser sediments, which dominate the riverwash.

Saltcanyon Series

The Saltcanyon series consists of very deep, well drained soils on alluvial fans. These soils formed in alluvium derived from mixed rock sources. Slope ranges from 1 to 15 percent. The mean annual precipitation is 18 to 22 inches, and the mean annual air temperature is 58 to 62 degrees F.

Taxonomic class: Fine-loamy, mixed, superactive, thermic Pachic Argixerolls

Typical Pedon

Saltcanyon loam, 1 to 5 percent slopes, in an area of rangeland. When described on October 11, 1995, the soil was dry throughout.

A—0 to 13 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; very friable, slightly sticky and slightly plastic; common very fine roots; many very fine interstitial pores; 10 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bt1—13 to 25 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few fine tubular pores; few thin clay films on faces of peds; 10 percent gravel; neutral (pH 7.2); gradual smooth boundary.

Bt2—25 to 43 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common fine tubular pores; common thin clay films on faces of peds; 10 percent gravel; slightly alkaline (pH 7.5); clear smooth boundary.

Bt3—43 to 61 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common fine tubular pores; common thin clay films on faces of peds; 10 percent gravel; slightly alkaline (pH 7.7).

Type location: Colusa County, California; about 12 miles west of Williams, California; 2,200 feet east and 2,250 feet north of the southwest corner of section 6, T. 14 N., R. 4 W., MDB&M; 39 degrees, 05 minutes, 28 seconds north latitude and 122 degrees, 20 minutes, 40 seconds west longitude; USGS Salt Canyon, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 60 to 62 degrees F. The content of rock fragments ranges from 0 to 15 percent throughout the profile. Reaction is neutral or slightly alkaline throughout the profile. Unless the soils are irrigated, the soil moisture control section, from a depth of 5 to 15 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15.

The A horizon has dry color of 10YR 5/3, 5/2, or 4/3 and moist color of 10YR 3/3, 3/2, or 2/2. The texture is loam. The content of clay is 12 to 27 percent.

The Bt horizon generally has dry color of 10YR 5/3, 5/2, or 4/3 and moist color of 10YR 3/3, 3/2, or 2/2. In the lower part of the horizon, the color may be 10YR 5/4 dry and 10YR 3/4 moist. The texture is loam, sandy clay loam, or clay loam. The content of clay is 18 to 35 percent.

Scribner Series

The Scribner series consists of very deep, poorly drained soils on flood plains. These soils formed in alluvium derived from mixed sources. Slope is 0 to 1 percent. The mean annual precipitation is 13 to 16 inches, and the mean annual air temperature is 59 to 62 degrees F.

Taxonomic class: Fine-loamy, mixed, superactive, thermic Cumulic Endoaquolls

Typical Pedon

Scribner silt loam, 0 to 1 percent slopes, in a fallow rice paddy. When described on May 20, 1987, the soil was dry to a depth of 3 inches and moist from a depth of 3 inches to a water table at a depth of 40 inches.

Ap—0 to 6 inches; grayish brown (2.5Y 5/2) silt loam, very dark grayish brown (2.5Y 3/2) moist; moderate coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine interstitial and tubular pores; many fine prominent brownish yellow (10YR 6/6) accumulations of iron, many fine prominent dark yellowish brown (10YR 4/6) moist; strongly acid (pH 5.3); abrupt smooth boundary.

A—6 to 12 inches; grayish brown (2.5Y 5/2) clay loam, very dark gray (10YR 3/1) moist; moderate coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial and tubular pores; few thin clay films lining pores; common fine prominent brownish yellow (10YR 6/8) accumulations of iron, common fine prominent dark yellowish brown (10YR 3/6) moist; moderately acid (pH 5.6); abrupt smooth boundary.

Ab1—12 to 20 inches; gray (10YR 5/1) clay loam, very dark gray (10YR 3/1) moist; weak medium subangular blocky structure; hard, friable, very sticky and very plastic; common very fine roots; common very fine and few fine tubular pores; common thin clay films bridging sand grains and few thin clay films lining pores; few fine prominent yellowish brown (10YR 5/6) accumulations of iron, few fine faint very dark grayish brown (10YR 3/2) moist; slightly acid (pH 6.3); clear smooth boundary.

Ab2—20 to 33 inches; dark grayish brown (2.5Y 4/2) loam, very dark grayish brown (2.5Y 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; few very fine roots; common very fine and few fine tubular pores; common thin clay films bridging sand grains and few thin clay films lining soil pores; effervescent; many fine faint grayish brown (2.5Y 5/2) accumulations of iron, many fine prominent (10YR 3/1) moist; neutral (pH 6.8); clear smooth boundary.

Ab3—33 to 41 inches; dark grayish brown (2.5Y 4/2) loam, very dark grayish brown (2.5Y 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; common medium prominent yellowish brown (10YR 5/4) accumulations of iron, common medium distinct brown (10YR 4/3) moist; slightly alkaline (pH 7.8); clear smooth boundary.

C—41 to 60 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; lime in soft seams; few medium faint yellowish brown (10YR 5/4) accumulations of iron, few medium faint dark yellowish brown (10YR 4/4) moist; slightly alkaline (pH 7.5).

Type location: Colusa County, California; about 3 1/2 miles west of Meridian, California; 1,050 feet south and 500 feet west of the northeast corner of section 21, T. 15 N., R. 1 W., MDB&M; 39 degrees, 08 minutes, 28 seconds north latitude and 121 degrees, 58 minutes, 18 seconds west longitude; USGS Meridian, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 7 to 20 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15.

The Ap horizon has dry color of 2.5Y 5/2 and moist color of 10YR 3/2, 2.5Y 3/2, or 5Y 3/2. The texture is silt loam. Reaction is strongly acid to neutral.

The A and Ab horizons have dry color of 10YR 5/2, 5/1, or 3/2 or 2.5Y 5/2 or 4/2 and moist color of 10YR 3/2 or 3/1, 2.5Y 3/2 or 4/2, or 5Y 3/2. The texture is clay loam, silt loam, or loam. Reaction is neutral to moderately alkaline.

The C horizon has dry color of 10YR 5/3 or 5/2 and moist color of 10YR 4/3, 4/2, 3/3, or 3/1 or 5Y 4/1. The texture is silt loam or loam. Reaction is slightly alkaline or moderately alkaline.

Sehorn Series

The Sehorn series consists of moderately deep, well drained soils on foothills. These soils formed in residuum weathered from calcareous sandstone and shale. Slope ranges from 9 to 50 percent. The mean annual precipitation is 14 to 18 inches, and the mean annual air temperature is 60 to 62 degrees F.

Taxonomic class: Fine, smectitic, thermic Aridic Haploxererts

Typical Pedon

Sehorn clay, in an area of Altamont-Sehorn complex, 15 to 30 percent slopes, under annual grasses and forbs. When described on September 21, 1993, the soil was dry throughout.

A—0 to 5 inches; light olive brown (2.5Y 5/3) silty clay, olive brown (2.5Y 4/3) moist; strong coarse prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and slightly plastic; common very fine roots; common very fine low-continuity interstitial pores; neutral (pH 7.0); abrupt smooth boundary.

Bw—5 to 9 inches; light olive brown (2.5Y 5/3) silty clay, olive brown (2.5Y 4/3) moist; strong coarse prismatic structure parting to moderate medium subangular blocky; extremely hard, firm, sticky and plastic; few very fine roots; common very fine low-continuity interstitial pores; common prominent patchy pressure faces on peds; noneffervescent; 1 percent gravel; neutral (pH 7.0); gradual wavy boundary.

Bss1—9 to 19 inches; light olive brown (2.5Y 5/3) silty clay, olive brown (2.5Y 4/3) moist; strong coarse prismatic structure parting to moderate medium subangular blocky; extremely hard, very firm, sticky and very plastic; few very fine and fine roots; common very fine low-continuity interstitial and tubular pores; few prominent discontinuous intersecting slickensides on faces of peds and common prominent patchy pressure faces on peds; noneffervescent; 5 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bss2—19 to 26 inches; light yellowish brown (2.5Y 6/3) gravelly silty clay, light olive brown (2.5Y 5/3) moist; strong coarse prismatic structure parting to moderate medium subangular blocky; extremely hard, firm, sticky and very plastic; few very fine and fine roots; common very fine low-continuity interstitial and tubular pores; few prominent discontinuous intersecting slickensides on faces of peds and common prominent patchy pressure faces on peds; noneffervescent; 15 percent gravel; neutral (pH 7.0); abrupt smooth boundary.

BC—26 to 35 inches; light yellowish brown (10YR 6/4) extremely gravelly silty clay, light olive brown (2.5Y 5/3) moist; moderate fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few very fine roots; common very fine low-continuity interstitial pores; noneffervescent; 80 percent gravel; neutral (pH 7.0); gradual irregular boundary.

R—35 inches; hard, highly fractured, fine grained sandstone with 5 percent soil material in fractures.

Type location: Colusa County, California; about 6 miles northwest of Sites, California; 1,500 feet east and 550 feet south of the northwest corner of section 8, T. 7 N., R. 4 W., MBD&M; 39 degrees, 20 minutes, 44 seconds north latitude and 122 degrees, 19 minutes, 23 seconds west longitude; USGS Sites, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 64 to 66 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 7 to 21 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The weighted average clay content in the textural control section, from a depth of 10 to 35 inches, is 40 to 60 percent. The depth to highly fractured and weathered shale ranges from 20 to 40 inches.

The A horizon has dry color of 10YR 5/4, 5/3, or 4/4 or 2.5Y 5/3 and moist color of 10YR 4/3, 3/3, or 4/4 or 2.5Y 4/3. The texture is silty clay. Reaction is slightly acid or neutral.

The B horizon has dry color of 10YR 5/4, 5/3, or 6/4 or 2.5Y 5/3 or 6/3 and moist color of 10YR 4/4 or 4/3 or 2.5Y 4/3 or 5/3. Reaction is neutral or slightly alkaline. The texture is silty clay or clay. Some pedons have very gravelly or extremely gravelly horizons in the lower part.

Sheetiron Series

The Sheetiron series consists of moderately deep, well drained soils on mountains. These soils formed in residuum weathered from mica-quartz schist. Slope ranges from 30 to 75 percent. The mean annual precipitation is 40 to 60 inches, and the mean annual air temperature is 47 to 53 degrees F.

Taxonomic class: Loamy-skeletal, mixed, active, mesic Typic Dystroxerepts

Typical Pedon

Sheetiron gravelly sandy loam, in an area of Sheetiron-Deadwood association, 30 to 50 percent slopes (soil survey of Lake County, California, 1989).

Oi—0 to 1 inch; decomposed and partially decomposed conifer litter consisting of twigs, bark, needles, and cones.

A1—1 to 3 inches; brown (10YR 5/3) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common medium roots; many very fine, fine, and medium interstitial pores; 30 percent gravel; strongly acid (pH 5.5); clear wavy boundary.

A2—3 to 8 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; moderate very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine and common coarse roots; common very fine, fine, and medium interstitial pores; few thin gray mica and silt coatings on faces of peds and in pores; 50 percent gravel; strongly acid (pH 5.5); clear wavy boundary.

Bw1—8 to 17 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 5/3) moist; moderate fine and medium subangular blocky structure; soft, friable, slightly sticky and nonplastic; common very fine and fine, many medium, and common coarse roots; common very fine, fine, and medium interstitial pores; common moderately thick gray mica and silt coatings on faces of peds and in pores; 50 percent gravel and 5 percent cobbles; strongly acid (pH 5.5); gradual wavy boundary.

Bw2—17 to 29 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, yellowish brown (10YR 5/4) moist; moderate fine and medium subangular blocky structure; soft, friable, slightly sticky and nonplastic; common very fine, fine, and medium interstitial pores; common moderately thick gray mica and silt coatings on faces of peds and in pores; 55 percent gravel and 5 percent cobbles; strongly acid (pH 5.5); abrupt irregular boundary.

R—29 inches; hard, fractured mica-quartz schist; fractures that are 1 to 4 inches wide and 10 to 39 inches apart; soil material and roots extending down into the fractures.

Type location: Lake County, California; in Mendocino National Forest, about 0.9 mile east on Road 20N02 from its intersection with Road 20N11 and 0.3 mile north on a logging road; 1,850 feet north and 2,000 feet east of the southwest corner of section 23, T. 20 N., R. 9 W., MDB&M; 39 degrees, 34 minutes, 14 seconds north latitude and 122 degrees, 50 minutes, 22 seconds west longitude; USGS Kneecap Ridge, California, topographic quadrangle.

Range in Characteristics

The depth to lithic contact is 20 to 40 inches. Base saturation is 40 to 60 percent throughout the profile. Reaction is strongly acid or moderately acid throughout the profile. The mean annual soil temperature is 47 to 54 degrees F. The soil moisture control section, from a depth of 11 to 28 inches, is dry in all parts from June 1 to October 31.

The A horizon has dry color of 10YR 5/3, 5/4, 6/3, 6/4, or 7/3 and moist color of 10YR 3/2, 3/3, 4/3, 4/4, or 5/3. Dry value of 5 or less and moist value and chroma of 3 or less occur only in the upper 3 to 6 inches. The horizon has 10 to 25 percent clay and 20 to 50 percent gravel and cobbles.

The B horizon has dry color of 10YR 6/2, 6/3, 7/2, or 7/3 and moist color of 10YR 5/3 or 5/4 or 2.5YR 5/3 or 5/4. The texture is very gravelly sandy loam or extremely gravelly sandy loam. The content of gravel and cobbles ranges from 35 to 70 percent. The content of clay ranges from 12 to 25 percent.

Skyhigh Series

The Skyhigh series consists of moderately deep, well drained soils on hills. These soils formed in residuum weathered from shale. Slope ranges from 15 to 50 percent. The mean annual precipitation is 18 to 28 inches, and the mean annual air temperature is 58 to 60 degrees F.

Taxonomic class: Fine, smectitic, thermic Mollic Haploxeralfs

Typical Pedon

Skyhigh loam, in a brush-covered area of Skyhigh-Millsholm complex, 15 to 50 percent slopes. When described on November 9, 1990, the soil was dry throughout.

A—0 to 3 inches; brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine interstitial pores; moderately acid (pH 5.7); 5 percent angular shale fragments; clear smooth boundary.

Bt1—3 to 8 inches; dark yellowish brown (10YR 4/4) gravelly clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine interstitial and few fine tubular pores; common thin clay films on faces of peds; slightly acid (pH 6.1); 20 percent angular shale fragments; clear smooth boundary.

Bt2—8 to 25 inches; dark yellowish brown (10YR 4/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and medium roots; common fine tubular pores; many thin clay films; 30 percent angular shale fragments; moderately acid (pH 5.8); clear smooth boundary.

Bt3—25 to 37 inches; dark yellowish brown (10YR 4/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine and medium roots; few fine tubular pores; few thin clay films on faces of peds; 30 percent angular shale fragments. moderately acid (pH 5.7); abrupt smooth boundary.

R—37 inches; hard, fractured shale.

Type location: Colusa County, California; about 2$^1/_2$ miles west of Wilbur Springs, California; 1,100 feet north and 50 feet east of the southwest corner of section 19, T. 14 N., R. 5 W., MDB&M; 39 degrees, 02 minutes, 35 seconds north latitude and 122 degrees, 27 minutes, 15 seconds west longitude; USGS Wilbur Springs, California, topographic quadrangle.

Range in Characteristics

The thickness of solum and the depth to bedrock range from 20 to 40 inches. The mean annual soil temperature is about 59 to 64 degrees F, and the soil temperature is above 47 degrees F from February 28 to December 15. The soil moisture control section, from a depth of 6 to 19 inches, is moist in some or all parts between November 1 and May 31 and dry the rest of the year.

The A horizon has dry color of 10YR 4/3, 4/4, or 5/3 or 7.5YR 5/3 or 4/4 and moist color of 10YR 3/3 or 7.5YR 4/3 or 3/3. The content of gravel ranges from 5 to 15 percent. The content of clay ranges from 24 to 32 percent. The texture is loam. Reaction is moderately acid or slightly acid.

The Bt horizon has dry color of 10YR 5/4 or 4/4 or 7.5YR 4/4 or 4/3 and moist color of 10YR 4/4 or 4/3 or

7.5YR 4/4, 4/3, or 3/3. The texture is gravelly clay loam, gravelly clay, or gravelly sandy clay loam. The content of gravel ranges from 20 to 35 percent. The content of clay ranges from 35 to 50 percent. Reaction is moderately acid or slightly acid.

Sleeper Series

The Sleeper series consists of deep, well drained soils on hills. These soils formed in material weathered from sandstone, shale, and siltstone. Slopes are 15 to 50 percent. The mean annual precipitation is 18 to 22 inches, and the mean annual air temperature is 58 to 60 degrees F.

Taxonomic class: Fine, smectitic, thermic Mollic Haploxeralfs

Typical Pedon

Sleeper clay loam, in an area of Skyhigh-Sleeper-Millsholm association, 30 to 50 percent slopes, rangeland. When described on June 25, 1996, the soil was dry throughout.

A1—0 to 5 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; strong coarse prismatic structure; hard, firm, slightly sticky and slightly plastic; common very fine roots; few fine interstitial pores; noneffervescent; slightly alkaline (pH 7.5); clear smooth boundary.

A2—5 to 9 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; strong coarse prismatic structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine interstitial pores; many thin clay films on faces of peds; very slightly effervescent; slightly alkaline (pH 7.5); clear smooth boundary.

Bt1—9 to 19 inches; brown (10YR 5/3) clay, brown (10YR 4/3) moist; strong coarse angular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine roots; few fine interstitial and tubular pores; many thin clay films on faces of peds; slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

Bt2—19 to 35 inches; brown (10YR 5/3) clay, brown (10YR 4/3) moist; strong coarse angular blocky structure; hard, firm, slightly plastic and slightly plastic; few very fine roots; common fine interstitial pores; common wedge-shaped aggregates; many thin clay films on faces of peds; strongly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.

Bt3—35 to 53 inches; yellowish brown (10YR 5/4) clay loam, brown (10YR 4/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few fine interstitial and tubular pores; many thin clay films on faces of peds; strongly effervescent; 10 percent gravel in the lower part; slightly alkaline (pH 7.8)

R—53 inches; hard, fine grained sandstone.

Type location: Colusa County, California; about 2 miles west down a road extending from the intersection of Highway 16 and Highway 20, about $2^3/_4$ miles south of the road; 50 feet north and 1,500 feet east of the southwest corner of section 14, T. 13 N., R. 5 W., MDB&M; 38 degrees, 57 minutes, 54 minutes north latitude and 122 degrees, 23 minutes, 00 seconds west longitude; USGS Wilson Valley, California, topographic quadrangle.

Range in Characteristics

The depth to lithic contact is 40 to 60 inches. The mean annual soil temperature is 59 to 63 degrees F. The soil moisture control section, from a depth of 6 to 16 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts from November 1 to June 1.

The A horizon has dry color of 10YR 5/3 or 5/2 and moist color of 10YR 3/3 or 3/2. The texture is clay loam. Reaction is neutral or slightly alkaline.

The Bt horizon has dry color of 10YR 5/4 or 5/3 or 7.5YR 5/4 or 5/3 and moist color of 10YR 4/4, 4/3, or 3/4 or 7.5YR 4/4 or 3/4. The texture is clay loam, clay, or gravelly clay loam. The content of rock fragments ranges from 0 to 35 percent. Reaction is neutral or slightly alkaline.

Snook Series

The Snook series consists of very shallow, somewhat excessively drained soils on mountains. These soils formed in residuum derived from sandstone or shale. Slope ranges from 30 to 75 percent. The mean annual precipitation is 30 to 50 inches, and the mean annual air temperature is 52 to 58 degrees F.

Taxonomic class: Loamy, mixed, superactive, nonacid, thermic Lithic Xerorthents

Typical Pedon

Snook gravelly sandy loam, in an area of Maymen-Etsel-Snook complex, 30 to 75 percent slopes. When described on August 26, 1996, the soil was dry throughout.

A1—0 to 1 inch; yellowish brown (10YR 5/4) gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; weak thin platy structure; loose when dry and moist, slightly sticky and nonplastic when wet; common very fine roots; many very fine interstitial pores; 20 percent gravel; strongly acid (pH 5.5); abrupt smooth boundary.

A2—1 to 8 inches; yellowish brown (10YR 5/4) gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; massive; loose when dry and moist, slightly sticky and nonplastic when wet; few very fine roots; many very fine interstitial pores; 30 percent gravel; strongly acid (pH 5.5); abrupt wavy boundary.

R—8 inches; hard, fractured sandstone.

Type location: Colusa County, California; about 1 1/4 miles south of Cold Springs Mountain; 250 feet south and 1,400 feet east of the northwest corner of section 12, T. 14 N., R. 6 W., MDB&M; 39 degrees, 04 minutes, 58 seconds north latitude and 122 degrees, 28 minutes, 44 seconds west longitude; USGS Lower Lake, California, topographic quadrangle.

Range in Characteristics

The thickness of the solum and the depth to lithic contact are 4 to 10 inches. About 20 to 80 of the soil surface is covered with rock fragments. The content of clay is 10 to 25 percent. The content of gravel and cobbles ranges from 5 to 35 percent. The mean annual soil temperature is 56 to 59 degrees F. The soil moisture control section, from the surface to a depth of 5 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year.

The A horizon has dry color of 7.5YR 4/4, 5/4, or 6/2 or 10YR 5/4, 6/2, 6/3, or 6/4 and moist color of 7.5YR 3/4 or 4/2 or 10YR 3/4, 4/3, or 4/4. The texture is gravelly sandy loam. Reaction is strongly acid or moderately acid.

Speaker Series

The Speaker series consists of moderately deep, well drained soils on mountain side slopes. These soils formed in residuum and colluvium weathered from sedimentary rocks. Slope ranges from 30 to 50 percent. The mean annual precipitation is 35 to 50 inches, and the mean annual air temperature is 50 to 54 degrees F.

Taxonomic class: Fine-loamy, mixed, active, mesic Ultic Haploxeralfs

Typical Pedon

Speaker gravelly loam, in a wooded area of Neuns-Bamtush-Speaker complex, 30 to 50 percent slopes. When described on August 10, 1980, the soil was dry throughout.

Oi—0 to 1 inch; layer of manzanita leaves and knobcone pine needles and stems.

A—1 to 10 inches; very pale brown (10YR 7/4) gravelly loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; soft, loose, slightly sticky and nonplastic; few fine roots; few very fine tubular pores; 20 percent gravel; slightly acid (pH 6.5); gradual wavy boundary.

Bt1—10 to 16 inches; strong brown (7.5YR 5/8) gravelly clay loam, strong brown (7.5YR 4/6) moist; strong medium and coarse angular blocky structure; slightly hard, very friable, sticky and plastic; few fine roots; few very fine tubular pores; few thin clay films lining pores; 20 percent gravel; moderately acid (pH 6.0); gradual wavy boundary.

Bt2—16 to 26 inches; reddish brown (2.5YR 4/4) gravelly clay loam, dark reddish brown (2.5YR 4/3) moist; strong coarse angular blocky structure; slightly hard, very friable, sticky and plastic; few fine roots; few very fine tubular pores; common thick clay films on faces of peds; 25 percent gravel; moderately acid (pH 6.0); gradual wavy boundary.

Cr—26 to 36 inches; reddish brown (2.5YR 4/4), weathered schist; yellow (2.5Y 7/8) bands; many thick clay films on faces of peds; fractured into plates 4 to 75 millimeters in size.

Type location: Colusa County, California; along Pine Ridge Road (17N02), about 0.1 mile east of the Cooley Ranch gate, on the south side of the road; 2,300 feet south and 2,000 feet east of the northwest corner of section 9, T. 16 N., R. 7 W., MDB&M; 39 degrees, 15 minutes, 02 seconds north latitude and 122 degrees, 38 minutes, 32 seconds west longitude; USGS Fouts Springs, California, topographic quadrangle.

Range in Characteristics

The thickness of the solum and the depth to paralithic contact range from 20 to 40 inches. Reaction is slightly acid or moderately acid throughout the profile. The mean annual soil temperature is 54 to 59 degrees F. The soil moisture control section, from a depth of 6 to 18 inches, is dry in some part from June 1 to October 31 and moist in some or all parts the rest of the year.

The A horizon has dry color of 10YR 7/4, 5/3, or 5/4 or 7.5YR 5/4 and moist color of 7.5YR 3/4 or 4/6. The texture is gravelly loam.

The Bt horizon has dry color of 7.5YR 5/6, 5/8, or 6/6; 5YR 5/6; or 2.5YR 4/4. It has moist color of 7.5YR 4/3, 4/6, or 5/6; 5YR 4/6; or 2.5YR 3/4 or 4/3. The texture is gravelly clay loam or clay loam. The content of clay is 27 to 35 percent in the control section.

Squawrock Taxadjunct

The Squawrock taxadjunct consists of moderately deep, well drained soils on mountains. These soils formed in residuum weathered from sandstone. Slope ranges from 15 to 50 percent. The mean annual precipitation is 25 to 45 inches, and the mean annual air temperature is 54 to 59 degrees F.

Taxonomic class: Clayey-skeletal, mixed, superactive, thermic Typic Haploxeralfs

Typical Pedon

Squawrock gravelly loam, in an area of Fouts-Yorkville-Squawrock association, 15 to 50 percent slopes. When described on August 2, 1995, the soil was dry throughout.

A—0 to 2 inches; brown (7.5YR 5/4) gravelly loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few very fine roots; common very fine interstitial pores; 15 percent gravel; slightly acid (pH 6.5); clear smooth boundary.

Bt1—2 to 9 inches; brown (7.5YR 5/4) very gravelly clay loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; common fine interstitial pores; few thin clay films bridging sand grains; 35 percent gravel; neutral (pH 6.7); clear smooth boundary.

Bt2—9 to 18 inches; brown (7.5YR 4/4) very gravelly clay loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; common fine interstitial pores; many thin clay films on faces of peds; 35 percent gravel; neutral (pH 6.7); clear smooth boundary.

Bt3—18 to 23 inches; brown (7.5YR 5/2) gravelly clay, brown (7.5YR 4/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; few fine and very fine tubular and interstitial pores; many thin clay films on faces of peds; 15 percent gravel; neutral (pH 7.2); clear smooth boundary.

C—23 to 26 inches; weak red (2.5YR 5/2) gravelly clay, dusky red (2.5YR 3/2) moist; massive; hard, friable, sticky and plastic; few fine interstitial pores; 25 percent gravel; neutral (pH 7.2); clear smooth boundary.

R—26 inches; hard, very fine grained sandstone.

Type location: Colusa County, California; about 1/4 mile west of Fouts Springs, California, in Moon Glade; 1,000 feet north and 600 feet east of the southwest corner of section 5, T. 17 N., R. 7 W., MDB&M; 39 degrees, 21 minutes, 20 seconds north latitude and 122 degrees, 40 minutes, 10 seconds west longitude; USGS Fouts Springs, California, topographic quadrangle.

Range in Characteristics

The thickness of the solum and the depth to lithic contact range from 20 to 40 inches. The mean annual soil temperature is 58 to 61 degrees F. The soil moisture control section, from a depth of 10 to 29 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year.

The A horizon has dry color of 10YR 6/4, 6/3, 6/2, 5/4, or 5/2 or 7.5YR 5/4 and moist color of 10YR 3/3 or 3/2 or 7.5YR 3/4 or 4/4. The texture is loam. The content of gravel and cobbles is 10 to 35 percent. The content of clay is 18 to 27 percent. The content of organic matter is 1 to 3 percent. Reaction is moderately acid to neutral.

The Bt horizon has dry color of 10YR 7/4, 7/2, 6/2, or 5/4 or 7.5YR 5/4, 5/2, or 4/4 and moist color of 10YR 5/4, 4/3, 3/4, or 3/3 or 7.5YR 4/4, 4/2, or 3/4. The texture is very gravelly clay loam or gravelly clay. The content of rock fragments averages 35 to 60 percent. In some horizons it is less than 35 percent. The content of clay is 30 to 45 percent. Reaction is slightly acid to slightly alkaline.

The C horizon, if it occurs, has dry color of 2.5YR 5/2 and moist color of 2.5YR 3/2. The texture is gravelly clay.

The Squawrock soils in this survey area are a taxadjunct to the Squawrock series because of the clay in the Bt horizon and colors in the surface layer that are slightly brighter than is typical for the series.

Stonyford Series

The Stonyford series consists of shallow, well drained soils on mountain side slopes. These soils formed in residuum weathered from basic igneous rocks and related tuff breccia. Slope ranges from 5 to 50 percent. The mean annual precipitation is 22 to 28 inches, and the mean annual air temperature is 58 to 60 degrees F.

Taxonomic class: Loamy, mixed, superactive, thermic Lithic Mollic Haploxeralfs

Typical Pedon

Stonyford gravelly loam, in an area of Stonyford-Guenoc complex, 15 to 30 percent slopes, chaparral. When described on July 26, 1978, the soil was dry throughout.

A—0 to 3 inches; brown (7.5YR 4/4) gravelly loam, dark reddish brown (5YR 3/4) moist; weak medium subangular blocky structure parting to moderate medium granular; soft, friable, nonsticky and nonplastic; many fine roots; many fine and very fine interstitial pores; 20 percent angular gravel, dominantly less than 1/2 inch in diameter; neutral (pH 6.8); clear wavy boundary.

Bt1—3 to 7 inches; dark reddish brown (5YR 3/4) gravelly clay loam, dark reddish brown (5YR 3/4) moist; weak medium and coarse subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; many fine roots; many fine and few medium interstitial and tubular pores; few thin clay films lining pores; 15 percent angular gravel; neutral (pH 6.6); clear wavy boundary.

Bt2—7 to 14 inches; dark reddish brown (5YR 3/4) gravelly clay loam, dark reddish brown (5YR 3/3) moist; medium and coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; many medium and few fine roots; common thin clay films lining pores and on faces of peds; 30 percent gravel; neutral (pH 6.6); clear irregular boundary.

R—14 inches; highly fractured, partially weathered, brown (7.5YR 5/4) metamorphosed basalt; some soil material in cracks in the upper part, the cracks becoming less numerous and the basalt becoming less weathered and more massive with increasing depth.

Type location: Colusa County, California; approximately 3.7 miles west of Stonyford; about 50 feet north of Fouts Springs Road, on a southwest-facing slope; about 2,200 feet north and 1,200 feet east of the southwest corner of section 35, T. 18 N., R. 7 W., MDB&M; about 39 degrees, 22 minutes, 13 seconds north latitude and 122 degrees, 36 minutes, 13 seconds west longitude; Gilmore Peak topographic quadrangle.

Range in Characteristics

The thickness of the solum and the depth to bedrock range from 10 to 20 inches. The mean annual soil temperature is 59 to 64 degrees F. The soil moisture control section, from a depth of 6 to 11 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year. The soils are gravelly throughout. They are moderately acid to neutral throughout.

The A horizon has dry color of 7.5YR 4/4 or 5/6; 5YR 4/4 or 4/6; or 2.5YR 4/4 or 5/4. It has moist color of 5YR 3/4 or 2.5YR 3/4. The texture is gravelly loam.

The Bt horizon has dry color of 7.5YR 5/4; 5YR 3/4, 3/3, 4/6, or 6/6; or 2.5YR 4/6, 4/4, 3/4, or 5/4. It has moist color of 7.5YR 4/4; 5YR 3/4, 3/3, or 4/6; or 2.5YR 3/6 or 3/4. The increase in clay content from the A horizon to the Bt horizon is less than 10 percent (absolute). The texture is gravelly clay loam. The content of clay is 27 to 35 percent.

Tujunga Series

The Tujunga series consists of very deep, somewhat excessively drained soils on flood plains. These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 16 inches, and the mean annual air temperature is 60 to 62 degrees F.

Taxonomic class: Mixed, thermic Typic Xeropsamments

Typical Pedon

Tujunga loam, overwash, 0 to 2 percent slopes, under annual grasses and forbs. When described on August 4, 1988, the soil was dry throughout.

Ap—0 to 10 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; massive; slightly hard, friable, very sticky and slightly plastic; common very fine roots; common very fine and fine interstitial and tubular pores; few fine distinct brownish yellow (10YR 6/6) accumulations of iron, few fine distinct dark yellowish brown (10YR 3/6) moist; slightly acid (pH 6.3); abrupt wavy boundary.

C1—10 to 17 inches; gray (10YR 5/1) fine sand, very dark gray (10YR 3/1) moist; single grain; loose, nonsticky and nonplastic; many very fine roots; many coarse interstitial pores; neutral (pH 7.2); clear smooth boundary.

C2—17 to 37 inches; gray (10YR 5/1) fine sand, very dark gray (10YR 3/1) moist; single grain; loose, nonsticky and nonplastic; common very fine roots; many coarse interstitial pores; neutral (pH 7.2); diffuse wavy boundary.

C3—37 to 62 inches; gray (10YR 5/1) fine sand, very dark gray (10YR 3/1) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many coarse interstitial pores; neutral (pH 7.0).

Type location: Colusa County, California; about 3 1/2 miles north of Colusa, in an unsectionalized area;

1,350 feet south and 1,950 feet west of the northeast corner of section 5, T. 16 N., R. 1 W., MDB&M; 39 degrees, 16 minutes, 17 seconds north latitude and 122 degrees, 00 minutes, 36 seconds west longitude; USGS Moulton Weir, California, topographic quadrangle.

Range in Characteristics

The Ap overwash ranges from 2 to 10 inches in thickness. The mean annual soil temperature is 63 to 65 degrees F. The 6- to 33-inch soil moisture control section is dry in all parts from May 15 to October 31 and moist in some or all parts from November 15 to May 1.

The Ap horizon has dry color of 10YR 6/3 or 5/3 and moist color of 10YR 4/3 or 3/3. The texture is loam. Reaction is slightly acid or neutral.

The C horizon has dry color of 10YR 5/1, 6/2, or 5/3 and moist color of 10YR 3/1, 4/3, or 4/2. The texture is fine sand or loamy sand. Reaction is neutral.

Venado Series

The Venado series consists of very deep, poorly drained soils in basins (figure 20). These soils formed in alluvium weathered from dominantly serpentinitic rocks. Slope ranges from 0 to 2 percent. The mean annual precipitation is 18 to 20 inches, and the mean annual air temperature is 58 to 60 degrees F.

Taxonomic class: Very-fine, magnesic, thermic Aridic Endoaquerts

Typical Pedon

Venado silty clay, in an area of rangeland. When described on August 8, 1996, the soil was dry throughout.

Ap—0 to 3 inches; very dark gray (2.5Y 3/1) clay, black (2.5Y 2.5/1) moist; strong fine angular blocky structure; very hard, firm, moderately sticky and very plastic; common very fine roots; neutral (pH 7.2); abrupt wavy boundary.

A—3 to 13 inches; very dark gray (2.5Y 3/1) clay, black (2.5Y 2.5/1) moist; weak very coarse prismatic structure parting to moderate very coarse angular blocky; very hard, firm, moderately sticky and very plastic; common very fine roots; very slightly effervescent; pressure faces on vertical and horizontal surfaces of peds; slightly alkaline (pH 7.8); gradual smooth boundary.

Bss—13 to 30 inches; black (2.5Y 2.5/1) clay, black (2.5Y 2.5/1) moist; strong medium angular blocky structure parting to weak moderate wedge-shaped aggregates; very hard, firm, moderately sticky and very plastic; few very fine roots; very slightly effervescent; many intersecting slickensides; 5 percent chert gravel; moderately alkaline (pH 8.0); clear smooth boundary.

Bk—30 to 38 inches; gray (5Y 6/1) silty clay, very dark gray (5Y 3/1) and olive gray (5Y 4/2) moist; weak medium angular blocky structure; hard, friable, moderately sticky and moderately plastic; few fine tubular pores; few faint patchy clay films on vertical and horizontal faces of peds; strongly effervescent; strongly alkaline (pH 8.6); gradual smooth boundary.

Btk—38 to 53 inches; light olive gray (5Y 6/2) and pale yellow (5Y 8/2) silty clay loam, olive gray (5Y 4/2) and light olive gray (5Y 6/2) moist; weak fine angular blocky structure; hard, friable, moderately sticky and moderately plastic; few very fine and common fine tubular pores; violently effervescent; few faint patchy clay films on vertical and horizontal faces of peds; strongly alkaline (pH 8.5); abrupt smooth boundary.

BCtk—53 to 61 inches; light olive gray (5Y 6/2) silty clay loam, dark olive gray (5Y 3/2) moist; weak medium angular blocky structure; hard, friable, moderately sticky and moderately plastic; few very fine and common fine tubular pores; strongly effervescent; few faint patchy clay films on vertical and horizontal faces of peds; strongly alkaline (pH 8.5); abrupt smooth boundary.

Ab—61 to 69 inches; very dark gray (2.5Y 3/1) clay, black (2.5Y 2.5/1) moist; strong fine angular blocky structure; very hard, firm, moderately sticky and very plastic; very slightly effervescent; pressure faces on vertical and horizontal surfaces of peds; moderately alkaline (pH 8.0).

Type location: Colusa County, California; about 3$^1/_2$ miles southwest of Leesville, California; 1,100 feet west and 200 feet north of the southeast corner of section 17, T. 15 N., R. 5 W., MDB&M; 39 degrees, 08 minutes, 29 seconds north latitude and 122 degrees, 25 minutes, 53 seconds west longitude; USGS Leesville, California, topographic quadrangle.

Range in Characteristics

The soils have cracks, 1 to 2 centimeters wide, that open and close at least once each year and remain open for 180 days or more. The cracks extend to a depth of 50 centimeters. The mean annual soil temperature is 58 to 60 degrees F. The content of rock fragments ranges from 0 to 15 percent. Ca to Mg ratios are 1:5 to 1:11. The 6- to 20-inch soil moisture control section is dry in all parts from June 1 to October 31 and moist in all parts from November 1 to

May 31. The weighted average clay content in the 10- to 40-inch textural control section is 60 to 65 percent.

The Ap and A horizons have dry color of 10YR 4/1 or 3/1 or 2.5Y 3/1 and moist color of 10YR 2/1 or 2.5Y 2.5/1. The texture is clay. The content of clay ranges from 35 to 65 percent. Reaction is neutral or slightly alkaline.

The Bss and Bk horizons have dry color of 10YR 5/1 or 3/1 or 2.5Y 6/1 or 2.5/1 and moist color of 10YR 3/1 or 2/1 or 2.5Y 4/2, 3/1, or 2.5/1. The texture is silty clay or clay loam. The content of clay ranges from 35 to 65 percent. Reaction is moderately alkaline or strongly alkaline.

The Btk and BCtk horizons have dry color of 10YR 5/2, 5Y 8/2 or 6/2, or 2.5Y 6/2 or 6/1 and moist color of 10YR 3/2; 5Y 6/2, 4/2, or 3/2; or 2.5Y 4/2 or 4/1. The texture is clay loam, loam, silty clay loam, silty clay, or clay. The content of clay ranges from 25 to 40 percent. Reaction is strongly alkaline.

The Ab horizon has dry color of 5Y 3/1 and moist color of 5Y 2.5/1. The texture is clay. The content of clay ranges from 40 to 80 percent. Reaction is moderately alkaline.

Vina Series

The Vina series consists of very deep, well drained soils on flood plains. These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 16 inches, and the mean annual air temperature is 60 to 62 degrees F.

Taxonomic class: Coarse-loamy, mixed, superactive, thermic Pachic Haploxerolls

Typical Pedon

Vina loam, 0 to 2 percent slopes, in an area of cropland. When described on August 4, 1988, the soil was moist throughout.

Ap—0 to 8 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine interstitial pores; moderately acid (pH 5.8); clear smooth boundary.

A1—8 to 14 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and common very fine roots; common very fine interstitial pores; slightly acid (pH 6.4); clear smooth boundary.

A2—14 to 21 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine interstitial and few fine tubular pores; slightly acid (pH 6.5); abrupt smooth boundary.

A3—21 to 26 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; few very fine roots; common very fine interstitial and few fine tubular pores; slightly acid (pH 6.5); abrupt smooth boundary.

AC—26 to 46 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and few coarse roots; few very fine interstitial and few fine and common very fine tubular pores; few fine distinct dark brown (7.5YR 3/4) accumulations of iron; slightly acid (pH 6.5); abrupt smooth boundary.

C1—46 to 48 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; few fine distinct grayish brown (2.5Y 5/2) accumulations of iron; neutral (pH 6.6); abrupt smooth boundary.

C2—48 to 60 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; neutral (pH 6.9).

Type location: Colusa County, California; about 5 miles north of Colusa; 1,900 feet east and 300 feet north of the southwest corner of section 31, T. 17 N., R. 1 W., MDB&M; 39 degrees, 16 minutes, 33 seconds north latitude and 122 degrees, 00 minutes, 54 seconds west longitude; Moulton Weir, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 8 to 24 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The weighted average clay content in the textural control section, from a depth of 10 to 40 inches, ranges from 12 to 18 percent.

The Ap and A horizons have dry color of 10YR 5/3 or 5/2 and moist color of 10YR 3/3 or 3/2. The texture is loam or fine sandy loam. Reaction is moderately acid to slightly alkaline.

The AC horizon has dry color of 10YR 5/3 or 5/2 and moist color of 10YR 3/3 or 3/2. The texture is loam, fine sandy loam, or silt loam. Reaction is slightly acid to slightly alkaline.

The C horizon has dry color of 10YR 6/3, 6/2, 5/3, or 5/2 and moist color of 10YR 4/4, 4/3, 4/2, 3/4, 3/3, or 3/2. The texture is sandy loam or silt loam. Reaction is neutral or slightly alkaline.

Westfan Series

The Westfan series consists of very deep, well drained soils on relict alluvial fans (figure 21). These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 16 inches, and the mean annual air temperature is 60 to 62 degrees F.

Taxonomic class: Fine-loamy, mixed, superactive, thermic Pachic Haploxerolls

Typical Pedon

Westfan loam, 0 to 2 percent slopes, in an area of cropland. When described on October 25, 1988, the soil was moist below a depth of 18 inches.

Ap1—0 to 4 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine and fine interstitial pores; neutral (pH 6.9); abrupt smooth boundary.

Ap2—4 to 14 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine and fine tubular pores; neutral (pH 7.3); clear smooth boundary.

ABt—14 to 24 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak coarse prismatic structure parting to moderate fine angular blocky; hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; continuous moderately thick clay films lining pores and on faces of peds; slightly alkaline (pH 7.5); clear smooth boundary.

Btk—24 to 33 inches; brown (10YR 4/3) fine sandy loam, dark brown (10YR 3/3) moist; strong medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular and few very fine interstitial pores; common moderately thick clay films on faces of peds and lining pores; strongly effervescent; disseminated lime in seams; slightly alkaline (pH 7.7); clear smooth boundary.

Ck1—33 to 42 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular and interstitial pores; moderately alkaline (pH 7.9); strongly effervescent; disseminated lime in seams and concretions; clear smooth boundary.

Ck2—42 to 55 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine interstitial pores; strongly effervescent; disseminated lime in seams and nodules; moderately alkaline (pH 7.9); gradual smooth boundary.

C1—55 to 69 inches; light yellowish brown (10YR 6/4) fine sandy loam, mixed dark brown (10YR 3/3) and brown (10YR 4/3) moist; massive; hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine interstitial pores; moderately alkaline (pH 8.0); gradual wavy boundary.

C2—69 to 92 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, very friable, sticky and plastic; few very fine interstitial pores; moderately alkaline (pH 8.2); gradual smooth boundary.

2C—92 to 100 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 5/4) moist; massive; very hard, firm, very sticky and very plastic; few very fine interstitial pores; moderately alkaline (pH 8.3).

Type location: Colusa County, California; about 1 mile east of Williams; 3,200 feet west and 720 feet south of the northeast corner of section 19, T. 15 N., R. 2 W., MDB&M; 39 degrees, 08 minutes, 45 seconds north latitude and 122 degrees, 07 minutes, 35 seconds west longitude; USGS Williams, California, topographic quadrangle.

Range in Characteristics

The thickness of the solum ranges from 25 to more than 60 inches. The mean annual soil temperature is 63 to 65 degrees F, and the soil temperature is above 47 degrees F the entire year. The 6- to 17-inch soil moisture control section is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 31. The soils are calcareous at a depth of 20 to 40 inches. The 10- to 40-inch textural control section averages 18 to 27 percent clay. Some pedons are strongly alkaline throughout.

The Ap horizon has dry color of 10YR 5/3, 5/2, 4/3, or 4/2 and moist color of 10YR 3/3 or 3/2. The texture is clay loam, loam, or gravelly loam. Reaction is neutral or slightly alkaline.

The ABt horizon has dry color of 10YR 5/3 or 4/3 and moist color of 10YR 4/3 or 3/3. The texture is sandy clay loam, loam, or gravelly loam. Reaction is neutral to moderately alkaline.

The Btk horizon has dry color of 10YR 5/4, 5/3, or 4/3 and moist color of 10YR 4/4, 4/3, or 3/3. The texture is sandy clay loam, loam, fine sandy loam, or gravelly loam. Reaction is neutral to moderately alkaline.

The C and 2C horizons have dry color of 10YR 6/4, 5/4, or 5/3 and moist color of 10YR 3/3, 3/4, 4/4, 4/3, or 5/4. The texture is silty clay loam, loam, sandy clay loam, or fine sandy loam. Reaction is slightly alkaline or moderately alkaline.

Willows Series

The Willows series consists of very deep, poorly drained soils in basins (figure 22). These soils formed in alluvium derived from mixed sources. Slope ranges from 0 to 2 percent. The mean annual precipitation is 14 to 16 inches, and the mean annual air temperature is 60 to 62 degrees F.

Taxonomic class: Fine, smectitic, thermic Sodic Endoaquerts

Typical Pedon

Willows silty clay, 0 to 1 percent slopes, frequently flooded, in a fallow rice paddy; described on September 24, 1993.

Ap1—0 to 5 inches; dark grayish brown (2.5Y 4/2) silty clay, very dark grayish brown (2.5Y 3/2) moist; weak medium subangular blocky structure parting to moderate medium coarse granular; very hard, firm, sticky and plastic; many very fine roots; many very fine and fine low-continuity interstitial and tubular pores; noneffervescent; common fine distinct yellowish brown (10YR 5/4) cylindrical accumulations of iron; neutral (pH 7.0); clear smooth boundary.

Ap2—5 to 13 inches; dark grayish brown (2.5Y 4/2) silty clay, very dark grayish brown (2.5Y 3/2) moist; weak coarse angular blocky structure; very hard, firm, sticky and plastic; common very fine roots; many very fine low-continuity tubular pores; prisms 25 to 35 centimeters across; compacted layer; few prominent discontinuous pressure faces on peds; noneffervescent; common fine distinct yellowish brown (10YR 5/4) accumulations of iron; moderately alkaline (pH 7.9); gradual smooth boundary.

Bw—13 to 20 inches; grayish brown (2.5Y 5/2) silty clay, very dark grayish brown (2.5Y 3/2) moist; moderate coarse angular blocky structure; very hard, firm, sticky and plastic; few very fine roots; many very fine low-continuity tubular pores; prisms 25 to 35 centimeters across; compacted layer; few prominent discontinuous pressure faces on peds; slightly effervescent on concretions; common fine irregular very dark gray (10YR 3/1) slightly hard iron-manganese concretions; few fine distinct yellowish brown (10YR 5/4) accumulations of iron; moderately alkaline (pH 8.1); gradual smooth boundary.

Bssy1—20 to 39 inches; brown (10YR 5/3) silty clay, brown (10YR 4/3) moist; strong coarse angular blocky structure; very hard, firm, sticky and plastic; few very fine roots; many very fine low-continuity tubular pores; prisms 25 to 35 centimeters across, breaking to wedge-shaped peds; few prominent discontinuous pressure faces on peds, few prominent patchy organic coatings in root channels and/or pores, and common prominent continuous intersecting slickensides on faces of peds; common fine irregular white (10YR 8/1) soft masses of lime; common white (10YR 8/1) fine threads and soft masses of gypsum; common fine rounded very dark gray (10YR 3/1) slightly hard iron-manganese concretions; slightly alkaline (pH 7.8); clear smooth boundary.

Bssy2—39 to 54 inches; brown (10YR 5/3) silty clay, brown (10YR 4/3) moist; strong coarse angular blocky structure; very hard, firm, sticky and plastic; few very fine roots; many very fine low-continuity tubular pores; prisms breaking to wedge-shaped peds; common prominent continuous intersecting slickensides on faces of peds; few prominent patchy organic coatings in root channels and/or pores; common fine irregular white (10YR 8/1) soft masses of lime; common white (10YR 8/1) fine threads and soft masses of gypsum; common fine rounded very dark gray (10YR 3/1) slightly hard iron-manganese concretions; strongly effervescent on concretions; moderately alkaline (pH 7.9); clear smooth boundary.

Bssy3—54 to 60 inches; brown (10YR 5/3) silty clay, brown (10YR 4/3) moist; moderate coarse angular blocky structure; very hard, firm, sticky and plastic; few very fine roots; many very fine low-continuity tubular pores; prisms breaking to wedge-shaped peds; iron accumulations along pore linings or on surfaces of slickensides; common prominent continuous intersecting slickensides on faces of peds; common fine irregular white (10YR 8/1) soft masses of lime; common white (10YR 8/1) fine threads and soft masses of gypsum; common coarse and very coarse irregular soft masses of lime; common fine rounded iron-manganese concretions; strongly effervescent on concretions; few medium distinct light brownish gray (10YR 6/2) accumulations of iron; moderately alkaline (pH 8.0); gradual smooth boundary.

Bssy4—60 to 72 inches; brown (10YR 5/3) clay, brown (10YR 4/3) moist; common medium distinct gray (10YR 5/1) (moist) irregular iron depletions; moderate coarse angular blocky structure parting to moderate medium subangular blocky; very hard, firm, deformable, sticky and plastic; few very fine roots throughout; many very fine low-continuity tubular pores; prisms breaking to wedge-shaped peds; iron depletions along pore linings or on surfaces of slickensides; common prominent continuous intersecting slickensides on faces of peds; common fine irregular white (10YR 8/1) soft masses of lime throughout; common white (10YR 8/1) fine threads and soft masses of gypsum throughout; common fine rounded slightly hard iron-manganese concretions throughout; strongly effervescent on concretions (HCl, 1 normal); moderately alkaline (pH 8.2); clear wavy boundary.

Bssy5—72 to 80 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/4) moist; common medium gray (10YR 5/1) (moist) irregular iron depletions; moderate coarse subangular blocky structure; very hard, firm, deformable, sticky and plastic; few very fine roots throughout; many very fine low-continuity tubular pores; prisms breaking to wedge-shaped peds; iron depletions along pore linings or on surfaces of slickensides; common prominent continuous intersecting slickensides on faces of peds; common fine irregular white (10YR 8/1) soft masses of lime throughout; common white (10YR 8/1) fine threads and soft masses of gypsum throughout; common fine rounded very dark gray (10YR 3/1) slightly hard iron-manganese concretions throughout; strongly effervescent on concretions (HCl, 1 normal); moderately alkaline (pH 8.1); clear smooth boundary.

Bssky—80 to 87 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; few fine greenish gray (5GY 5/1) (moist) irregular iron depletions; moderate coarse subangular blocky structure; very hard, firm, deformable, sticky and plastic; few very fine roots throughout; few fine tubular pores; prisms breaking to wedge-shaped peds; iron depletions along pore linings or on surfaces of slickensides; common prominent continuous intersecting slickensides on faces of peds; common fine irregular white (10YR 8/1) soft masses of lime throughout; common white (10YR 8/1) fine threads and soft masses of gypsum throughout; common fine rounded very dark gray (10YR 3/1) iron-manganese concretions throughout; violently effervescent on concretions (HCl, 1 normal); strongly alkaline (pH 8.7).

Type location: Colusa County, California; about 3 miles west of Colusa; 2,200 feet north and 2,250 feet west of the southeast corner of section 27, T. 16 N., R. 2 W., MDB&M; 39 degrees, 12 minutes, 40 seconds north latitude and 122 degrees, 4 minutes, 55 seconds west longitude; USGS Colusa, California, topographic quadrangle.

Range in Characteristics

The mean annual soil temperature is 63 to 65 degrees F. The soil temperature is above 47 degrees F the entire year. Unless the soils are irrigated, the soil moisture control section, from a depth of 6 to 17 inches, is dry in all parts from May 15 to October 31 and moist in some or all parts from November 1 to May 15. The weighted average clay content in the textural control section, from a depth of 10 to 40 inches, ranges from 40 to 60 percent.

The A horizon has dry color of 10YR 6/2, 6/1, 5/2, or 5/1 or 2.5Y 5/2 or 4/2 and moist color of 10YR 3/2 or 3/1 or 2.5Y 3/2. The texture is silty clay. Reaction is slightly acid to moderately alkaline.

The Bw, Bssy, and Bssky horizons have dry color of 10YR 6/4, 6/3, 5/4, or 5/3 or 2.5Y 6/4 or 5/2 and moist color of 10YR 4/4, 4/3, 3/4,or 3/3 or 2.5Y 4/4, 4/2, or 3/2. The texture is silty clay or clay. Reaction is slightly alkaline to strongly alkaline.

Yollabolly Series

The Yollabolly series consists of shallow, excessively drained soils on mountain side slopes. These soils formed in residuum derived from schist. Slope ranges from 30 to 75 percent. The mean annual precipitation is 50 to 70 inches, and the mean annual air temperature is 43 to 48 degrees F.

Taxonomic class: Loamy-skeletal, mixed, active, acid, frigid Lithic Xerorthents

Typical Pedon

Yollabolly very gravelly loam, in an area of Freezeout-Yollabolly association, 50 to 75 percent slopes, under black oak and Jeffrey pine with a thin surface cover of twigs, oak leaves, and pine needles. When described on October 15, 1996, the soil was dry throughout.

A1—0 to 2 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine interstitial pores; 35 percent gravel; strongly acid (5.5); abrupt smooth boundary.

A2—2 to 6 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine interstitial pores; 35 percent gravel; moderately acid (5.9); clear smooth boundary.

C—6 to 17 inches; light yellowish brown (10YR 6/4) very gravelly loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium and few very fine roots; common very fine interstitial pores; 40 percent gravel; strongly acid (5.5); abrupt smooth boundary.

R—17 inches; hard, fractured schist.

Type location: Colusa County, California; on Mendocino National Forest Road 17N14, about 0.3 mile north of its intersection with MNF Road 16NO3; 1,500 feet west and 400 feet south of the northeast corner of section 2, T. 16 N., R. 8 W., MDB&M; 39 degrees, 16 minutes, 29 seconds north latitude and 122 degrees, 43 minutes, 30 seconds west longitude; USGS Fouts Springs, California, topographic quadrangle.

Range in Characteristics

The depth to lithic contact ranges from 10 to 20 inches. The content of clay ranges from 10 to 25 percent throughout the profile. The mean annual soil temperature is 44 to 47 degrees F. The soil temperature is above 41 degrees F from March 15 to November 15 and above 47 degrees F April 15 to October 15. The soil moisture control section, from a depth of 6 to 17 inches, is dry in all parts from July 30 to October 1 and moist in all parts December 15 to May 30.

The A horizon has dry color of 10YR 7/2, 6/4, 5/4, or 5/3 or 7.5YR 6/4 and moist color of 10YR 5/2, 4/4, 3/4, or 3/3 or 7.5YR 4/6. The texture is very gravelly or extremely gravelly loam in the lower part. The content of gravel ranges from 35 to 65 percent. Reaction is very strongly acid in most pedons and moderately acid in some pedons.

The C horizon has dry color of 10YR 6/6, 6/4, 6/3, or 5/6 and moist color of 10YR 5/6, 4/6, 4/3, or 4/2. The texture is very gravelly sandy loam, extremely gravelly sandy loam, very gravelly loam, or extremely gravelly loam. The content of gravel ranges from 35 to 75 percent. Reaction is very strongly to moderately acid.

Yorkville Series

The Yorkville series consists of very deep, well drained soils on mountain side slopes and landslips. These soils formed in residuum weathered dominantly from schist. Slope ranges from 15 to 50 percent. The mean annual precipitation is 25 to 45 inches, and the mean annual air temperature is 54 to 59 degrees F.

Taxonomic class: Fine, mixed, superactive, thermic Typic Argixerolls

Typical Pedon

Yorkville clay loam, in an area of Fouts-Yorkville-Squawrock association, 15 to 50 percent slopes. When described on August 13, 1980, the soil was dry throughout.

A—0 to 2 inches; dark gray (10YR 4/1) clay loam, black (10YR 2/1) moist; strong fine granular structure parting to moderate medium subangular blocky; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine interstitial pores; 2 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bt1—2 to 15 inches; dark gray (10YR 4/1) clay loam, black (10YR 2/1) moist; moderate medium and coarse subangular blocky structure; very hard, firm, sticky and plastic; common fine roots; common very fine interstitial and few fine tubular pores; 5 percent gravel; slightly alkaline (pH 7.5); gradual wavy boundary.

Bt2—15 to 40 inches; gray (10YR 5/1) clay, very dark gray (10YR 3/1) moist; moderate fine prismatic structure parting to moderate medium subangular blocky; very hard, firm, sticky and plastic; few fine and medium roots; common fine interstitial and few fine tubular pores; 5 percent gravel; slightly alkaline (pH 7.6); gradual wavy boundary.

Bt3—40 to 55 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard; friable, sticky and plastic; few fine roots; common fine interstitial pores; 10 percent gravel; slightly alkaline (pH 7.6); gradual wavy boundary.

BC—55 to 60 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; common fine interstitial pores; 10 percent gravel; moderately alkaline (pH 8.0); clear wavy boundary.

Cr—60 inches; strongly weathered and highly fractured schist.

Type location: Colusa County, California; about 1$^{1}/_{2}$ miles northeast of Fouts Springs, California; 1,600 feet west and 2,000 feet north of the southeast corner of section 32, T. 18 N., R. 7 W., MDB&M; 39 degrees, 22 minutes, 10 seconds north latitude and 122 degrees, 39 minutes, 35 seconds west longitude; USGS Fouts Springs, California, topographic quadrangle.

Range in Characteristics

The thickness of the solum and the depth to bedrock are more than 60 inches. The mean annual soil temperature is 58 to 61 degrees F. The soil moisture control section, from a depth of 6 to 20 inches, is dry in all parts from June 1 to October 31 and moist in some or all parts the rest of the year.

The A horizon has dry color of 10YR 5/3, 5/2, 4/3, 4/2, or 4/1 or 2.5Y 5/2 or 4/2 and moist color of 10YR 3/3, 3/2, 3/1, or 2/1 or 2.5Y 3/2. The texture is clay loam. Reaction is slightly acid to slightly alkaline.

The Bt horizon has dry color of 10YR 5/3, 5/2, 5/1, 4/3, 4/2, or 4/1 or 2.5Y 5/4 or 5/2 and moist color of 10YR 4/1, 3/2, 3/1, or 2/1 or 2.5Y 3/2. This horizon is clay loam or clay and has 35 to 50 percent clay, 9 to 20 percent more clay than the A horizon. Reaction is neutral to moderately alkaline.

The BC horizon has dry color of 10YR 5/3, 5/2, 4/3, or 4/2 or 2.5Y 5/4 or 5/2 and moist color of 10YR 4/2 or 3/2 or 2.5Y 3/2. The texture is clay loam. The content of clay is 27 to 35 percent. Reaction is neutral to moderately alkaline.

Formation of the Soils

Soil formation is complex, involving chemical, physical, and biological processes working together upon the uppermost layers of the earth's surface. The diversity of soils depends on the magnitude and interaction of five major soil-forming factors—climate, topography, parent material, vegetation and other living organisms, and time (Jenny, 1994).

Climate

Climate exerts a powerful influence on soil formation. The availability of moisture is of critical importance in the functioning of chemical and physical processes. Weathering of parent material proceeds at a rapid rate in areas where a continual supply of moisture is available. In arid climates soil formation may come to a relative halt during extremely dry periods.

The soils in the Sacramento Valley formed under a climate that supplied abundant moisture for soil formation in winter and early spring and then remained dry for the rest of the year. Areas along the Sacramento River and other streams received additional moisture from overbank flooding, amounting to two or three times the amount from rainfall. As a result of a combination of overbank flooding and deposition, areas along the Sacramento River and other streams on the west side of the Sacramento Valley have developed very deep soils.

The dry summer and fall in the Sacramento Valley reduce the amount of soil leaching caused by rainfall. The reduced leaching enhances the retention of bases on the soil exchange complex. The rich level of bases combined with soil texture, depth, and content of organic matter have resulted in the extremely fertile soils of the Sacramento Valley.

In the foothills of the county and the lower elevation areas of the Coast Range, rainfall is below a level that leaches many bases from the soils, but it is adequate in most years for plant growth; consequently, the soils are productive areas for livestock grazing. Moisture plays a critical role in weathering the fine grained sandstone and shale of the Great Valley Formation that underlies most of the foothills. Millsholm soils, which are shallow over bedrock, are primarily on south-facing slopes. Solar radiation dries these soils by early in spring, stopping most chemical soil weathering. Contra Costa soils are mostly on shaded north-facing slopes that retain moisture well into the summer months, resulting in soil profile development to a depth of 30 to 35 inches.

Above elevations of approximately 3,000 feet on the Coast Range, the amount of annual rainfall increases from 35 to 55 inches, depending on the specific elevation. Rainfall in the mountains is sufficient to leach bases from the soil exchange complex and produce acid soils. With the exception of the very deep Bamtush soils, which are in stable areas, soils of the mountains seldom reach a depth of more than 30 inches. On the steep slopes, the significant rainfall causes erosion, which limits the development of deep soils.

Soil temperature plays an important role in soil formation bacause chemical reactions proceed more rapidly with increasing soil temperature. Soil chemical reactions essentially stop when soil temperatures are below 32 degrees F, contributing to the limited depth of the soils in the higher areas on the Coast Range. Soil temperature and moisture are interrelated. As the soils dry during the summer, little chemical weathering of parent materials proceeds, even at the higher temperatures.

Soils of the foothills and Sacramento Valley have soil temperatures high enough during the moist periods of winter and early spring for some chemical weathering to continue.

Soil temperature assists in the weathering of parent materials into clays. The soils of the foothills and stable areas of the Sacramento Valley are relatively high in content of clay. Areas along the Sacramento River and west-side streams have deposits of loamy material, which is transported alluvium and has not developed in place. Mountain soils are generally loamy because their lower soil temperatures reduce the weathering of parent material to clay. Increasing soil moisture and decreasing soil temperature contribute to a higher content of organic matter in the soils of the mountains.

A few of the soils in Colusa County formed under different, older climatic conditions known as paleoclimates. Corning soils are the best example. They were deposited during a period when the amount of annaul rainfall was considerably higher. Bases in these soils are considerably leached, partly because of the higher rainfall during the paleoclimate and partly because of the great age of the soils. The clay in these soils has been translocated into a thick, dense claypan, which, combined with a low base status, results in low fertility.

Topography

Topography plays a role in soil formation in the uplands. The steeper slopes generally have shallower soils. Erosion of soil profiles occurs in small amounts under normal conditions and may be rapidly accelerated following the loss of a plant cover or another disturbance. Soil materials eroded from the upper slopes are deposited on the lower toe slopes and in valleys at the base of the hills and mountains.

In the Sacramento Valley, the lowest geographical areas are the basins. Alcapay, Capay, Clear Lake, Corbiere, and Willows soils are in the basins. These soils are now partially drained by ditches, but during their formation, they all had a high water table at some time of the year. The water in the soils contained large amounts of soluble salts, which were deposited in the upper part of the soils through the process of evapotranspiration. The resulting soils, which have an accumulation of salts, have required extensive reclamation to remove the excess salts in irrigation water or displace them below the root zone.

Alluvium, which is deposited along streams, is the parent material of soils that developed in response to the relief of the flood plain and the elevation of the streams. This development is described in more detail in the section on geomorphic surfaces.

Mass movement is a process in which soil material is removed from side slopes and deposited in downslope areas. Many areas of the mountains and foothills are susceptible to mass movement, which can be caused by steep slopes, geologic uplift, unstable underlying geologic material, periods of excessive rainfall, removal of the plant cover, and road construction.

Parent Material

Parent material exerts a strong influence on soil formation. It is the unconsolidated, more-or-less chemically weathered mineral or organic matter in which the soils are developed by pedogenic processes. Along the Sacramento River and west-side streams, soils formed in alluvium deposited during periods of flooding. The properties of the alluvium affect texture, fertility, pH, salt content, color, and other soil properties. Tujunga and Vina soils formed in coarse textured alluvium and are high in sand content and low in clay content. Corbiere, Moonbend, and Scribner soils formed in siilty alluvium.

The soils of the Sacramento Valley are weathered to a considerable depth because the native conditions under which the soils formed were characterized by adequate moisture and heavy vegetation. Unaltered parent material of these soils was not observed during the soil survey, except in very deep ditches.

Alcapay, Capay, Clear Lake, and Willows soils formed in very fine textured alluvium in the Colusa Basin and Butte Sink. A water table in these soils assisted soil formation through the deposition of salts. There is always the possibility that the current alluvial soils overlie a paleosol, or older buried soil, as deposition was continual under natural conditions.

Soils on foothills formed in residuum derived from fine grained sandstone and shale, which are readily weathered if moisture is available. Most of these soils have a relatively low content of rock fragments for upland soils as a result of the readily weatherable nature of the parent rock. The fine grained nature of the parent material also results in soils that are generally high in content of clay. Several soils, notably Ayar and Balcom soils, formed in material high in content of carbonates and thus have a high content of these carbonates throughout.

Soils that formed in material derived from serpentinitic rocks, which have magnesium-bearing minerals, generally are higher in content of magnesium than other soils. The magnesium influences plant growth at high levels. Soils along the western boundary of Lake County and west of Bear, Indian, and Stonyford Valleys formed in material weathered from serpentinitic rocks. Examples are Henneke, Okiota, and Montara soils. Excessive magnesium in these soils results in unusual plant communities because the plants typical of the survey area struggle to survive or are eliminated.

Alluvium derived from the soils that are high in content of magnesium has been widely deposited in Bear Valley. Bearvalley, Leesville and Venado soils which have high levels of magnesium, formed in this alluviuim.

The soils on the Coast Range formed mainly in material weathered from schist of the Fransiscan Formation. Because of steep slopes and slow weathering rates resulting from cold soil temperatures, these soils are moderately deep to unaltered parent material and have many rock fragments.

Vegetation and Other Living Organisms

Plants, micro-organisms, animals, and other organisms affect certain soil features. In areas of the Sacramento Valley grasslands, which have scattered oaks, the content of organic matter throughout the soil profile decreases regularly with increasing depth. As soils of the Grandbend, Moonbend, Scribner, and Vina series were cultivated, beginning in the late 1800s, a large amount of the organic matter was lost. This loss was accompanied by a loss of fertility. Modern fertilizers now compensate for this loss of native fertility. Soil nitrogen, a nutrient essential for plant growth, also was lost as the soils were cultivated and was replaced by commercial fertilizers. Incorporating plant residue into the soils improves the fertility and tilth of the soils.

Micro-organisms, such as bacteria, are present in large numbers in soils and affect the decomposition of rocks, the transformation of nitrogen compounds for plant use, and many other soil chemical properties. During dry periods irrigation has maintained a relatively constant moisture content in the soils that increases the activity of microbes and promotes weathering of parent material.

Soils used for rice in flooded paddies are subject to extended reducing conditions with changes in soil pH and transformation of iron and manganese. Salts that are present in the natural state of clayey soils are moved downward into the soil profile by irrigation.

Soils on foothills are dominantly affected by the growth of grasses. Organic matter is regularly distributed in these soils. Some accumulation of organic matter occurs below oak trees. This accumulation disappears when the trees are removed or die and the spot reverts to grasses.

In the mountains conifers play a major role in soil formation. Organic matter accumulates in large amounts on the surface in a partly decomposed mat and in the upper part of the A horizon. Plant roots concentrated in this layer capture plant nutrients. The lower parts of the soils contribute little to plant nutrition. Tree roots accelerate rock decomposition by entering cracks and creating small rock fragments. Pine and fir needles decompose, creating organic acids, which lower soil pH. The greater forest plant growth could produce deeper soils; however the steep slopes and colder soil temperatures dominate soil formation in the mountains, resulting in soils of only moderate depth.

Time

The length of time that the soil-forming factors have been active determines the morphology of the soils. Very young soils, such as Tujunga soils along the Sacramento River, have been deposited in the last hundred years and show little evidence of soil formation other than a small accumulation of organic matter in the upper few inches. Vina soils, which are very young soils on the slightly more stable surfaces, have accumulated an appreciable amount of organic matter throughout. They are several hundred years old.

As more time passes, other soil processes take place, especially the translocation of clay from the A horizon to the B horizon. In the slightly older soils, such as Moonbend and Westfan soils, some clay has been translocated to the B horizon. Soils that are similar to Moonbend soils generally are less than a few thousand years old.

As more time passes, to the point of tens of thousands of years, some soils develop a thick subsoil of heavy clay. Examples are Hillgate and Mallard soils, which have more than 40 percent clay in the B horizon.

After very long periods of time, soils develop to the point where further soil formation may not proceed without a change in the soil-forming factors. These soils may be characterized by a very dense claypan subsoil, a duripan, the leaching of bases, and iron oxidation. The very old Corning soils, for example, have a dense claypan, are low fertility because of the leaching of bases, and have characteristic red subsoil colors because of iron oxidation. Only resistant remnants of the old terraces where the Corning soils formed remain. These soils were deposited during the Pleistocene and are the oldest valley soils in the survey area.

Geomorphic Surfaces of the Sacramento Valley in the Survey Area

A geomorphic surface is a mappable area of the earth's surface that has a common history; the area is of similar age and is formed by a set of processes during an episode of landscape evolution. A geomorphic surface can be erosional, constructional, or both. The surface shape can be plane, concave, convex, or any combination of these. Understanding geomorphic surfaces is very important to the understanding of soils in valleys and on terraces and is used extensively in soil mapping.

Low Flood Plains

The area inside the levees on the Sacramento River has beaches of sand and gravel and numerous bars and channels. This area is heavily vegetated and frequently flooded. The soils under the dense vegetation of oaks, cottonwoods, willows, and grapevines are sandy and stratified.

Inside the Sacramento River levees are areas 5 to 10 feet higher than the beaches and bars. This second surface has coarse-loamy Mollisols of the Vina series that have a very thick, dark surface horizon. The native vegetation was dense stands of oaks, cottonwoods, willows, grapevines, and poison oak. This surface is flooded occasionally and is used for orchards of walnuts and peaches. It continues on both sides of the river in some areas and also follows old slough remnant channels away from the river. The levees are often constructed at the edge of this surface on what was the edge of the natural river levee. The natural river levee is a slightly higher area of deposition from overbank flooding along the river.

High Flood Plains

This surface is now protected from flooding by the levees along the Sacramento River. Historically, the surface was flooded in most years during periods of high riverflow. It begins at the natural levee and slopes very gently toward the Colusa Basin. The soils are dominantly those of the Moonbend series, which have a high content of silt and a thick, dark surface horizon. These very productive soils are used mostly for orchards and some tomato production. The city of Colusa is constructed on this surface, as was the Native American village of Colus, because of less intense, less frequent flooding. The native vegetation was oak with scattered cottonwoods and dense, tall perennial grasses.

Basins

This surface makes up most of the Colusa Basin and Butte Sink. The Colusa Basin received regular additions of fine textured sediments because of overflows from sloughs of the Sacramento River and streams flowing east from the Coast Range foothills. The fine textured sediments settled out of the slow-moving water once it entered the basin. Floodwater from the Sacramento River no longer reaches the basin because of levees, but the streams from the Coast Range foothills still reach the basin unimpeded. Flooding is still frequent and of long duration along the lowest areas of the basin. The soils in the basin occur as extensive areas of Willows and Clear Lake soils.

Large areas of the basin surface were affected by the accumulation of sodium and have been partially reclaimed over the last 80 years. Additions of gypsum and other soil amendments and annual flooding for rice production leached the soil salts down to 3 or 4 feet in most areas. As rice roots extend to a depth of only about 12 inches, the soil reclamation efforts here are adequate for rice and excellent yields are obtained. It appears that the dense clays that extend to a depth of 8 feet or more and the ground water table, which is usually not lower than 6 feet, limit the further reclamation of these soils. Fields that are not planted for several years will have salts transported upwards to the surface through evaporation. As the basin rises to the west, it meets the distal ends of alluvial fans and joins some interfan basins east of Interstate 5.

Interfan Basins

This surface lies between the alluvial fans on the west side of the Sacramento Valley. The soils are those of the Capay, Alcapay, Willows, and Clear Lake series. They are fine textured, having horizons mostly of clay. This surface is depositional; fine textured sediments were deposited from the streams on the west side of the valley. These basins are used mostly for rice production. The accumulation of sodium was severe in these basins, and reclamation was started in the 1970s, after the Tehama-Colusa canal was built. Many areas are now sufficiently reclaimed to produce good yields of rice, but salty areas remain. Alcapay soils have excess sodium as high as 2 feet in their profile and yet produce good rice yields if managed carefully.

Alluvial Fans

The alluvial fans generally have two surfaces. The lower surface consists of the immediate stream channels, which are flooded very regularly. This surface has been changed by stream diversion in many areas. The native vegetation was cottonwoods and willows that were mostly cleared but are returning in many areas. The soils are those of the Hustabel series, which have a texture of sandy loam in the upper part, and those of the Arand series, which are sandy. A slightly higher surface that is flooded less frequently makes up most of the area of alluvial fans. The soils on this surface are those of the Westfan and Corval series, which are dominantly loamy. The cities of Williams and Maxwell are on these surfaces. Diversion of streams has reduced the risk of flooding. Flooding outside of stream channels occurs occasionally on the alluvial fan surface.

Alluvial Terraces

This older surface is limited to terraces on the western margins of the Sacramento Valley and in a few areas in upland valleys. These terraces are no longer flooded, and erosion is replacing deposition as the means of constructing the surface. The soils are dominantly those of the Hillgate series, which have a subsoil of brownish clay or clay loam. The alluvial terrace surface grades very slowly into the alluvial fan surface and the interfan basin surface, which is difficult to locate in places. In the Arbuckle area, the alluvial terrace surface is overlain in places by a surface of alluvium that was deposited from streams that no longer deposit material on the surface. The soils in this area are those of the Arbuckle series, which generally are loamy and have gravel in the lower part of the subsoil.

The oldest alluvial terrace surface occurs as scattered erosional remnants on a small acreage along the lower margins of foothills and in some foothill valleys. Erosion is the dominant process on this surface today. The soils are those of the Corning series, which are typically reddish brown or dark reddish brown, are dominantly neutral or slightly acid, and generally have dense clay in the upper part of the subsoil.

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Glossary

AASHTO classification. A system that classifies soils specifically for geotechnical engineering purposes that are related to highway and airfield construction. It is based on particle-size distribution and Atterberg limits.
AASHTO group index (GI). An empirical index number used to evaluate clayey and silty clay material.
ABC soil. A soil having an A, a B, and a C horizon.
AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.
Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.
Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.
Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.
Alluvial cone. See Alluvial fan.
Alluvial fan. A low, outspread mass of loose material and/or rock material, commonly with gentle slopes, shaped like an open fan or a segment of a cone, deposited by a stream at the place where it issues from a narrow mountain valley or where a tributary stream is near or at its junction with the main stream. It is steepest near the mouth of the valley where its apex points upstream, and it slopes gently and convexly outward with a gradual decrease in gradient.
Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.
Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.
Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.
Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.
Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.
Aspect. The direction in which a slope faces.
Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.
Atterberg limits. The collective designation of seven limits of consistency of fine grained soils, suggested by Albert Atterberg, 1911-1912. Current usage usually retains only the liquid limit, the plastic limit, and the plasticity index.
Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 2.5
Low	2.5 to 5
Moderate	5 to 7.5
High	7.5 to 10
Very high	more than 10

AWC. See Available water capacity
Backslope. The hillslope profile position that forms the steepest and generally linear, middle portion of the slope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below. They may or may not include cliff segments (i.e., free faces). Backslopes are commonly erosional landforms produced by mass movement, colluvial action, and running water.
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, lowermost part of intermontane basins (i.e., bolsons and semibolsons). The floor includes all of the alluvial, eolian, and erosional landforms below the piedmont slope.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. A general term for the solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

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

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

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

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

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Bulk density. The weight of ovendry soil per unit volume. Bulk density is commonly expressed in grams per cubic centimeter or pounds per cubic foot.

Butte. An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by a summit width that is less than the height of bounding escarpments, commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

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

Calcium carbonate equivalent. The quantity of carbonate (CO_3) in the soil expressed as $CaCO_3$ and as a weight percentage of the soil material that is less than 2 millimeters in size.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence of soils across a landscape that are about the same age, formed in similar kinds of parent material and under similar climatic conditions, but have different characteristics because of variations in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity (CEC). 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.

CEC. See Cation-exchange capacity.

Cement rock. Shaly limestone used in the manufacture of cement.

Channery soil material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A dense, compact, slowly permeable layer in the subsoil. It has a much higher clay content than the overlying material, from which it is separated by a sharply defined boundary. It is usually hard when dry and plastic or sticky when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility). See Linear extensibility percent.

Colluvium. Unconsolidated, unsorted earth material transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Compaction. The process by which soil grains are rearranged in a manner that decreases void space and brings the grains into closer contact with one another, thereby increasing the bulk density.

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

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conglomerate. A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Cements include silica, calcium carbonate, and iron oxides. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

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

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

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

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Delta. A body of alluvium having a surface that is nearly flat and fan shaped; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

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.

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

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of underlying bedrock.

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

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

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

Draw. A small stream channel, generally more open and with a broader floor than a ravine or gulch.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

EC. See Electrical conductivity

Ecological site. An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Electrical conductivity (EC). The electrolytic conductivity of an extract from saturated soil paste.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian. Pertaining to material transported and deposited by the wind. Includes earth materials, such as dune sands, sand sheets, loess deposits, and clay.

Ephemeral stream. Generally a small stream, or upper reach of a stream, that flows only in direct response to precipitation. It receives no protracted supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by running water, waves, or moving ice and wind or by such processes as mass wasting and corrosion (solution and other chemical processes). The term “geologic erosion” refers to natural erosion occurring over long (geologic) timespans. “Accelerated erosion” refers to erosion that is in excess of what is presumed or estimated to be naturally occurring levels and is a direct result of human activities.

Erosional pavement. A concentration of gravel or larger rock fragments that remains on the soil surface as a lag after finer particles have been removed by running water or wind.

Escarpment. A relatively continuous cliff or relatively steep slope, produced by erosion or faulting, breaking the general continuity of more gently sloping land surfaces. The term is most commonly applied to cliffs produced by differential erosion, and it is commonly used synonymously with “scarp.”

Extrusive. An adjective for igneous rocks and sediments derived from deep-seated molten matter (magma) deposited and cooled on the earth’s surface (including lava flows and tephra deposits).

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 piedmont. The most extensive landform on piedmont slopes, formed by a) the lateral, downslope coalescence of mountain-front alluvial fans into one generally smooth slope with or without the transverse undulations of the semiconical alluvial fans and b) accretions of fan aprons.

Fan remnant. A general term for a landform that is the remaining part of an older fan landform, such as an alluvial fan, fan apron, inset fan, or fan skirt. It has been either dissected (an erosional fan remnant) or partially buried (a nonburied fan remnant). An erosional fan remnant must have a relatively flat summit that is a relict fan surface. A nonburied fan remnant is a relict surface in its entirety.

Fan terrace. See Fan remnant.

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

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

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

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

Firebreak. Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

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

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. The nearly level plain that borders a stream and is subject to inundation under flood-stage conditions unless protected artificially. It is generally a constructional landform built of sediment deposited during overflow and lateral migration of the streams.

Fluvial. Of or pertaining to rivers; produced by river action.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Footslope. The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragments. Unattached cemented pieces of bedrock, bedrocklike material, durinodes, concretions, and nodules 2 or more millimeters in diameter and woody material 20 or more millimeters in size in organic soils.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai. Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the direction of the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content. These soils have large amounts of smectitic clay.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Granitic. Generally pertaining to an igneous intrusive rock of felsic to intermediate composition. The rock is like granite but is not necessarily true granite. Commonly, the term is applied to granite, quartz monzonite, granodiorite, and diorite.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A small channel with steep sides caused by erosion and cut by a concentrated but intermittent flow of water, usually during and immediately following heavy rains or during periods after ice or snow melts. A gully generally is an obstacle to wheeled vehicles 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.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet (300 meters) above surrounding lowlands, generally of restricted 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 often dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey

Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

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

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

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rocks. Examples: andesite, basalt, and granite.

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

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

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

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

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

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

Inset fan. The flood plain of an ephemeral stream that is confined between fan remnants, ballenas, basin-floor remnants, or closely opposed fan toeslopes of a basin.

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

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that does not flow throughout the year (is commonly dry for 3 or more months of the year) and has a channel that is generally below the local water table. It flows only when it receives base flow during wet periods or when it receives ground-water discharge or protracted contributions from melting snow or other erratic surface and shallow subsurface sources.

Intrusive. An adjective for igneous rocks derived from molten matter (magma) that invaded preexisting rocks and cooled below the surface of the earth.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Level basin (paddy).—Water is applied to a level plain surrounded by levees or dikes.

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

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

K factor. A measurement of potential soil erodibility caused by detachment of soil particles by water.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit. Clastic sediments and chemical precipitates deposited in lakes.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

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

LEP. See Linear extensibility percent.

Linear extensibility percent (LEP). The linear expression of the volume difference of natural soil fabric at $^1/_3$- or $^1/_{10}$-bar water content and oven dryness. The volume change is reported as percent change for the whole soil.

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

LL. See Liquid limit.

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

Loess. Material transported and deposited by wind and consisting dominantly of silt-size clastics.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

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

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions (35 to 65 percent each). It formed primarily in freshwater lacustrine areas, but varieties associated with more saline environments also occur.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesa. A broad, nearly flat-topped, and commonly isolated upland mass characterized by summit widths that are more than the heights of bounding erosional scarps. Also, a broad structural bench and alluvial terrace at intermediate levels in stepped sequences of platforms bordering canyons and valleys.

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. Examples: schist, gneiss, quartzite, slate, and marble.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

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

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

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

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

Mountain. A natural elevation of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, generally of restricted summit area relative to surrounding surfaces and generally having steep sides (a slope of more than 25 percent), with or without a considerable surface of bare rock. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily through tectonic activity and/or volcanic action and secondarily through differential erosion.

Muck. Unconsolidated soil material consisting primarily of highly decomposed organic material in which the original plant parts are not recognizable. It generally is darker than peat and has more mineral material. (See Sapric soil material.)

Mudstone. A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal "Mudstone" also is a general term that includes clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

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

OM. See Organic matter.

Organic matter (OM). Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated and more or less chemically weathered mineral or organic material in which the solum of a soil forms through pedogenic processes.

Peat. Unconsolidated soil material, largely undecomposed or slightly decomposed organic matter, that has accumulated under conditions of excess moisture. See Fibric soil material.

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

Pediment. A gently sloping erosional surface developed at the foot of a receding hill or mountain slope. The surface may be essentially bare, exposing earth material that extends beneath adjacent uplands, or it may be thinly mantled with alluvium and colluvium, ultimately in transit from an upland front to a basin or valley lowland. In hill-footslope terrain, the mantle is designated "pedisediment." The term has been used in several geomorphic contexts: Pediments may be classed with respect to (a) landscape positions, for example, intermontane-basin piedmont or valley-border footslope surfaces (respectively, apron and terrace pediments; (b) type of material eroded, bedrock or regolith; or (c) combinations of the above.

Pedisediment. A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on a pediment and currently is or formerly was transported across the pediment.

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.

Perched water table. The upper surface of unconfined ground water separated from and underlying the main body of ground water by an unsaturated zone.

Percolation. The downward 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:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

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

PI. See Plasticity index.

Piedmont. As an adjective, lying or formed at the base of a mountain or mountain range; e.g., a piedmont terrace or a piedmont pediment. As a noun, an area, plain, slope, glacier, or other feature at the base of a mountain; e.g., a foothill or bajada.

Plasticity index (PI). The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

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

Plateau (geomorphology). A comparatively flat area of great extent and elevation. Specifically, an extensive land region considerably elevated (more than 100 meters) above adjacent lower lying terrain and commonly limited on at least one side by an abrupt descent A comparatively large part of a plateau surface is near the summit level.

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

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

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

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

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs. 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:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Regolith. The unconsolidated mantle of weathered rock and soil on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rhyolite. A group of extrusive igneous rocks, generally porphyritic and exhibiting flow texture, with phenocrysts of quartz and alkali feldspar in a glassy cryptocrystalline ground mass. Also, any rock in that group; the extrusive equivalent of granite.

Rill. A small channel with steep sides caused by erosion and cut by a concentrated but intermittent flow of water, usually during and immediately following moderate rains or during periods after ice and snow melt. Generally, a rill is not an obstacle to wheeled vehicles and is shallow enough to be obliterated by ordinary tillage.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, gravel, 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.

SAR. See Sodium adsorption ratio.

Saline soil. A soil containing soluble salts in an amount that impairs plant growth. A saline soil does not contain excess exchangeable sodium. Salinity is expressed as the electrical conductivity of a saturation extract in millimhos per centimeter (mmhos/cm) at 25 degrees C. Salinity classes are:

0 to 2	nonsaline
2 to 4	very slightly saline
4 to 8	slightly saline
8 to 16	moderately saline
More than 16	strongly saline

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.

Saprolite. Soft, friable, isovolumetrically weathered bedrock that retains the fabric and structure of the parent rock exhibiting extensive intercrystal and intracrystal weathering. In pedology, the term “saprolite” was formerly applied to any unconsolidated residual material underlying the soil and grading to hard bedrock below.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under “normal” low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, marine deposits, e.g., sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Seepage. The movement of water through soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by induration of a deposit of clay, silty clay, or silty clay loam and tending to split into thin layers.

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

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

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

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A closed depression formed either by solution of the surficial bedrock, e.g., limestone, or gypsum, or by the collapse of underlying caves. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 5 percent
Moderately sloping	5 to 9 percent
Strongly sloping	9 to 15 percent
Moderately steep	15 to 30 percent
Steep	30 to 50 percent
Very steep	50 percent and higher

Classes for complex slopes are as follows:

Nearly level	0 to 2 percent
Undulating	2 to 5 percent
Gently rolling	5 to 9 percent
Rolling	9 to 15 percent
Hilly	15 to 30 percent
Steep	30 to 50 percent
Very steep	50 percent and higher

Sloughed till. Water-saturated till that has flowed slowly downhill from its original place of deposit by glacial ice. It may rest on other till, on glacial outwash, or on a glaciolacustrine deposit.

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 erodibility factors. Factors (Kw) and (Kf) are erodibility factors which quantify the susceptibility of soil to detachment by water. These erodibility factors predict the long-term average soil loss which results from sheet and rill erosion under various alternative combinations of cropping systems and conservation techniques. Factor Kw indicates the erodibility of the whole soil, and factor Kf indicates the erodibility only the fine-earth fraction, which is the material less than 20 millimeters in diameter.

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 rock fragments in a soil. In cross section, the line may be marked only by scattered fragments or it may be a discrete layer of fragments. The fragments are more commonly pebbles or cobbles than stones. A stone line generally overlies material that was subject to weathering, soil formation, and erosion before deposition of the overlying material. Many stone lines seem to be buried erosion pavements, originally formed by running water on the land surface and concurrently covered by surficial sediment.

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

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

Storie index. A numerical index expressing the relative degree of suitability of a soil for general intensive agricultural uses at the time of the evaluation. The index is based on soil characteristics and is obtained by evaluating surface and subsurface chemical and physical soil properties as well as surface landscape features.

Stratified. Formed, arranged, or laid down in layers. The term refers to geologic deposits. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsidence. The decrease in surface elevation as a result of the drainage of wet soils that have organic layers or semifluid, mineral layers.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

T factor. The soil loss tolerance factor. An estimate of the maximum 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.

Talus. Rock fragments of any size or shape (generally coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such, loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Temperature regime, soil. A system that categorizes, for taxonomic purposes, general, long-term soil temperature conditions at the standard depth of 20 inches or at the bedrock surface, whichever is shallower. The various regimes are defined according to the freezing point of water or the high and low extremes for significant biological activity. The regimes, which are fully defined in “Keys to Soil Taxonomy,” are outlined as follows:

Cryic.—Soils that have a mean annual temperature between 32 and 47 degrees F and that remain cold in summer.

Frigid.—Soils that have a mean annual temperature similar to that of the soils in the cryic regime but that have an average summer temperature that is at least 9 degrees F warmer.

Mesic.—Soils in which the mean annual temperature is between 47 and 59 degrees F and the difference between summer and winter temperatures is more than 9 degrees.

Thermic.—Soils in which the mean annual temperature is between 59 and 72 degrees F and the difference between mean summer and winter temperatures is more than 9 degrees.

Hyperthermic.—Soils in which the mean annual temperature is more than 72 degrees F and the difference between mean summer and mean winter temperatures is more than 9 degrees.

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.”

Till plain. An extensive area of nearly level to undulating soils underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The outermost inclined surface at the base of a hill; part of a footslope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tuff. Any consolidated or cemented deposit that is 50 percent volcanic ash (less than 2 millimeters in size).

Unified soil classification. A system for classifying soils for engineering purposes based on particle-size characteristics, liquid limit, and plasticity index.

Upland (geomorphology). A general term for the higher ground of a region, in contrast with low adjacent land, such as a valley or plain. Land at a higher elevation than the flood plain or low stream terrace and land above the footslope zone of the hillslope continuum.

Valley fill. The unconsolidated sediment, deposited by any agent (water, wind, ice, or mass wasting), filling or partly filling a valley.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Water table. The upper surface of ground water or that level below which the soil is saturated by water. Also, the top of an aquifer.

WEG. See Wind erodibility group.

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 (WEG). A group of soils that have similar properties affecting their resistance to soil blowing in cultivated areas.

Wind erodiblility index (WEI). 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.

Windthrow. The uprooting and tipping over of trees by the wind.

Appendices

Appendix A is an excerpt from California supplement CA-4 to the National Conservation Planning Manual, dated February 1981, United States Department of Agriculture, Soil Conservation Service.

Appendix B is an edited version of the guides for assigning soils to land capability classes, subclasses, and units. The original documentation is a California guide dated April 2000.

Appendix C consists of excerpts from guides used for the Storie index ratings, dated 1978 and 1948.

Appendix A.—Prime Farmlands—California

Prime farmland is land best suited for producing food, forage, fiber, and oilseed crops and also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land but not urban builtup land or water). It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically when treated and managed, including water management, according to modern farming methods.

Prime farmland meets all of the following criteria:

1. The soils have:
   a. Aquic, udic, ustic, or xeric moisture regimes and an available water capacity of at least 4 inches (10 cm) per 40 to 60 inches (1 to 1.52 meters) of soil to produce the commonly grown cultivated crops (cultivated crops include, but are not limited to, grain, forage, fiber, oilseed, sugarbeets, vegetables, orchard, vineyard, and bush fruit crops) adapted to the region in 7 or more years out of 10; or
   b. Xeric, ustic, aridic, or torric moisture regimes in which the available water capacity is at least 4 inches (10 cm) per 40 to 60 inches (1 to 1.52 meters) of soil and the area has a developed irrigation water supply that is dependable (a dependable water supply is one in which enough water is available for irrigation in 8 out of 10 years for the crops commonly grown) and of adequate quality; and,
2. The soils have a temperature regime that is frigid, mesic, thermic, or hyperthermic (pergelic and cryic regimes are excluded). These are soils that, at a depth of 20 inches (50 cm), have a mean annual temperature higher than 32 degrees F (0 degrees C). In addition, the mean summer temperature at this depth in soils with an O horizon is higher than 47 degrees F (8 degrees C); in soils that have no O horizon, the mean summer temperature is higher than 59 degrees F (15 degrees C); and,
3. The soils have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches (1 meter); and,
4. The soils either have no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow cultivated crops common to the area to be grown; and,
5. The soils can be managed so that, in all horizons within a depth of 40 inches (1 meter), during part of each year the conductivity of the saturation extract is less than 4 mmhos/cm and the exchangeable sodium percentage (ESP) is less than 15; and,
6. The soils are not flooded frequently during the growing season (less often than once in 2 years); and,
7. The product of K (erodibility factor) x percent slope is less than 2.0; and,
8. The soils have a permeability rate of at least 0.06 inch (0.15 cm) per hour in the upper 20 inches (50 cm) and the mean annual soil temperature at a depth of 20 inches (50 cm) is less than 59 degrees F (15 degrees C); the permeability rate is not a limiting factor if the mean annual soil temperature is 59 degrees F (15 degrees C) or higher; and,
9. Less than 10 percent of the surface layer [upper 6 inches (15 cm)] in these soils consists of rock fragments coarser than 3 inches (7.6 cm); and,
10. The soils have a minimum rooting depth of 40 inches (1 meter).

The national Land Inventory Monitoring (LIM) definitions have been slightly modified for California standards: criterion 1 is a California definition, not a national one. Part A which reads “AWC of at least 4 inches (10 cm), per 40 to 60 inches (1 to 1.52 meters) of soil” is a California definition.

Appendix B.—Guide for Placing Soils in Capability Classes

Criteria	Capability class							
	1	2	3	4	5	6 [12]	7 [13]	8 [14]
Effective soil depth (in) [1]	≥40	≥40	≥20	≥10	≥20	≥10	Any	Any
ETp 32 degrees F	≥20	≥14	≥10	≥6	≥6	≥4	---	Any
4ETa	≥20	≥16	≥12	≥8	≥8	≥6	≥2	Any
Surface texture (irrigated)	SL-CL	LS-C, may be GR	Any, may be GR, CB	Any, may be GRV, CBV, ST [10]	Any, may be GRX, CBX, STV	Any, may be GRX, CBX, STV	Any	Any
Surface texture (nonirrigated)	SL-CL	SL-C, may be GR	SL-C, may be, GR, CB	LS-C, GRV, CBV, ST [10]	Any, may be GRX, CBX, STV	Any, may be GRX, CBX, STV	Any	Any
Permeability (in/hr) [2]	0.2-6.0	0.06-20	<0.06-20	Any	Any	Any	Any	Any
Depth to water table (in) [3]	Well or mod. well >60	Somewhat poorly through somewhat excessively >36	Poorly through excessively >20	Poorly through excessively >20	Any	Any	Any	Any
Available water capacity (in) [4]	≥7.5 avg. AWC ≥0.13 in/in	≥5.0 avg. AWC ≥0.08 in/in	≥3.5 avg. AWC ≥0.06 in/in	≥2.5 avg. AWC ≥0.04 in/in	≥3.0 avg. AWC	≥2.0 avg. AWC	≥1.0 avg. AWC	Any
Slope (%): [5, 6, 7]								
Group A	<2	<5	<8	<15	<2	<25	<50	Any
Group B	<2	<8	<15	<25	<2	<50	<75	Any
Erosion hazard	None or slight	None through moderate	None through high	Any	None or slight	Any	Any	Any
Flooding	None or rare	None through occasional	None through occasional	None through frequent [11]	Any	Any	Any	Any
Salinity/EC x 10 at 25 degrees C (mmhos/cm) [8]	<4	<8	<16	<16	<8	Dryland, <16 Irrigated, any	Any	Any
Alkali ESP [8]	None	<25	<50	<50	<25	Dryland, <25 Irrigated, <50	Any	Any

Guide for Placing Soils in Capability Classes—Continued

Criteria	Capability class							
	1	2	3	4	5	6[12]	7[13]	8[14]
Toxic substances[9] ..	None	None or slight	None through moderate	None through moderate	None or slight	Dryland, slight Irrigated, slight through moderate	Any	Any
Frost-free season (32 degrees F)	≥140 days	≥100 days	≥80 days	≥50 days	Any	Any	Any	Any

[1] Claypans with permeability of less than 0.06 inch/hour will be treated as limiting the effective depth.
[2] Permeability of the least permeable subsurface horizon.
[3] Depth to the water table during the growing season.
[4] Available moisture between field capacity and wilting point.
[5] Use erosion hazard to help determine upper slope percent.
[6] In existing map units, 9 percent and 30 percent can be substituted for 8 percent and 25 percent.
[7] Group A includes soils with K factors of 0.37 or more and soils that are subject to rill and gully erosion, such as soils that formed in granitic material and soils that have a claypan. Other soils are in group B.
[8] For salts and alkali to be a major limitation, there should be other soil limitations, such as slow permeability or a high water table.
[9] Such as boron and magnesium, which are leached with difficulty.
[10] Rock fragments interfere with tillage but do not prevent cropping.
[11] Frequent flooding that does not prevent normal cropping.
[12] Range and woodland mechanical practices can be applied to class 6 land.
[13] Range and woodland mechanical practices are impractical on class 7 land.
[14] Class 8 lands have limitations that preclude their use for commercial plant production and restrict their use to recreation, water supply, or esthetic purposes.

Guide for Placing Soils in Capability Subclasses in California—A

(Where wind velocities are low and/or soils are irrigated. Only the soils in capability classes 2 through 8 are assigned to a subclass.)

Soil properties	Subclass by slope range[1]			
	0-2%	2-9%	9-15%	15+%
1. Moderately slowly, moderately, moderately rapidly, rapidly, and very rapidly permeable, moderately well drained, well drained, somewhat excessively drained, and excessively drained soils more than 20 inches deep that have the following textures:				
a. Fine and very fine	s	e	e	e
b. Moderately fine	s[2, 3]	e	e	e
c. Medium	s[2, 3]	e	e	e
d. Moderately coarse, with or without a textural B	s[2, 3]	e	e	e
e. Coarse and very coarse, with a textural B	s	e	e	e
f. Coarse and very coarse, with little or no textural B	s	s	s	e
2. Slowly and very slowly permeable soils that are more than 20 inches deep:[4]				
a. Well drained and moderately well drained	s	e	e	e
b. Somewhat poorly drained	w	e	e	e
3. Wet, poorly drained and very poorly drained soils:				
a. Moderately coarse to fine textured (includes claypans and fragipans)	w	w	w	e
b. Coarse textured with little or no textural B[5]	w	w	w	e
c. Deep organic soils[5]	w	w	w	e
4. Excessively drained, somewhat excessively drained, and moderately well drained, shallow and very shallow soils:				
a. 10 to 20 inches deep to bedrock	s	e	e	e
b. 0 to 10 inches deep to bedrock	s	s	s	s[6]

Guide for Placing Soils in Capability Subclasses in California—A (Continued)

Soil properties	Subclass by slope range[1]			
	0-2%	2-9%	9-15%	15+%
5. Excessively drained, somewhat excessively drained, well drained, and moderately well drained, saline and sodic soils (moderate to severe salinity and sodicity)	s	e	e	e
6. Soils that have a very cobbly, extremely cobbly, very gravelly, extremely gravelly, very stony, or extremely stony surface layer	s	s	s	s[7]
7. Soils that are subject to damaging overflow	w	w	w	e

[1] For soils in capability classes 2 through 8. Class 1 land is excluded.
[2] Where these soils are more than 40 inches deep, they are generally in class 1.
[3] Use “C” only for dryland if soil is class 1 irrigated.
[4] Permeability of the B horizon or control section.
[5] Including somewhat poorly drained soils.
[6] Subclass “e” if slope is more than 50 percent.
[7] Subclass “e” if slope is more than 30 percent.

Guide for Placing Soils in Capability Subclasses in California—B

(Where wind velocities are high and the soils are not irrigated. Only soils in capability classes 2 through 8 are assigned to a subclass.)

Soil properties	Subclass by slope range[1]			
	0-2%	2-9%	9-15%	15+%
1. Moderately slowly, moderately, moderately rapidly, rapidly, and very rapidly permeable, moderately well drained, well drained, somewhat excessively drained, and excessively drained soils more than 20 inches deep that have the following textures:				
a. Fine and very fine	s	e	e	e
b. Moderately fine	e	e	e	e
c. Medium	e	e	e	e
d. Moderately coarse, with or without a textural B	e	e	e	e
e. Coarse and very coarse, with a textural B	e	e	e	e
f. Coarse and very coarse, with little or no textural B	e	e	e	e
2. Slowly and very slowly permeable soils that are more than 20 inches deep:[2]				
a. Well drained and moderately well drained	s	e	e	e
b. Somewhat poorly drained	w	e	e	e
3. Wet, poorly drained and very poorly drained soils:				
a. Moderately coarse to fine textured (includes claypans and fragipans)	w	w	w	e
b. Coarse textured with little or no textural B[3]	w	w	w	e
c. Deep organic soils[3]	w	w	w	e
4. Excessively drained, somewhat excessively drained, and moderately well drained, shallow and very shallow soils:				
a. 10 to 20 inches deep to bedrock	s	s	e	e
b. 0 to 10 inches deep to bedrock	s	s	s	s[4]

Guide for Placing Soils in Capability Subclasses in California—B (Continued)

Soil properties	Subclass by slope range[1]			
	0-2%	2-9%	9-15%	15+%
5. Excessively drained, somewhat excessively drained, well drained, and moderately well drained, saline and sodic soils (moderate to severe salinity and sodicity)	s	e	e	e
6. Soils that have a very cobbly, extremely cobbly, very gravelly, extremely gravelly, very stony, or extremely stony surface layer	s	s	s	s[5]
7. Soils that are subject to damaging overflow	w	w	w	e

[1] For soils in capability classes 2 through 8. Class 1 land is excluded.
[2] Permeability of the B horizon or control section.
[3] Including somewhat poorly drained soils.
[4] Subclass "e" if slope is more than 50 percent.
[5] Subclass "e" if slope is more than 30 percent.

Guide for Placing Soils in Capability Units

Capability unit	Principal soil property or limitation
1	Potential or actual wind or water erosion hazard.
2	Drainage or overflow hazard (somewhat or poorly drained, flooded, or ponded).
3	Slowly or very slowly permeable subsoils or substrata.
4	Coarse or gravelly textures.
5	Fine or very fine textures.
6	Salinity or alkali sufficient to constitue a continuing limitation or hazard.
7	Stones, cobbles, or rocks sufficient to interfere with tillage.
8	Hardpan or hard, unweathered bedrock within the root zone.
9	Low inherent fertility associated with strong acidity, a low calcium-magnesium ratio, or excess calcium, boron, or molydenum.
10	High organic matter content—peats and mucks.
11	Coarse-sandy or very gravelly substrata limiting to root penetration and moisture retention.

Appendix C—Storie Soil-Rating Chart

(Storie soil index rating=factor A x factor B x factor C x factor X. These factors are used to rate cropland and rangeland.)

Factor A—Rating on character of the physical profile

I. Soils on recent alluvial fans, flood plains, or other secondary deposits having undeveloped profiles 100
- x--shallow phases (on consolidated material), 2 feet deep 50-60
- x--shallow phase (on consolidated material), 3 feetdeep 70
- g--extremely gravelly subsoils 80-95
- s--stratified clay subsoils 80-95

II. Soils on young alluvial fans, flood plains, or other secondary deposits having slightly developed profiles 95-100
- x--shallow phases (on consolidated material), 2 feet deep 50-60
- x--shallow phases (on consolidated material), 3 feet deep 70
- g--extremely gravelly subsoils 80-95
- s--stratified clay subsoils 80-95

III. Soils on older alluvial fans, alluvial plains, or terraces having moderately developed profiles (moderately dense subsoils) 80-95
- x--shallow phases (on consolidated material), 2 feet deep 40-60
- x--shallow phases (on consolidated material), 3 feet deep 60-70
- g--extremely gravelly subsoils 60-90

IV. Soils on older plains or terraces having strongly developed profiles (dense clay subsoils) 40-80

V. Soils on older plains or terraces having hardpan subsoil layers:
- at less than 1 foot 5-20
- at 1 to 2 feet 20-30
- at 2 to 3 feet 30-40
- at 3 to 4 feet 40-50
- at 4 to 6 feet 50-80

VI. Soils on older terraces and upland areas having dense clay subsoils resting on moderately consolidated or consolidated material 40-80

VII. Soils on upland areas underlain by hard igneous bedrock:
- at less than 1 foot 10-30
- at 1 to 2 feet 30-50
- at 2 to 3 feet 50-70
- at 3 to 4 feet 70-80
- at 4 to 6 feet 80-100
- at more than 6 feet 100

VIII. Soils on upland areas underlain by consolidated sedimentary rocks:
- at less than 1 foot 10-30
- at 1 to 2 feet 30-50
- at 2 to 3 feet 50-70
- at 3 to 4 feet 70-80
- at 4 to 6 feet 80-100
- at more than 6 feet 100

IX. Soils on upland areas underlain by softly consolidated material:
- at less than 1 foot 20-40
- at 1 to 2 feet 40-60
- at 2 to 3 feet 60-80
- at 3 to 4 feet 80-90
- at 4 to 6 feet 90-100
- at more than 6 feet 100

Factor B-—Rating on the basis of surface texture

Medium textured:
- fine sandy loam 100
- loam 100
- silt loam 100
- sandy loam 95
- silty clay loam, calcareous 95
- silty clay loam, noncalcareous 90
- clay loam, calcareous 95
- clay loam, noncalcareous 85-90

Heavy or fine textured:
- silty clay, highly calcareous 70-90
- silty clay, noncalcareous 60-70
- clay, highly calcareous 70-80
- clay, noncalcareous 50-70

Light or coarse textured:
- coarse sandy loam 90
- loamy sand 80
- very fine sand 80
- fine sand 65
- sand 60
- coarse sand 30-60

Gravelly:
- gravelly fine sandy loam 0-80
- gravelly loam 60-80
- gravelly silt loam 60-80
- gravelly sandy loam 50-70
- gravelly clay loam........60-80
- gravelly clay 40-70
- gravelly sand 20-30

Stony:

- stony fine sandy loam 70-80
- stony loam 60-80
- stony silt loam 60-80
- stony sandy loam 50-70
- stony clay loam 60-80
- stony clay 40-70
- stony sand 10-40

Factor C—Rating on the basis of slope

- A--Nearly level (0 to 2%) 100
- AA--Gently undulating (0 to 2%) 95-100
- B--Gently sloping (3 to 8%) 95-100
- BB--Undulating (3 to 8%) 85-100
- C--Moderately sloping (9-15%) 80-95
- CC--Rolling (9 to 15%) 80-95
- D--Strongly sloping (16 to 30%) 70-80
- DD--Hilly (16 to 30%) 70-80
- E--Steep (30 to 45%) 30-50
- F--Very steep (45% and over) 5-30

Factor X—Rating of conditions other than those in factors A, B, and C

Drainage:

- well drained 100
- fairly well drained [1] 80-90
- moderately waterlogged [2] 40-80
- badly waterlogged [3] 0-40
- subject to overflow .... variable

Alkali: [4]

- alkali-free 100
- slightly affected 60-95
- moderately affected 30-60
- moderately to strongly affected 15-30
- strongly affected 5-15

Nutrient (fertility level):

- high 100
- fair 95-100
- poor 80-95
- very poor 60-80

Acidity: according to degree [5] 80-95

Erosion:

- none to slight 100
- detrimental deposition 75-95
- moderate sheet erosion 80-95
- occasional shallow gullies 70-90
- moderate sheet erosion with:
  - shallow gullies 60-80
  - deep gullies 10-70
- moderate sheet erosion with deep gullies 10-60
- severe sheet erosion 50-80
- severe sheet erosion with:
  - shallow gullies 40-50
  - deep gullies 10-40
- very severe erosion 10-40
- moderate wind erosion 80-95
- severe wind erosion 30-80

Microrelief:

- smooth 100
- channels 60-95
- hogwallows 60-95
- low hummocks 80-95
- high hummocks 20-60
- dunes 10-40

[1] Moderately well drained according to current terminology.

[2] Somewhat poorly drained according to current terminology.

[3] Poorly drained or very poorly drained according to current terminology.

[4] Salinity/sodicity according to current terminology.

[5] pH less than 5.0

Soil Grading

For simplification, six soil grades have been set up in California by combining soils having ranges in index rating as follows:

Grade 1 (excellent): Soils that rate between 80 and 100 percent and which are suitable for a wide range of crops, including alfalfa, orchard, truck, and field crops.

Grade 2 (good): Soils that rate between 60 and 79 percent and which are suitable for most crops. Yields are generally good to excellent.

Grade 3 (fair): Soils that rate between 40 to 59 percent and which are generally of fair quality, with a less wide range of suitability than grades 1 and 2. Soils in this grade may give good results with certain specialized crops.

Grade 4 (poor): Soils that rate between 20 to 39 percent and which have a narrow range in their agricultural possibilities. For example, a few soils in this grade may be good for rice, but not good for many other uses.

Grade 5 (very poor): Soils that rate between 10 and 19 percent are of very limited use, except for pasture, because of adverse conditions, such as shallowness, roughness, and alkali content.

Grade 6 (nonagricultural): Soils that rate less than 10 percent include, for example, tidelands, riverwash, soils of high alkali content, and steep broken land.

Timber Soil Rating

A field study was started in 1947 on the relationship of soils, climate, and timber site quality. This paper reports on studies of 163 filed locations extending from the Pacific Ocean to the east side of the Sierra Nevada Mountains in Nevada. The soils were studied at each location, then classified, and the timber site-quality determined by referencing the height and age value to appropriate site class curves.

Four main soil factors appear to govern or limit the growth of conifers in California. These are A—Soil depth and texture characteristics; B—Soil permeability; C—Soil chemical characteristics; and D—Drainage and runoff properties. In addition, there is the climatic factor.

High sites for growing conifers in California need a deep soil of sufficiently fine texture to hold about 12% or more of moisture; a permeable profile; no toxic chemical characteristics; acid reaction; a well drained profile; and a total annual rainfall of more than 40 inches.

A preliminary timber rating chart is presented in this paper based on assigning percentage ratings to five factors: A—Soil depth and texture; B—Soil permeability; C—Soil chemical characteristics; D—Drainage and runoff properties; E—Climate.

Four climatic zones are considered in rating the timber sites in the Sierra Nevada and Coast Range Mountains of California and Nevada.

Timber Site Rating = A x B x C x D x E.

Timber Soil Rating Chart

An Index for Rating the Value of Soils for Growing Timber in California

Factor A: Depth-Texture [1]

Depth-Texture	Rating in percent	Depth class
Over 72" depth	100	5
60-72	90-100	5
48-60	80-90	5
36-48	70-80	4
24-36	50-70	3
12-24	30-50	2
0-12	0-30	1

[1] No effect to rating for textures with 12% or more available water capacity.

Factor B: Permeability

Permeability	Rating in percent	Profile groups
Moderately rapidly & rapidly permeable profiles	100	I; II; VII-I, II; VIII-I, II; IX-I, II
Moderately slowly & slowly permeable profiles	80-90	III; III+; VII-III, III+; VIII-III, III+; IX-III, III
Very slowly permeable profiles	30-70	IV; V; VII-IV; VIII-IV; IX-IV

Factor C: Chemical (Alkalinity, Salinity, Etc.)

Chemical effect	Rating in percent	Toxicity class
None	100	
Slight	80-90	S
Moderate	20-80	M
Strong	0-20	A

Factor D: Drainage-Runoff

Drainage	Rating in percent	Drainage symbol
Well & moderately well	100	w
Excessively	80-95	r
Somewhat poorly	40-80	i
Poorly and very poorly	10-40	p

Factor E: Climate

CF--Coastal Fog (Redwood)		CR--Coastal Range (Douglas fir)		WS--Westside Sierra (Pine)		ES--Eastside Sierra Pine (P.J.)	
Rainfall							
Rain-fall	Rating	Rain-fall	Rating	Rain-fall	Rating	Rain-fall	Rating
In	*Pct*	*In*	*Pct*	*In*	*Pct*	*In*	*Pct*
45	120	45	100	45	100		
40	110	40	95	40	95	40	90
35	100	35	90	35	90	35	80
30	90	30	60-70	30	50-60	30	70
25	80	25	30	25	20	25	60
20	30					20	50
						15	40

Importance of Soil Classification and Rating of Soil for Timber Sites

The classification of soil together with a rating of soil for timber site quality will strengthen the California forest resources survey in two ways. First, it will facilitate and improve the quality of the timber site classification. Previously, this classification was based entirely on the height-age relationship of dominant trees without reference to the soil. Ratings were satisfactorily made where dominants were present, as in the case of virgin timber or older second growth. On the other hand, difficulties were encountered in making reliable ratings in many cut-over or burned-over areas where suitable dominants were infrequent or entirely absent. Also, in some cases where timber growth was absent, it could not be determined with any degree of certainty whether the sites were suitable at all for growing timber. In present forest resources surveys, these difficulties are overcome by rating timber sites from soil in areas lacking dominant trees. Second, the maps produced by the survey, since they show the location of good, fair, poor, and unsuitable sites for growing various kinds of timber trees, will have greater usefulness to those interested in managing forest lands for timber crops. To illustrate, a private enterprise seeking to purchase a forest property to provide a continuing supply of raw material for a lumber manufacturing or wood pulp plant can use the maps to locate the best soils for growing the kind of timber it wants. Also, public agencies interested in reforesting some of the 5 million acres of essentially unstocked and idle forestry sites in California can use the maps advantageously to plan and carry out planting programs. From the maps, the best soils can be selected for high-priority planting and the appropriate species for those soils can be determined.

Areas outside the boundary of the present forest resources survey can be more easily appraised from a knowledge of the soil and climatic factors in their relationship to the vegetation and land use problems. Thus, a knowledge of the soils, such as that collected in the basic soil survey on agricultural lands, can and should be extended to natural resources surveys on the so-called wild lands of the country because a knowledge of soils and climate is just as necessary for a proper evaluation of the productivity of land for timber crops as for agricultural crops.

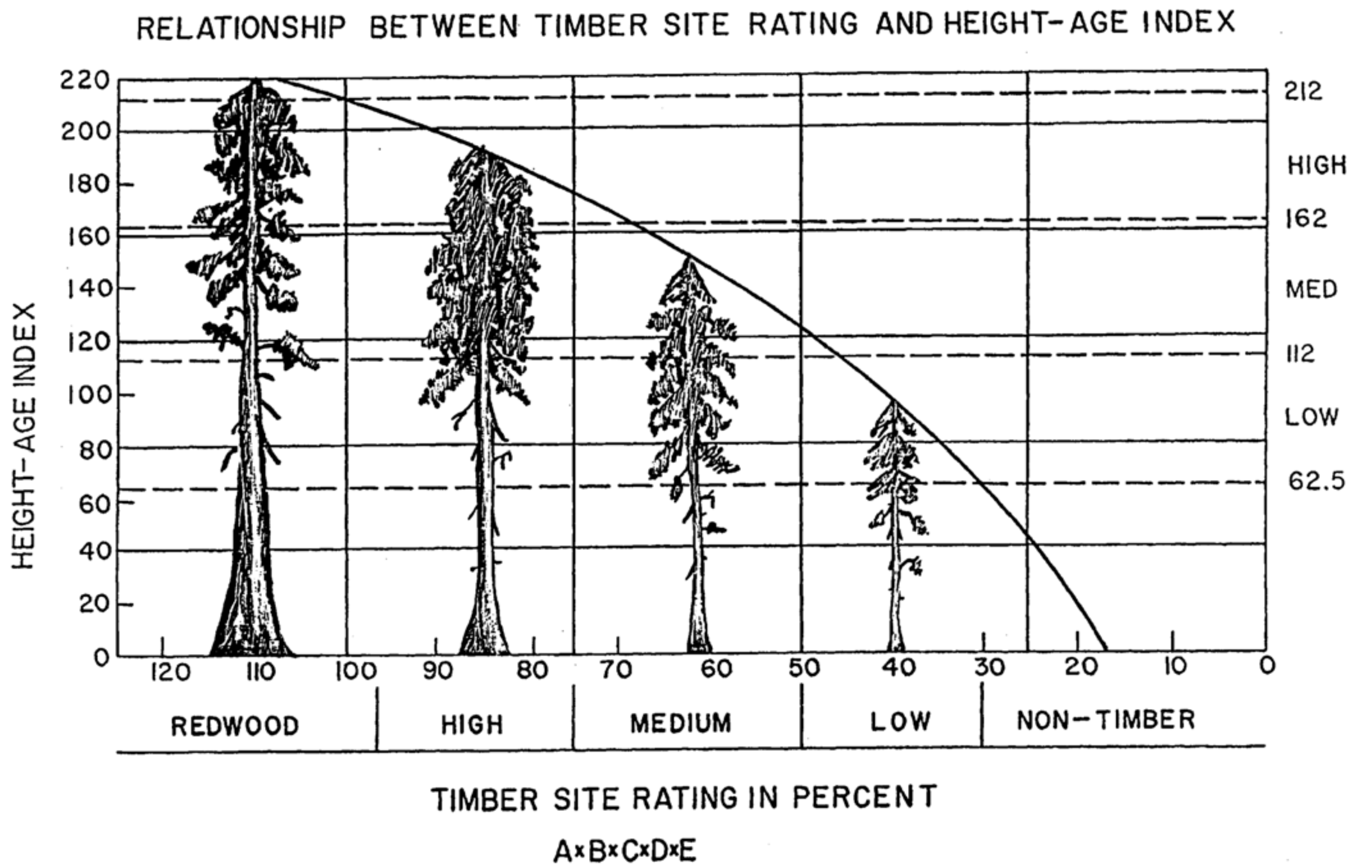

Figure 23.—Relationship between timber site rating and height-age index.

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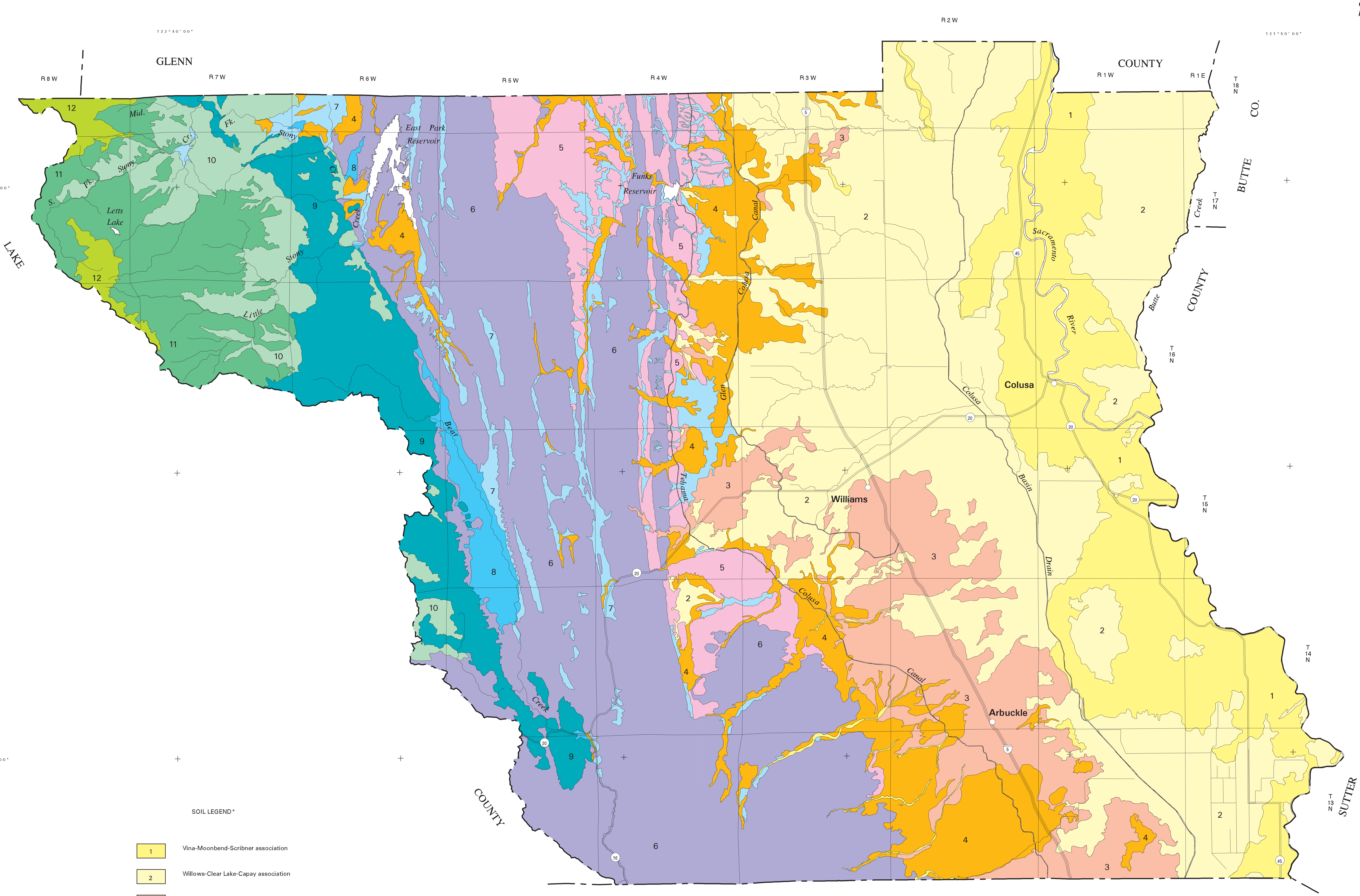


SOIL LEGEND*

1	Vina-Moonbend-Scribner association
2	Willows-Clear Lake-Capay association
3	Westfan-Mallard association
4	Hillgate-Arbuckle-Corval-Corning association
5	Altamont-Ayar-Sehorn association
6	Millsholm-Goldeagle-Contra Costa association
7	Capay-Hillgate-Saltcanyon association
8	Venado-Leesville association
9	Okiota-Henneke association
10	Maymen-Etsel association
11	Neuns-Goulding association
12	Freezeout-Yollabolly association

*The units on this legend are described in the text under the heading "General Soil Map Units".

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
COLUSA COUNTY RESOURCE CONSERVATION DISTRICT
STATE OF CALIFORNIA, DEPARTMENT OF CONSERVATION
REGENTS OF THE UNIVERSITY OF CALIFORNIA
UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR,
BUREAU OF LAND MANAGEMENT, FISH AND WILDLIFE SERVICE

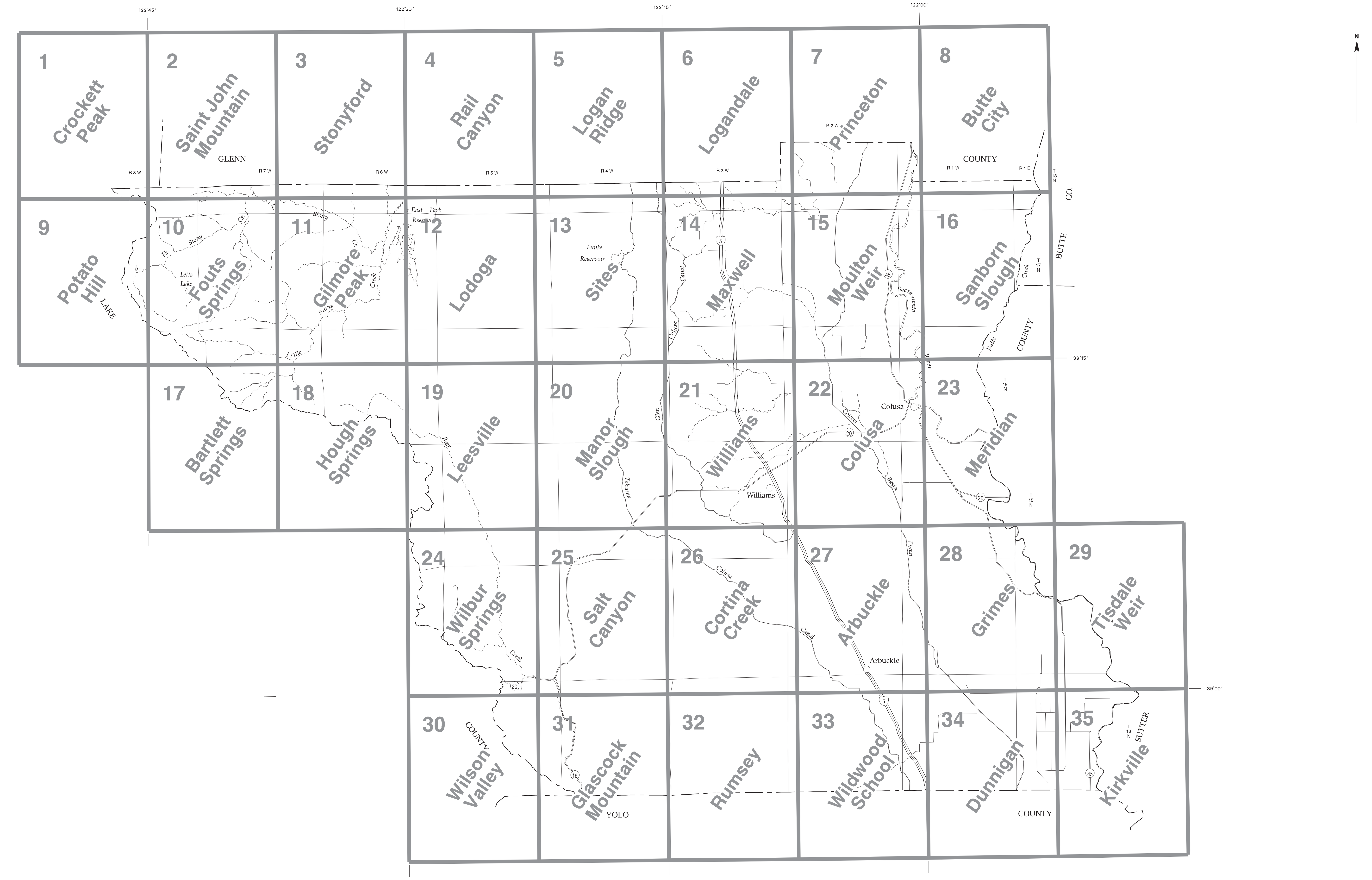
GENERAL SOIL MAP
COLUSA COUNTY, CALIFORNIA

MILES

KILOMETERS

SCALE = 1:145000

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



INDEX TO MAP SHEETS
COLUSA COUNTY, CALIFORNIA

Scale 1:200000

MILES

KILOMETERS

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

SOIL LEGEND

SYMBOL	NAME
100	Capay clay loam, 0 to 1 percent slopes, occasionally flooded
101	Capay silty clay, 0 to 2 percent slopes, frequently flooded
102	Capay clay loam, 0 to 1 percent slopes
103	Capay clay loam, 0 to 1 percent slopes, frequently flooded
104	Willows silty clay, 0 to 1 percent slopes, frequently flooded
105	Willows silty clay, 0 to 1 percent slopes, occasionally flooded
106	Willows silty clay, 0 to 1 percent slopes
107	Scribner silt loam, 0 to 1 percent slopes, occasionally flooded
108	Scribner silt loam, 0 to 1 percent slopes
109	Scribner silt loam, 0 to 1 percent slopes, frequently flooded
110	Hustabel sandy loam, 0 to 1 percent slopes
112	Westfan loam, 0 to 2 percent slopes
113	Westfan loam, sodic, 0 to 2 percent slopes
114	Westfan clay loam, 0 to 1 percent slopes
115	Clear Lake clay, 0 to 1 percent slopes, occasionally flooded
116	Clear Lake clay, calcareous, 0 to 2 percent slopes, occasionally flooded
117	Clear Lake clay, calcareous, 0 to 1 percent slopes, frequently flooded
118	Clear Lake clay, 0 to 2 percent slopes, frequently flooded
124	Moonbend silt loam, 0 to 2 percent slopes, occasionally flooded
125	Moonbend silt loam, 0 to 2 percent slopes
126	Moonbend silt loam, 0 to 2 percent slopes, frequently flooded
127	Mallard clay loam, 0 to 1 percent slopes
128	Mallard loam, 0 to 1 percent slopes
129	Mallard clay loam, 0 to 1 percent slopes, occasionally flooded
130	Corbiere silt loam, 0 to 1 percent slopes
131	Corbiere silt loam, 0 to 2 percent slopes, frequently flooded
133	Corbiere silt loam, 0 to 2 percent slopes, occasionally flooded
136	Colusa loam, 0 to 2 percent slopes
141	Myers clay, 0 to 2 percent slopes
144	Hillgate clay loam, 0 to 2 percent slopes
145	Hillgate loam, 0 to 2 percent slopes
147	Hillgate loam, 1 to 5 percent slopes
150	Arbuckle sandy loam, 1 to 5 percent slopes
151	Arbuckle-Hillgate complex, 1 to 5 percent slopes
152	Arbuckle gravelly loam, 1 to 5 percent slopes
155	Alcapay clay, 0 to 1 percent slopes
160	Grandbend loam, 0 to 2 percent slopes
170	Vina loam, 0 to 2 percent slopes, frequently flooded
171	Vina loam, 0 to 2 percent slopes
172	Vina fine sandy loam, 0 to 2 percent slopes, frequently flooded
174	Vina loam, 0 to 2 percent slopes, occasionally flooded
175	Tujunga loam, overwash, 0 to 2 percent slopes, frequently flooded
176	Columbia fine sandy loam, 0 to 2 percent slopes, frequently flooded
177	Holillipah loamy sand, channeled, 0 to 2 percent slopes
185	Riverwash
187	Westfan loam, 0 to 2 percent slopes, occasionally flooded
188	Westfan loam, clay substratum, 0 to 2 percent slopes
189	Arand very gravelly sandy loam, 0 to 2 percent slopes
190	Arand very gravelly loam, 0 to 2 percent slopes
193	Westfan gravelly loam, 0 to 2 percent slopes
200	Clear Lake clay, 0 to 2 percent slopes, occasionally flooded
204	Capay clay, 0 to 3 percent slopes, occasionally flooded
205	Capay clay, 0 to 3 percent slopes
206	Capay clay, 5 to 9 percent slopes
210	Corval loam, 0 to 3 percent slopes
211	Corval clay loam, 0 to 3 percent slopes
212	Ayar clay, 5 to 15 percent slopes
213	Ayar clay, 15 to 30 percent slopes
215	Altamont-Sehorn complex, 15 to 30 percent slopes
216	Altamont-Sehorn complex, 9 to 15 percent slopes
218	Sehorn-Altamont complex, 30 to 50 percent slopes
220	Altamont silty clay, 5 to 9 percent slopes
221	Altamont silty clay, 9 to 15 percent slopes
230	Corning clay loam, 1 to 5 percent slopes
232	Maywood gravelly loam, 0 to 2 percent slopes, occasionally flooded
233	Eastpark clay loam, 0 to 2 percent slopes
241	Contra Costa-Altamont association, 30 to 50 percent slopes
253	Millsholm-Altamont-Rock outcrop complex, 5 to 15 percent slopes
255	Millsholm-Rock outcrop complex, 9 to 30 percent slopes
257	Millsholm-Capay complex, 3 to 9 percent slopes
261	Millsholm-Altamont complex, 15 to 30 percent slopes
270	Balcom-Ayar complex, 15 to 30 percent slopes
271	Balcom-Ayar complex, 30 to 50 percent slopes
275	Goldeagle-Positas-Balcom complex, 30 to 75 percent slopes
276	Positas gravelly sandy loam, 30 to 50 percent slopes
280	Skyhigh-Millsholm complex, 15 to 50 percent slopes
300	Contra Costa-Millsholm complex, 50 to 75 percent slopes
305	Contra Costa loam, 50 to 75 percent slopes
311	Contra Costa loam, 9 to 15 percent slopes
312	Saltcanyon loam, 1 to 5 percent slopes
313	Saltcanyon loam, 5 to 9 percent slopes
315	Mallard clay loam, 2 to 5 percent slopes
316	Hillgate loam, 5 to 9 percent slopes
320	Millsholm loam, 5 to 30 percent slopes
329	Sehorn-Millsholm-Altamont complex, 15 to 30 percent slopes
330	Millsholm-Contra Costa complex, 15 to 30 percent slopes
331	Sehorn-Millsholm-Rock outcrop complex, 30 to 50 percent slopes
332	Millsholm-Rock outcrop association, 30 to 75 percent slopes
334	Millsholm-Contra Costa association, 30 to 75 percent slopes
337	Millsholm-Saltcanyon association, 5 to 15 percent slopes
345	Skyhigh-Sleeper-Millsholm association, 15 to 30 percent slopes
346	Skyhigh-Millsholm-Sleeper association, 30 to 50 percent slopes
347	Boar-Sleeper complex, 15 to 30 percent slopes
348	Boar-Sleeper complex, 30 to 50 percent slopes
350	Haploxererts, 30 to 50 percent slopes
355	Venado clay, 0 to 2 percent slopes
360	Bearvalley gravelly sandy loam, 2 to 5 percent slopes
365	Leesville clay loam, 2 to 5 percent slopes
366	Leesville clay loam, 0 to 2 percent slopes
370	Livermore very gravelly loam, 5 to 9 percent slopes
371	Buttes-Millsholm complex, 30 to 50 percent slopes
519	Stonyford-Guenoc complex, 5 to 15 percent slopes
520	Stonyford-Guenoc complex, 15 to 30 percent slopes
521	Stonyford-Guenoc complex, 30 to 50 percent slopes
524	Arand-Riverwash complex, 0 to 2 percent slopes, frequently flooded
526	Etsel-Maymen-Marpa association, 30 to 50 percent slopes
527	Maymen-Etsel-Speaker association, 30 to 50 percent slopes
528	Maymen-Etsel-Snook complex, 30 to 75 percent slopes
529	Maymen-Etsel-Mayacama complex, 30 to 75 percent slopes
542	Okiota-Dubakella-Henneke complex, 15 to 50 percent slopes
545	Henneke-Montara-Rock outcrop complex, 15 to 50 percent slopes
548	Henneke-Okiota complex, 30 to 50 percent slopes
549	Henneke-Okiota complex, 50 to 75 percent slopes
557	Neuns-Bamtush-Speaker complex, 30 to 50 percent slopes
564	Fouts-Yorkville-Squawrock association, 15 to 50 percent slopes
570	Endoaquolls, 0 to 2 percent slopes, frequently ponded
590	Neuns-Marpa-Goulding complex, 30 to 50 percent slopes
591	Neuns-Sheetiron-Goulding complex, 30 to 50 percent slopes
592	Neuns-Goulding-Sheetiron complex, 50 to 75 percent slopes
596	Yollabolly-Rock outcrop-Freezeout complex, 50 to 75 percent slopes
597	Yollabolly-Freezeout complex, 30 to 50 percent slopes
599	Freezeout-Yollabolly complex, 30 to 50 percent slopes
600	Freezeout-Yollabolly association, 50 to 75 percent slopes
610	Neuns-Bamtush-Goulding association, 30 to 50 percent slopes
650	Bamtush-Marpa complex, 15 to 30 percent slopes
651	Bamtush-Marpa complex, 30 to 50 percent slopes
652	Water

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state, or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline and neatline

AD HOC BOUNDARY (label) — Davis Airstrip

- Small airport, airfield, park, oilfield, cemetery, or flood pool — FLOOD POOL LINE

STATE COORDINATE TICK 1 890 000 FEET

LAND DIVISION CORNER (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS

- Interstate — 173
- Federal — 287
- State — 52
- County, farm or ranch — 1283

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or Small (Named where applicable) — water

PITS — w

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban area) (occupied)
- Church
- School
- Indian mound (label) — Indian Mound
- Located object (label) — Tower
- Tank (label) — Gas
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent — Label only
- Drainage end — Label only
- Canals or ditches — Label only
- Double-line (label) — CANAL
- Drainage and/or irrigation — Label only

LAKES, PONDS AND RESERVOIRS

- Perennial — water w
- Intermittent — int i

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS — 105 108

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

SOIL SAMPLE (normally not shown)

MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
CROCKETT PEAK QUADRANGLE

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1993 - 1999 aerial photography. Public land survey system (PLSS) were acquired from U.S. Geological Survey.

North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

CROCKETT PEAK, CALIFORNIA
7.5 MINUTE SERIES

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
SAINT JOHN MOUNTAIN QUADRANGLE
SHEET NUMBER 2 OF 35

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NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

SAINT JOHN MOUNTAIN, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 2 OF 35

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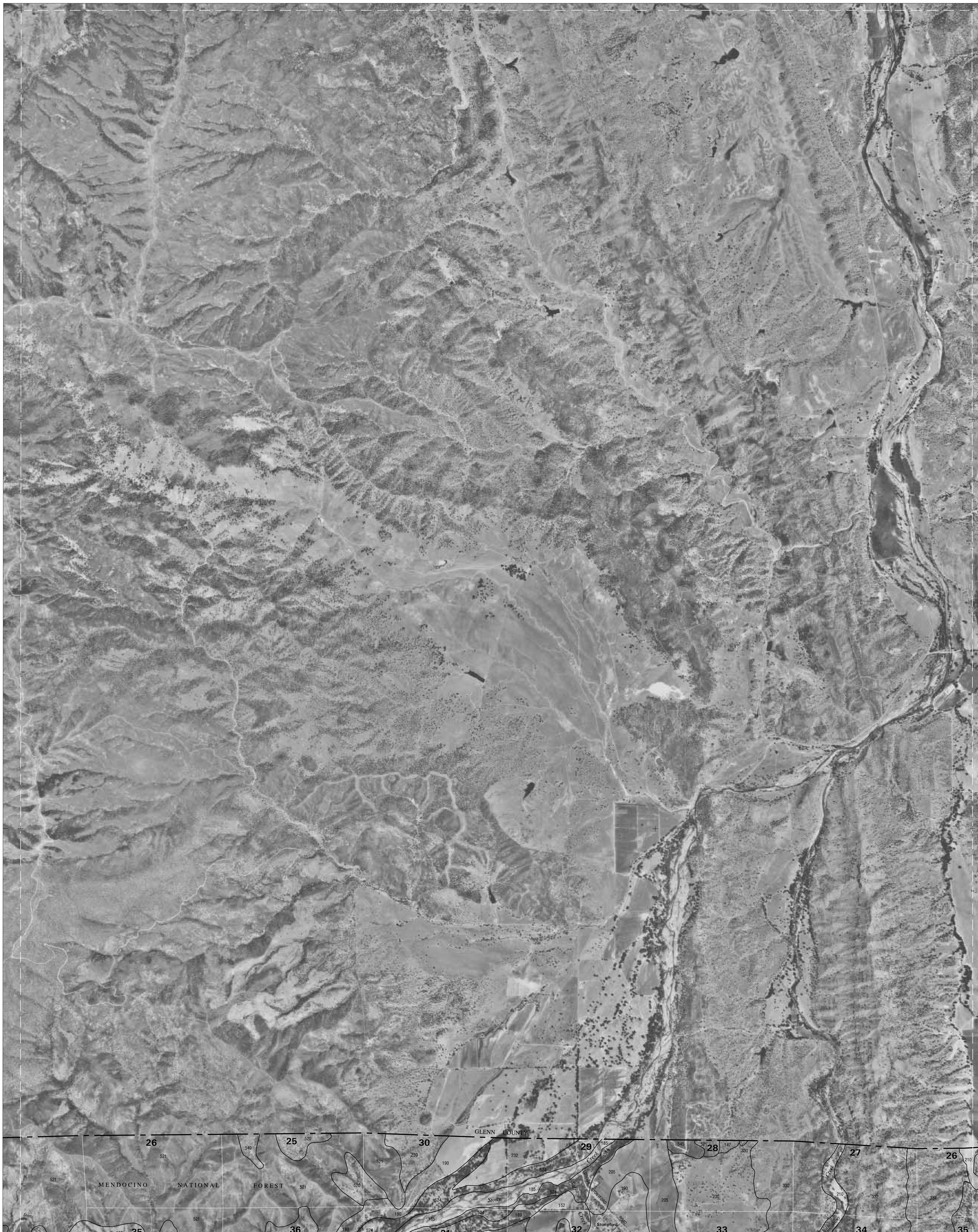
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
STONYFORD QUADRANGLE
SHEET NUMBER 3 OF 35



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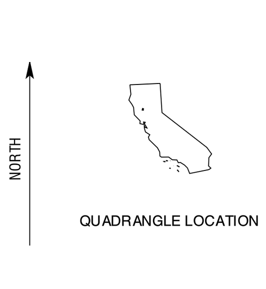

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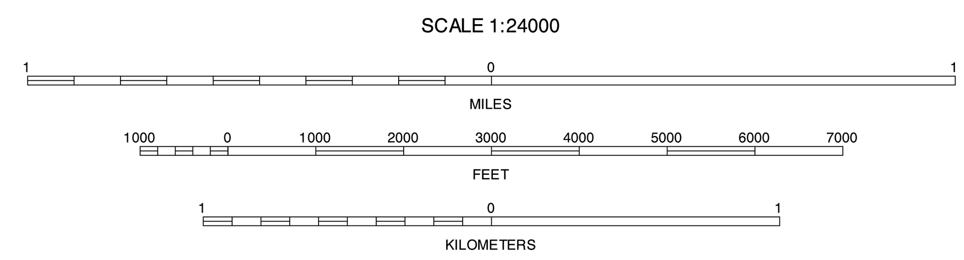

STONYFORD, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 3 OF 35

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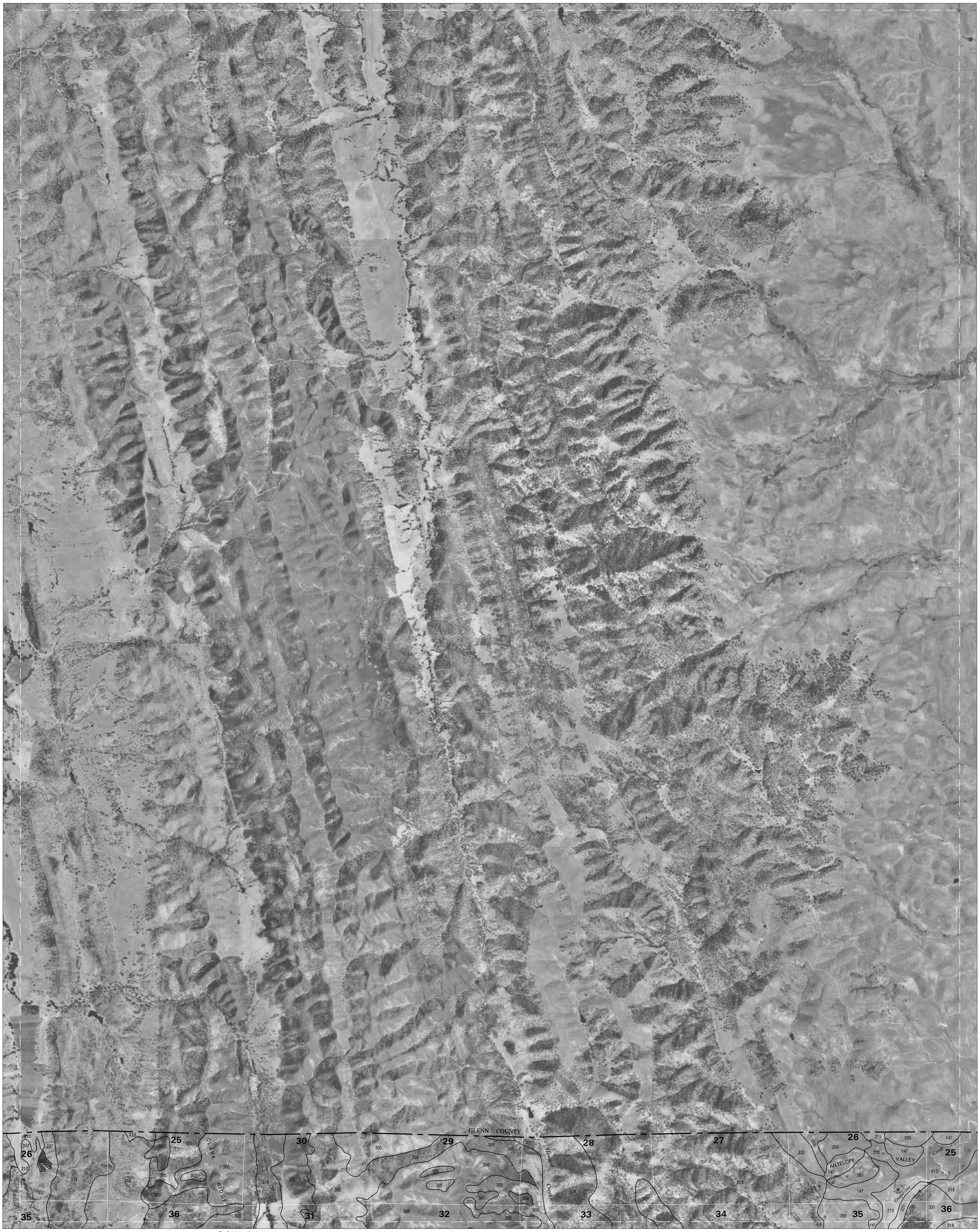
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
RAIL CANYON QUADRANGLE
SHEET NUMBER 4 OF 35



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

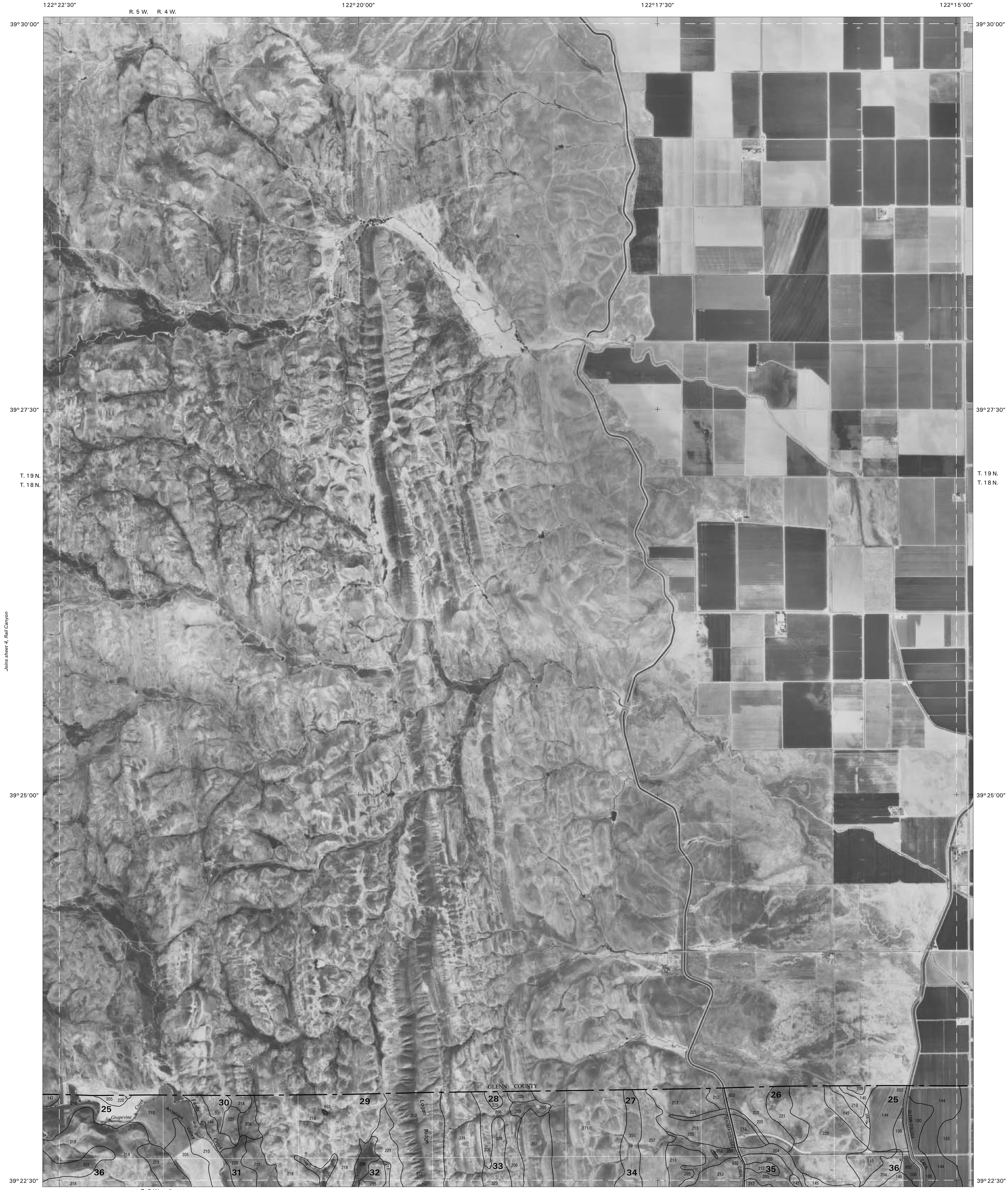
MILES

FEET

KILOMETERS

RAIL CANYON, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 4 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

LOGAN RIDGE, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 5 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
LOGANDALE QUADRANGLE
SHEET NUMBER 6 OF 35

122°15′00″ 122°12′30″ 122°10′00″ 122°07′30″
R. 4 W. R. 3 W. R. 3 W. R. 2 W.

39°30′00″ 39°27′30″ T. 19 N. T. 18 N. 39°25′00″ 39°22′30″

Joins sheet 5, Logan Ridge

Joins sheet 7, Princeton

R. 4 W. R. 3 W. R. 3 W. R. 2 W.
122°15′00″ 122°12′30″ 122°10′00″ 122°07′30″

Joins sheet 13, Sites

Joins sheet 14, Maxwell

Joins sheet 15, Moulton Weir

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

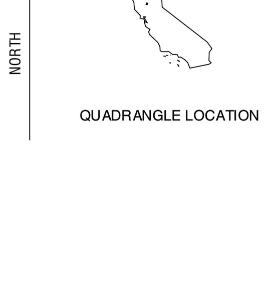
LOGANDALE, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 6 OF 35

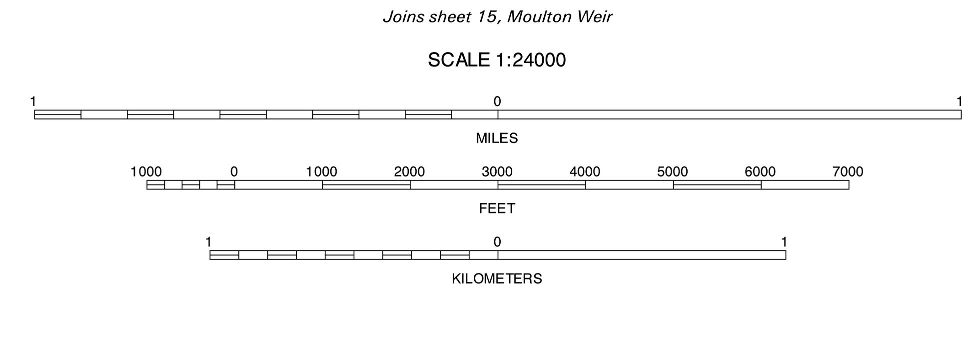
Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1993 - 1999 aerial photography. Public land survey system (PLSS) were acquired from U.S. Geological Survey.

North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.





PRINCETON, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 7 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
BUTTE CITY QUADRANGLE
SHEET NUMBER 8 OF 35

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1993 - 1999 aerial photography. Public land survey system (PLSS) were acquired from U.S. Geological Survey.

North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

BUTTE CITY, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 8 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

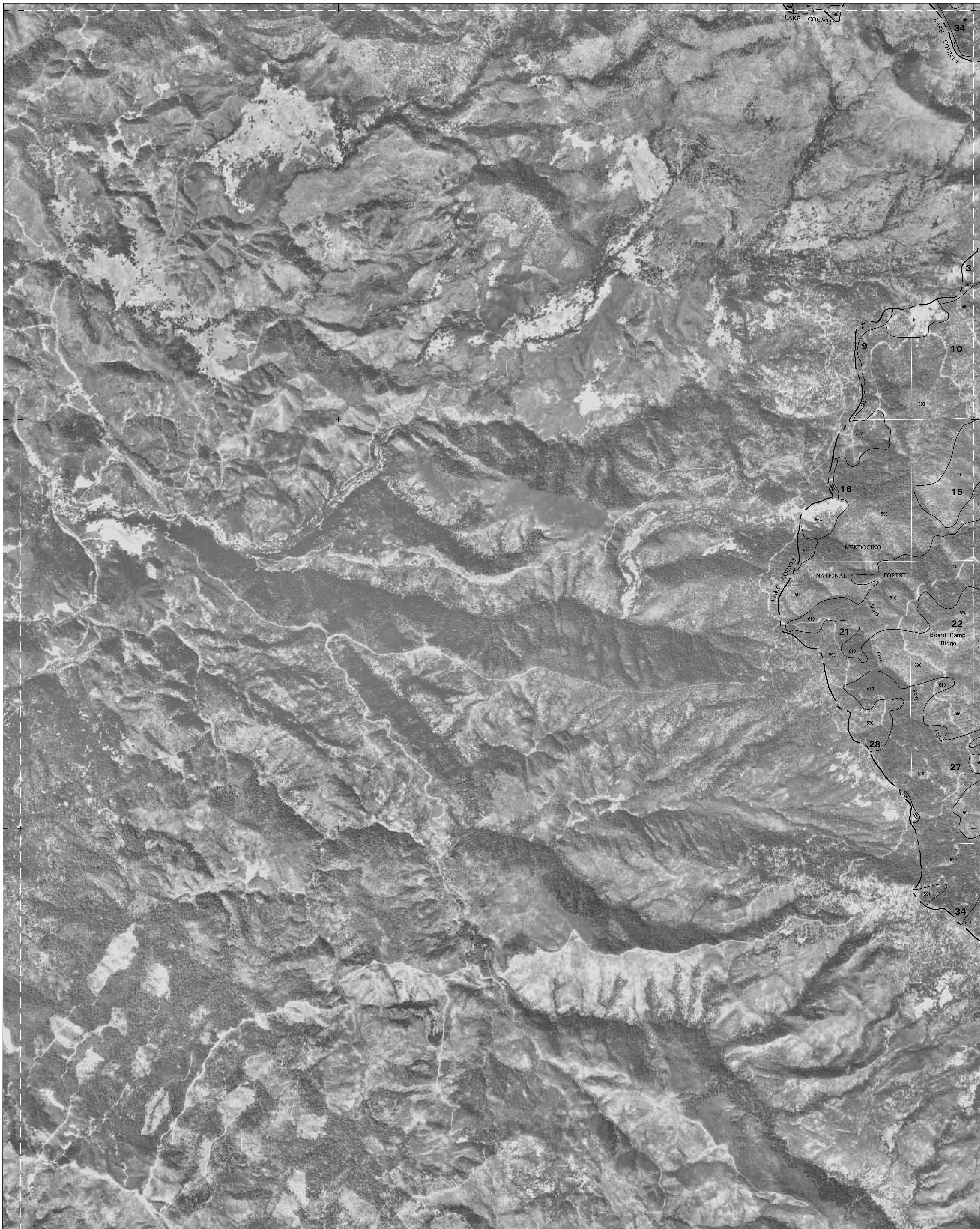
COLUSA COUNTY, CALIFORNIA
POTATO HILL QUADRANGLE
SHEET NUMBER 9 OF 35

Joins sheet 1, Crockett Peak

Joins sheet 2, Saint John Mountain

122° 52'30" 122° 50'00" 122° 47'30" 122° 45'00"

R. 9 W. R. 8 W.



39° 22'30" T. 18 N. T. 17 N. 39° 20'00" 39° 17'30" T. 17 N. T. 16 N. 39° 15'00"

Joins sheet 10, Fouts Springs

122° 52'30" 122° 50'00" 122° 47'30" 122° 45'00"

Joins sheet 17, Bartlett Springs

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

POTATO HILL, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 9 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
FOUTS SPRINGS QUADRANGLE
SHEET NUMBER 10 OF 35

Joins sheet 1, Crockett Peak

Joins sheet 2, Saint John Mountain

Joins sheet 3, Stonyford

122° 45'00" 122° 42'30" 122° 40'00" 122° 37'30"

R. 8 W. R. 7 W.

39° 22'30" T. 18 N. T. 17 N.

39° 20'00" 39° 17'30" 39° 15'00"

T. 17 N. T. 16 N.

Joins sheet 9, Potato Hill

Joins sheet 11, Gilmore Peak

122° 45'00" 122° 42'30" 122° 40'00" 122° 37'30"

R. 8 W. R. 7 W.

Joins sheet 17, Bartlett Springs

Joins sheet 18, Hough Springs

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North American Datum of 1983 (NAD83). GRS-80 Spherioid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

FOUTS SPRINGS, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 10 OF 35

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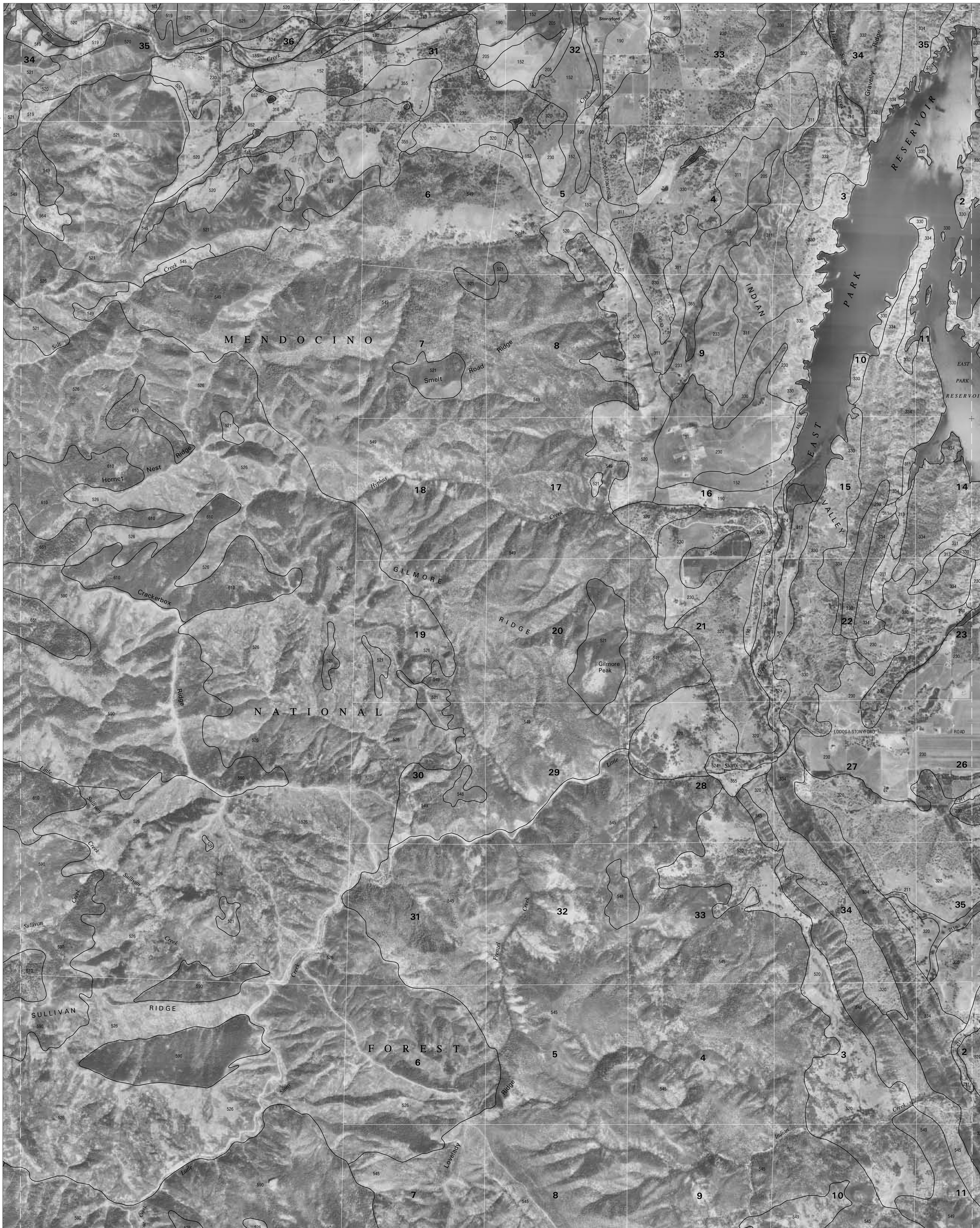
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
GILMORE PEAK QUADRANGLE
SHEET NUMBER 11 OF 35

Joins sheet 2, Saint John Mountain

Joins sheet 3, Stonyford

Joins sheet 4, Rail Canyon



Joins sheet 10, Fouts Springs

Joins sheet 12, Lodoga

Joins sheet 17, Bartlett Springs

Joins sheet 18, Hough Springs

Joins sheet 19, Leesville

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North American Datum of 1983 (NAD83). GRS-80 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

GILMORE PEAK, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 11 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

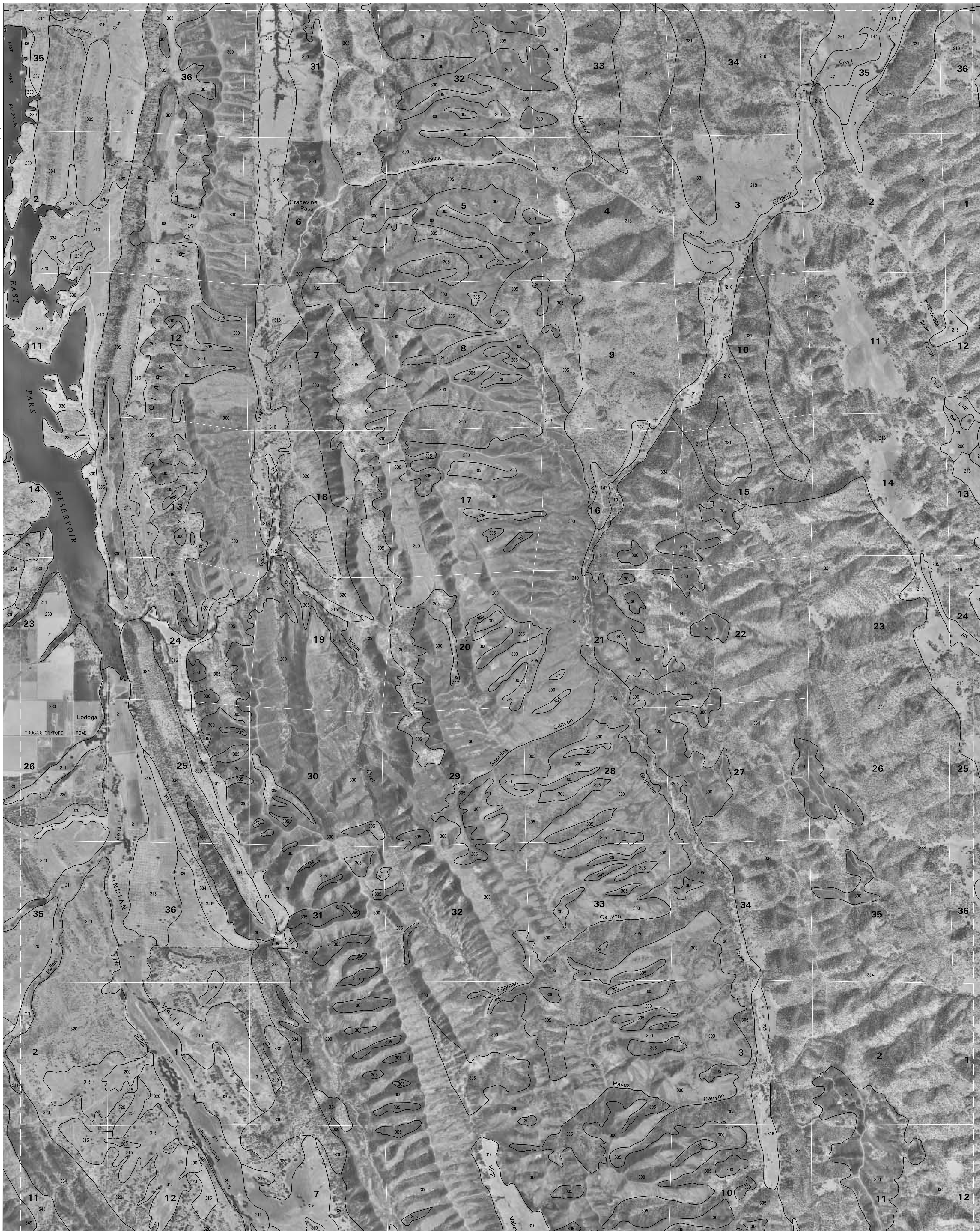
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
LODOGA QUADRANGLE
SHEET NUMBER 12 OF 35

Joins sheet 3, Stonyford

Joins sheet 4, Rail Canyon

Joins sheet 5, Logan Ridge



122° 30'00" | R. 6 W. | R. 5 W. | 122° 27'30" | 122° 25'00" | 122° 22'30"

39° 22'30" | T. 18 N. | T. 17 N. | 39° 20'00" | 39° 17'30" | T. 17 N. | T. 16 N. | 39° 15'00"

Joins sheet 11, Gilmore Peak

Joins sheet 13, Sites

Joins sheet 19, Leesville

Joins sheet 18, Hough Springs

Joins sheet 20, Manor Slough

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

LODOGA, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 12 OF 35

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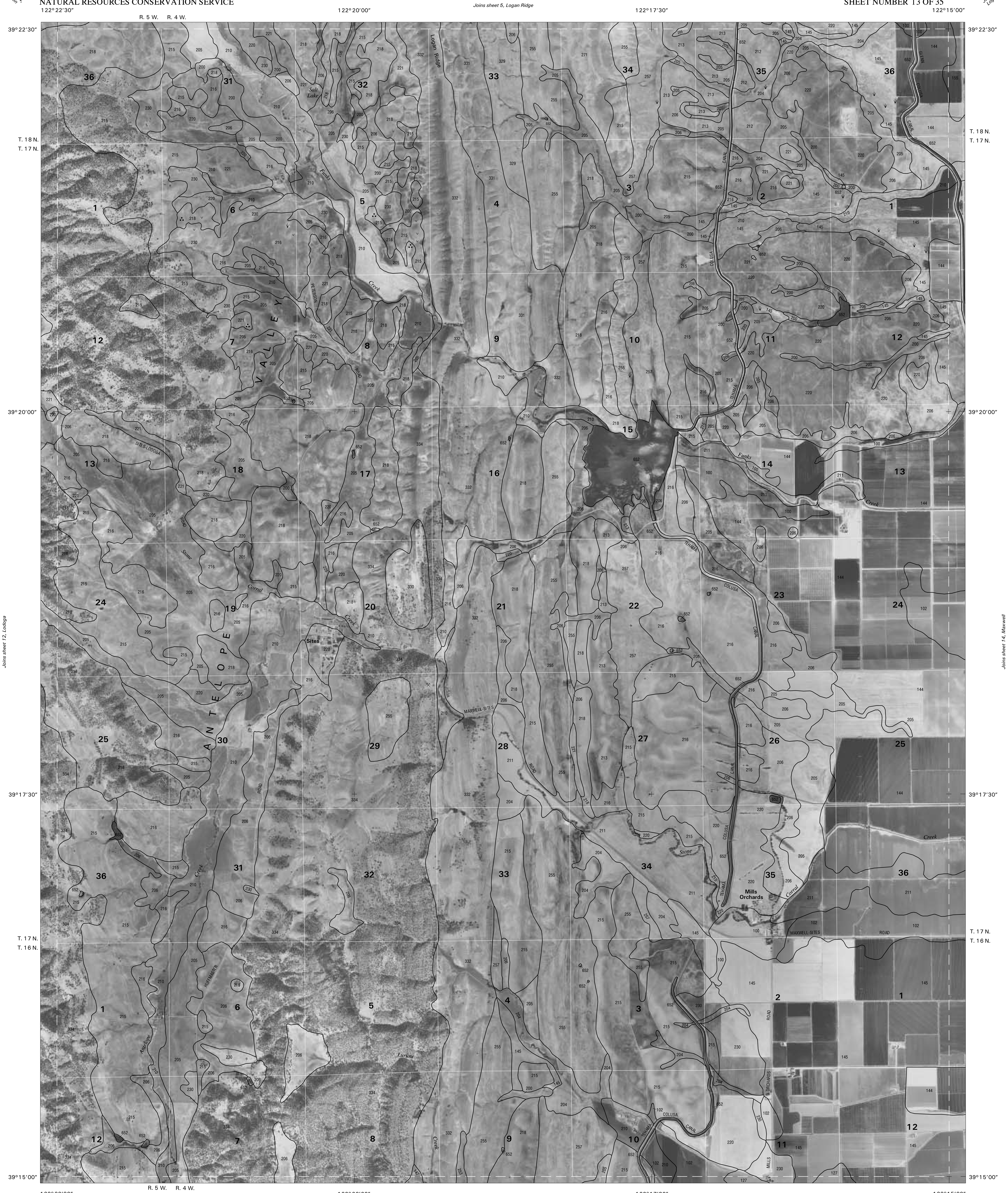
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
SITES QUADRANGLE
SHEET NUMBER 13 OF 35



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

SITES, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 13 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
MAXWELL QUADRANGLE
SHEET NUMBER 14 OF 35

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

MILES 1 0 1

FEET 1000 0 1000 2000 3000 4000 5000 6000 7000

KILOMETERS 1 0 1

MAXWELL, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 14 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
MOULTON WEIR QUADRANGLE
SHEET NUMBER 15 OF 35

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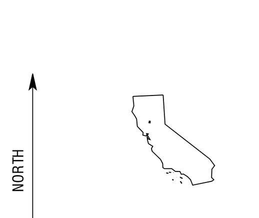
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

SCALE 1:24000

MILES

FEET

KILOMETERS

MOULTON WEIR, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 15 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
SANBORN SLOUGH QUADRANGLE
SHEET NUMBER 16 OF 35

Joins sheet 7, Princeton

Joins sheet 8, Butte City

Joins sheet 15, Moulton Weir

Joins sheet 23, Meridian

Joins sheet 22, Colusa

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service. Base maps are orthophotographs prepared by the U.S. Department of the Interior, Geological Survey, from 1993 - 1999 aerial photography. Public land survey system (PLSS) were acquired from U.S. Geological Survey.

North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

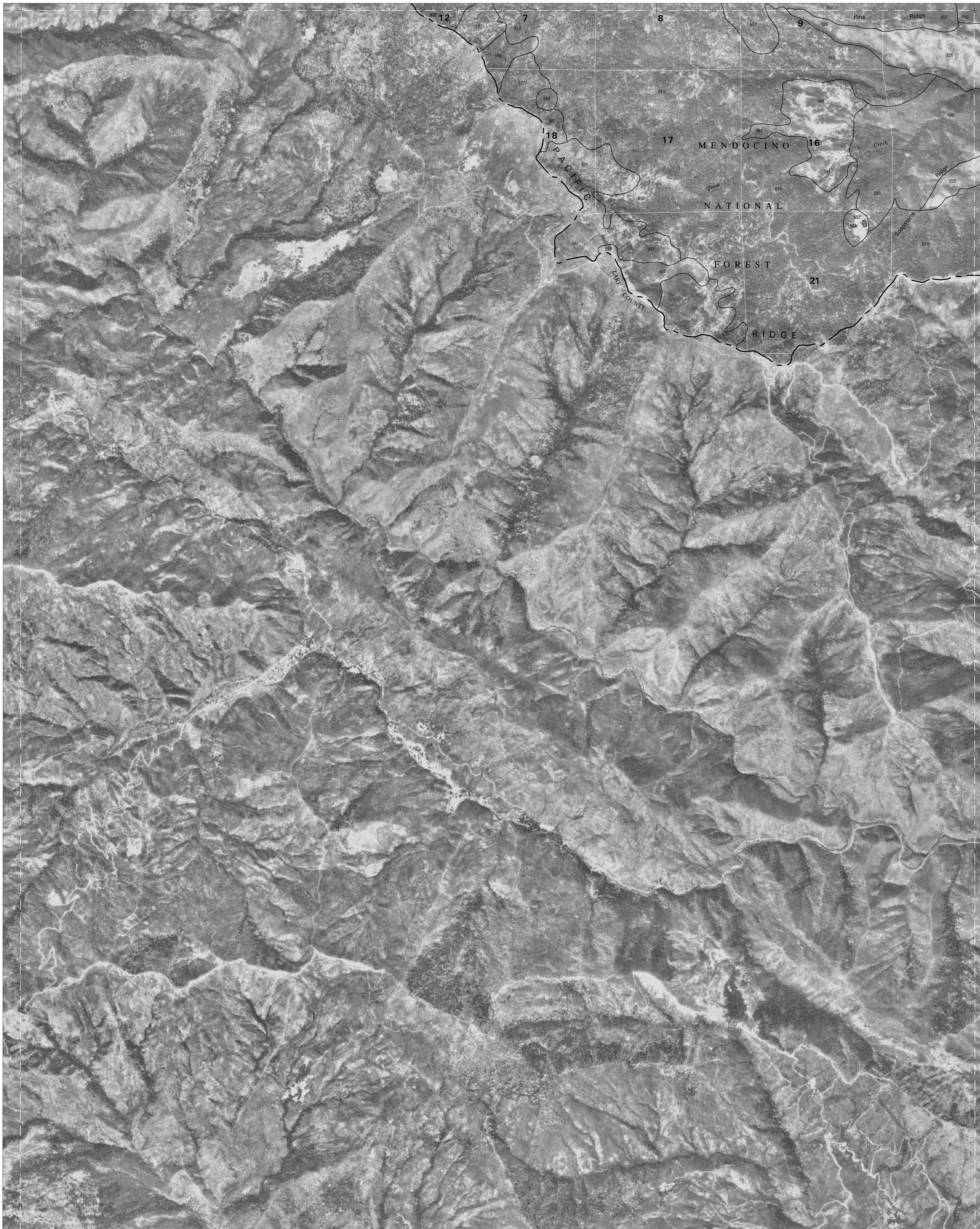
1 0 1
KILOMETERS

SANBORN SLOUGH, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 16 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
BARTLETT SPRINGS QUADRANGLE
SHEET NUMBER 17 OF 35



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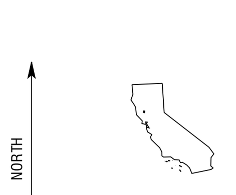
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

BARTLETT SPRINGS, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 17 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
HOUGH SPRINGS QUADRANGLE
SHEET NUMBER 18 OF 35

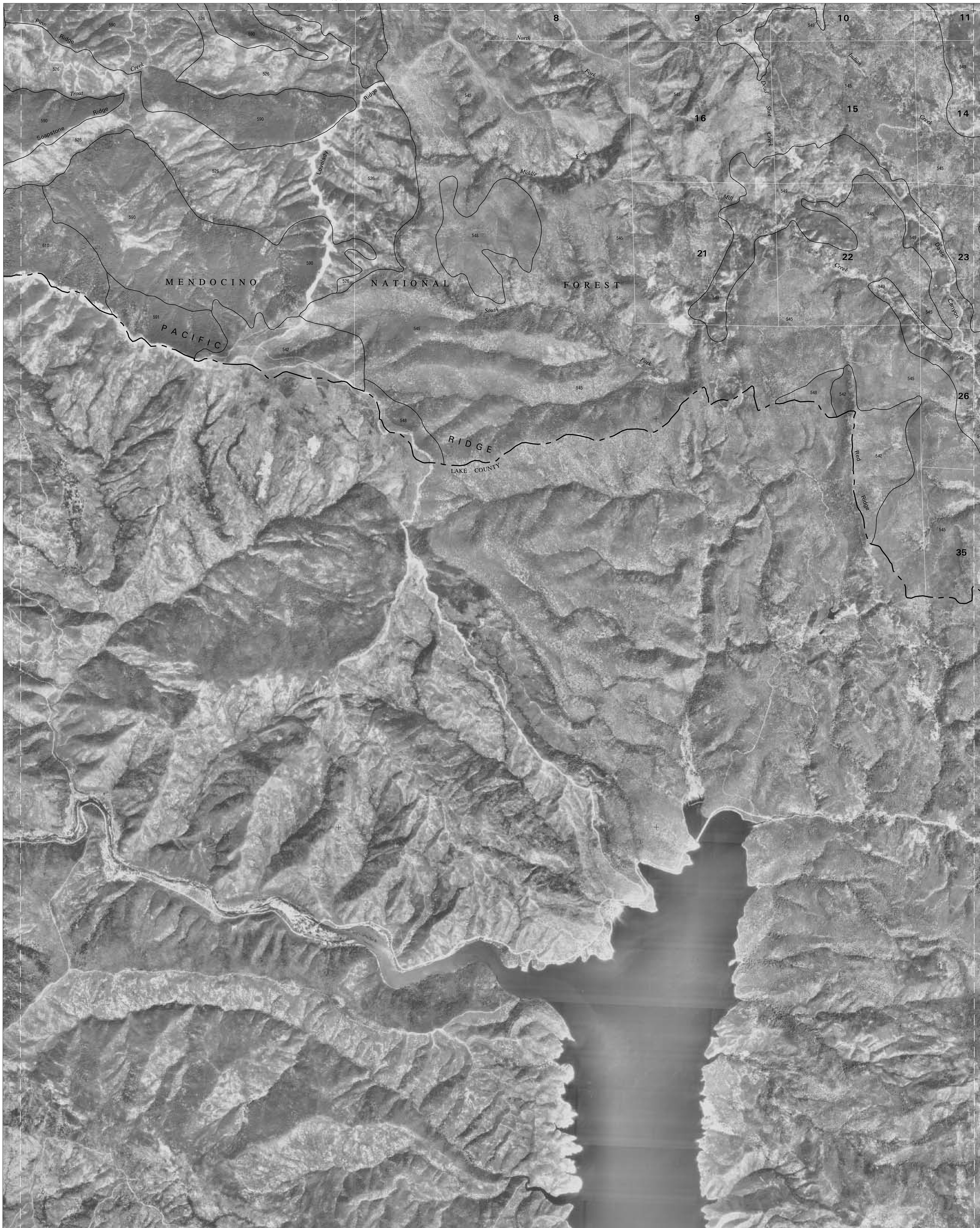
Joins sheet 10, Fouts Springs

Joins sheet 11, Gilmore Peak

Joins sheet 12, Lodoga

122°37'30" 122°35'00" R. 7 W. R. 6 W. 122°32'30" 122°30'00"

39°15'00" 39°15'00"



39°12'30" 39°12'30"

T. 16 N.
T. 15 N.

Joins sheet 17, Bartlett Springs

Joins sheet 19, Leesville

39°10'00" 39°10'00"

39°07'30" 39°07'30"

R. 7 W. R. 6 W.
122°37'30" 122°35'00" 122°32'30" 122°30'00"

Joins sheet 24, Wilbur Springs

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

HOUGH SPRINGS, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 18 OF 35

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
LEESVILLE QUADRANGLE
SHEET NUMBER 19 OF 35

Joins sheet 11, Gilmore Peak

Joins sheet 12, Lodoga

Joins sheet 13, Sites

122°30'00" R. 6 W. R. 5 W. 122°27'30" 122°25'00" 122°22'30"

39°15'00" 39°12'30" T. 16 N. T. 15 N. 39°10'00" 39°07'30"

Joins sheet 18, Hough Springs

Joins sheet 20, Manor Slough

122°30'00" R. 6 W. R. 5 W. 122°27'30" 122°25'00" 122°22'30"

Joins sheet 24, Wilbur Springs

Joins sheet 25, Salt Canyon

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

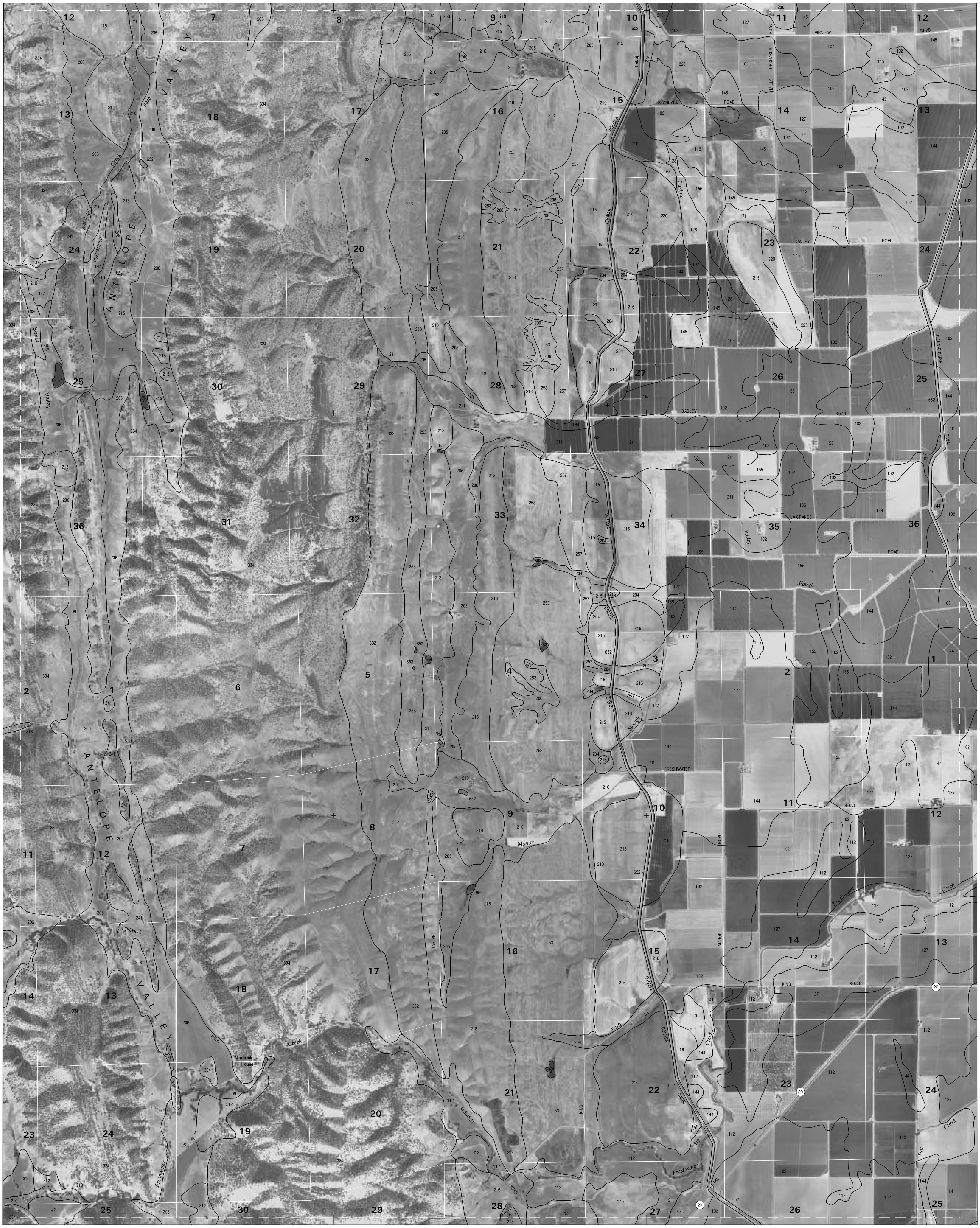
1 0 1
KILOMETERS

LEESVILLE, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 19 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
MANOR SLOUGH QUADRANGLE
SHEET NUMBER 20 OF 35



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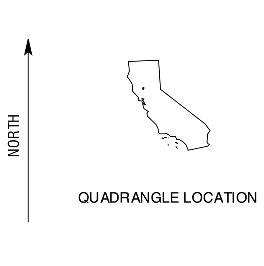
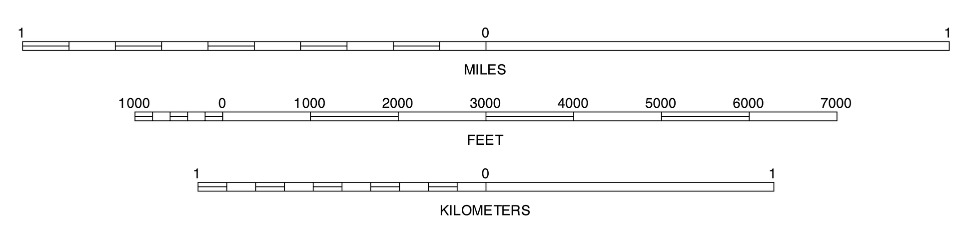
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

SCALE 1:24000



MANOR SLOUGH, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 20 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
WILLIAMS QUADRANGLE
SHEET NUMBER 21 OF 35

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

WILLIAMS, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 21 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
COLUSA QUADRANGLE
SHEET NUMBER 22 OF 35

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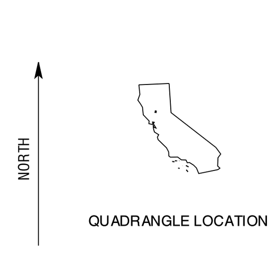
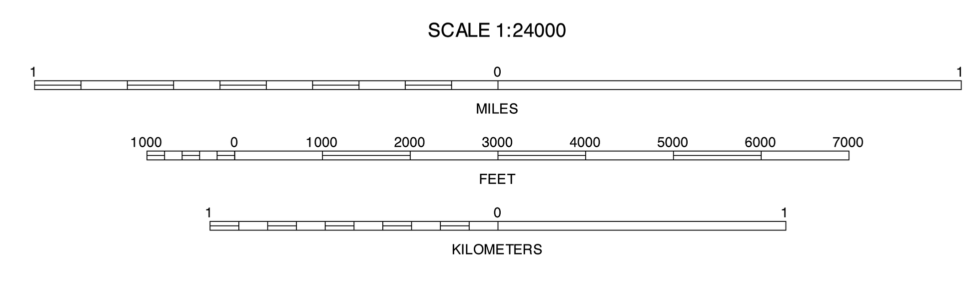
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

SCALE 1:24000



COLUSA, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 22 OF 35

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
MERIDIAN QUADRANGLE
SHEET NUMBER 23 OF 35

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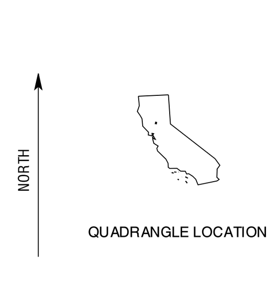
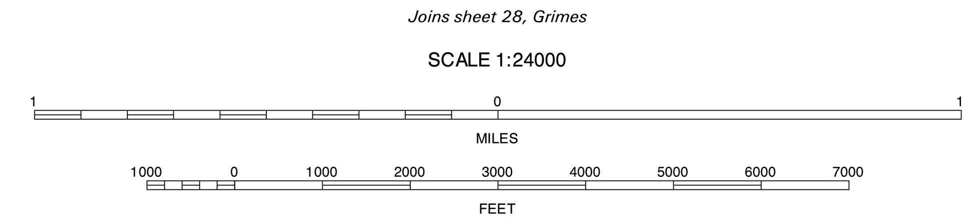
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



SCALE 1:24000



MERIDIAN, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 23 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
WILBUR SPRINGS QUADRANGLE (OVERSIZED)
SHEET NUMBER 24 OF 35

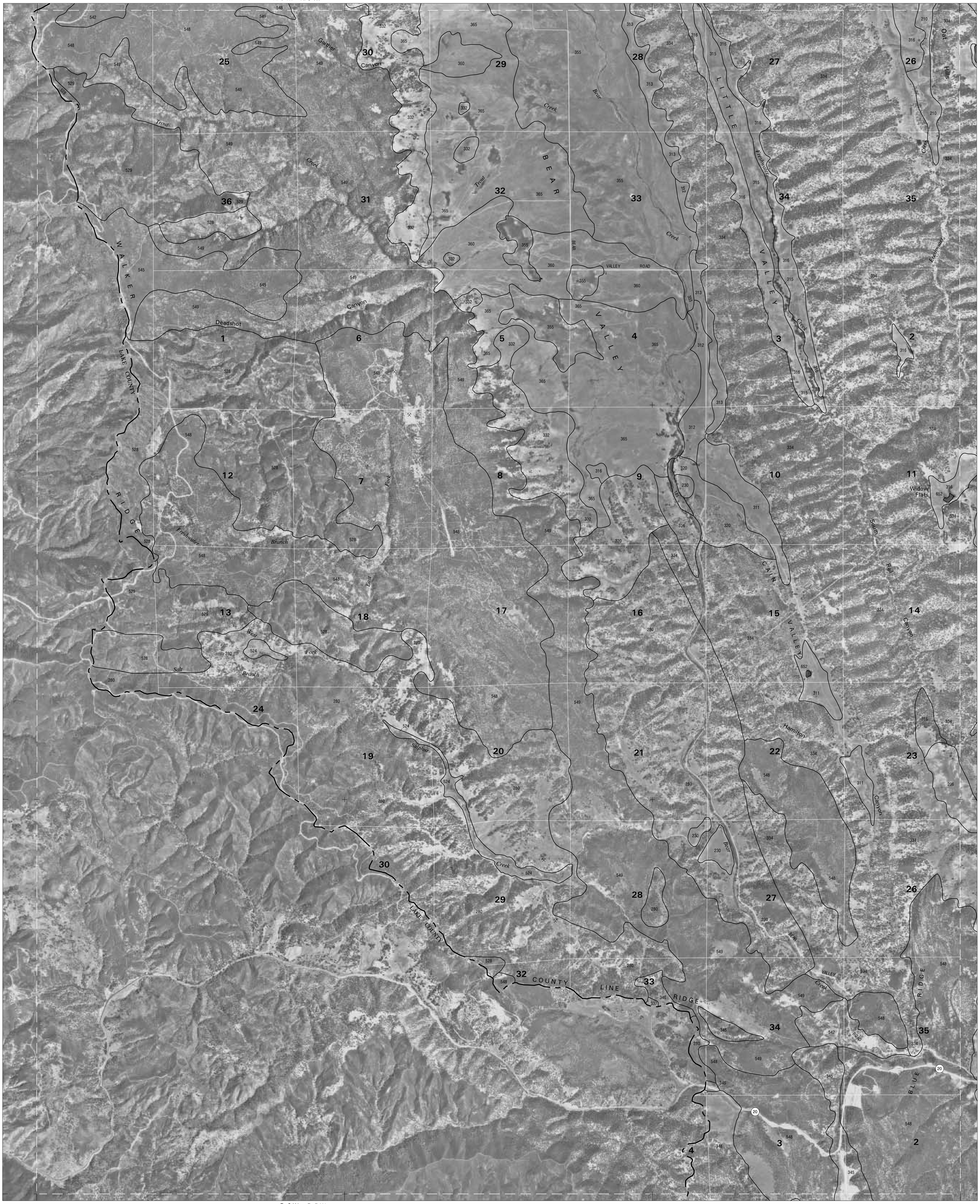
Joins sheet 18, Hough Springs

Joins sheet 19, Leesville

Joins sheet 20, Manor Slough

122° 30'00" | R. 6 W. R. 5 W. | 122° 27'30" | 122° 25'00" | 122° 22'30"

39° 07'30" | T. 15 N. T. 14 N. | 39° 05'00" | 39° 02'30" | T. 14 N. T. 13 N. | 39° 00'00"



Joins sheet 25, Salt Canyon

122° 30'00" | R. 6 W. R. 5 W. | 122° 27'30" | 122° 25'00" | 122° 22'30"

Joins sheet 30, Wilson Valley

Joins sheet 31, Glascock Mountain

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

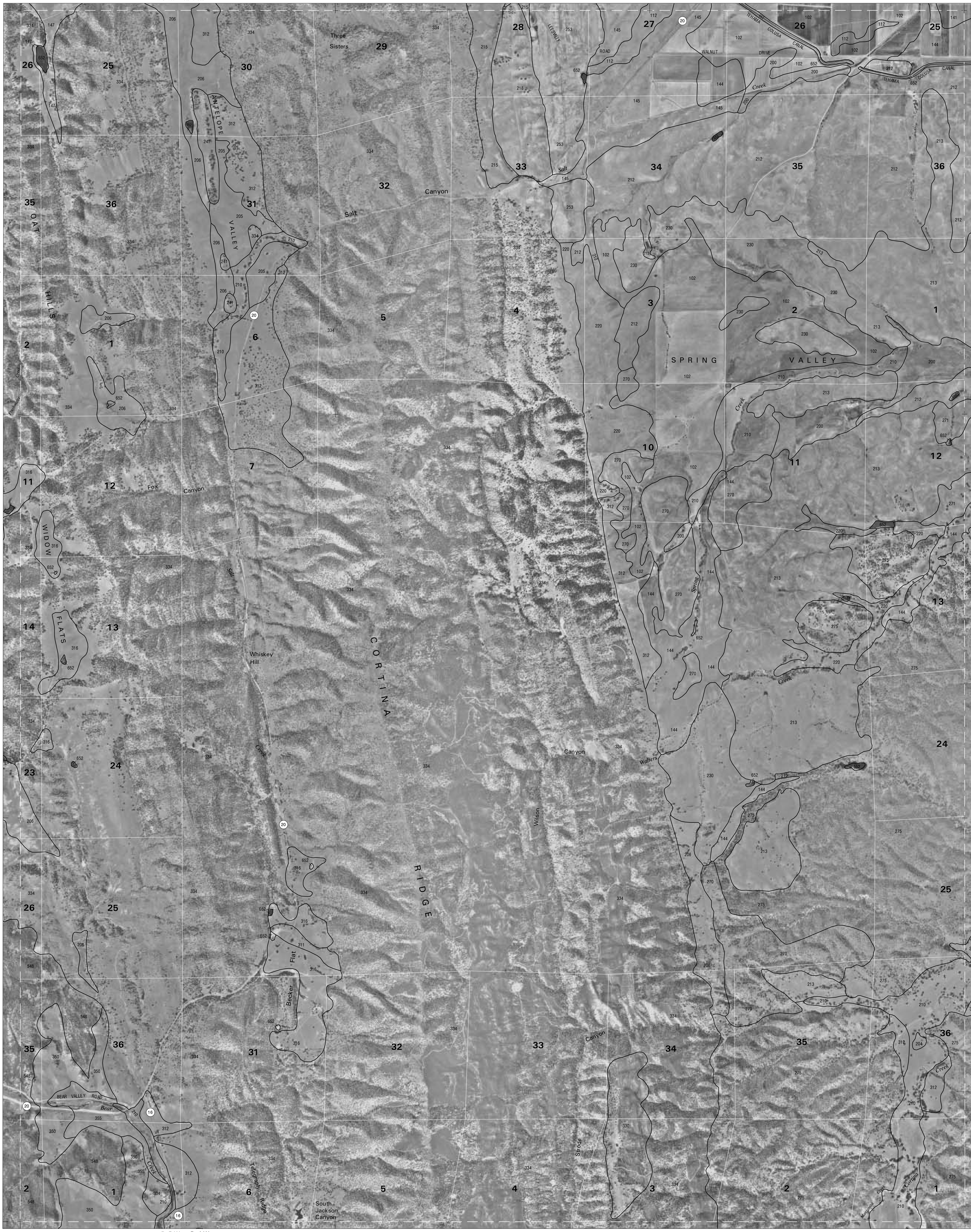
1 0 1
KILOMETERS

WILBUR SPRINGS, (OVERSIZED) CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 24 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
SALT CANYON QUADRANGLE
SHEET NUMBER 25 OF 35



SALT CANYON, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 25 OF 35

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 20, Manor Slough

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
CORTINA CREEK QUADRANGLE
SHEET NUMBER 26 OF 35

Joins sheet 22, Colusa

Joins sheet 21, Williams

122°15'00" R. 4 W. R. 3 W. 122°12'30" 122°10'00" R. 3 W. R. 2 W. 122°07'30"

39°07'30" 39°07'30"

T. 15 N. T. 14 N.

39°05'00" 39°05'00"

Joins sheet 25, Salt Canyon

Joins sheet 27, Arbuckle

39°02'30" 39°02'30"

T. 14 N. T. 13 N.

39°00'00" 39°00'00"

R. 4 W. R. 3 W. R. 3 W. R. 2 W.
122°15'00" 122°12'30" 122°10'00" 122°07'30"

Joins sheet 32, Rumsey

Joins sheet 31, Glascock Mountain

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

CORTINA CREEK, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 26 OF 35

Joins sheet 33, Wildwood School

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
ARBUCKLE QUADRANGLE
SHEET NUMBER 27 OF 35

Joins sheet 21, Williams

Joins sheet 22, Colusa

Joins sheet 23, Meridian

122° 07′30″ 122° 05′00″ 122° 02′30″ 122° 00′00″

R. 2 W. R. 2 W. R. 1 W.

39° 07′30″ 39° 05′00″ 39° 02′30″ 39° 00′00″

T. 15 N. T. 14 N. T. 13 N.

Joins sheet 26, Cortina Creek

Joins sheet 28, Grimes

Joins sheet 32, Rumsey

Joins sheet 33, Wildwood School

Joins sheet 34, Dunnigan

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

ARBUCKLE, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 27 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
GRIMES QUADRANGLE
SHEET NUMBER 28 OF 35

Joins sheet 22, Colusa

Joins sheet 23, Meridian

122°00'00" 121°57'30" 121°55'00" 121°52'30"

R. 1 W. R. 1 E.

39°07'30"

T. 15 N.
T. 14 N.

39°05'00"

Joins sheet 27, Arbuckle

Joins sheet 29, Tisdale Weir

39°02'30"

T. 14 N.
T. 13 N.

39°00'00"

122°00'00" 121°57'30" 121°55'00" 121°52'30"

R. 1 W. R. 1 E.

Joins sheet 34, Dunnigan

Joins sheet 33, Wildwood School

Joins sheet 35, Kirkville

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

GRIMES, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 28 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

Joins sheet 22, Meridian

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
TISDALE WEIR QUADRANGLE
SHEET NUMBER 29 OF 35

121°52'30" 121°50'00" R. 1 E. R. 2 E. 121°47'30" 121°45'00"

39°07'30" T. 15 N. T. 14 N. 39°05'00" 39°02'30" T. 14 N. T. 13 N. 39°00'00"

Joins sheet 28, Grimes

121°52'30" 121°50'00" R. 1 E. R. 2 E. 121°47'30" 121°45'00"

Joins sheet 35, Kirkville

Joins sheet 34, Dunnigan

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

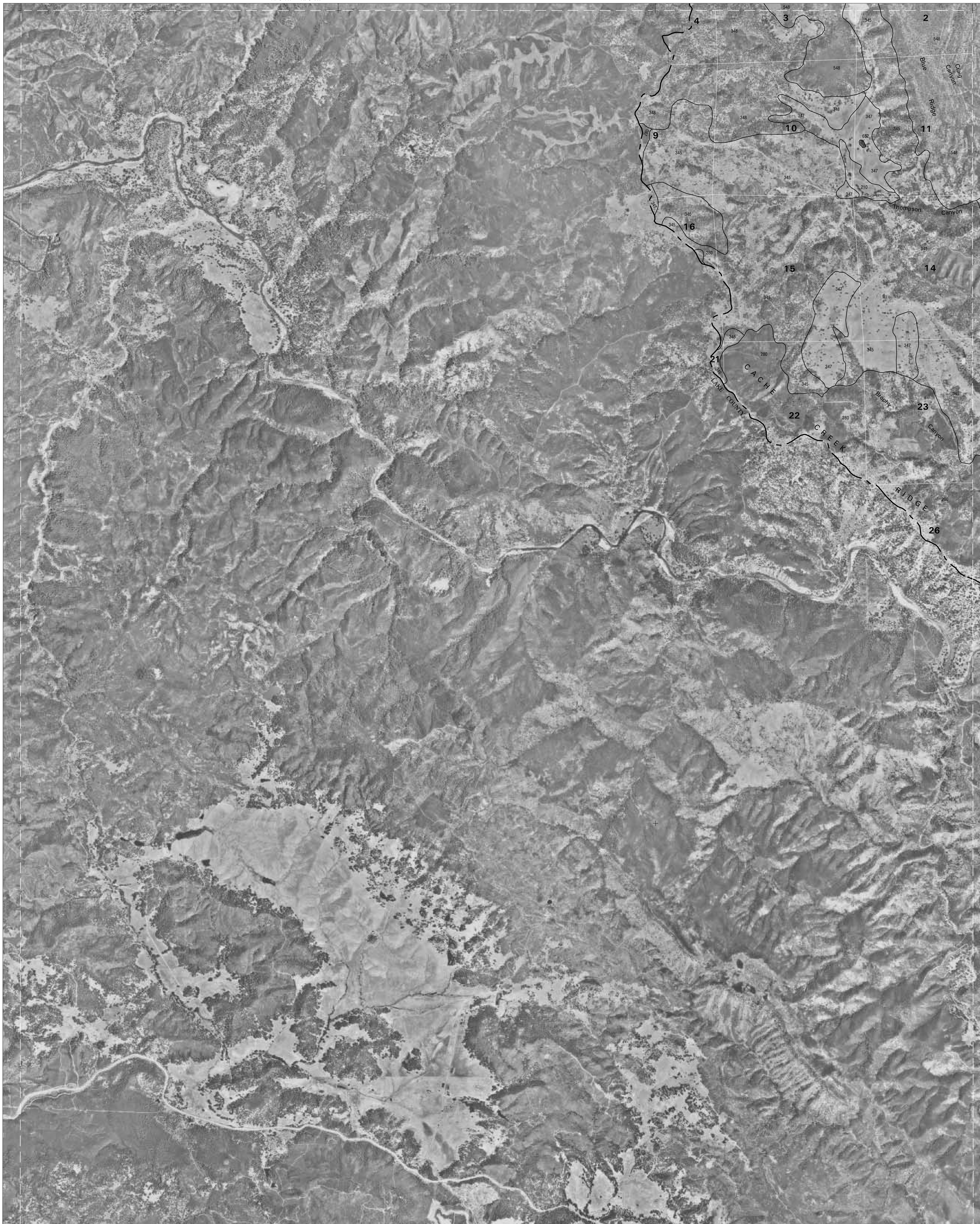
1 0 1
KILOMETERS

TISDALE WEIR, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 29 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
WILSON VALLEY QUADRANGLE
SHEET NUMBER 30 OF 35



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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

WILSON VALLEY, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 30 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

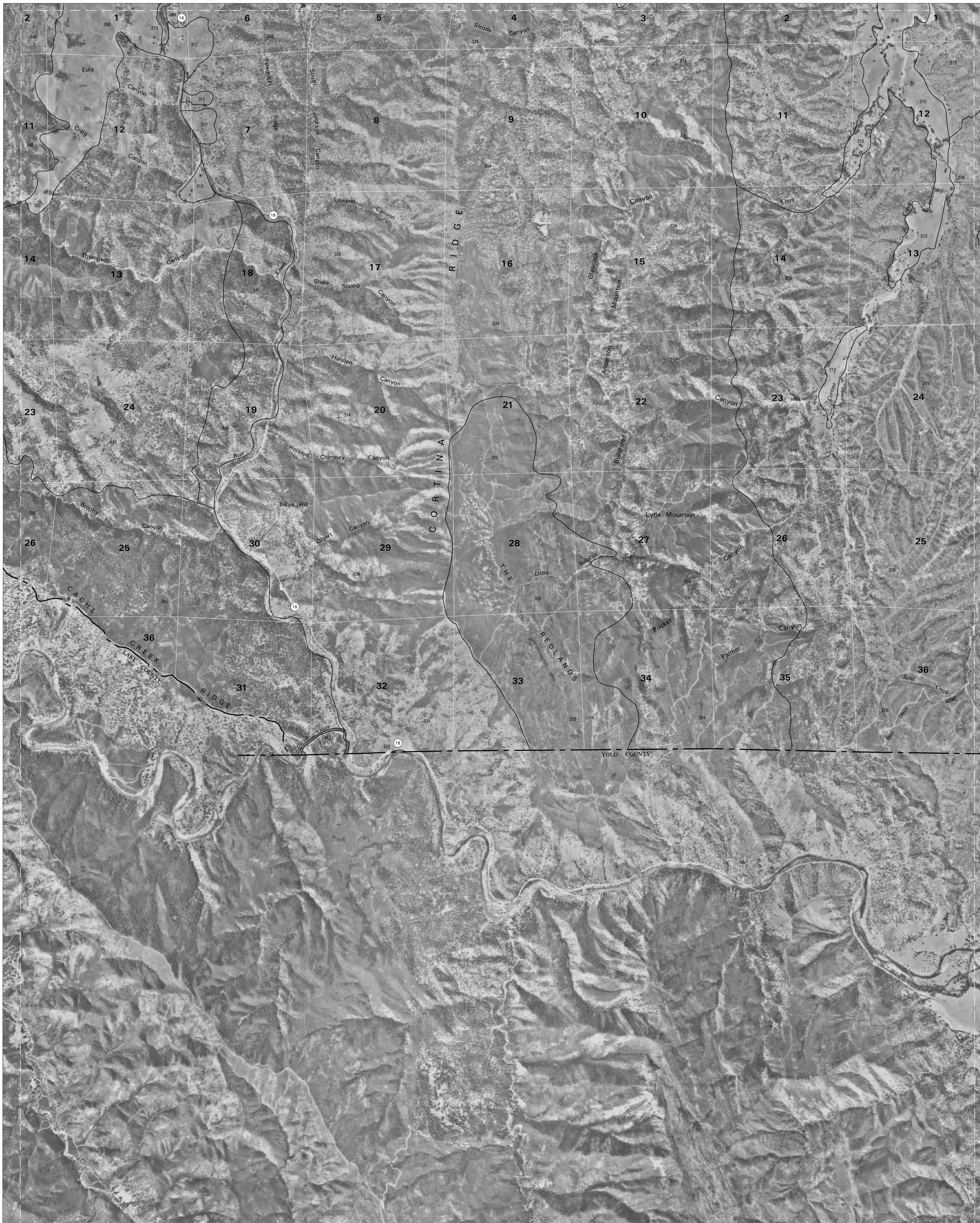
Joins sheet 24, Wilbur Springs

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
GLASCOCK MOUNTAIN QUADRANGLE
SHEET NUMBER 31 OF 35

Joins sheet 26, Cortina Creek

Joins sheet 25, Salt Canyon



Joins sheet 30, Wilson Valley

Joins sheet 32, Rumsey

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

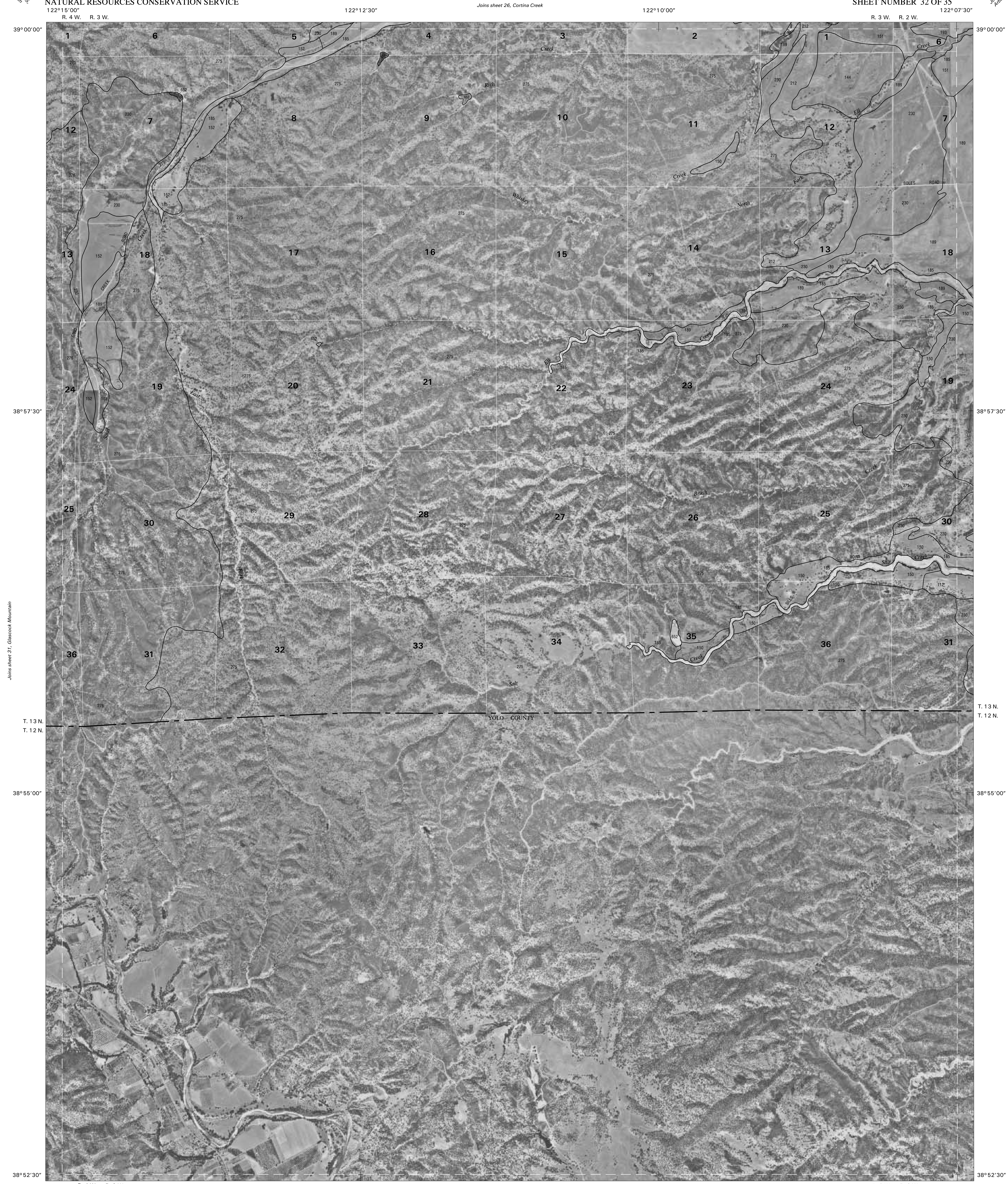
1 0 1
KILOMETERS

GLASCOCK MOUNTAIN, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 31 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
RUMSEY QUADRANGLE
SHEET NUMBER 32 OF 35



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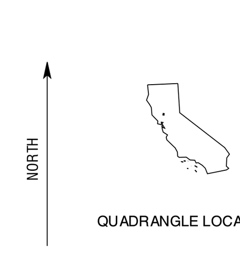
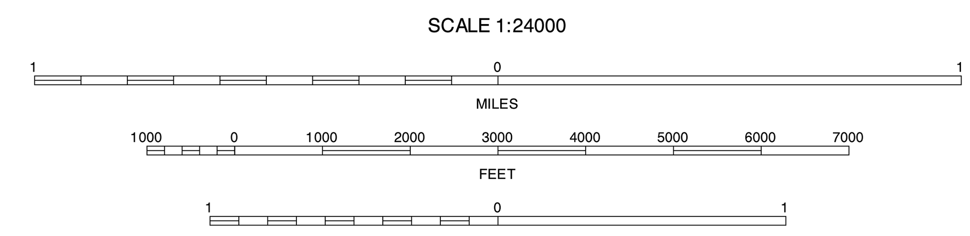


SCALE 1:24000



RUMSEY, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 32 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
WILDWOOD SCHOOL QUADRANGLE
SHEET NUMBER 33 OF 35

Joins sheet 26, Cortina Creek

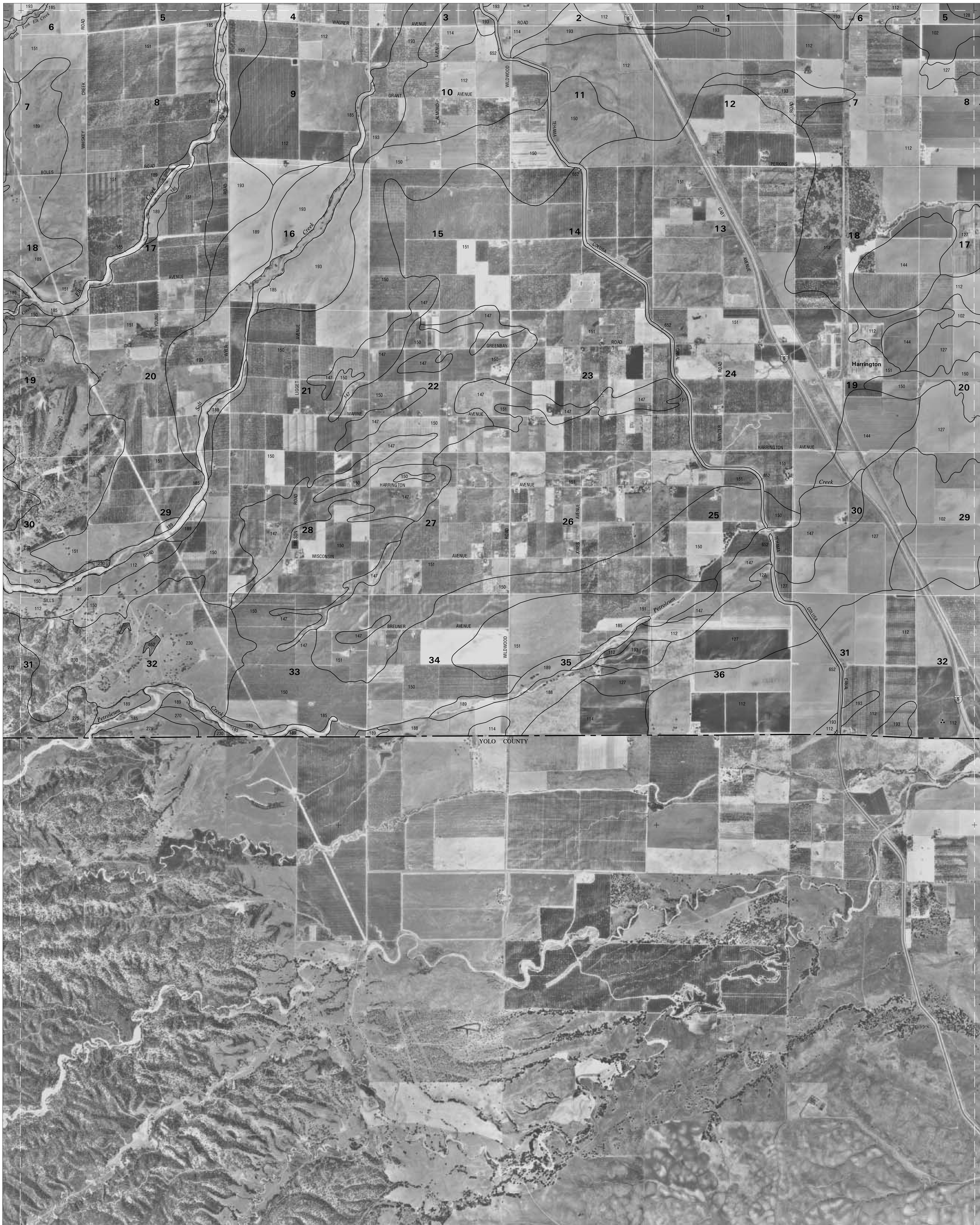
Joins sheet 27, Arbuckle

Joins sheet 28, Grimes

122° 07′30″ 122° 05′00″ 122° 02′30″ 122° 00′00″

R. 2 W. R. 1 W.

39° 00′00″



38° 57′30″

38° 55′00″

38° 52′30″

Joins sheet 32, Rumsey

Joins sheet 34, Dunnigan

122° 07′30″ 122° 05′00″ 122° 02′30″ 122° 00′00″

R. 2 W. R. 1 W.

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North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

NORTH

QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

WILDWOOD SCHOOL, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 33 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
DUNNIGAN QUADRANGLE
SHEET NUMBER 34 OF 35

Joins sheet 27, Arbuckle

Joins sheet 28, Grimes

Joins sheet 29, Tisdale Weir

Joins sheet 33, Wildwood School

Joins sheet 35, Kirkville

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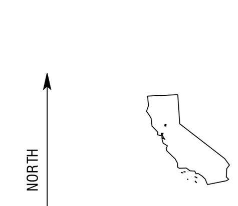
North American Datum of 1983 (NAD83). GRS-80 Spheriod 1000-meter ticks: Universal Transverse Mercator, zone 10. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.



QUADRANGLE LOCATION

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

DUNNIGAN, CALIFORNIA
7.5 MINUTE SERIES
SHEET NUMBER 34 OF 35

Soil map delineations extending beyond the dashed white quadrangle neatline are for reference only and are included on adjacent map sheets.

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

COLUSA COUNTY, CALIFORNIA
KIRKVILLE QUADRANGLE
SHEET NUMBER 35 OF 35

Joins sheet 28, Grimes
Joins sheet 29, Tisdale Weir
Joins sheet 34, Dunnigan

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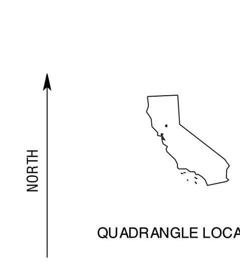

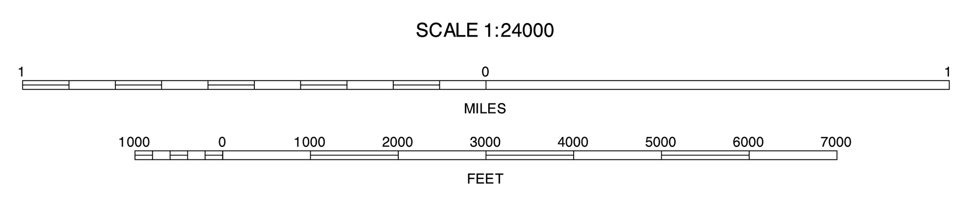

KIRKVILLE, CALIFORNIA

7.5 MINUTE SERIES
SHEET NUMBER 35 OF 35

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