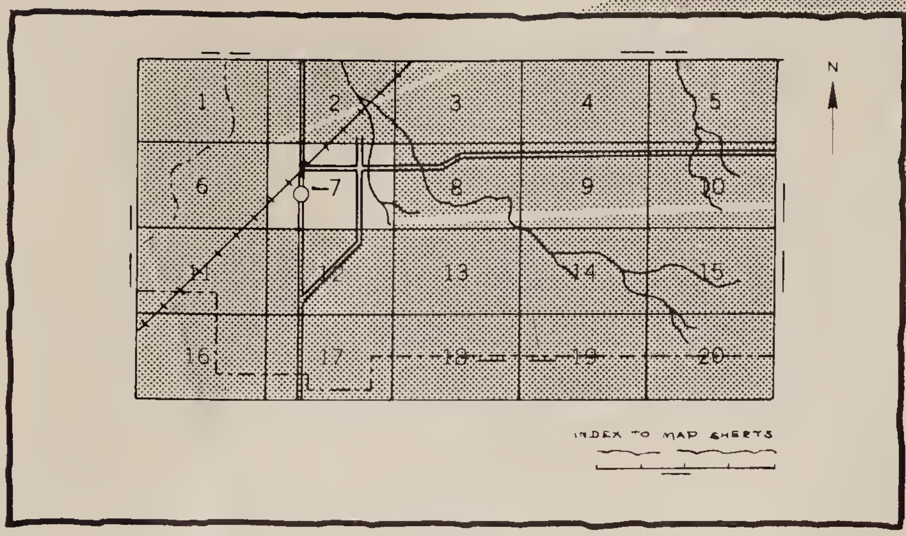
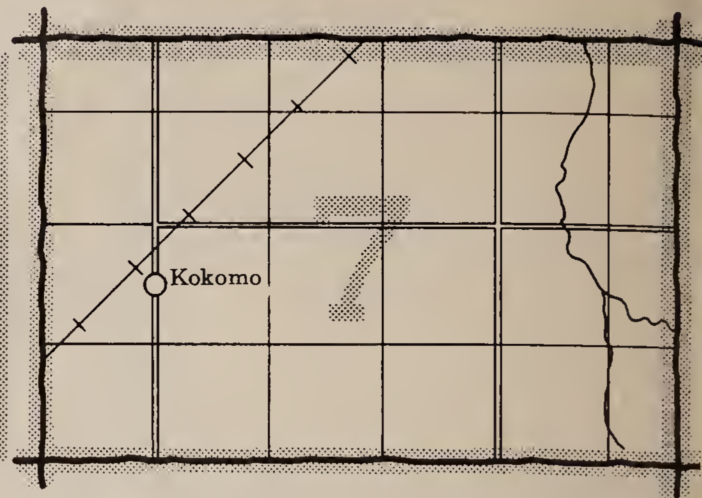
Soil survey of
Tuscarora Mountain Area, Nevada
Parts of Elko, Eureka, and Lander Counties

United States Department of Agriculture, Soil Conservation Service, and
United States Department of the Interior, Bureau of Land Management
in cooperation with
University of Nevada Agricultural Experiment Station

HOW TO US

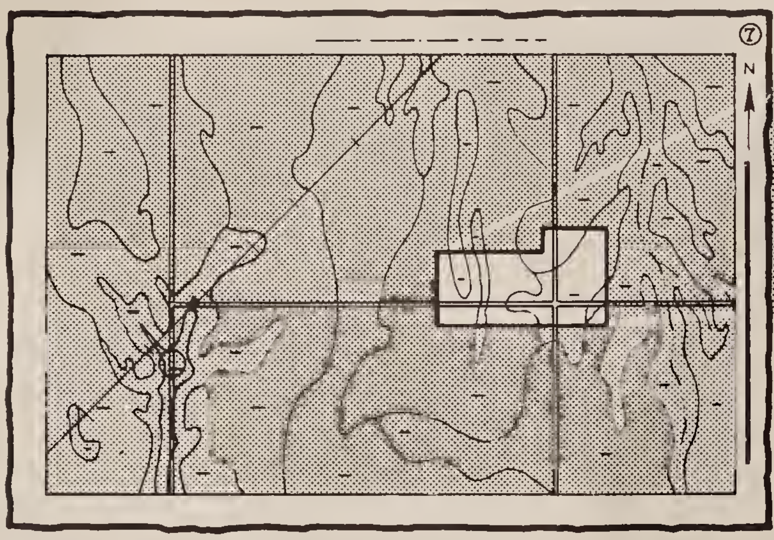
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

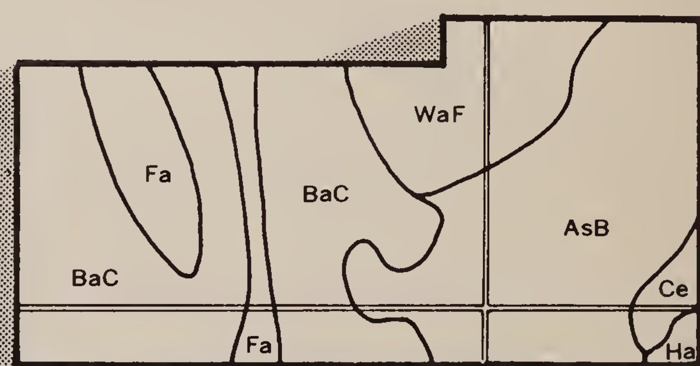




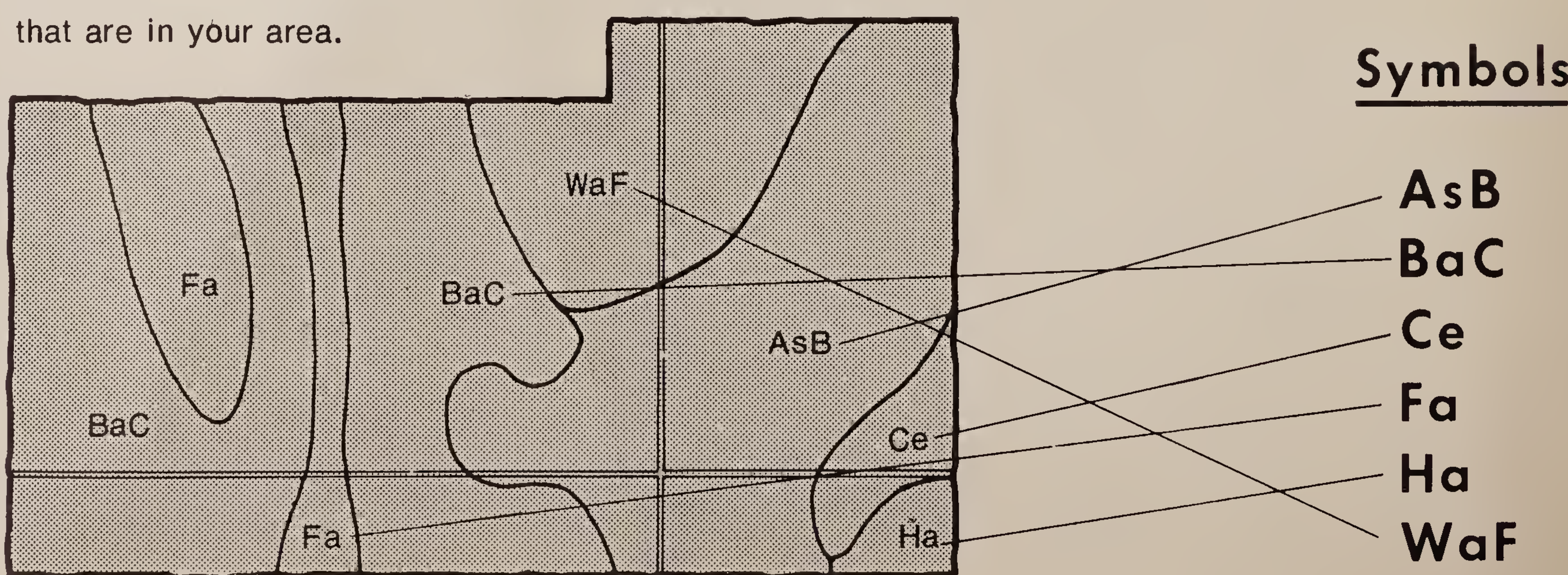
2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.



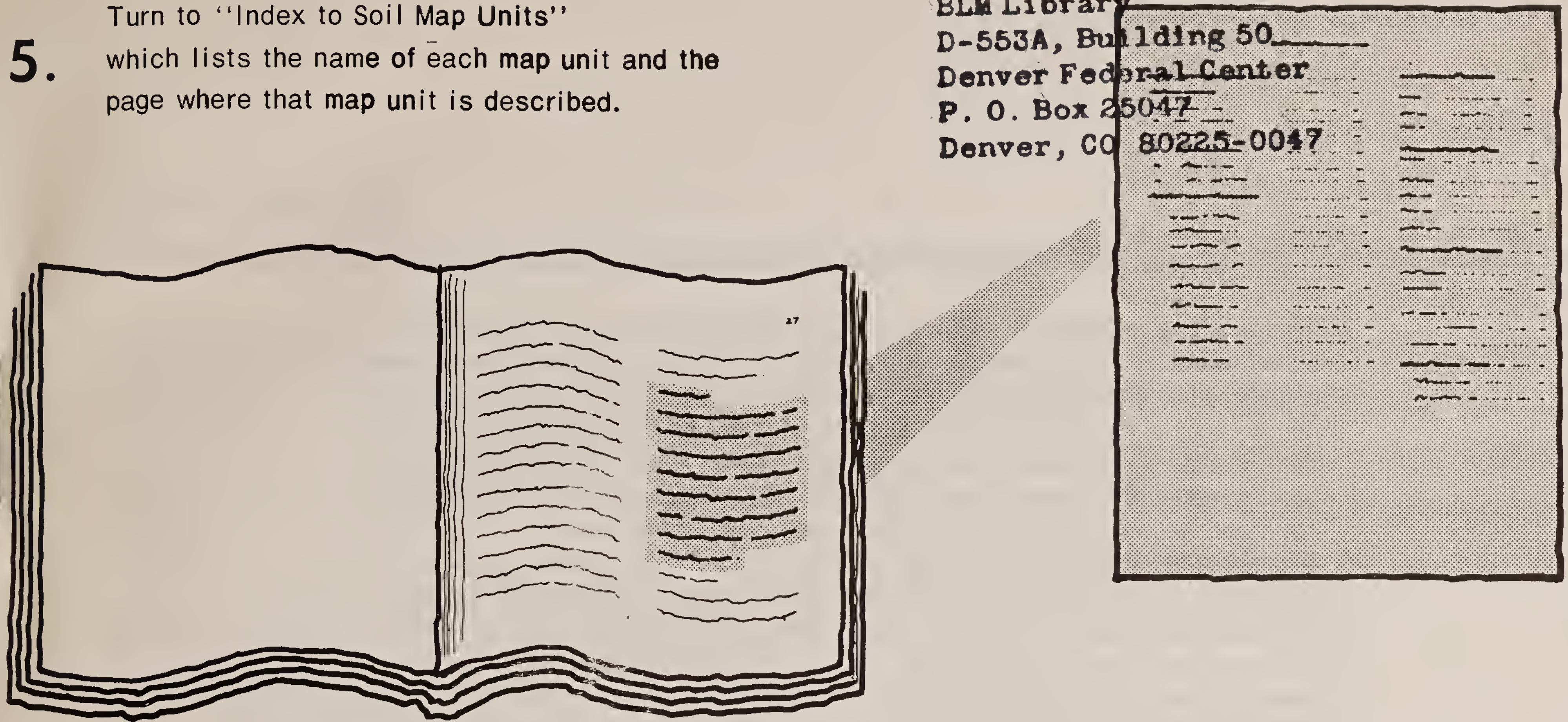


4. List the map unit symbols that are in your area.

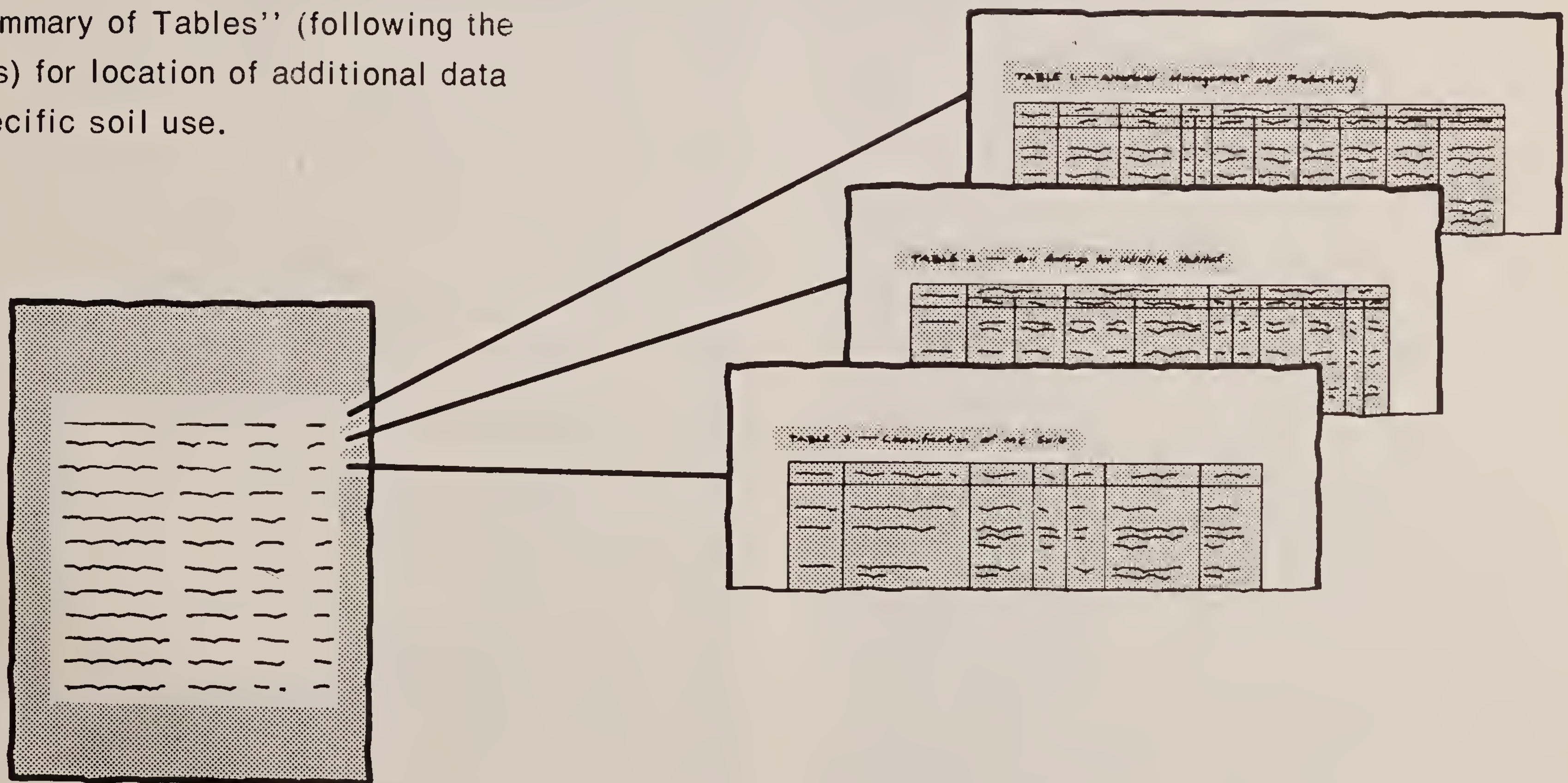


THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was performed in the period 1960-66. Soil names and descriptions were approved in 1968. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1968. This survey was made cooperatively by the Soil Conservation Service; the Bureau of Land Management; and the University of Nevada Agricultural Experiment Station. It is part of the technical assistance furnished to the Eureka County, Lander County, Jiggs, and Owyhee Conservation Districts.

Soil maps in this survey may be copied without permission, but any enlargement of these maps could cause misunderstanding of the detail of mapping and result in erroneous interpretations. Enlarged maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

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Issued December 1980

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Summary of tables

Foreword

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

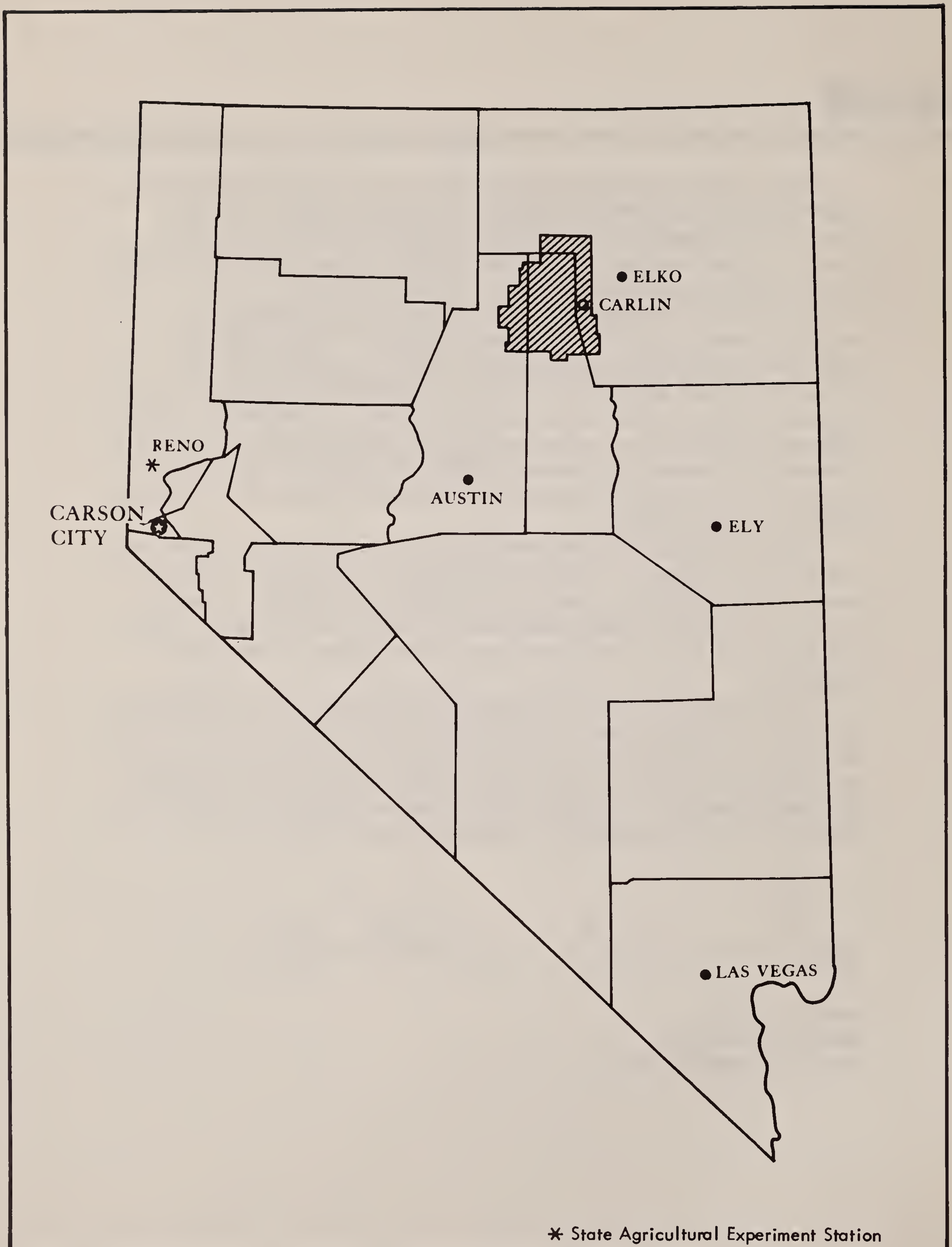
This soil survey is designed for many different users. Farmers, ranchers, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey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

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

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

Gerald Thola

Gerald C. Thola
State Conservationist
Soil Conservation Service



Location of Tuscarora Mountain Area in Nevada.

Soil survey of
Tuscarora Mountain Area, Nevada
Parts of Elko, Eureka, and Lander Counties

By William E. Dollarhide and George J. Staidl, Soil Conservation Service
Fieldwork by Eddie L. Spencer, David M. Candland, Warren M. Archer, Richard D. Strong, and Edwin G. Dimick, Soil Conservation Service, and Charles W. Luscher, Bureau of Land Management

United States Department of Agriculture, Soil Conservation Service, and
United States Department of the Interior, Bureau of Land Management
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TUSCARORA MOUNTAIN AREA, parts of Elko, Eureka, and Lander Counties, is in the northeastern part of Nevada. It has a total area of about 924,495 acres, or 1,445 square miles. The small towns of Carlin, Dunphy, and Beowawe are located within the survey area.

Important physiographic units in the survey area include parts of the Tuscarora, Independence, Cortez, Shoshone, and Osgood Mountains; Boulder Valley; and flood plains along the Humboldt River and tributary streams. Elevation ranges from about 4,300 feet on the lower flood plain of the Humboldt River to about 8,000 feet in the Tuscarora and Pine Mountains.

The survey area is sparsely populated. The main industries are ranching and mining. Small areas of irrigated land along the flood plain of the Humboldt River and its tributary streams are used mainly for the production of hay and pasture.

Descriptions, names, and delineations of soils in this soil survey do not fully agree with those on soil maps for adjacent counties. Differences are the result of better knowledge of soils, modifications in series concepts, intensity of mapping, or the extent of soils within the survey.

General nature of the survey area

This section gives general information about the survey area. It briefly discusses history, water supply, industries, drainage, geology, and climate.

History

The survey area was originally inhabited by the Shoshone Indians. Fur trappers arrived in the area in 1828. In 1841 they were followed by settlers who traveled down the Humboldt River.

The cattle industry got its start in 1859-60, when it was proven that cattle could be successfully wintered on the bottom lands along the Humboldt River.

In 1868 the Central Pacific Railroad Company laid tracks along the Humboldt River and established the towns of Beowawe, Dunphy, and Carlin, the only towns in the area. In later years the Southern Pacific Railroad absorbed the Central Pacific Railroad, and a short time later the Western Pacific Railroad Company laid tracks adjacent to the existing ones.

Water supply

The major sources of irrigation water in the survey area are the Humboldt River, Pine Creek, and Maggie Creek. A few wells have been drilled, but these furnish only a small part of the total water supply. At the higher elevations, numerous small springs and seeps and several small perennial streams provide adequate watering facilities for livestock and wildlife. In the valleys, there are few springs and the streams are mostly intermittent. Water in the valleys is provided by wells. The ground water supply in the valleys is quite variable in quality, and the amount that is available for irrigation has not been determined.

In the rural areas, water for household use is obtained from drilled wells or from dependable springs. Carlin's water supply is also obtained from wells.

Industries and transportation

The main industries in the survey area are ranching and mining.

The ranches are dominantly cow and calf operations, and the current year's crop generally is sold in fall and exported. There are also a few herds of sheep in the area.

Interest in mining has recently increased. In 1965 operation of an open pit gold mine was opened in the Tuscarora Mountains, in the northern part of the area. This is the largest open pit gold mine in the United States and is the second largest gold producer. Other mines are operated intermittently and produce mainly barium or copper. There is a barite mill at Argenta.

Geysers near Beowawe are being explored as a source of hydrothermal power to produce electricity.

The area is so sparsely settled that there is little need for improved roads. In summer and fall most of the survey area is accessible by dirt roads or jeep trails.

The area is served by the Southern Pacific and Western Pacific Railroads, which parallel the Humboldt River. Ore loading dumps are at Dunphy, Argenta, and Palisades. Two small freight platforms are located at Beowawe and Carlin.

The principal highway in the survey area is Interstate 80, which runs from east to west through the center of the area. Two paved state highways also traverse the southern part of the area. Route 51 runs south from Carlin through Pine Valley, and Route 21 runs from Interstate 80 at Bob's Flat through Beowawe and Crescent Valley. Two principal roads serve the part of the area north of Interstate 80. A paved road runs north along Maggie Creek from Carlin in the eastern part of the area, and a graveled road that is used year-round runs north from the Dunphy Ranch through Boulder Valley.

Drainage

The survey area is drained principally by the Humboldt River, which enters the eastern part of the area near Carlin, flows in a westerly direction through the central part, and exits from the western part. The eastern half of the area north of the Humboldt River is drained by Maggie Creek, which joins the Humboldt River at Palisades. The northwestern corner of the area is drained by Rock Creek, which enters Boulder Valley and flows roughly parallel to the Humboldt River. The rest of the area is drained by intermittent streams that flow only for short periods in spring or during localized thunderstorms in summer. These streams are principally Boulder Creek and the drainageways in Whirlwind and Crescent Valleys, all of which empty into the Humboldt River.

Geology

Rocks of the Tertiary System underlie most of the uplands in the area. These are volcanic rocks consisting of andesite, rhyolite, and related pyroclastic rocks. The majority of these were laid down during the Miocene and Pliocene epochs, but some in the Cortez Mountains in the southern part of the area were laid down during the Eocene and Oligocene epochs and have been altered to some extent. Typical soils derived from these rocks include Bucan, Chen, Ramires, and Taylor Creek soils.

The northern part of the Tuscarora Mountains and the lower slopes on both the east and west sides of Emigrant Pass are dominated by rocks of the Ordovician System. These consist mainly of the Vinini Formation, which is made up of interbedded chert, shale, sandstone, and greenstone. Carstump, Slaven, Primeaux, Packer, and Torro are typical soils that formed in material derived from these rocks.

A very complex faulted area occurs in the vicinity of the Newmont Mine at the head of Rodeo Creek. Included in this area are rocks of the Hanson Creek Formation. These rocks are fractured and brecciated, dark gray to black dolomite and Eureka Quartzite, which is a vitreous, white, fine-grained, sugary quartzite. They are also of Ordovician age. The oldest rock in the area, Hamburg Dolomite of Cambrian age, is also in this region.

The oldest valley fill is sediment of Tertiary-Quaternary age that makes up the terraces in the Maggie Creek area and in Pine Valley. This valley fill is mainly white to buff silt, sand, and gravel, that locally include diatomaceous silt and diatomite. These deposits generally are known as the Humboldt Formation. Soils such as those of the Donna, Stampede, Susie Creek, and Pie Creek series formed in these deposits.

The fans and terraces in Crescent, Whirlwind, and Boulder Valleys are made up of older Quaternary alluvium. This alluvium is the parent material for soils such as those of the Beowawe, Midas, Rad, and Tenabo series.

The youngest material in the area consists of recent alluvium along the flood plains of the major streams and on the floors of the lower valleys. It is stratified clay, silt, sand, and gravel. Typical soils derived from this material are those of the Welch, Four Star, Humboldt, Ocala, and McConnel series.

Climate

Prepared by the National Climatic Center, Asheville, North Carolina.

In the Tuscarora Mountain Area summers are hot, especially at lower elevations, and winters are cold. Precipitation normally is light at lower elevations throughout the year. At higher elevations, precipitation is much greater and snow accumulates to a considerable depth.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Beowawe, Carlin, and Tuscarora. 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.

In winter the average temperature is 31 degrees F at the lower elevations and 28 degrees at the higher elevations. The average daily minimum temperature is 18 degrees. The lowest temperature on record, -30 degrees, occurred at Beowawe on December 11, l972. In summer the average temperature is 68 degrees at Beowawe and Carlin and 64 degrees at Tuscarora. The average daily maximum temperature is 88 degrees at the higher elevations. The highest temperature, 108 degrees, was recorded at Beowawe on July 27, 1975.

Growing degree days, shown in table 1, are equivalent to "heat units." Beginning in spring, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Of the total annual precipitation, 4 inches, or 50 percent, usually falls during the period April through September at Beowawe; 6 inches, or 40 percent, at Carlin; and 5 inches, or 40 percent, at Tuscarora. Two years in ten, the rainfall in April through September is less than 2 inches at Beowawe, 3 inches at Tuscarora, and 4 inches at Carlin. The heaviest 1-day rainfall during the period of record was 2.8 inches at Carlin on June 6, 1968. Thunderstorms number about 21 each year, 14 of which occur in summer.

Average yearly cumulative snowfall is 10 inches at Beowawe, 38 inches at Tuscarora, and 55 inches at Carlin. The greatest snow depth at any one time during the period of record was 42 inches at Tuscarora. On an average of 3 days at Beowawe, 58 days at Carlin, and 33 days at Tuscarora, at least 1 inch of snow is on the ground. However, the number of days varies greatly from year to year. Every few years a blizzard strikes the survey area. Even at the lower elevations, snow remains on the ground for several days.

The average relative humidity in midafternoon is about 35 percent. Humidity is higher at night in all seasons, and the average at dawn is about 60 percent. The prevailing wind is from the southwest. Average windspeed is highest, 7 miles per hour, in April.

How this survey was made

Soil scientists made this survey to learn what kinds of soil are in the survey area, where they are, and how they can be used. The soil scientists went into the area knowing they likely would locate many soils they already knew something about and perhaps identify some they had never seen before. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; the kinds of rock; and many facts about the soils. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by the action of plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in survey areas nearby and in more distant places. Thus, through correlation, they classified and named the soils according to nationwide uniform procedures.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the soils on aerial photographs. These photographs show woodland, buildings, field borders, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. The design of each map unit is based on the intended use and management for the survey area. In areas where the present or intended use requires intensive management, primarily cropland and hayland in the Tuscarora Mountain Area, the map units consist primarily of one kind of soil. Each delineation has been entered, and the soil has been identified by transecting and traversing the area. Soil boundaries were plotted by observation and aerial photograph interpretation and verified at closely spaced intervals. In areas that require less intensive use and management, such as those used for rangeland, wildlife habitat, or watershed, the map units often consist of two or three different kinds of soil or miscellaneous areas. The soils in each delineation were identified by transecting, traversing, and some onsite observation. Boundaries were plotted by observation and aerial photograph interpretation and verified by some field observations.

Soil map units that have been more intensively examined and verified have map unit symbols consisting of a capital letter followed by a small letter. The less intensively examined and verified map units have a capitalized second letter in the map unit symbol.

While a soil survey is in progress, samples of soils are taken as needed for laboratory measurements and for engineering tests. The soils are field tested, and interpretations are modified as needed during the course of the survey. New interpretations are added to meet local needs, mainly through field observations of different kinds of soil, uses, and levels of management. Data are assembled from other sources, such as test results, records, field experience, and information available from state and local specialists. For example, data on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, managers of rangeland and woodland, engineers, planners, developers and builders, home buyers, and those seeking recreation.

General soil map for broad land use planning

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

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

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

The 14 map units in this survey have been grouped into 4 general kinds of landscape for broad interpretive purposes. Each of the broad groups and the map units in each group are described in the following pages.

Areas dominated by wet soils on flood plains

Three map units are in this group. The soils in this group dominantly are on flood plains of rivers and streams. Elevation is 4,300 to 6,000 feet. The average annual precipitation is 6 to 12 inches, the average annual air temperature is 42 to 51 degrees F, and the frost-free season is about 80 to 110 days.

These soils are nearly level and very deep. They are fine textured to moderately coarse textured throughout the profile. These are young soils that exhibit little if any profile development.

Most of the soils in this group have a seasonal high water table and are subject to flooding. Some of the soils, however, are well drained to excessively drained, or they have altered drainage and are not subject to flooding.

1. Welch-Four Star-Bosco

Nearly level, very deep, poorly drained and somewhat excessively drained soils; on flood plains and low stream terraces

This map unit is mainly in the eastern part of the survey area, along the Humboldt River, Maggie Creek, and Pine Creek and their tributaries. The vegetation on the poorly drained soils in this unit is mostly sedges, willows, and other water-tolerant plants. The vegetation on the somewhat excessively drained soils and on the soils where the drainage has been altered by stream entrenchment is mainly big sagebrush, basin wildrye, and rubber rabbitbrush.

This unit makes up about 3 percent of the survey area. The most extensive soils in the unit are the Welch, Four Star, and Bosco soils.

The poorly drained Welch soils are on flood plains. These soils are medium textured and moderately fine textured throughout the profile. They are subject to flooding. In some areas the drainage has been altered by stream entrenchment.

The poorly drained Four Star soils are on flood plains on narrow canyon bottoms. These soils are moderately coarse textured throughout the profile. They are subject to flooding.

The somewhat excessively drained Bosco soils are on low stream terraces. These soils are medium textured and moderately coarse textured throughout the profile. They are very gravelly.

Of minor extent in this unit are Bicondoa, Crooked Creek, Hussa, and Simon soils and Alluvial land. These soils are calcareous throughout the profile. The Bicondoa and Crooked Creek soils are fine textured throughout the profile. All of the minor soils except Simon are on flood plains and support vegetation similar to that on the major soils. The Simon soils are on terraces and support big sagebrush and grasses.

This unit is used for pasture, meadow hay, rangeland, cropland, and wildlife habitat.

The main limitations for cropland and openland wildlife habitat are the small amount of water available for irrigation, the short growing season, the high water table in the Welch and Four Star soils, and the very gravelly texture of the Bosco soils.

2. Ocala-Dunphy-Rosney

Nearly level, very deep, somewhat poorly drained and well drained soils; on flood plains and low terraces

This map unit is mainly in the western part of the survey area. It is on the slightly elevated parts of the Humboldt River flood plain and on low stream terraces in some of the broader valleys. Vegetation is mostly basin wildrye on the somewhat poorly drained soils that are slightly saline-alkali. It is dominantly big sagebrush and rubber rabbitbrush in areas where the condition of the range is poor. The strongly saline-alkali soils support black greasewood, and the well drained soils mostly support Nuttall saltbush and shadscale.

This unit makes up about 6 percent of the survey area. The most extensive soils in the unit are the Ocala, Dunphy, and Rosney soils.

The somewhat poorly drained Ocala soils are on flood plains and low stream terraces. These soils are medium textured and moderately fine textured throughout the profile. They are slightly saline-alkali to strongly saline-alkali. Some of these soils are subject to flooding, and in some areas the drainage has been altered by stream entrenchment.

The somewhat poorly drained Dunphy soils are on flood plains and low terraces. These soils are stratified and are moderately coarse textured to moderately fine textured throughout the profile. They are slightly saline-alkali to strongly saline-alkali. In some areas the drainage has been altered by stream entrenchment.

The well drained Rosney soils are on low terraces. These soils are moderately fine textured throughout the profile. They are moderately saline-alkali to strongly saline-alkali.

Of minor extent in this unit are Wholan soils and Playa. Wholan soils are on alluvial fans and support shadscale.

The main limitations of this unit for pasture, cropland, and openland and wetland wildlife habitat are the small amount of water available for irrigation and the content of salt and alkali in the soils.

The main limitations for range seeding and rangeland wildlife habitat are the content of salt and alkali in the soils and low precipitation.

3. Humboldt-Rixie-Griver

Nearly level, very deep, poorly drained and somewhat poorly drained soils; on flood plains

This map unit is mainly in the western part of the survey area. It is on the broad flood plains of the Humboldt River. The vegetation is mostly native meadow grasses, such as bluegrasses, basin wildrye, and creeping wildrye in the slightly saline-alkali areas and inland saltgrass and black greasewood in the strongly saline-alkali areas.

This unit makes up about 3 percent of the survey area. The most extensive soils in the unit are the Humboldt, Rixie, and Griver soils.

The poorly drained Humboldt soils are fine textured throughout the profile. These soils are slightly saline-alkali to strongly saline-alkali. They are subject to flooding.

The somewhat poorly drained Rixie soils are moderately fine textured throughout the profile. These soils are slightly saline-alkali to strongly saline-alkali. They are subject to flooding. In some areas the drainage has been slightly altered by stream entrenchment.

The poorly drained Griver soils are moderately coarse textured throughout the profile. These soils are salt- and alkali-affected in some places. They are subject to flooding. In some areas drainage has been altered by stream entrenchment.

Of minor extent in this unit are Dunphy, Ocala, and Iron Blossom soils. These soils are on slightly elevated flood plains, low terraces, and toe slopes of alluvial fans. They support vegetation that is similar to that of the major soils.

This unit is used mainly for native pasture and meadow hay and for wildlife habitat. Some small areas are used for improved pasture and cropland.

The main limitation of this unit for native pasture and meadow hay and for wetland wildlife habitat is the content of salt and alkali in the soils.

The main limitations for cropland and openland wildlife habitat are the seasonal high water table, the hazard of flooding, and the content of salt and alkali in the soils.

Areas dominated by well drained soils on low terraces and alluvial fans

Two map units are in this group. The soils in this group are mainly on alluvial fans and terraces between flood plains and on the higher lying terraces of foothills. Elevation is 4,400 to 5,500 feet. The average annual precipitation is 6 to 10 inches, the average annual temperature is 45 to 50 degrees F, and the frost-free season is about 100 to 110 days.

Most of the soils in this group are well drained, but some of the soils in broad valleys are somewhat poorly drained. The soils in this group are nearly level to strongly sloping. They dominantly are very deep, but some soils are shallow to moderately deep over a hardpan. The soils are moderately coarse textured to moderately fine textured throughout the profile, and they have some silica cementation.

4. Cherry Spring-Orovada-Chiara

Nearly level to strongly sloping, shallow, moderately deep and very deep, well drained soils; on alluvial fans and terraces

This map unit is mostly in the east-central and west-central parts of the survey area. It is on alluvial fans and low terraces between the bottom lands and high terraces or hills. The vegetation is mainly big sagebrush and grasses.

This unit makes up about 18 percent of the survey area. The most extensive soils in this unit are the Cherry Spring, Orovada, and Chiara soils.

The gently sloping and moderately sloping Cherry Spring soils are moderately deep. These soils are on terraces. They are medium textured and moderately fine textured above the hardpan.

The nearly level to strongly sloping Orovada soils are very deep. These soils are on alluvial fans. They are moderately coarse textured throughout the profile, and they have some nodes that are cemented with silica.

The gently sloping to strongly sloping Chiara soils are shallow. These soils are on alluvial fans. They are medium textured above the hardpan.

Of minor extent in this unit are Tomera, Cortez, Berning, Triplen, and Brock soils.

This unit is used mainly for rangeland and wildlife habitat. A few areas are used for irrigated cropland.

The main limitation of this unit for livestock grazing and rangeland wildlife habitat is low precipitation.

The main limitation for cropland is the lack of readily available water for irrigation. In addition, the limited depth to the hardpan in the Cherry Spring and Chiara soils restricts the rooting depth. Stones are on the surface in some areas.

5. Cluro-Midas-Geysen

Nearly level, very deep, somewhat poorly drained and well drained soils; on alluvial fans and terraces

This map unit is mostly in the west-central part of the survey area, in Boulder Valley. It is on alluvial fans and terraces above the low flood plain terraces of the Humboldt River and below the surrounding alluvial fans.

The vegetation on the well drained soils that are nonsaline and nonalkali is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. Soils that are slightly saline-alkali support mostly basin wildrye and big sagebrush. These soils support rubber rabbitbrush in areas where the condition of the range is poor. Black greasewood dominates the plant community on the strongly saline-alkali soils. Shadscale is in some areas.

This unit makes up about 5 percent of the survey area. The most extensive soils in the unit are Cluro, Midas, and Geysen soils.

The somewhat poorly drained Cluro soils are on terraces. These soils are stratified and are moderately coarse textured to moderately fine textured throughout the profile. Nodes that are cemented with silica are in the lower part. Some areas of these soils are salt- and alkali-affected. In some areas the drainage has been altered by stream entrenchment.

The well drained Midas soils are on alluvial fans. These soils are moderately coarse textured and medium textured throughout the profile. They are very gravelly in the lower part, and some layers are weakly cemented with silica.

The well drained Geysen soils are on terraces and toe slopes of alluvial fans. These soils are medium textured and moderately fine textured throughout the profile. Some layers are weakly cemented with silica. Geysen soils are slightly saline-alkali to strongly saline-alkali.

Of minor extent in this unit are Iron Blossom, McConnel, Blackhawk, and Pocker soils. Iron Blossom, McConnel, and Pocker soils support vegetation that is similar to that on the major soils that are salt- and alkali-affected. Blackhawk soils mainly support bud sagebrush and shadscale.

This unit is used mostly for rangeland and wildlife habitat. Some areas are used for irrigated cropland.

The main limitations of this unit for livestock grazing and rangeland wildlife habitat are low precipitation and the content of salt and alkali in the soils.

The main limitations for cropland and openland wildlife habitat are lack of readily available water for irrigation and the content of salt and alkali in the soils.

Areas dominated by well drained soils on high terraces and alluvial fans

Four map units are in this group. Most of the soils in this group are on alluvial fans and terraces adjacent to foothills and mountainsides. Elevation is 4,600 to 6,500 feet. The average annual precipitation is 8 to 14 inches, the average annual air temperature is 42 to 48 degrees F, and the frost-free season is about 70 to 105 days.

These soils are well drained and shallow to very deep. They are nearly level to strongly sloping on the tops of terraces and fans and are moderately steep to very steep on the side slopes. Most of these soils have a subsoil or hardpan, or both.

6. Tenabo-Alley-Whirlo

Nearly level to very steep, shallow and very deep, well drained soils; on alluvial fans and low foothills

This map unit is mostly in the southwestern part of the survey area. It is between flood plains or low terraces and uplands. The vegetation is mainly bud sagebrush and shadscale on the soils on alluvial fans, and it is big sagebrush and bluebunch wheatgrass on the soils on foothills.

This unit makes up about 7 percent of the survey area. The most extensive soils in the unit are the Tenabo, Alley, and Whirlo soils.

The nearly level to moderately steep and shallow Tenabo soils are on alluvial fans. These soils are medium textured and moderately fine textured above the hardpan. Some areas of these soils have an extremely stony surface layer.

The moderately steep to very steep and very deep Alley soils are on foothills. These soils are moderately coarse textured to moderately fine textured and are gravelly or cobbly throughout the profile. Some of the soils are very cobbly in the lower part, and some have an extremely stony surface layer. Some layers are weakly cemented with silica.

The nearly level to strongly sloping and very deep Whirlo soils are on alluvial fans. These soils are moderately coarse textured to medium textured and are very gravelly throughout the profile. Some of these soils have a very stony surface layer.

Of minor extent in this unit are Beowawe and Broyles soils. These soils are on alluvial fans and terraces. They support mainly bud sagebrush and shadscale.

This unit is used for rangeland and rangeland wildlife habitat. It is limited mainly by low precipitation. Some areas are limited by stones on the surface. Steepness of slope limits the Alley soils.

7. Coff-Clurde-Bunky

Gently sloping to steep, moderately deep and very deep, well drained soils; on alluvial fans, dissected terraces, and foothills

This map unit consists of a narrow area west of Blossom Mountain and on Pine Mountain, along the western side of the Tuscarora Mountains. The vegetation is mostly bluebunch wheatgrass and Thurber needlegrass. Some black sagebrush and big sagebrush is also present.

This map unit makes up about 1 percent of the survey area. The most extensive soils in this unit are the Coff, Clurde, and Bunky soils.

The steep and moderately deep Coff soils are on foothills. These soils are medium textured throughout the profile, and they are very gravelly above the hardpan.

The moderately sloping to strongly sloping and very deep Clurde soils are on alluvial fans and terraces. These soils are medium textured to moderately fine textured throughout the profile, and they are gravelly in the lower part. Some layers have nodes that are cemented with silica.

The gently sloping to moderately sloping and moderately deep Bunky soils are on the tops of dissected terraces. These soils are medium textured above the hardpan.

Of minor extent in this unit are Bobs and Denay soils. Bobs soils are on landscapes that are similar to those of the major soils, and they support similar vegetation. Denay soils are on mountainous uplands. They support vegetation that is similar to that on the major soils. They also support some basin wildrye.

This unit is used for rangeland and rangeland wildlife habitat. It is limited mainly by low precipitation. The hardpan in the Coff and Bunky soils restricts rooting depth. Steepness of slope of the Coff soils limits use of mechanical practices.

8. Stampede-Short Creek-Donna

Gently sloping to very steep, moderately deep and deep, well drained soils; on terraces and side slopes

This map unit is mostly in the northeastern and southeastern corners of the survey area. It is on high terraces that are above canyon bottoms and below upland foothills. The vegetation is mainly big sagebrush, low sagebrush, and grasses.

This unit makes up about 9 percent of the survey area. The most extensive soils in the unit are the Stampede, Short Creek, and Donna soils.

The moderately sloping to strongly sloping and moderately deep Stampede soils are on terraces. These soils have a medium textured surface layer and a fine textured subsoil that is underlain by a hardpan.

The steep to very steep and deep Short Creek soils are on the sides of terraces. These soils have a moderately fine textured surface layer and a fine textured, very gravelly subsoil.

The gently sloping to moderately sloping and moderately deep Donna soils are on terraces. These soils have a medium textured surface layer and a very fine textured subsoil that is underlain by a hardpan.

Of minor extent in this unit are Simon soils and some small areas of Welch and Bosco soils. Simon soils are on alluvial fans and support big sagebrush and grasses. Welch soils are on flood plains along stream channels. They support meadow vegetation. Bosco soils are on low terraces along stream channels. They support big sagebrush and grasses.

This unit is used for rangeland and rangeland wildlife habitat.

The main limitations of this unit for rangeland is low precipitation, steepness of slope on the Short Creek soils, and the claypan in the Donna soils.

9. Rad-Brock

Nearly level to moderately steep, shallow and very deep, well drained soils; on alluvial fans and terraces

This unit is mostly in an area somewhat south of the central part of the survey area. It is between the Humboldt River flood plain and adjacent low-lying terraces and fans. The vegetation is mainly big sagebrush and grasses in the non-alkali-affected areas and black greasewood in the alkali-affected areas.

This unit makes up about 2 percent of the survey area. The most extensive soils in this unit are the Rad and Brock soils.

The nearly level to moderately sloping and very deep Rad soils are on alluvial fans. These soils are medium textured throughout the profile and have some nodes that are cemented with silica. Some of these soils are alkali-affected.

The moderately sloping to moderately steep and shallow Brock soils are on terraces. These soils are very gravelly or very cobbly and are medium textured to moderately fine textured above the hardpan. Some of these soils have an extremely stony surface layer.

Of minor extent in this unit are Boulflat, Orovada, and Wholan soils. Boulflat soils are on uplands, and Orovada and Wholan soils are on alluvial fans. Wholan soils receive a small amount of runoff from higher lying areas, and they support winterfat.

This unit is used mostly for rangeland and wildlife habitat. Some areas are used for irrigated cropland; however, the Brock soils are not used for cropland.

The main limitation of this unit for rangeland and rangeland wildlife habitat is low precipitation. Some areas of the Rad soils are also limited by the content of alkali. The hardpan in the Brock soils restricts rooting depth. Some areas of the soils are extremely stony, which limits use of mechanical practices.

The main limitations for cropland and openland wildlife habitat are the lack of readily available water for irrigation and the content of alkali in some areas of the Rad soils.

Areas dominated by well drained soils on mountains and hills

Five map units are in this group. The soils in this group are mostly on mountainsides and the surrounding foothills. Elevation is 5,000 to 8,000 feet. The average annual precipitation is 8 to 20 inches, the average annual air temperature is 40 to 49 degrees F, and the frost-free season is about 50 to 105 days.

Most of the soils in this group are well drained and are strongly sloping to very steep. They are shallow to very deep over bedrock. Texture ranges from fine to coarse. Content of rock fragments ranges from few to many.

10. Chen-Ramires-Slaven

Strongly sloping to steep, shallow and moderately deep, well drained soils; on uplands

This map unit is mostly in the eastern part of the survey area. It is on hills and low mountainsides between the alluvial fans and terraces and the high mountainsides. The vegetation is mainly big sagebrush, low sagebrush, bluebunch wheatgrass, and Thurber needlegrass.

This unit makes up about 19 percent of the survey area. The most extensive soils in the unit are the Chen, Ramires, and Slaven soils.

The Chen soils are strongly sloping to moderately steep and shallow. These soils have a medium textured surface layer and a fine textured, very gravelly subsoil that is underlain by bedrock. Some of the soils have an extremely stony surface layer.

The Ramires soils are moderately steep to steep and moderately deep. These soils have a medium textured to moderately fine textured surface layer and a fine textured subsoil that is underlain by bedrock. The subsoil is gravelly in some areas. Some of the soils have a very stony surface layer.

The Slaven soils are moderately steep to steep and moderately deep. These soils have a very gravelly, medium textured surface layer and a very gravelly, fine textured subsoil that is underlain by bedrock.

Of minor extent in this unit are Taylor Creek, Mascamp, Carstump, and Mosquet soils. Taylor Creek soils are on the higher mountainsides. Mascamp and Carstump soils are on foothills. Mosquet soils are on ridges and have a sparse cover of low sagebrush and bluebunch wheatgrass.

This unit is used for rangeland, rangeland wildlife habitat, and watershed.

The main limitations of this unit are the shallow rooting depth of the Chen soils and the steepness of slope of the Ramires and Slaven soils. Some areas are also limited by stones on the surface.

11. Torro-Tusel-Jack Creek

Steep to very steep, deep and very deep, well drained and excessively drained soils; on mountainous uplands

This map unit is mostly in the north-central part of the survey area. It is on high mountainsides. The vegetation is mainly big sagebrush and bitterbrush with an understory of bluebunch wheatgrass and Idaho fescue.

This unit makes up about 6 percent of the survey area. The most extensive soils in the unit are the Torro, Tusel, and Jack Creek soils.

The steep Torro soils are very deep and well drained. These soils are very gravelly throughout the profile. The surface layer is medium textured, the subsoil is moderately fine textured, and the substratum is moderately coarse textured or coarse textured.

The steep Tusel soils are very deep and well drained. These soils are very gravelly and are medium textured to moderately fine textured throughout the profile.

The very steep Jack Creek soils are deep and excessively drained. These soils are very gravelly and coarse textured throughout the profile.

Of minor extent in this unit are Hapgood, Packer, and Primeaux soils. Hapgood soils are in concave pockets on north-facing slopes. They support quaking aspen. Packer soils are on ridges and support mostly low sagebrush. Primeaux soils are on high mountainsides and support vegetation that is similar to that on the major soils.

This unit is used for wildlife habitat, watershed, and rangeland. The main limitation for rangeland is steepness of slope.

12. Bucan-Humdun-Creva

Moderately sloping to steep, shallow, deep and very deep, well drained soils; on uplands

This map unit is in small, scattered areas throughout the survey area. It is on foothills above alluvial fans and terraces. The vegetation is dominantly big sagebrush with an understory of bluebunch wheatgrass and Thurber needlegrass.

This unit makes up about 13 percent of the survey area. The most extensive soils in the unit are the Bucan, Humdun, and Creva soils.

The Bucan soils are moderately steep to steep and deep. These soils have a medium textured surface layer and a fine textured subsoil that is underlain by bedrock. Some of these soils are gravelly.

The Humdun soils are moderately steep to steep and very deep. These soils are medium textured throughout the profile. Some nodes that are cemented with silica are in the lower part. Some of these soils have an extremely stony surface layer, and some have rock fragments throughout the profile.

The Creva soils are moderately sloping to moderately steep and shallow. These soils have a gravelly, medium textured surface layer and a very gravelly, fine textured to moderately fine textured subsoil that is underlain by bedrock.

Of minor extent in this unit are Boulflat, Havingdon, Glean, and Malpais soils. Also included are areas of Rock outcrop and Rubble land.

This unit is used for rangeland, rangeland wildlife habitat, and watershed. It is limited mainly by steepness of slope on the Bucan and Humdun soils. Some areas of Bucan soils are also limited by stones on the surface. The Creva soils are limited by shallow rooting depth.

13. Pie Creek-Susie Creek-Toeja

Moderately sloping to moderately steep, moderately deep and deep, well drained soils; on uplands

This map unit is mostly in the east-central part of the survey area. Some small areas are in the northwestern corner and the south-central part. The soils in this unit are on rolling hills above alluvial fans and terraces. The vegetation is mainly big sagebrush and low sagebrush with an understory of bluebunch wheatgrass and Thurber needlegrass.

This unit makes up about 6 percent of the survey area. The most extensive soils in the unit are the Pie Creek, Susie Creek, and Toeja soils.

The Pie Creek soils are moderately steep and moderately deep. These soils have a medium textured surface layer and a fine textured subsoil that is underlain by bedrock. Some of these soils have a very cobbly surface layer.

The Susie Creek soils are moderately sloping and strongly sloping and deep. These soils have a medium textured surface layer, a fine textured subsoil, and a medium textured or moderately coarse textured substratum that is underlain by bedrock.

The Toeja soils are moderately steep and deep. These soils are medium textured to moderately fine textured throughout the profile.

Of minor extent in this unit are Pattani and Ucopia soils.

This unit is used for rangeland, rangeland wildlife habitat, and watershed.

The Pie Creek soils in this unit are limited by the shallow depth to clay, which restricts the rooting depth. Some areas are also limited by cobbles on the surface.

14. Puett-Ferdelford

Moderately steep to very steep, shallow and moderately deep, well drained soils; on uplands

This map unit is mostly in the southeastern corner of the survey area. It is on low-lying uplands between canyon bottoms and foothills. The vegetation is dominantly big sagebrush and black sagebrush with an understory of Indian ricegrass. Some areas support stands of Utah juniper.

This unit makes up about 2 percent of the survey area. The most extensive soils in this unit are the Puett and Ferdelford soils.

The Puett soils are shallow and moderately steep to steep. They are moderately coarse textured and are underlain by tuffaceous bedrock.

The Ferdelford soils are moderately deep and moderately steep to very steep. They are moderately fine textured and are underlain by tuffaceous bedrock.

Of minor extent in this unit are Orovada, Berning, Short Creek, and Toeja soils. Also included are areas of Badland. The Orovada soils are on alluvial fans, the Berning and Short Creek soils are on the sides of dissected terraces and fans, and the Toeja soils are on uplands. These soils support big sagebrush and grasses.

This unit is used for rangeland and rangeland wildlife habitat. It is limited mainly by steepness of slope and restricted rooting depth.

Broad land use considerations

The soils in the Tuscarora Mountain Area vary widely in their potential for major land uses such as cropland, pasture, rangeland, wildlife habitat, and urbanization. Extensive changes in land use are not expected in the foreseeable future.

Approximately 90 percent of the land in the area is used for rangeland and related uses. These areas need careful management. Map units 1, 2, and 3 have the highest potential to produce forage. Because these units are near water and produce more palatable plants, there is a tendency for them to be overused, resulting in range deterioration. Map units 4, 5, 6, 7, 8, and 9 are extensively used for range. In general, the primary limitation is the lack of adequate precipitation. Some of the soils in these units have a hardpan that limits rooting depth, and on other soils mechanical operations are hindered by rock fragments on the surface or steepness of slope, or both. Map units 10, 11, 12, 13, and 14 are well suited to range use. Mechanical operations in most areas of these units are limited by steepness of slope. Some areas are limited by rock fragments on the surface. The rooting depth of the soils in map units 10, 14, and most of 12 is also limited.

Approximately 5 percent of the land in the survey area is used for pasture and meadow hay. Map units 1 and 3 are extensively used for pasture and meadow hay, and most areas of these units are well suited to this use. Some of the soils in these areas are limited by their content of salt and alkali.

Less than 2 percent of the land in the survey area is used for cultivated crops. Approximately 10 percent of the area would be suitable for cropland if irrigation water were available. The main crops grown are small grain, such as barley, wheat, and oats; alfalfa; and improved grass-legume forage. Small areas in map units 1, 2, 4, 5, 6, 7, and 9 are used for cropland. The soils in map unit 1 are limited by the high water table and the hazard of flooding. One of the primary limitations for the rest of the map units is the lack of water available for irrigation. Most of the water must be pumped from wells, and wells that produce enough water for these uses are not easily found. The Orovada soils of map unit 4, the Whirlo soils of map unit 6, and the salt- and alkali-free Rad soils in map unit 9 are well suited to climatically adapted plants. The selection of plants is limited by the short growing season. Most areas of the soils in map units 2 and 5 and the Rad soils in map unit 9 have potential for irrigated crops if the salt and alkali content is controlled. The Clurde soils in map unit 7 and some of the sloping soils in the other units are limited by slope and the hazard of erosion.

Almost all of the land in the Tuscarora Mountain Area is used by one or more kinds of wildlife. The Humboldt River and the lower part of Rock Creek support catfish, black bass, and carp. Several of the streams and small ponds in the area support trout.

The openland wildlife common to the area includes pheasant, valley quail, cottontail rabbit, meadowlark, and killdeer. Map units 1 and 3 are used extensively by these species. The availability of water and the food and cover provided by the native meadows and pastures make these units attractive for wildlife habitat. The small areas of cropland and rangeland in these units provide additional food and cover and further enhance the overall habitat. The parts of map units 2, 4, 5, 6, 7, and 9 that are irrigated are also used extensively by openland wildlife species. Watering places need to be provided when the areas are not being irrigated. Fence rows, ditchbanks, and odd corners can be planted with selected plants to improve the habitat. The adjacent range areas provide additional cover.

The wetland wildlife common to the area includes ducks, geese, herons, muskrat, and beaver. Map units 1 and 3 are the only areas that extensively support wetland wildlife. The soils in map unit 1 support wetland plants. Shallow water areas can be established on the nearly level soils of this unit. The more sloping soils are limited for shallow water areas. Some areas have been drained by stream entrenchment and are now very limited in their ability to provide habitat for wetland wildlife.

Soil maps for detailed planning

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

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil, a brief description of the soil profile, and a listing of the principal hazards and limitations to be considered in planning management.

For this survey, soils were mapped at two levels of detail. The soils mapped in greater detail are called narrowly defined map units. Those mapped in lesser detail are called broadly defined map units. The boundaries of the narrowly defined map units were plotted and verified at closely spaced intervals. The boundaries of the broadly defined units were plotted and verified at greater intervals. The intensity of mapping for a given soil was based on the anticipated long-term use of the soil. The narrowly defined map units are identified by an asterisk in the soil map legend.

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

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

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

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Coit-Griver complex is an example.

A *soil association* is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar. Alley-Brock association is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material, support little or no vegetation, or have some other highly unfavorable attribute. Alluvial land and Rock outcrop are examples. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

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

Soil descriptions

ALF—Alley cobbly fine sandy loam, 30 to 50 percent slopes. This very deep, well drained soil is on low mountain foothills. It formed in loess underlain by mixed alluvium and colluvium derived dominantly from volcanic and sedimentary rock. Elevation is 4,900 to 5,400 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light brownish gray cobbly fine sandy loam about 7 inches thick. The subsoil is pale brown loam and gravelly clay loam about 11 inches thick. The upper 16 inches of the substratum is pale brown and white gravelly fine sandy loam that is weakly cemented with silica. The lower part, to a depth of 50 inches, is light gray very cobbly fine sandy loam.

Included in this unit are about 5 percent moderately steep Brock soils on alluvial fans and terraces and 5 percent Orovada soils along drainageways. Included areas make up about 10 percent of the total acreage.

Permeability of this Alley soil is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight. The substratum is slightly salt- and alkali-affected.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, spiny hopsage, downy rabbitbrush, and Sandberg bluegrass. The production of vegetation is limited by rapid runoff and moderately low average annual precipitation.

Steepness of slope limits access by livestock and promotes overgrazing of the less sloping areas of this unit. Livestock grazing should be managed to protect the unit from excessive erosion. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

The suitability of this unit for rangeland seeding is very poor. The main limitation is slope.

This unit is limited for roads because of slope. Roads should be located with care and designed to minimize cuts and fills. To minimize erosion and reduce maintenance costs, surface drainage should be provided and disturbed areas should be stabilized.

This unit is in capability subclass VIIs, nonirrigated.

AN—Alley-Brock association. This map unit is on low mountain foothills, alluvial fans, and dissected terraces. Slope is 4 to 50 percent. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 47 degrees F, and the average frost-free season is about 105 days.

This unit is 60 percent Alley cobbly fine sandy loam, 30 to 50 percent slopes, and 25 percent Brock extremely stony loam, 4 to 30 percent slopes. The Alley soil is on low mountain foothills, and the Brock soil is on alluvial fans and dissected terraces.

Included in this unit is about 10 percent Alley soils that have an extremely stony surface layer, are on low mountain foothills, and have slopes of 50 to 70 percent. Also included is 5 percent Rock outcrop on crests of ridges and low mountain foothills. Included areas make up about 15 percent of the total acreage.

The Alley soil is very deep and well drained. It formed in loess overlying mixed alluvium and colluvium derived from volcanic and sedimentary rock. Typically, the surface layer is light brownish gray cobbly fine sandy loam about 7 inches thick. The subsoil is pale brown loam and gravelly clay loam about 11 inches thick. The upper 16 inches of the substratum is pale brown and white gravelly fine sandy loam that is weakly cemented with silica. The lower part, to a depth of 50 inches, is light gray very cobbly fine sandy loam.

Permeability of the Alley soil is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight. The substratum is slightly salt- and alkali-affected.

The Brock soil is shallow and well drained. It formed in gravelly loamy alluvium derived from mixed rock. Typically, the surface layer is light brownish gray extremely stony loam about 5 inches thick. The subsoil is light gray very gravelly sandy clay loam about 9 inches thick. An indurated, silica-cemented hardpan is at a depth of 14 inches.

Permeability of the Brock soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the indurated hardpan are 8 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight. The hardpan is slightly to moderately salt- and alkali-affected.

Most areas of this unit are used for livestock grazing and wildlife habitat.

The potential plant community on the Alley soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, spiny hopsage, downy rabbitbrush, and Sandberg bluegrass. The production of vegetation is limited by rapid runoff and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is slope.

The potential plant community on the Brock soil is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, spiny hopsage, and Sandberg bluegrass. The production of vegetation is limited by very low available water capacity and the shallow rooting depth. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth, the extremely stony surface layer, and very low available water capacity.

Steepness of slope on most of this unit limits access by livestock and promotes overgrazing of the less sloping areas. Livestock grazing should be managed to protect the unit from excessive erosion. Loss of the surface layer of the Brock soil results in a decrease in productivity and in the potential to produce vegetation suitable for grazing. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is limited for roads mainly by slope on the Alley soil and by the hardpan, slope, and susceptibility to frost heaving on the Brock soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Brock soil, because of the underlying hardpan. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

This map unit is in capability subclass VIIs, nonirrigated.

AR—Alley-Rock outcrop association. This map unit is on low mountain foothills. Slope is 50 to 75 percent. Elevation is 4,900 to 5,200 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 105 days.

This unit is 45 percent Alley extremely stony fine sandy loam, 50 to 75 percent slopes; 25 percent Rock outcrop; and 20 percent Rubble land. The Alley soil is on south-facing slopes of low mountain foothills, Rock outcrop is on crests, ridges, and sides of low mountain foothills, and Rubble land is in stringers below the Rock outcrop.

Included in this unit are about 5 percent steep Alley soils that have a cobbly surface layer and 5 percent shallow and moderately deep, gently sloping soils. Included areas make up about 10 percent of the total acreage.

The Alley soil is very deep and well drained. It formed in loess overlying mixed alluvium and colluvium derived from volcanic and sedimentary rock. Typically, the surface layer is light brownish gray extremely stony fine sandy loam about 5 inches thick. The subsoil is pale brown loam and gravelly clay loam about 10 inches thick. The upper 12 inches of the substratum is pale brown and white gravelly fine sandy loam that is weakly cemented with silica. The lower part, to a depth of 50 inches, is light gray very cobbly fine sandy loam.

Permeability of the Alley soil is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight. The substratum is slightly salt- and alkali-affected.

Rock outcrop consists of exposed areas of barren bedrock that are less than 10 percent soil material.

Rubble land consists of stringers of cobbles, stones, or boulders on side slopes below areas of Rock outcrop.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Alley soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, spiny hopsage, downy rabbitbrush, and Sandberg bluegrass. The production of vegetation is limited by rapid runoff and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the extremely stony surface layer and slope.

Rock outcrop and Rubble land are mainly barren of vegetation and are not suitable for rangeland seeding.

Steepness of slope on this unit limits access by livestock and promotes overgrazing of the less sloping areas. Livestock grazing should be managed to protect the unit from excessive erosion. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is limited for roads because of slope on the Alley soil, Rock outcrop, Rubble land, and stones and cobbles on the surface. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Alley soil is in capability subclass VIIs, nonirrigated, and Rock outcrop and Rubble land are in capability subclass VIIIs, nonirrigated.

Au—Alluvial land. Alluvial land is along Maggie Creek and the Humboldt River. It ranges in texture from gravel and coarse sand to silty clay loam. There is no orderly sequence of texture or thickness of layers. Any given profile or layer can range from gravelly or very gravelly to nongravelly. Some areas are cobbly. Carbonates occur in places, and they can occur at any depth.

Permeability is highly variable, ranging from slow to rapid or very rapid. Most areas are poorly drained to somewhat poorly drained and are subject to frequent overflow. The hazard of erosion is high. Some areas are salt- and alkali-affected. Depositional layers of soil material and debris are common.

Alluvial land is used for livestock grazing and wildlife habitat. The vegetation is highly variable, and production is low. Creeping wildrye, inland saltgrass, and willows grow on the older deposits, and sunflowers and cockleburs grow on the more recent deposits.

Roads are limited by the hazard of flooding.

This map unit is in capability unit VIIw, nonirrigated.

BaA—Beowawe silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans and terraces. It formed in mixed alluvium derived dominantly from volcanic and sedimentary rock. Elevation is 4,500 to 5,000 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is pale brown silt loam about 9 inches thick. The subsoil is brown loam about 7 inches thick. The substratum, to a depth of 50 inches, is brown loam to pale brown and light gray coarse sandy loam that is weakly cemented with silica and lime.

Included in this unit is about 15 percent stringers of Broyles soils along shallow, intermittent drainageways.

Permeability of this Beowawe soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of erosion is slight. The hazard of soil blowing is moderate. The soil is slightly salt- and alkali-affected to a depth of 16 inches and moderately salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available and the limitations of the content of salt and alkali in the soil and the hazard of erosion when irrigation water is applied are overcome.

The potential plant community on this unit is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale and bud sagebrush. The production of vegetation is limited by the content of salt and alkali in the soil and low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and low average annual precipitation.

This unit is moderately limited for roads by the low load-bearing strength and the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage and a stable subgrade.

This map unit is in capability subclasses IIc, irrigated, and VIIc, nonirrigated.

BB—Beowawe-Broyles association. This map unit is on terraces. Slope is 2 to 8 percent. Elevation is 4,500 to 5,000 feet. The average annual precipitation is about 6 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

This unit is 65 percent Beowawe silt loam and 25 percent Broyles silt loam. The Beowawe soil is on the middle and upper parts of the terraces, and the Broyles soil is on the lower parts of the terraces and along drainageways.

Included in this unit is about 10 percent narrow stringers of silt loam along shallow, intermittent drainageways.

The Beowawe soil is very deep and well drained. It formed in mixed alluvium derived dominantly from volcanic and sedimentary rock. Typically, the surface layer is pale brown silt loam about 9 inches thick. The subsoil is brown loam about 7 inches thick. The substratum, to a depth of 50 inches, is brown loam to pale brown and light gray coarse sandy loam that is weakly cemented with silica and lime.

Permeability of this Beowawe soil is moderately slow. Available water capacity is high. Effective rooting depth is 50 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly salt- and alkali-affected to a depth of 16 inches and moderately salt- and alkali-affected below this depth.

The Broyles soil is very deep and well drained. It formed in loess and alluvium derived dominantly from mixed rock. Typically, the surface layer is light brownish gray silt loam about 5 inches thick. The subsoil is light gray silt loam about 8 inches thick. The substratum to a depth of 60 inches or more is very pale brown stratified loam to loamy sand. It has some durinodes.

Permeability of the Broyles soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is nonsalt- and nonalkali-affected to slightly salt- and alkali-affected above a depth of 13 inches and is moderately salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available and the limitations of slope, the tendency of the silty surface layer to crust, the content of salt and alkali in the Beowawe soil, and the hazard of erosion when irrigation water is applied to the Beowawe soil are overcome.

The potential plant community on this unit is mainly shadscale, bud sagebrush, bottlebrush squirreltail, and Indian ricegrass. The present vegetation in most areas is mainly shadscale and bud sagebrush.

The production of vegetation on the Beowawe soil is limited by the content of salt and alkali in the soil and low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and low average annual precipitation.

The production of vegetation on the Broyles soil is limited by low average annual precipitation and the tendency of the silty surface layer to crust, which adversely affects the water intake rate. The suitability of this soil for rangeland seeding is very poor. The main limitation is low average annual precipitation.

Grazing should be delayed until the soils in this unit are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is moderately limited for roads because of the low load-bearing strength and the susceptibility of the soils to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage and a stable subgrade.

This map unit is in capability subclasses IIIe, irrigated, and VIIc, nonirrigated.

BC—Beowawe silty clay loam, heavy subsoil variant. This very deep, moderately well drained soil is on toe slopes of alluvial fans. It formed in alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,500 to 4,600 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free season is about 120 days.

Typically, the surface layer is light gray silty clay loam about 1 inch thick. The subsoil is light gray silty clay loam and clay about 14 inches thick. The substratum to a depth of 60 inches or more is light gray silty clay loam. It is weakly cemented below a depth of 29 inches. The soil is slightly or moderately salt- and alkali-affected throughout.

Included in this unit is about 3 percent Ocala soils, on low terraces bordering alluvial fans, that are somewhat poorly drained and are strongly salt- and alkali-affected. Also included is about 2 percent Rosney soils, on alluvial plains, that are strongly salt- and alkali-affected. Included areas make up about 5 percent of the total acreage.

Permeability of this Beowawe soil is very slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. The soil is slightly to moderately salt- and alkali-affected.

This unit is used for livestock grazing and wildlife habitat. It is not suited to irrigated crops because of the content of salt and alkali in the soil and the very slow permeability.

The potential plant community on the Beowawe soil is mainly shadscale and bud sagebrush. The present vegetation in most areas is mainly shadscale, black greasewood, and saltgrass. The production of vegetation is limited by the slight or moderate content of salt and alkali in the soil and low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of the soil for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and low average annual precipitation.

This unit is limited for roads because of the clayey subsoil. To reduce maintenance costs, roads should be provided with surface drainage and a stable subgrade.

This map unit is in capability subclass VIIs, nonirrigated.

BD—Berning-Short Creek association. This map unit is on dissected terraces. Slope is 30 to 75 percent. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 100 days.

This unit is 45 percent Berning gravelly loam, 30 to 50 percent slopes, and 45 percent Short Creek gravelly clay loam, 50 to 75 percent slopes. The Berning soil is on south-, west-, and east-facing slopes, and the Short Creek soil is on north-facing slopes.

Included in this unit are about 5 percent Toeja soils along the lower parts of terrace breaks and 5 percent very deep, medium textured, somewhat poorly drained soils along intermittent streams and drainageways. Included areas make up about 10 percent of the total acreage.

The Berning soil is very deep and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray gravelly loam about 8 inches thick. The upper 16 inches of the subsoil is brown very gravelly clay, and the lower 36 inches is brown very gravelly sandy clay loam.

Permeability of the Berning soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Short Creek soil is very deep and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray and brown gravelly clay loam about 8 inches thick. The upper 15 inches of the subsoil is brown very gravelly clay, and the lower 37 inches is brown and pale brown very gravelly sandy clay.

Permeability of the Short Creek soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Berning soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush and bottlebrush squirreltail. The production of vegetation is limited by rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steep slopes.

The potential plant community on the Short Creek soil is mainly big sagebrush, Idaho fescue, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and Idaho fescue. The production of vegetation is limited by the low available water capacity and very rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is very steep slopes.

Livestock grazing should be managed to protect the unit from excessive erosion. Steepness of slope limits access by livestock and promotes overgrazing of the less sloping areas. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is limited for roads because of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

This map unit is in capability subclass VIIe, nonirrigated.

BE—Berning-Toeja association. This map unit is on dissected terraces. Slope is 15 to 30 percent. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 45 degrees F, and the average frost-free season is about 100 days.

This unit is 40 percent Berning gravelly loam and 40 percent Toeja loam. The Berning soil is mainly on south-facing slopes, and the Toeja soil is mainly on north-facing slopes.

Included in this unit is about 15 percent moderately sloping to strongly sloping Toeja soils on the lower toe slopes and narrow tops of terraces. Also included is about 5 percent Orovada soils on alluvial fans along the base of terrace breaks. Included areas make up about 20 percent of the total acreage.

The Berning soil is very deep and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray gravelly loam about 8 inches thick. The upper 16 inches of the subsoil is brown very gravelly clay, and the lower 36 inches is brown very gravelly sandy clay loam.

Permeability of the Berning soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Toeja soil is deep and well drained. It formed in loess that has a high content of volcanic ash and is underlain by residuum derived from tuff. Typically, the surface layer is brown loam about 13 inches thick. The subsoil is brown clay loam about 18 inches thick. The substratum is pale brown loam to very gravelly coarse sandy loam about 17 inches thick. Weathered bedrock is at a depth of 48 inches.

Permeability of the Toeja soil is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is very rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Berning soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, basin wildrye, and bottlebrush squirreltail. The production of vegetation is limited by low available water capacity, rapid runoff, and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are slope, the gravelly surface layer, and the moderately low average annual precipitation.

The potential plant community on the Toeja soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The production of vegetation is limited by rapid runoff and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are slope and the moderately low average annual precipitation.

Livestock grazing should be managed to protect the unit from excessive erosion. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Range seeding can be applied on this unit if species adapted to the moderately low moisture supply are used.

This unit is limited for roads because of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

This map unit is in capability subclass VIe, nonirrigated.

Bf—Bicondoa silty clay loam, drained, slightly saline. This very deep soil is on flood plains. Drainage was altered as a result of streams changing channel or by channel entrenchment. The soil formed in clayey alluvium derived dominantly from tuff and basalt. Slope is 0 to 2 percent. Elevation is 4,800 to 5,200 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 110 days.

Typically, the surface layer is gray silty clay loam about 11 inches thick. The underlying material to a depth of 60 inches or more is light gray silty clay loam.

Included in this unit are about 5 percent stratified, loamy Welch and Four Star soils, 3 percent Hussa loam and sandy loam, 5 percent Bicondoa silty clay, and 2 percent Crooked Creek soils that are dark gray and black silty clay. Included areas make up about 15 percent of the total acreage.

Permeability of this Bicondoa soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 3.5 to 6 feet from January to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. This soil is subject to flooding during spring in some years. It is slightly salt- and alkali-affected.

Most areas of this unit are used for irrigated hay and pasture. A few areas are used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly big sagebrush, basin wildrye, and Nevada bluegrass. The present vegetation in most areas is mainly big sagebrush, rubber rabbitbrush, and basin wildrye. The production of vegetation is limited by the moderately low average annual precipitation and the slightly saline surface layer.

Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation and the slightly saline surface layer. Range seeding can be applied on this unit when species adapted to the moderately low moisture supply are used.

This unit is well suited to hay and pasture. The main limitations are a low supply of water for irrigation, slow permeability, the seasonal high water table, and occasional periods of flooding.

The rate of application of irrigation water should be regulated to prevent a rise in the level of the water table. Compaction of the surface layer, poor tilth, and excessive runoff result if equipment is operated on the soil when it is wet. Fertilizer is needed for optimum growth of grasses and legumes.

This unit is limited for roads because of low soil strength, potential frost action, and the hazard of flooding. Roads should be designed to provide surface drainage, to maintain subsurface drainage, and to withstand flooding. Roads on this unit are difficult to maintain because of the presence of clay that has low strength when wet.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Bg—Bicondoa silty clay. This very deep, poorly drained soil is on flood plains. It formed in clayey alluvium derived dominantly from tuff and basalt. Slope is 0 to 2 percent. Elevation is 4,800 to 5,200 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 110 days.

Typically, the surface layer is gray silty clay about 10 inches thick. The upper 30 inches of the underlying material is gray silty clay loam, and the lower part to a depth of 60 inches or more is light gray gravelly loam.

Included in this unit are about 8 percent stratified, loamy Welch soils and 7 percent Bicondoa silty clay loam. Included areas make up about 15 percent of the total acreage.

Permeability of this Bicondoa soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 0 to 18 inches from December to July. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. This soil is subject to brief periods of flooding from February to May.

Most areas of this unit are used for irrigated meadow. A few areas are used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly tufted hairgrass, big bluegrass, and sedges. The present vegetation in most areas is mainly juncus, sedges, and tufted hairgrass. The production of vegetation is limited by the hazard of flooding or ponding in spring.

The suitability of this unit for rangeland seeding is fair. The main limitations are the fine textured surface layer and wetness, which limits use of seeding equipment until the soil is dry. Range seeding is feasible on this unit if adapted species and recommended seeding methods are used.

This unit is suited to hay and pasture. The main limitations are wetness, slow permeability, and brief periods of flooding. Shallow-rooted, water-tolerant plants are suited to this unit. The rate of application of irrigation water should be regulated to prevent a rise in the level of the water table. Fertilizer promotes good growth of forage plants and hay.

Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

This unit is limited for roads because of low soil strength, wetness, and the hazard of flooding. Roads should be designed to provide surface drainage, to maintain subsurface drainage, and to withstand flooding. Roads on this unit are difficult to maintain because of the presence of clay that has low strength when wet.

This map unit is in capability subclasses IVw, irrigated, and VIw, nonirrigated.

BHD—Bobs cobbly loam, 4 to 15 percent slopes. This shallow, well drained soil is on upland terraces and alluvial fans. It formed in loamy alluvium derived dominantly from limestone. Elevation is 5,500 to 6,800 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

Typically, the surface layer is grayish brown cobbly loam about 4 inches thick. The underlying material is grayish brown gravelly loam about 8 inches thick. An indurated, lime-cemented hardpan is at a depth of 12 inches.

Included in this unit are about 7 percent moderately steep Ferdelford soils on side slopes along terrace breaks, 4 percent Stampede soils on the less sloping parts of terraces and fans, and 4 percent Donna soils that have a claypan and support low sagebrush and grasses. Included areas make up about 15 percent of the total acreage.

Permeability of this Bobs soil is moderate. Available water capacity is very low. Effective rooting depth and depth to the indurated, lime-cemented hardpan are 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, basin wildrye, Indian ricegrass, and Sandberg bluegrass. The production of vegetation is limited by the shallow rooting depth and very low available water capacity. The suitability of this unit for rangeland seeding is very poor. The main limitations are the shallow rooting depth and very low available water capacity.

Livestock grazing should be managed to protect the soil from excessive erosion. Loss of the surface layer results in a significant decrease in productivity and in the potential of the soil to produce vegetation suitable for grazing. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is limited for roads because of the shallow depth to the hardpan. To minimize erosion and reduce maintenance costs, roads should be designed to avoid deep cuts because of the underlying hardpan and to provide surface drainage.

This map unit is in capability subclass VIIs.

Bk—Bosco very gravelly loam. This very deep, somewhat excessively drained soil is on flood plains. It formed in mixed alluvium derived dominantly from volcanic and sedimentary rock. Slope is 0 to 2 percent. Elevation is 4,700 to 5,800 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

Typically, the surface layer is grayish brown very gravelly loam about 15 inches thick. The upper 31 inches of the underlying material is stratified, pale brown very gravelly loam and very gravelly sandy loam. The lower part to a depth of 70 inches is variegated very gravelly sand.

Included in this unit is about 10 percent drained Welch soils that are in depressional areas on the flood plain bordering stream channels. Also included is 5 percent drained Four Star soils that are in low areas bordering stream channels. Included areas make up about 15 percent of the total acreage.

Permeability of this Bosco soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, or cultivated crops if water for irrigation is made available and the limitations of moderate available water capacity and moderately rapid permeability are overcome.

The potential plant community on this unit is mainly big sagebrush, basin wildrye, and Nevada bluegrass. The present vegetation in most areas is mainly big sagebrush, basin wildrye, and cheatgrass. The production of vegetation is limited by moderate available water capacity and moderately low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is poor. The main limitations are moderately low average annual precipitation and the very gravelly surface layer. Range seeding can be applied on this unit if species adapted to the moderately low moisture supply are used.

This unit is moderately limited for roads because of the susceptibility of the soil to frost heaving. To reduce maintenance costs, roads should be designed to provide adequate surface drainage and subgrades should be stabilized.

This map unit is in capability subclasses IVs, irrigated, and VIIs, nonirrigated.

BL—Bosco-Welch association. This map unit is on narrow flood plains and low terraces along stream channels. Slope is 0 to 4 percent. Elevation is 4,800 to 5,800 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

This unit is 65 percent Bosco very gravelly loam, 0 to 2 percent slopes, and 20 percent Welch silt loam, drained, 0 to 4 percent slopes. The Bosco soil is on stream terraces that are slightly elevated, and the Welch soil is in depressional areas throughout the flood plains.

Included in this unit is about 5 percent poorly drained Welch loam in depressional areas on the flood plains. Also included is about 10 percent gravel and sand riverwash along the stream channels. Included areas make up about 15 percent of the total acreage.

The Bosco soil is very deep and somewhat excessively drained. It formed in mixed alluvium derived from volcanic and sedimentary rock. Typically, the surface layer is grayish brown very gravelly loam about 15 inches thick. The upper 31 inches of the underlying material is pale brown, stratified very gravelly loam and very gravelly sandy loam. The lower part to a depth of 70 inches is variegated very gravelly sand.

Permeability of the Bosco soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight.

The Welch soil is very deep. It developed under poor drainage conditions, but the water table has been lowered. The soil formed in alluvium derived from mixed rock sources. Typically, the surface layer is dark gray loam about 7 inches thick. The underlying material to a depth of 60 inches or more is stratified, dark gray, dark grayish brown, and grayish brown clay loam and gravelly clay loam.

Permeability of the Welch soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 4 to 6 feet from February to May. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Frequent, brief periods of flooding occur when the streamflow is high. Drainage was altered when the water table lowered as a result of channel entrenchment and streams changing channel.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, or cultivated crops if water for irrigation water is made available. The main limitations are the moderate available water capacity and moderately rapid permeability of the Bosco soil and the hazard of flooding and the seasonal high water table of the Welch soil.

The potential plant community on the Bosco soil is mainly big sagebrush, basin wildrye, and Nevada bluegrass. The present vegetation in most areas is mainly big sagebrush, basin wildrye, and cheatgrass. The production of vegetation is limited by moderate available water capacity and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are moderately low average annual precipitation and the very gravelly surface layer.

The potential plant community on the Welch soil is mainly big sagebrush, basin wildrye, and western wheatgrass. The present vegetation in most areas is mainly big sagebrush, rubber rabbitbrush, and basin wildrye. The production of vegetation is limited by the hazards of flooding and ponding in spring. The suitability of this soil for rangeland seeding is poor. The main limitations are the hazard of flooding and ponding.

Grazing on this unit should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. Range seeding can be applied on this unit if species adapted to the moderately low moisture supply are used. If the plant cover is disturbed, protection from flooding is needed on the Welch soil to control gullying, streambank cutting, and sheet erosion.

This unit is limited for roads because of the susceptibility of the Welch soil to frost heaving and low load-bearing strength and the hazard of flooding on the Welch soil. It is somewhat limited by the susceptibility to frost heaving on the Bosco soil. To reduce maintenance costs, roads should be provided with protection from flooding, surface drainage, and a stable subgrade.

The Bosco soil is in capability subclasses IVs, irrigated, and VIIs, nonirrigated, and the Welch soil is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

BM—Boulflat-Havingdon association. This map unit is on low foothills. Slope is 4 to 30 percent. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 105 days.

This unit is 40 percent Boulflat gravelly loam, 15 to 30 percent slopes; 30 percent Havingdon gravelly silt loam, 15 to 30 percent slopes; and 20 percent Brock cobbly loam, 4 to 30 percent slopes. The Boulflat soil is on upland hills, the Havingdon soil is on the sides of foothills, and the Brock soil is on terraces throughout the unit.

Included in this unit are about 5 percent steep Humdun soils on north-facing slopes and 5 percent Rock outcrop on ridges. Included areas make up about 10 percent of the total acreage.

The Boulflat soil is moderately deep and well drained. It formed in colluvium and residuum derived from chert, shale, quartzite, and loess that has a high content of ash. Typically, the surface layer is light brownish gray gravelly loam about 4 inches thick. The subsoil is pale brown gravelly clay loam about 9 inches thick. The upper 10 inches of the substratum is light gray very gravelly loam, and the lower 11 inches is a strongly silica-cemented hardpan. Bedrock is at a depth of 34 inches.

Permeability of the Boulflat soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 20 to 34 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Havingdon soil is moderately deep and well drained. It formed in residuum derived from chert, shale, and some loess and volcanic ash. Typically, the surface layer is light brownish gray gravelly silt loam about 6 inches thick. The subsoil is brown very gravelly sandy clay loam to yellowish brown very gravelly clay about 15 inches thick. Bedrock is at a depth of 21 inches.

Permeability of the Havingdon soil is slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 20 to 26 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Brock soil is shallow and well drained. It formed in mixed alluvium. Typically, the surface layer is light brownish gray cobbly loam about 5 inches thick. The subsoil is light gray very gravelly sandy clay loam about 9 inches thick. An indurated, silica-cemented hardpan is at a depth of 14 inches.

Permeability of the Brock soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 8 to 20 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is slight. This soil is slightly to moderately salt- and alkali-affected in the hardpan.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Boulflat soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, low Douglas rabbitbrush, Thurber needlegrass, and Sandberg bluegrass. The production of vegetation is limited by the very low available water capacity, rapid runoff, and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation, very low available water capacity, and steepness of slope.

The potential plant community on the Havingdon soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, spiny hopsage, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the very low available water capacity, rapid runoff, and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation, very low available water capacity, and steepness of slope.

The potential plant community on the Brock soil is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush and spiny hopsage. The production of vegetation is limited by the shallow rooting depth and very low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and very low available water capacity.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Brock soil. Loss of the surface layer of this soil results in a severe decrease in productivity and in its potential to produce vegetation suitable for grazing.

This unit is limited for roads because of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Brock soil, because of the depth to the underlying hardpan. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be designed to provide surface drainage.

The Boulflat soil is in capability subclass VIe, nonirrigated; the Havingdon soil is in capability subclass VIIe, nonirrigated; and the Brock soil is in capability subclass VIIs, nonirrigated.

BN—Boulflat-Humdun association. This map unit is on low-lying hills and steep uplands. Slope is 15 to 50 percent. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 47 degrees F, and the average frost-free period is about 110 days.

This unit is 40 percent Old Camp, calcareous variant, cobbly sandy loam, 30 to 50 percent slopes; 20 percent Boulflat gravelly loam, 15 to 30 percent slopes; and 20 percent Humdun silt loam, 30 to 50 percent slopes. The Old Camp variant soil is on west- and south-facing slopes, the Boulflat soil is on north-facing slopes and at slightly higher elevations, and the Humdun soil is on north-facing slopes and in concave areas.

Included in this unit are about 15 percent Bucan soils on upland hills and 4 percent very deep, poorly drained, loamy soils that are in drainageways and support meadow vegetation. Also included is 1 percent areas of Rock outcrop on ridges. Included areas make up about 20 percent of the total acreage.

The Old Camp variant soil is shallow and well drained. It formed in material weathered dominantly from chert. Typically, the surface layer is light brownish gray and pale brown cobbly sandy loam about 9 inches thick. The subsoil is pale brown very gravelly clay loam about 4 inches thick. Bedrock is at a depth of 13 inches.

Permeability of the Old Camp variant soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 8 to 15 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Boulflat soil is moderately deep and well drained. It formed in colluvium and residuum derived from chert, shale, quartzite, and loess that has a high content of ash. Typically, the surface layer is light brownish gray gravelly loam about 4 inches thick. The subsoil is pale brown gravelly clay loam about 9 inches thick. The upper 10 inches of the substratum is light gray very gravelly loam, and the lower 11 inches is a strongly silica-cemented hardpan. Bedrock is at a depth of 34 inches.

Permeability of the Boulflat soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 20 to 34 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Humdun soil is very deep and well drained. It formed in loess that has a moderate content of volcanic ash and is underlain by alluvium and residuum derived dominantly from soft tuff. Typically, the surface layer is light grayish brown silt loam about 8 inches thick. The subsoil is light brownish gray and pale brown silt loam about 22 inches thick. The substratum to a depth of 60 inches or more is pale brown silt loam that is weakly cemented with silica.

Permeability of the Humdun soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Old Camp variant soil is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush and Thurber needlegrass. The production of vegetation is limited by the shallow rooting depth, very low available water capacity, and steep slopes. The suitability of this soil for rangeland seeding is very poor. The main limitations are the steepness of slope and shallow rooting depth.

The potential plant community on the Boulflat soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, low Douglas rabbitbrush, Thurber needlegrass, and Sandberg bluegrass. The production of vegetation is limited by the very low available water capacity, rapid runoff, and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation, very low available water capacity, and steepness of slope.

The potential plant community on the Humdun soil is mainly big sagebrush, basin wildrye, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, cheatgrass, and bluebunch wheatgrass. The production of vegetation is limited by rapid runoff and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Steepness of slope limits access to this unit and movement of livestock. Livestock grazing should be managed to protect the unit from excessive erosion and to avoid overuse in the less sloping areas of the Boulflat soil and the included loamy soils in drainageways. Loss of the surface layer results in a severe decrease in productivity and in the potential of the Old Camp variant soil to produce vegetation suitable for grazing.

This unit is limited for roads because of steepness of slope and the shallow depth to bedrock of the Old Camp variant soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Old Camp variant soil, because of the depth to the underlying bedrock. Roads should be provided with surface drainage. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized.

The Old Camp variant soil is in capability subclass VIIs, nonirrigated; the Boulflat soil is in capability subclass VIe, nonirrigated; and the Humdun soil is in capability subclass VIIe, nonirrigated.

BO—Brock-Boulflat association. This map unit is on hilly uplands and on alluvial fans and terraces. Slope is 2 to 30 percent. Elevation is 4,800 to 5,100 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 105 days.

This unit is 40 percent Brock cobbly loam, 4 to 30 percent slopes; 30 percent Boulflat gravelly loam, 15 to 30 percent slopes; and 20 percent Rad silt loam, 2 to 8 percent slopes. The Brock soil is on the dissected ends of terraces and terrace breaks along drainageways; the Boulflat soil is on the longer, smoother, more rounded hilly slopes that generally are at the highest elevations in the unit; and the Rad soil is on fans at the base of terraces and along drainageways.

Included in this unit are about 4 percent Orovada fine sandy loam interspersed throughout areas of the Rad soil, 2 percent steep Humdun soils on north-facing slopes, 2 percent steep, very gravelly and cobbly soils that are deep to bedrock and are on north-facing slopes, and 2 percent steep and very steep, loamy soils that are moderately deep to bedrock and are on south-facing slopes. Included areas make up about 10 percent of the total acreage.

The Brock soil is shallow and well drained. It formed in alluvium derived dominantly from mixed rock. Typically, the surface layer is light brownish gray cobbly loam about 5 inches thick. The subsoil is light gray very gravelly sandy clay loam about 9 inches thick. An indurated, silica-cemented hardpan is at a depth of 14 inches.

Permeability of the Brock soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 8 to 20 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is slight. This soil is slightly to moderately salt- and alkali-affected in the hardpan.

The Boulflat soil is moderately deep and well drained. It formed in colluvium and residuum derived from chert, shale, quartzite, and loess that has a high content of ash. Typically, the surface layer is light brownish gray gravelly loam about 4 inches thick. The subsoil is pale brown gravelly clay loam about 9 inches thick. The upper 10 inches of the substratum is light gray very gravelly loam, and the lower 11 inches is a strongly silica-cemented hardpan. Bedrock is at a depth of 34 inches.

Permeability of the Boulflat soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 20 to 34 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Rad soil is very deep and well drained. It formed in loess that is underlain by mixed alluvium. Typically, the surface layer is light brownish gray silt loam about 6 inches thick. The subsoil is pale brown very fine sandy loam about 12 inches thick. The upper 27 inches of the substratum is pale brown to very pale brown very fine sandy loam that is weakly cemented with silica in the lower part. The lower part of the substratum to a depth of 60 inches or more is very pale brown to light gray very fine sandy loam.

Permeability of the Rad soil is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly or moderately salt- and alkali-affected below a depth of 18 inches.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Brock soil is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush and spiny hopsage. The production of vegetation is limited by the shallow rooting depth, very low available water capacity, and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and very low available water capacity.

The potential plant community on the Boulflat soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, low Douglas rabbitbrush, Thurber needlegrass, and Sandberg bluegrass. The production of vegetation is limited by the moderately low average annual precipitation and very low available water capacity. The suitability of this soil for rangeland seeding is poor. The main limitations are moderately low precipitation, very low available water capacity, and slope.

The potential plant community on the Rad soil is mainly big sagebrush, Indian ricegrass, Sandberg bluegrass, and spiny hopsage. The present vegetation in most areas is mainly big sagebrush and bud sagebrush. The production of vegetation is limited by the moderately low average annual precipitation and the tendency of the silty surface layer to crust, which adversely affects the water intake rate. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Rad soil. Range seeding can be applied on the Rad soil if species adapted to the moderately low moisture supply are used. Seeding of areas of the Rad soil is difficult because of their small size and the pattern in which they occur with the Brock soil.

This unit is limited for roads because of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Brock soil, because of the underlying hardpan. Roads should be provided with surface drainage. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized.

The Brock soil is in capability subclass VIIs, nonirrigated; the Boulflat soil is in capability subclass VIe, nonirrigated; and the Rad soil is in capability subclasses IIIe, irrigated, and VIc, nonirrigated.

BpA—Broyles silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial terraces. It formed in loess and mixed alluvium. Elevation is 4,500 to 5,000 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light brownish gray silt loam about 5 inches thick. The subsoil is light gray silt loam about 8 inches thick. The substratum to a depth of 60 inches or more is stratified, very pale brown loam to loamy sand. It has some durinodes.

Included in this unit is about 15 percent Rad soils that are slightly salt-affected and are along shallow, intermittent drainageways.

Permeability of this Broyles soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly or moderately salt- and alkali-affected below a depth of 13 inches.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly shadscale, bud sagebrush, Indian ricegrass, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The production of vegetation is limited by the low average annual precipitation and the tendency of the silty surface layer to crust, adversely affecting the water intake rate. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

This unit is well suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by the moderate available water capacity and the tendency of the silty surface layer to crust, adversely affecting the water intake rate. To avoid overirrigating and leaching of plant nutrients, the available water capacity, the water intake rate, and the needs of the crop should be considered when applying irrigation water. Water should be applied slowly to properly wet the rooting zone. Returning crop residue to the soil and keeping tillage to a minimum reduce crusting of the surface layer and compaction of the soil.

This unit is moderately limited for roads because of the low load-bearing strength and the susceptibility of the soils to frost heaving. To increase trafficability and reduce maintenance costs, roads should be provided with surface drainage and a stable surface.

This map unit is in capability subclasses IIs, irrigated, and VIIc, nonirrigated.

BPB—Broyles silt loam, 2 to 8 percent slopes. This very deep, well drained soil is on alluvial fans and terraces. It formed in loess and mixed alluvium. Elevation is 4,500 to 5,000 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light brownish gray silt loam about 5 inches thick. The subsoil is light gray silt loam about 8 inches thick. The substratum to a depth of 60 inches or more is stratified, very pale brown loam to loamy sand. It has some durinodes.

Included in this unit are about 5 percent nearly level Beowawe soils that are salt- and alkali-affected and are on the lower edges of alluvial fans and terraces, 5 percent nearly level Rosney soils that are salt- and alkali-affected and are on the lower edges of alluvial fans and terraces, and 5 percent Whirlo soils on the upper parts of alluvial fans and terraces. Included areas make up about 15 percent of the total acreage.

Permeability of this Broyles soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly salt- and alkali-affected below a depth of 13 inches.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available and if the limitations of slope and the tendency of the silty surface layer to crust are overcome.

The potential plant community on this unit is mainly shadscale, bud sagebrush, Indian ricegrass, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The production of vegetation is limited by the low average annual precipitation and the tendency of the surface layer to crust, adversely affecting the water intake rate.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

This unit is moderately limited for roads because of the low load-bearing strength and the susceptibility of the soil to frost heaving. To reduce maintenance costs, roads should be provided with surface drainage and a stable subgrade.

This unit is in capability subclasses IIIe, irrigated, and VIIc, nonirrigated.

BQE—Bucan loam, 15 to 30 percent slopes. This deep, well drained soil is on uplands. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived dominantly from volcanic rock. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 85 days.

Typically, the surface layer is light brownish gray loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 27 inches is yellowish brown gravelly clay.

Included in this unit, in small areas throughout the unit, are about 10 percent stony Bucan soils and 5 percent moderately sloping and strongly sloping Pattani soils. Included areas make up about 15 percent of the total acreage.

Permeability of this Bucan soil is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Thurber needlegrass, and bluebunch wheatgrass. The production of vegetation is limited by the moderately low average annual precipitation and rapid runoff.

The suitability of this unit for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation. Range seeding can be applied on this unit if species adapted to the moderately low moisture supply are used. Brush management is needed in areas where unpalatable brush species have increased significantly from the potential plant community. If the desirable plants are not present in sufficient amounts, range seeding is needed following brush management.

Livestock grazing should be managed to protect this unit from excessive erosion. Loss of the surface layer of this Bucan soil results in a significant decrease in productivity and in the ability of the soil to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soil has warmed up and the plants have achieved sufficient growth.

This unit is limited for roads because of slope and the clayey subsoil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Roads should be designed to provide surface drainage. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface.

This map unit is in capability subclass VIe, nonirrigated.

BRF—Bucan very rocky loam, 15 to 50 percent slopes. This deep, well drained soil is on uplands. It formed in material weathered from volcanic rock. Elevation is 5,000 to 5,800 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 85 days.

Typically, 10 to 25 percent of the surface is areas of Rock outcrop. The surface layer is light grayish brown extremely stony loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay. The lower 25 inches is yellowish brown cobbly clay.

Included in this unit are about 10 percent Bucan stony loam in small areas throughout the unit and 5 percent narrow stringers of Rubble land at the base of Rock outcrop. Included areas make up about 15 percent of the total acreage.

Permeability of this Bucan soil is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

Most areas of this unit are used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Thurber needlegrass, and bluebunch wheatgrass. The production of vegetation is limited by the moderately low average annual precipitation and rapid runoff. The suitability of this unit for rangeland seeding is very poor. The main limitations are slope, stones, and Rock outcrop.

Steepness of slope, stones, and Rock outcrop limit access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soil has warmed up and the plants have achieved sufficient growth. Loss of the surface layer of this Bucan soil results in a significant decrease in productivity and in the ability of the soil to produce vegetation suitable for grazing.

This unit is limited for roads because of slope, the clayey subsoil, stones on the surface, and Rock outcrop. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Roads should be designed to provide surface drainage. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface.

This map unit is in capability subclass VIIs, nonirrigated.

BS—Bucan association. This map unit is on uplands. Slope is 15 to 50 percent. Elevation is 5,000 to 5,800 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 85 days.

This unit is 45 percent Bucan loam, 15 to 30 percent slopes, and 45 percent Bucan gravelly loam, 30 to 50 percent slopes, eroded. The Bucan loam is in hilly areas on uplands, and the Bucan gravelly loam is on the steeper parts of uplands.

Included in this unit is about 10 percent loamy soils that are very deep and poorly drained. They are along narrow, intermittent drainageways and support meadow vegetation.

The Bucan loam is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived from volcanic rock. Typically, the surface layer is light grayish brown loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay. The lower 25 inches is yellowish brown gravelly clay.

Permeability of the Bucan loam is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Bucan gravelly loam is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived from volcanic rock. Typically, the surface layer is light grayish brown gravelly loam about 4 inches thick. The upper 21 inches of the subsoil is brown clay. The lower 25 inches is yellowish brown gravelly clay.

Permeability of the Bucan gravelly loam is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

Most areas of this unit are used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Thurber needlegrass, and bluebunch wheatgrass. The production of vegetation is limited by the moderately low average annual precipitation and rapid runoff.

The suitability of this unit for range seeding is poor on slopes of less than 30 percent and very poor on the steeper slopes. The main limitations are slope and the moderately low average annual precipitation. Range seeding can be applied on this unit if species adapted to the moderately low moisture supply are used and the areas with steep slopes are avoided.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas of the Bucan loam and the included soils along drainageways. Loss of the surface layer of these Bucan soils results in a significant decrease in productivity and in the ability of the soils to produce vegetation suitable for grazing.

Brush management is needed in areas where unpalatable brush species have increased significantly and in areas that are less sloping. If the desirable plants are not present in sufficient amounts, range seeding is needed following brush management. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

This unit is limited for roads because of slope and the clayey subsoil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Roads should be designed to provide surface drainage. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface.

The Bucan loam is in capability subclass VIc, nonirrigated, and the Bucan gravelly loam is in capability subclass VIIe, nonirrigated.

BT—Bucan stony association. This map unit is on uplands. Slope is 15 to 50 percent. Elevation is 5,000 to 5,800 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 85 days.

This unit is 60 percent Bucan stony loam, 15 to 30 percent slopes, and 25 percent Bucan extremely stony loam, 15 to 50 percent slopes. The Bucan stony loam is on the lower slopes, and the Bucan extremely stony loam is on the upper slopes near ridges.

Included in this unit are about 10 percent steep Humdun soils on north-facing slopes and 5 percent Rock outcrop on ridges. Included areas make up about 15 percent of the total acreage.

The Bucan stony loam is deep and well drained. It formed in material derived from volcanic rock. Typically, the surface layer is light grayish brown stony loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown cobbly clay.

Permeability of the Bucan stony loam is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Bucan extremely stony loam is deep and well drained. It formed in material derived from volcanic rock. Typically, the surface layer is light grayish brown extremely stony loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown cobbly clay.

Permeability of the Bucan extremely stony loam is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

Most areas of this unit are used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the moderately low average annual precipitation and rapid runoff. The suitability of this unit for rangeland seeding is very poor. The main limitations are slope and stones on the surface.

Steepness of slope and stones limit access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas. Loss of the surface layer of the soils in this unit results in a significant decrease in productivity and in the ability of the soils to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soil has warmed up and the plants have achieved sufficient growth.

This unit is limited for roads because of slope, the clayey subsoil, and stones on the surface. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Roads should be designed to provide surface drainage. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface.

The Bucan stony loam is in capability subclass VIe, and the Bucan extremely stony loam is in capability subclass VIIs.

BU—Bucan-Clurde association. This map unit is on uplands, terraces, and alluvial fans. Slope is 4 to 50 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 45 degrees F, and the average frost-free season is about 100 days.

This unit is 40 percent Bucan gravelly loam, 30 to 50 percent slopes, eroded; 20 percent Clurde silt loam, 4 to 15 percent slopes; and 20 percent Orovada fine sandy loam, 4 to 15 percent slopes. The Bucan soil is on uplands, the Clurde soil is on terraces at slightly lower elevations, and the Orovada soil is on alluvial fans at the base of the terraces.

Included in this unit are about 5 percent steep Ramires soils on uplands, 5 percent Rock outcrop scattered throughout areas of the Bucan soil, 4 percent

Toeja soils along the edges of steep slopes, 3 percent small areas of Orovada gravelly fine sandy loam on gentle slopes throughout areas of the Orovada fine sandy loam, and 3 percent stony Bucan soils around the areas of Rock outcrop. Included areas make up about 20 percent of the total acreage.

The Bucan soil is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived from volcanic rock. Typically, the surface layer is light brownish gray gravelly loam about 4 inches thick. The upper 21 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown gravelly clay.

Permeability of the Bucan soil is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Clurde soil is very deep and well drained. It formed in loess that has a high content of volcanic ash and is underlain by alluvium derived from mixed rock. Typically, the surface layer is light gray silt loam about 5 inches thick. The subsoil is pale brown clay loam about 12 inches thick. The upper 12 inches of the substratum is pale brown clay loam and is about 20 percent durinodes. The lower part, to a depth of 50 inches, is very pale brown gravelly loam.

Permeability of the Clurde soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Orovada soil is very deep and well drained. It formed in loess that has a high content of volcanic ash and is underlain by alluvium derived from mixed rock. Typically, the surface layer is light brownish gray fine sandy loam about 5 inches thick. The subsoil is light gray and pale brown fine sandy loam about 13 inches thick. The substratum to a depth of 61 inches or more is stratified, pale brown and light brownish gray very fine sandy loam and silt loam. It has some durinodes.

Permeability of the Orovada soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. The substratum is slightly to moderately salt- and alkali-affected.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Bucan soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the moderately low average annual precipitation and rapid runoff. The suitability of this unit for rangeland seeding is very poor. The main limitation is slope.

The potential plant community on the Clurde and Orovada soils is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and bottlebrush squirreltail. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, littleleaf horsebrush, and cheatgrass. The production of vegetation is limited by the moderately low average annual precipitation. The suitability of these soils for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas of the Orovada and Clurde soils.

Range seeding can be applied in the less sloping areas of this unit if species adapted to the moderately low moisture supply are used. Brush management is needed in areas where unpalatable brush species have increased significantly. If the desirable plants are not present in sufficient amounts, range seeding is needed following brush management.

This unit is limited for roads because of slope and the clayey subsoil of the Bucan soil. Roads should be located on the Clurde and Orovada soils and in the less sloping areas of the Bucan soil, if feasible, to avoid excessive cuts and fills. Roads should be provided with surface drainage. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. To improve trafficability, roads need to be designed to provide a stable base and an adequate wearing surface.

The Bucan soil is in capability subclass VIe, nonirrigated, and the Clurde and Orovada soils are in capability subclass VIc, nonirrigated.

BV—Bucan-Creva association. This map unit is on hilly, low foothills. Slope is 4 to 30 percent. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is 90 to 105 days.

This unit is 40 percent Bucan stony loam, 15 to 30 percent slopes; 20 percent Creva gravelly loam, 4 to 30 percent slopes; and 20 percent Brock cobbly loam, 4 to 30 percent slopes. The Bucan soil is on hilly uplands, the Creva soil is adjacent to ridgetops and on ridgetops, and the Brock soil is on the sides of terraces.

Included in this unit are about 8 percent moderately deep Ramires gravelly clay loam and 7 percent moderately deep Ramires stony loam in small areas on north- and west-facing slopes. Also included is about 5 percent Bucan soils that have an extremely stony surface layer and are around small areas of Rock outcrop. Included areas make up about 20 percent of the total acreage.

The Bucan soil is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived dominantly from volcanic rock. Typically, the surface layer is light grayish brown stony loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown cobbly clay.

Permeability of the Bucan soil is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Creva soil is shallow and well drained. It formed in material derived dominantly from welded tuff and rhyolite. Typically, the surface layer is light grayish brown gravelly loam about 5 inches thick. The subsoil is light brownish gray gravelly clay loam about 14 inches thick. Bedrock is at a depth of 19 inches.

Permeability of the Creva soil is slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 4 to 20 inches. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Brock soil is shallow and well drained. It formed in alluvium derived dominantly from mixed rock. Typically, the surface layer is light brownish gray cobbly loam about 5 inches thick. The subsoil is light gray very gravelly sandy clay loam about 9 inches thick. An indurated hardpan is at a depth of 14 inches.

Permeability of the Brock soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 8 to 20 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is slight. This soil is slightly to moderately salt- and alkali-affected in the hardpan.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Bucan soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the moderately low average annual precipitation and rapid runoff. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

The potential plant community on the Creva soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, littleleaf horsebrush, and Sandberg bluegrass. The production of vegetation is limited by the shallow rooting depth, very low available water capacity, and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and very low available water capacity.

The potential plant community on the Brock soil is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush and spiny hopsage. The production of vegetation is limited by the shallow rooting depth, the very low available water capacity, and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and the very low available water capacity.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Creva and Brock soils. Seeding of areas of the more favorable Bucan soil is difficult because of the pattern in which they occur with the Brock and Creva soils. Loss of the surface layer of the Creva and Brock soils results in a significant decrease in productivity and in the ability of the soils to produce vegetation suitable for grazing.

This unit is limited for roads because of slope, shallow depth to bedrock, and the clayey subsoil of the Bucan soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Creva and Brock soils, because of the underlying hardpan and bedrock. Roads should be designed to provide surface drainage. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface.

The Bucan soil is in capability subclass VIe, nonirrigated, the Creva soil is in capability subclass VIIe, nonirrigated, and the Brock soil is in capability subclass VIIs, nonirrigated.

BW—Bucan-Glean association. This map unit is on uplands. Slope is 15 to 75 percent. Elevation is 5,000 to 6,000 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 45 degrees F, and the average frost-free season is about 75 days.

This unit is 50 percent Bucan extremely stony loam, 15 to 50 percent slopes; 20 percent Glean extremely stony loam, 50 to 75 percent slopes; and 15 percent Rock outcrop. The Bucan and Glean soils are on the side slopes of uplands, and Rock outcrop is on ridges and rims.

Included in this unit are about 10 percent Bucan stony loam scattered throughout areas of the Bucan extremely stony loam and 5 percent stringers of Rubble land extending down from the base of the Rock outcrop. Included areas make up about 15 percent of the total acreage.

The Bucan soil is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived dominantly from volcanic rock. Typically, the surface layer is light grayish brown extremely stony loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown cobbly clay.

Permeability of the Bucan soil is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Glean soil is deep and well drained. It formed in colluvium derived from mixed rock. Typically, the surface layer is brown extremely stony loam about 8 inches thick. The next 7 inches is brown very gravelly loam. The underlying material, to a depth of 51 inches, is brown very cobbly loam. Bedrock is at a depth of 51 inches.

Permeability of the Glean soil is moderately rapid. Available water capacity is low. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Bucan soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the moderately low average annual precipitation and rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitations are slope and stones on the surface.

The potential plant community on the Glean soil is mainly big sagebrush, antelope bitterbrush, Idaho fescue, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, antelope bitterbrush, cheatgrass, and bottlebrush squirreltail. The production of vegetation is limited by moderately rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitations are slope and stones on the surface.

Steepness of slope and stones on the surface limit access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Bucan soil.

This unit is limited for roads because of slope, stones on the surface, and the clayey subsoil of the Bucan soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Roads should be designed to provide surface drainage. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface. The stones and cobbles on the surface interfere with the construction of roads.

The Bucan and Glean soils are in capability subclass VIIe, nonirrigated, and Rock outcrop is in capability subclass VIIIs.

BX—Bucan-Humdun association. This map unit is on foothills. Slope is 15 to 50 percent. Elevation is 5,200 to 5,800 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 90 days.

This unit is 45 percent Bucan stony loam, 15 to 30 percent slopes; 25 percent Bucan extremely stony loam, 15 to 50 percent slopes; and 20 percent Humdun silt loam, 30 to 50 percent slopes. The Bucan soils are on east-, south-, and west-facing slopes, and the Humdun soil is on north-facing slopes.

Included in this unit are about 5 percent moderately steep Ramires soils on uplands and 5 percent Rock outcrop in small areas throughout areas of the Bucan soils. Included areas make up about 10 percent of the total acreage.

The Bucan stony loam is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived dominantly from volcanic rock. Typically, 1 to 3 percent of the surface layer is covered with stones. The surface layer is light grayish brown stony loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown cobbly clay.

Permeability of the Bucan stony loam is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Bucan extremely stony loam is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived dominantly from volcanic rock. Typically, the surface layer is light grayish brown extremely stony loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown cobbly clay.

Permeability of the Bucan extremely stony loam is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

The Humdun soil is very deep and well drained. It formed in loess that has a moderate content of volcanic ash and is underlain by alluvium and residuum derived dominantly from soft tuff. Typically, the surface layer is grayish brown silt loam about 8 inches thick. The subsoil is light brownish gray and pale brown silt loam about 22 inches thick. The substratum to a depth of 60 inches or more is pale brown silt loam. It has some durinodes.

Permeability of the Humdun soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly big sagebrush, Thurber needlegrass, basin wildrye, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the moderately low average annual precipitation and rapid runoff. The suitability of this unit for rangeland seeding is very poor. The main limitations are slope and stones on the surface in some areas.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas.

This unit is limited for roads because of slope and the clayey subsoil of the Bucan soils. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Bucan stony loam is in capability subclass VIe, nonirrigated, the Bucan extremely stony loam is in capability subclass VIIs, nonirrigated, and the Humdun soil is in capability subclass VIIe, nonirrigated.

BY—Bucan-Humdun-Brock association. This map unit is on low foothills and terraces. Slope is 4 to 50 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 100 days.

This unit is 40 percent Bucan stony loam, 15 to 30 percent slopes; 20 percent Humdun silt loam, 30 to 50 percent slopes; and 20 percent Brock cobbly loam, 4 to 30 percent slopes. The Bucan soil is on foothills, the Humdun soil is on north-facing slopes, and the Brock soil is on terraces.

Included in this unit are about 7 percent moderately deep Ramires soils scattered throughout areas of the Bucan stony loam, 7 percent Bucan extremely stony loam around small areas of Rock outcrop, 4 percent very deep Alley soils intermingled with the Brock cobbly loam, and 2 percent small stringers of Whirlo soils along narrow drainageways and at the base of steeper slopes. Included areas make up about 20 percent of the total acreage.

The Bucan soil is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived dominantly from volcanic rock. Typically, the surface layer is light grayish brown stony loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown cobbly clay.

Permeability of the Bucan soil is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Humdun soil is deep and well drained. It formed in loess that has a moderate content of volcanic ash and is underlain by alluvium and residuum derived dominantly from soft tuff. Typically, the surface layer is grayish brown silt loam about 8 inches thick. The subsoil is light brownish gray and pale brown silt loam about 22 inches thick. The substratum to a depth of 60 inches or more is pale brown silt loam. It has some durinodes.

Permeability of the Humdun soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Brock soil is shallow and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray cobbly loam about 5 inches thick. The subsoil is light gray very gravelly sandy clay loam about 9 inches thick. An indurated hardpan is at a depth of 14 inches.

Permeability of the Brock soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 8 to 20 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Bucan and Humdun soils is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the moderately low average annual precipitation and medium to rapid runoff.

The suitability of the Bucan soil for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation, the stony surface layer, and the moderately steep slopes. The suitability of the Humdun soil for rangeland seeding is very poor. The main limitation is the steep slopes.

The potential plant community on the Brock soil is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush and spiny hopsage. The production of vegetation is limited by the shallow rooting depth and the very low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and the very low available water capacity.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Brock soil.

Seeding of areas of the more favorable Bucan soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Humdun and Brock soils. Loss of the surface layer of the Brock soil results in a severe decrease in productivity and in the potential of the soil to produce vegetation suitable for grazing.

Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing. Cold soil temperatures of the Humdun and Bucan soils delay plant growth. Therefore, grazing should be delayed until the soils have warmed up.

This unit is limited for roads because of slope and the clayey subsoil of the Bucan soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Brock soil, because of the underlying hardpan. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Bucan soil is in capability subclass VIe, nonirrigated, the Humdun soil is in capability subclass VIIe, nonirrigated, and the Brock soil is in capability subclass VIIs, nonirrigated.

BZ—Bucan-Humdun-Rock outcrop association. This map unit is on uplands. Slope is 15 to 50 percent. Elevation is 5,200 to 5,800 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 100 days.

This unit is 45 percent Bucan stony loam, 15 to 30 percent slopes; 20 percent Humdun silt loam, 30 to 50 percent slopes; and 20 percent Rock outcrop. The Bucan soil is on the hilly east-, south-, and west-facing slopes, the Humdun soil is on north-facing slopes, and Rock outcrop is on ridges and rims.

Included in this unit are about 5 percent moderately deep Ramires soils throughout areas of the Bucan stony loam, 5 percent Bucan soils that have an extremely stony surface and are around areas of Rock outcrop, and 5 percent Rubble land at the base of Rock outcrop. Included areas make up about 15 percent of the total acreage.

The Bucan soil is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived dominantly from volcanic rock. Typically, the surface layer is light grayish brown stony loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown cobbly clay.

Permeability of the Bucan soil is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Humdun soil is very deep and well drained. It formed in loess that has a moderate content of volcanic ash and is underlain by alluvium and residuum derived dominantly from soft tuff. Typically, the surface layer is grayish brown silt loam about 8 inches thick. The subsoil is light brownish gray and pale brown silt loam about 22 inches thick. The substratum to a depth of 60 inches or more is pale brown silt loam. It has some durinodes.

Permeability of the Humdun soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly big sagebrush, Thurber needlegrass, basin wildrye, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Thurber needlegrass, and bluebunch wheatgrass. The production of vegetation is limited by the moderately low precipitation and the loss of moisture because of runoff.

The suitability of the Bucan soil for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation and steepness of slope. The suitability of the Humdun soil for rangeland seeding is very poor. The main limitation is steepness of slope. Seeding of areas of the more favorable Bucan soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Humdun soil and Rock outcrop.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

This unit is limited for roads because of slope and the clayey subsoil of the Bucan soil. The stones and cobbles on the surface of the Bucan soil interfere with the construction of roads. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be designed to provide surface drainage. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface.

The Bucan soil is in capability subclass VIe, nonirrigated, the Humdun soil is in capability subclass VIIe, nonirrigated, and Rock outcrop is in capability subclass VIIIs.

BZm—Bucan-Malpais association. This map unit is on uplands. Slope is 15 to 75 percent. Elevation is 5,200 to 5,800 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 45 degrees F, and the average frost-free period is about 100 days.

This unit is 60 percent Bucan loam, 15 to 30 percent slopes, and 20 percent Malpais very flaggy loam, 50 to 75 percent slopes. The Bucan soil is on hilly uplands, and the Malpais soil is on canyon walls.

Included in this unit are about 6 percent stony and very stony soils throughout areas of the Bucan soil, 5 percent loamy soils that are moderately deep to bedrock, 5 percent loamy soils that are shallow to bedrock and are on the steeper slopes, 2 percent Rock outcrop at the higher elevations, and 2 percent thin stringers of Rubble land in areas of the Malpais soil. Included areas make up about 20 percent of the total acreage.

The Bucan stony loam is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived dominantly from volcanic rock. Typically, the surface layer is light brownish gray loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown gravelly clay.

Permeability of the Bucan soil is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Malpais soil is very deep and well drained. It formed in colluvium derived dominantly from volcanic rock. Typically, the surface layer is light brownish gray very flaggy loam about 3 inches thick. The subsoil is pale brown very gravelly loam about 27 inches thick. The substratum to a depth of 60 inches or more is very pale brown very stony loam.

Permeability of the Malpais soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly big sagebrush, Thurber needlegrass, basin wildrye, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Thurber needlegrass, and bluebunch wheatgrass. The production of vegetation is limited by the moderately low average annual precipitation and the loss of moisture because of runoff.

The suitability of the Bucan soil for rangeland seeding is poor. The main limitations are the low average annual precipitation and steepness of slope. The suitability of the Malpais soil for rangeland seeding is very poor. The main limitation is steepness of slope. Seeding of areas of the more favorable Bucan soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Malpais soil.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Bucan soil.

This unit is limited for roads because of slope and the clayey subsoil of the Bucan soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Bucan soil is in capability subclass VIe, nonirrigated, and the Malpais soil is in capability subclass VIIe, nonirrigated.

BZs—Bucan-Singletree association. This map unit is on uplands. Slope is 30 to 50 percent. Elevation is 5,200 to 6,000 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

This unit is 65 percent Bucan gravelly loam, eroded, and 20 percent Singletree loam. The Bucan soil is on east-, south-, and west-facing slopes, and the Singletree soil is on north-facing slopes.

Included in this unit are about 10 percent Toeja soils along the lower edges of slopes and 5 percent loamy soils, in drainageways, that are very deep and poorly drained and support meadow vegetation. Included areas make up about 15 percent of the total acreage.

The Bucan soil is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived dominantly from volcanic rock. Typically, the surface layer is light brownish gray gravelly loam about 4 inches thick. The upper 21 inches of the subsoil is brown clay. The lower 25 inches is yellowish brown gravelly clay.

Permeability of the Bucan soil is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Singletree soil is deep and well drained. It formed in residuum and colluvium derived dominantly from volcanic rock. Typically, the surface layer is dark grayish brown loam about 17 inches thick. The subsoil is brown clay loam about 15 inches thick. The substratum is light brownish gray sandy loam to pale brown sandy clay loam about 17 inches thick over soft tuff.

Permeability of the Singletree soil is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Bucan soil is mainly big sagebrush, Thurber needlegrass, basin wildrye, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Thurber needlegrass, and bluebunch wheatgrass. The production of vegetation is limited by the moderately low average annual precipitation, the loss of moisture because of runoff, and the eroded surface layer. The suitability of this soil for rangeland seeding is very poor. The main limitation is slope.

The potential plant community on the Singletree soil is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and Idaho fescue. The present vegetation in most areas is mainly big sagebrush, antelope bitterbrush, and bluebunch wheatgrass. The production of vegetation is limited by the cold temperatures in spring. The suitability of this soil for rangeland seeding is very poor. The main limitation is slope.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the included soils. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

This unit is limited for roads because of slope and the clayey subsoil of the Bucan soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Roads should be provided with surface drainage. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. To improve trafficability, roads should also be designed to provide a stable base and an adequate wearing surface.

This map unit is in capability subclass VIIe, nonirrigated.

BZt—Bucan-Toeja association. This map unit is on uplands. Slope is 15 to 50 percent. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

This unit is 40 percent Bucan stony loam, 15 to 30 percent slopes; 30 percent Bucan extremely stony loam, 15 to 50 percent slopes; and 20 percent Toeja loam, 15 to 30 percent slopes. The Bucan soils are on south-facing slopes, and the Toeja soil is on north- and northwest-facing slopes.

Included in this unit is about 10 percent very steep Bucan soils.

The Bucan stony loam is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived dominantly from volcanic rock. Typically, 1 to 3 percent of the surface layer is covered with stones. The surface layer is light grayish brown stony loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown cobbly clay.

Permeability of the Bucan stony loam is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Bucan extremely stony loam is deep and well drained. It formed in loess that has a high content of volcanic ash and in the underlying residuum derived dominantly from volcanic rock. Typically, the surface layer is light grayish brown extremely stony loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown cobbly clay.

Permeability of the Bucan extremely stony loam is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Toeja soil is deep and well drained. It formed in material derived dominantly from tuff. Typically, the surface layer is grayish brown loam about 13 inches thick. The subsoil is brown clay loam about 18 inches thick. The substratum is pale brown loam to very gravelly coarse sandy loam about 17 inches thick. Weathered tuff is at a depth of 48 inches.

Permeability of the Toeja soil is moderately slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Bucan soils is mainly big sagebrush, Thurber needlegrass, basin wildrye, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Thurber needlegrass, and bluebunch wheatgrass. The production of vegetation is limited by the moderately low average annual precipitation and rapid runoff.

The suitability of the Bucan stony loam for rangeland seeding is poor. The main limitations are steepness of slope, the stony surface layer, and the moderately low average annual precipitation. The suitability of the Bucan extremely stony loam for rangeland seeding is very poor. The main limitations are steepness of slope and stones on the surface.

The potential plant community on the Toeja soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush and Thurber needlegrass. The production of vegetation is limited by the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation and steepness of slope.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas. Seeding of areas of the more favorable Bucan stony loam and Toeja soil is difficult because of their small size and the pattern in which they occur with the less favorable Bucan extremely stony loam. Range seeding can be applied on the more favorable soils in this unit if species adapted to the moderately low moisture supply are used.

This unit is limited for roads because of slope, stones and cobbles on the surface, and the clayey subsoil of the Bucan soils. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Roads should be designed to provide surface drainage. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. To improve trafficability, roads need to be designed to provide a stable base and an adequate wearing surface.

The Bucan stony loam and the Toeja soil are in capability subclass VIe, nonirrigated, and the Bucan extremely stony loam is in capability subclass VIIs, nonirrigated.

BZu—Bunky-Clurde association. This map unit is on terraces and terrace breaks. Slope is 2 to 50 percent. Elevation is 5,200 to 5,800 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 45 degrees F, and the average frost-free period is about 100 days.

This unit is 45 percent Bunky loam, 2 to 8 percent slopes; 25 percent Clurde silt loam, 4 to 15 percent slopes; and 25 percent Short Creek gravelly clay loam, 30 to 50 percent slopes. The Bunky soil is on the tops of terraces, the Clurde soil is on terraces at the lower elevations, and the Short Creek soil is on terrace breaks.

Included in this unit is about 5 percent Orovada soils along narrow drainageways and on short alluvial fans along the lower edges of terrace breaks.

The Bunky soil is moderately deep and well drained. It formed in alluvium derived dominantly from tuff, rhyolite, andesite, and loess that has a high content of volcanic ash in the upper part. Typically, the surface layer is light brownish gray loam about 9 inches thick. The subsoil is pale brown loam to very gravelly loam about 13 inches thick. A strongly silica-cemented hardpan is at a depth of 22 inches.

Permeability of the Bunky soil is moderate. Available water capacity is low. Effective rooting depth and depth to the hardpan are 20 to 36 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly to moderately salt- and alkali-affected in the lower part of the hardpan.

The Clurde soil is very deep and well drained. It formed in loess that has a high content of volcanic ash and is underlain by alluvium derived from mixed rock. Typically, the surface layer is light gray silt loam about 5 inches thick. The subsoil is light brownish gray clay loam about 12 inches thick. The upper 12 inches of the substratum is pale brown clay loam. It has some durinodes. The lower part to a depth of 50 inches is very pale brown gravelly loam.

Permeability of the Clurde soil is moderately slow. Available water capacity is high. Effective rooting depth is 50 inches or more. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Short Creek soil is very deep and well drained. It formed in mixed alluvium derived from mixed rock. Typically, the surface layer is light brownish gray gravelly clay loam about 8 inches thick. The upper 15 inches of the subsoil is brown very gravelly clay, and the lower 37 inches is brown and pale brown very gravelly sandy clay.

Permeability of the Short Creek soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Bunky soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly gray horsebrush and big sagebrush. The production of vegetation is limited by the low available water capacity and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

The potential plant community on the Clurde soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, littleleaf horsebrush, basin wildrye, and cheatgrass. The production of vegetation is limited by the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

The potential plant community on the Short Creek soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by the low available water capacity and rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is slope.

Steepness of slope on the Short Creek soil limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Bunky and Clurde soils. Range seeding can be applied on this unit if species adapted to the moderately low moisture supply are used. Seeding of large areas is somewhat difficult because of the steep slopes of the Short Creek soil.

This unit is limited for roads mainly by slope of the Short Creek soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Roads should be provided with surface drainage. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs.

The Bunky soil is in capability subclasses IVe, irrigated, and VIc, nonirrigated; the Clurde soil is in capability subclass VIc, nonirrigated; and the Short Creek soil is in capability subclass VIIe, nonirrigated.

CAD—Carstump very gravelly loam, 4 to 30 percent slopes. This moderately deep, well drained soil is on uplands. It formed in material weathered dominantly from chert and shale. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 95 days.

Typically, the upper part of the surface layer is grayish brown very gravelly loam about 4 inches thick. The lower part is grayish brown gravelly loam about 11 inches thick. The subsoil is brown and yellowish brown very gravelly clay about 14 inches thick. Unweathered bedrock is at a depth of 29 inches.

Included in this unit are about 5 percent moderately steep Ramires gravelly clay loam and 5 percent narrow stringers of loamy and gravelly soils, along streams and drainageways, that are very deep and poorly drained. These soils support meadow vegetation. Included areas make up about 10 percent of the total acreage.

Permeability of this Carstump soil is slow. Available water capacity is low. Effective rooting depth and depth to unweathered bedrock are 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, cheatgrass, and Sandberg bluegrass. The production of vegetation is limited by the low available water capacity and the moderately low average annual precipitation. The suitability of this unit for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation, the very gravelly surface layer, the low available water capacity, and steepness of slope.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soil has warmed up and the plants have achieved sufficient growth.

Brush management is needed in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soil from erosion and provide a seed source. Range seeding can be applied on this unit when species adapted to the moderately low moisture supply are used.

This unit is limited for roads because of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be designed to provide surface drainage.

This map unit is in capability subclass VIs, nonirrigated.

CBE—Chen very rocky loam, 8 to 30 percent slopes. This shallow, well drained soil is on uplands. It formed in residuum weathered from volcanic rock and some loess that has a high content of volcanic ash. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 85 days.

Typically, about 10 percent of the surface is rock outcrop. The surface layer is grayish brown extremely stony loam about 6 inches thick. The subsoil is brown very gravelly clay about 8 inches thick. Unweathered andesite is at a depth of 14 inches.

Included in mapping are very steep Glean soils, which make up about 8 percent of the map unit, and very steep Rubble land, which makes up 2 percent. Included areas make up about 10 percent of the total acreage.

Permeability of this Chen soil is very slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 12 to 16 inches. Runoff is medium, and the hazard of later erosion is moderate. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the very low available water capacity and the shallow rooting depth.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soil has warmed up and the plants have achieved sufficient growth. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce vegetation suitable for grazing.

The suitability of this unit for rangeland seeding is very poor. The main limitations are the very low available water capacity, the extremely stony surface, the shallow depth to the clay subsoil, the shallow rooting depth, and the outcrops of rock.

This unit is limited for roads because of slope, the shallow depth to bedrock, rock outcrops, and stones on the surface. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided because of the depth to the underlying bedrock. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage.

This map unit is in capability subclass VIIs, nonirrigated.

CC—Chen-Pie Creek-Ramires association. This map unit is on hilly uplands. Slope is 15 to 30 percent. Elevation is 5,500 to 6,500 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 90 days.

This unit is 40 percent Chen cobbly loam, 20 percent Pie Creek very cobbly loam, and 20 percent Ramires very stony loam. The Chen soil is on uplands near crests, the Pie Creek soil is on the lower slopes of hills, and the Ramires soil is interspersed with areas of the Chen and Pie Creek soils.

Included in this unit are about 8 percent Ramires gravelly loam that has slopes of less than 15 percent or more than 30 percent; 5 percent Rock outcrop on rims; 4 percent deep, very gravelly, gravelly, and loamy soils in drainageways; and 3 percent springs and seeps at the heads and along the edges of drainageways. Included areas make up about 20 percent of the total acreage.

The Chen soil is shallow and well drained. It formed in residuum derived from volcanic rock and some loess that has a high content of volcanic ash. Typically, the surface layer is grayish brown cobbly loam about 8 inches thick. The subsoil is grayish brown and brown very gravelly clay about 9 inches thick. Unweathered andesite is at a depth of 17 inches.

Permeability of the Chen soil is very slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 12 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Pie Creek soil is moderately deep and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is grayish brown and light brownish gray very cobbly loam about 5 inches thick. The upper 16 inches of the subsoil is brown and pale brown fine clay, and the lower 9 inches is pale brown clay. Bedrock is at a depth of 30 inches.

Permeability of the Pie Creek soil is very slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Ramires soil is moderately deep and well drained. It formed in residuum derived from tuff, rhyolite, and loess that has a high content of volcanic ash. Typically, the surface layer is grayish brown very stony loam about 9 inches thick. The subsoil is grayish brown gravelly clay to pale brown gravelly sandy clay about 17 inches thick. The substratum is white sandy loam about 8 inches thick over bedrock.

Permeability of the Ramires soil is slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Chen soil is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, bluebunch wheatgrass, and bottlebrush squirreltail. The production of vegetation is limited by the very low available water capacity, the shallow rooting depth, and rapid runoff. The suitability of this soil for rangeland seeding is poor. The main limitations are the shallow depth to the clay subsoil, the shallow rooting depth, the cobbly surface layer, and slope.

The potential plant community on the Pie Creek soil is mainly low sagebrush, bluebunch wheatgrass, Sandberg bluegrass, and Thurber needlegrass. The present vegetation in most areas is mainly low sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. The production of vegetation is limited by the low available water capacity and rapid runoff. The suitability of this soil for rangeland seeding is poor. The main limitations are the shallow depth to the clay subsoil, the very cobbly surface layer, and slope.

The potential plant community on the Ramires soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by the low available water capacity and rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is the very stony surface layer.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

This unit is limited for roads because of slope and the clayey subsoil of the Ramires and Pie Creek soils, the shallow depth to bedrock of the Chen soil, and stones and cobbles on the surface. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Chen soil, because of the depth to bedrock. To improve trafficability, roads need to be designed to provide a stable base and an adequate wearing surface. Disturbed areas should be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage.

The Chen and Pie Creek soils are in capability subclass VIIs, nonirrigated, and the Ramires soil is in capability subclass VIs, nonirrigated.

CD—Chen-Pie Creek-Taylor Creek association. This map unit is on uplands. Slope is 15 to 30 percent. Elevation is 5,500 to 6,500 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 80 days.

This unit is 40 percent Chen cobbly loam, 20 percent Pie Creek very cobbly loam, and 20 percent Taylor

Creek loam. The Chen soil is near the crests of uplands, the Pie Creek soil is on the lower slopes of hills, and Taylor Creek soil is on the higher lying, mainly north-facing slopes that are slightly concave.

Included in this unit are about 7 percent moderately steep Ramires gravelly clay loam, 6 percent moderately sloping to strongly sloping Susie Creek soils on uplands; 4 percent Chen soils that have a very stony surface layer and are near scattered, small areas of Rock outcrop; 2 percent deep, gravelly and loamy soils in drainageways; and 1 percent springs and seeps along the edges of drainageways. Included areas make up about 20 percent of the total acreage.

The Chen soil is shallow and well drained. It formed in residuum derived from volcanic rock and some loess that has a high content of volcanic ash. Typically, the surface layer is grayish brown cobbly loam about 8 inches thick. The subsoil is grayish brown and brown very gravelly clay about 9 inches thick. Unweathered andesite is at a depth of 17 inches.

Permeability of the Chen soil is very slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 12 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Pie Creek soil is moderately deep and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is grayish brown and light brownish gray very cobbly loam about 5 inches thick. The upper 16 inches of the subsoil is brown and pale brown fine clay, and the lower 9 inches is pale brown clay. Bedrock is at a depth of 30 inches.

Permeability of the Pie Creek soil is very slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Taylor Creek soil is very deep and well drained. It formed in residuum derived from mixed rock, volcanic ash, and loess. Typically, the surface layer is grayish brown loam about 15 inches thick. The upper 5 inches of the subsoil is pale brown gravelly fine clay, and the lower 20 inches is pale brown gravelly sandy clay.

Permeability of the Taylor Creek soil is very slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Chen soil is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, bluebunch wheatgrass, and bottlebrush squirreltail. The production of vegetation is limited by the very low available water capacity, the shallow rooting depth, and loss of moisture because of rapid runoff. The suitability of this soil for rangeland seeding is poor. The main limitations are the shallow depth to the clay subsoil, the shallow rooting depth, the cobbly surface layer, and slope.

The potential plant community on the Pie Creek soil is mainly low sagebrush, bluebunch wheatgrass, Sandberg bluegrass, and Thurber needlegrass. The present vegetation in most areas is mainly low sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. The production of vegetation is limited by the low available water capacity and loss of moisture because of rapid runoff. The suitability of this soil for rangeland seeding is poor. The main limitations are the shallow depth to the clay subsoil, the very cobbly surface layer, and slope.

The potential plant community on the Taylor Creek soil is mainly big sagebrush, Idaho fescue, Sandberg bluegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Idaho fescue, and bluebunch wheatgrass. The production of vegetation is limited by the short growing season and cold temperatures in spring. The suitability of this soil for rangeland seeding is fair. The main limitations are slope and the shallow depth to the clay subsoil.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

Brush management is needed in areas where unpalatable brush species have increased significantly from the potential plant community. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soil from erosion and provide a seed source. Seeding of areas of the more favorable Taylor Creek soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Chen and Pie Creek soils.

This unit is limited for roads because of slope and the clayey subsoil of the Pie Creek and Taylor Creek soils, the shallow depth to bedrock of the Chen soil, and stones and cobbles on the surface of the Chen and Pie Creek soils. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Chen soil, because of the underlying bedrock. To improve trafficability, roads need to be designed to provide a stable base and an adequate wearing surface. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage.

The Chen and Pie Creek soils are in capability subclass VIIs, nonirrigated, and the Taylor Creek soil is in capability subclass VIe, nonirrigated.

CEE—Chen-Taylor Creek association, hilly. This map unit is on uplands. Slope is 4 to 30 percent. Elevation is 5,500 to 6,500 feet. The average annual precipitation is about 14 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 70 days.

This unit is 40 percent Chen cobbly loam, 15 to 30 percent slopes; 20 percent Taylor Creek loam, 15 to 30 percent slopes; and 20 percent Mosquet very gravelly sandy loam, 4 to 15 percent slopes. The Chen soil is on uplands, the Taylor Creek soil is on north-facing slopes, and the Mosquet soil is on windswept ridgetops.

Included in this unit are about 7 percent moderately steep Ramires gravelly loam scattered throughout areas of the Chen and Taylor Creek soils, 5 percent steep Taylor Creek soils on north-facing slopes, 5 percent steep Singletree soils near the toe slopes, 2 percent deep, gravelly, loamy soils in drainageways and on narrow bottoms of canyons, and 1 percent springs and seeps at the heads and along the edges of drainageways. Included areas make up about 20 percent of the total acreage.

The Chen soil is shallow and well drained. It formed in residuum derived dominantly from volcanic rock and some loess that has a high content of volcanic ash. Typically, the surface layer is grayish brown cobbly loam about 8 inches thick. The subsoil is grayish brown and brown very gravelly clay about 9 inches thick. Bedrock is at a depth of 17 inches.

Permeability of the Chen soil is very slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 12 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Taylor Creek soil is very deep and well drained. It formed in residuum derived from mixed rock, volcanic ash, and loess. Typically, the surface layer is grayish brown loam about 15 inches thick. The upper 25 inches of the subsoil is pale brown gravelly fine clay. The lower 20 inches is pale brown gravelly loam.

Permeability of the Taylor Creek soil is very slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Mosquet soil is shallow and well drained. It formed in residuum derived dominantly from volcanic flow rock. Typically, the surface layer is grayish brown very gravelly sandy loam about 6 inches thick. The subsoil is dark yellowish brown gravelly clay about 14 inches thick. Bedrock is at a depth of 20 inches.

Permeability of the Mosquet soil is slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 6 to 20 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Chen soil is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the very low available water capacity, the shallow rooting depth, and moisture loss from rapid runoff. The suitability of this soil for rangeland seeding is poor. The main limitations are the shallow depth to the clay subsoil, the shallow rooting depth, the cobbly surface layer, and slope.

The potential plant community on the Taylor Creek soil is mainly big sagebrush, bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, bluebunch wheatgrass, and Idaho fescue. The production of vegetation is limited by the short growing season and cold temperatures in spring. The suitability of this soil for rangeland seeding is fair. The main limitations are slope and the shallow depth to the clay subsoil.

The potential plant community on the Mosquet soil is mainly low sagebrush, Idaho fescue, bottlebrush squirreltail, and Cusick bluegrass. The present vegetation in most areas is mainly low sagebrush and bottlebrush squirreltail. The production of vegetation is limited by the shallow rooting depth, the loss of moisture from the drying action of wind on the ridges, and cold temperatures in spring. The suitability of this soil for rangeland seeding is very poor. The main limitations are the very low available water capacity and the shallow rooting depth.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas. Loss of the surface layer results in a severe decrease in productivity and in the potential of the Mosquet soil to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth. Seeding of areas of the more favorable Taylor Creek soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Chen and Mosquet soils.

This unit is limited for roads because of slope, the clayey subsoil of the Taylor Creek soil, and the shallow depth to bedrock of the Chen and Mosquet soils. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Chen and Mosquet soils, because of the underlying bedrock. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Chen and Mosquet soils are in capability subclass VIIs, nonirrigated, and the Taylor Creek soil is in capability subclass VIe, nonirrigated.

CEF—Chen-Taylor Creek association, steep. This map unit is on uplands. Slope is 4 to 50 percent. Elevation is 6,000 to 7,000 feet. The average annual precipitation is about 14 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 70 days.

This unit is 40 percent Chen cobbly loam, 15 to 30 percent slopes; 20 percent Taylor Creek loam, 30 to 50 percent slopes; and 20 percent Mosquet very gravelly sandy loam, 4 to 15 percent slopes. The Chen soil is on uplands, the Taylor Creek soil is on north-facing slopes and in slightly concave areas, and the Mosquet soil is on windswept ridgetops.

Included in this unit are about 8 percent Ramires soils on the lower lying hills; 6 percent steep Singletree soils along the lower parts of uplands; 3 percent Rock outcrop; 2 percent deep, gravelly, loamy soils on the narrow bottoms of canyons, and 1 percent springs and seeps along the edges of drainageways. Included areas make up about 20 percent of the total acreage.

The Chen soil is shallow and well drained. It formed in residuum derived dominantly from volcanic rock and some loess that has a high content of volcanic ash. Typically, the surface layer is grayish brown cobbly loam about 8 inches thick. The subsoil is grayish brown and brown very gravelly clay about 9 inches thick. Bedrock is at a depth of 17 inches.

Permeability of the Chen soil is very slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 12 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Taylor Creek soil is very deep and well drained. It formed in residuum derived from mixed rock. Typically, the surface layer is grayish brown loam about 15 inches thick. The upper 25 inches of the subsoil is pale brown gravelly fine clay, and the lower 20 inches is pale brown gravelly loam.

Permeability of the Taylor Creek soil is very slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Mosquet soil is shallow and well drained. It formed in residuum derived dominantly from volcanic flow rock. Typically, the surface layer is grayish brown very gravelly sandy loam about 6 inches thick. The subsoil is dark yellowish brown gravelly clay about 14 inches thick. Bedrock is at a depth of 20 inches.

Permeability of the Mosquet soil is slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 6 to 20 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Chen soil is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the very low available water capacity, the shallow rooting depth, and moisture loss from rapid runoff. The suitability of this soil for rangeland seeding is poor. The main limitations are the shallow depth to the clay subsoil, the shallow rooting depth, the cobbly surface layer, and slope.

The potential plant community on the Taylor Creek soil is mainly bluebunch wheatgrass, Idaho fescue, big sagebrush, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, bluebunch wheatgrass, and Idaho fescue. The production of vegetation is limited by the short growing season and cold temperatures in spring. The suitability of this soil for rangeland seeding is very poor. The main limitation is slope.

The potential plant community on the Mosquet soil is mainly low sagebrush, Idaho fescue, bottlebrush squirreltail, and Cusick bluegrass. The present vegetation in most areas is mainly low sagebrush and bottlebrush squirreltail. The production of vegetation is limited by the shallow rooting depth, the loss of moisture from the drying action of wind on the ridges, and cold temperatures in spring. The suitability of this soil for rangeland seeding is very poor. The main limitations are the very low available water capacity and the shallow rooting depth.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Chen and Mosquet soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the Mosquet soil to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

This unit is limited for roads because of slope, the clayey subsoil of the Taylor Creek soil, and the shallow depth to bedrock of the Chen and Mosquet soils. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Chen and Mosquet soils, because of the underlying bedrock. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be designed to provide surface drainage. Trafficability is improved by providing a stable base and an adequate wearing surface.

The Chen and Mosquet soils are in capability subclass VIIs, nonirrigated, and the Taylor Creek soil is in capability subclass VIIe, nonirrigated.

CF—Cherry Spring-Berning association. This map unit is on terraces and terrace breaks. Slope is 2 to 30 percent. Elevation is 5,100 to 5,400 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 45 degrees F, and the average frost-free period is about 105 days.

This unit is 70 percent Cherry Spring silt loam, 2 to 8 percent slopes, and 20 percent Berning gravelly loam, 15 to 30 percent slopes. The Cherry Spring soil is on the tops of terraces, and the Berning soil is on terrace breaks.

Included in this unit is about 5 percent Cortez soils that have a fine textured subsoil and are in small areas throughout areas of the Cherry Spring soil. Also included is about 5 percent Orovada soils on small alluvial fans at the base of terrace breaks and along intermittent drainageways. Included areas make up about 10 percent of the total acreage.

The Cherry Spring soil is moderately deep and well drained. It formed in loess that has a large amount of volcanic ash and is underlain by alluvium derived from mixed rock. Typically, the surface layer is light grayish brown silt loam about 15 inches thick. The subsoil is pale brown and light brownish gray loam about 21 inches thick. The substratum to a depth of 54 inches or more is a strongly silica-cemented hardpan.

Permeability of the Cherry Spring soil is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to the hardpan are 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Berning soil is very deep and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray gravelly loam about 8 inches thick. The upper 16 inches of the subsoil is brown very gravelly clay, and the lower 36 inches is brown very gravelly sandy clay loam.

Permeability of the Berning soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat. The Cherry Spring soil can be used for irrigated crops if water for irrigation is made available and the limitations of slope and restricted rooting depth are overcome.

The potential plant community on the Cherry Spring soil is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and Webber ricegrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the moderate available water capacity and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderate available water capacity and the moderately low average annual precipitation.

The potential plant community on the Berning soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, basin wildrye, and bottlebrush squirreltail. The production of vegetation is limited by the low available water capacity, moisture loss from rapid runoff, and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are steepness of slope, the gravelly surface layer, and the moderately low average annual precipitation.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Cherry Spring soil. Loss of the surface layer results in a severe decrease in productivity and in the potential of the Cherry Spring soil to produce vegetation suitable for grazing. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing.

Brush management is needed in areas where unpalatable brush species have increased significantly from the potential plant community. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soils from erosion and provide a seed source. Range seeding can be applied on this unit when species adapted to the moderately low moisture supply are used.

This unit is limited for roads mainly because of the slope of the Berning soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage.

The Cherry Spring soil is in capability subclasses IIIe, irrigated, and VIs, nonirrigated, and the Berning soil is in capability subclass VIIe, nonirrigated.

CG—Cherry Spring-Cortez-Chiara association. This map unit is on low terraces. Slope is 2 to 8 percent. Elevation is 4,800 to 5,200 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 105 days.

This unit is 40 percent Cherry Spring silt loam, 20 percent Cortez silt loam, and 20 percent Chiara silt loam.

Included in this unit are about 15 percent gently sloping to strongly sloping Orovada soils along intermittent drainageways and 5 percent strongly sloping Brock soils on terrace breaks. Included areas make up about 20 percent of the total acreage.

The Cherry Spring soil is moderately deep and well drained. It formed in loess that has a large amount of volcanic ash and is underlain by mixed alluvium derived from mixed rock sources. Typically, the surface layer is light grayish brown silt loam about 15 inches thick. The subsoil is pale brown and light brownish gray loam about 21 inches thick. The substratum to a depth of 54 inches or more is a strongly silica-cemented hardpan.

Permeability of the Cherry Spring soil is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to the hardpan are 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Cortez soil is moderately deep and well drained. It formed in thin deposits of loess that is underlain by alluvium derived from mixed rock. Typically, the surface layer is light brownish gray silt loam about 10 inches thick. The subsoil is brown clay about 12 inches thick. The upper 26 inches of the substratum is an indurated, silica-cemented hardpan. The lower part to a depth of 60 inches or more is pale brown very gravelly coarse sandy loam.

Permeability of the Cortez soil is slow. Available water capacity is low. Effective rooting depth and depth to the hardpan are 22 to 36 inches. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. The lower part of the substratum is moderately salt- and alkali-affected. The subsoil is alkali-affected.

The Chiara soil is shallow and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light grayish brown silt loam about 4 inches thick. The subsoil is light gray silt loam about 9 inches thick. An indurated, silica-cemented hardpan is at a depth of 13 inches.

Permeability of the Chiara soil is moderate. Available water capacity is very low. Effective rooting depth and depth to the indurated hardpan are 10 to 20 inches. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. The hardpan is slightly to moderately salt- and alkali-affected.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated crops if water for irrigation is made available and the limitations of slope and limited rooting depth are overcome.

The potential plant community on the Cherry Spring soil is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and Webber ricegrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the moderate available water capacity, moderately deep rooting depth, and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderate available water capacity and the moderately low average annual precipitation.

The potential plant community on the Cortez soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the low available water capacity, the moderately deep rooting depth, and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the low available water capacity, the moderately deep rooting depth, and the moderately low average annual precipitation.

The potential plant community on the Chiara soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, and cheatgrass. The production of vegetation is limited by the very low available water capacity, the shallow depth to the hardpan, and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and the very low available water capacity.

Loss of the surface layer results in a severe decrease in productivity and in the potential of this unit to produce vegetation suitable for grazing. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing.

Brush management is needed on the Cherry Spring and Cortez soils in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soils from erosion and provide a seed source. Range seeding can be applied on the Cherry Creek and Cortez soils when species adapted to the moderately low moisture supply are used. Seeding of areas of the more favorable Cherry Spring and Cortez soils in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Chiara soils.

This unit is limited for roads mainly because of the clayey subsoil of the Cortez soil and the shallow depth to the hardpan of the Chiara soil. Roads should be designed to provide surface drainage. Deep cuts should be avoided, especially on the Chiara soil, because of the underlying hardpan. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface.

The Cherry Spring soil is in capability subclasses IIIe, irrigated, and VIs, nonirrigated; the Cortez soil is in capability subclasses IVe, irrigated, and VIs, nonirrigated; and the Chiara soil is in capability subclasses IVe, irrigated, and VIIs, nonirrigated.

CH—Cherry Spring-Cortez-Tomera association. This map unit is on low terraces. Slope is 2 to 8 percent. Elevation is 4,800 to 5,200 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 105 days.

This unit is 40 percent Cherry Spring silt loam, 20 percent Cortez silt loam, and 20 percent Tomera silt loam.

Included in this unit is about 10 percent shallow Chiara soils that have a medium textured subsoil and are in small areas throughout the unit. Also included is about 10 percent Orovada soils along intermittent drainageways. Included areas make up about 20 percent of the total acreage.

The Cherry Spring soil is moderately deep and well drained. It formed in loess that has a large amount of volcanic ash and is underlain by alluvium derived from mixed rock. Typically, the surface layer is light grayish brown silt loam about 15 inches thick. The subsoil is pale brown and light brownish gray loam about 21 inches thick. The substratum to a depth of 54 inches or more is a hardpan that is strongly cemented with silica.

Permeability of the Cherry Spring soil is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to the hardpan are 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Cortez soil is moderately deep and well drained. It formed in thin deposits of loess overlying alluvium derived from mixed rock. Typically, the surface layer is light brownish gray silt loam about 10 inches thick. The subsoil is brown clay about 12 inches thick. The upper 26 inches of the substratum is an indurated, silica-cemented hardpan. The lower part to a depth of 60 inches or more is pale brown very gravelly coarse sandy loam.

Permeability of the Cortez soil is slow. Available water capacity is low. Effective rooting depth and depth to the indurated hardpan are 22 to 36 inches. Runoff is moderate, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. The subsoil is alkali-affected, and the lower part of the substratum is moderately salt- and alkali-affected.

The Tomera soil is very deep and well drained. It formed in alluvium derived from mixed sedimentary and pyroclastic rock. Typically, the surface layer is light grayish brown silt loam about 9 inches thick. The subsoil is light brownish gray and brown gravelly clay to pale brown gravelly sandy clay loam about 30 inches thick. The substratum to a depth of 60 inches or more is light gray very gravelly sandy loam.

Permeability of the Tomera soil is slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. The subsoil is slightly salt- and alkali-affected, and the substratum is moderately salt- and alkali-affected.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated crops if water for irrigation is made available and the limitations of slope and moderate rooting depth of the Cherry Spring and Cortez soils are overcome.

The potential plant community on the Cherry Spring soil is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and Webber ricegrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the moderate available water capacity and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderate available water capacity and the moderately low average annual precipitation.

The potential plant community on the Cortez soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the low available water capacity and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the low available water capacity and the moderately low average annual precipitation.

The potential plant community on the Tomera soil is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and bottlebrush squirreltail. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, cheatgrass, and annuals. The production of vegetation is limited by the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

Loss of the surface layer results in a severe decrease in productivity and in potential of the Cherry Spring and Cortez soils to produce vegetation suitable for grazing. Grazing should be delayed until the soils in this unit are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing.

Brush management is needed in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soils from erosion and provide a seed source. Range seeding can be applied on this unit if species adapted to the moderately low moisture supply are used.

This unit is limited for roads mainly because of the clayey subsoil of the Cortez and Tomera soils. Roads should be designed to provide surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Cherry Spring soil is in capability subclasses IIIe, irrigated, and VIs, nonirrigated; the Cortez soil is in capability subclasses IVe, irrigated, and VIs, nonirrigated; and the Tomera soil is in capability subclasses IIIe, irrigated, and VIs, nonirrigated.

CK—Cherry Spring-Orovada association. This map unit is on low terraces and alluvial fans. Slope is 2 to 15 percent. Elevation is 4,800 to 5,200 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 105 days.

This unit is 60 percent Cherry Spring silt loam, 2 to 8 percent slopes, and 20 percent Orovada fine sandy loam, 4 to 15 percent slopes. The Cherry Spring soil is on terraces, and the Orovada soil is on alluvial fans at the lower elevations.

Included in this unit are about 6 percent moderately deep Cortez soils that have a fine textured subsoil, 6 percent shallow Chiara soils that have a medium textured subsoil, 6 percent very deep Tomera soils that have a gravelly, fine textured subsoil, and 2 percent stony soils that are moderately deep to a strongly cemented hardpan and are in small, isolated areas throughout the unit. Included areas make up about 20 percent of the total acreage.

The Cherry Spring soil is moderately deep and well drained. It formed in loess that has a large amount of volcanic ash overlying alluvium derived from mixed rock. Typically, the surface layer is light grayish brown silt loam about 15 inches thick. The subsoil is pale brown and light brownish gray loam about 21 inches thick. The substratum to a depth of 54 inches or more is a hardpan that is strongly cemented with silica.

Permeability of the Cherry Spring soil is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to the hardpan are 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Orovada soil is very deep and well drained. It formed in alluvium derived from mixed volcanic rock and loess that has a high content of volcanic ash. Typically, the surface layer is light brownish gray fine sandy loam about 5 inches thick. The subsoil is light gray and pale brown fine sandy loam about 13 inches thick. The substratum to a depth of 60 inches or more is stratified, pale brown and light brownish gray very fine sandy loam and silt loam. It has some durinodes.

Permeability of the Orovada soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high. The substratum is slightly to moderately salt- and alkali-affected.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated crops if water for irrigation is made available and the limitations of slope and the moderate rooting depth of the Cherry Spring soil are overcome.

The potential plant community on the Cherry Spring soil is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and Webber ricegrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the moderate available water capacity and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderate available water capacity and the moderately low average annual precipitation.

The potential plant community on the Orovada soil is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and Indian ricegrass. The present vegetation in most areas is mainly big sagebrush and Sandberg bluegrass. The production of vegetation is limited by the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

Loss of the surface layer results in a severe decrease in productivity and in the potential of the Cherry Spring soil to produce vegetation suitable for grazing. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing.

Brush management is needed in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soils from erosion and provide a seed source. Range seeding can be applied to this unit when species adapted to the moderately low moisture supply are used.

This unit is moderately limited for roads mainly because of low soil strength, the susceptibility of the soils to frost heaving, and slope in some areas. Roads should be designed to provide surface drainage.

The Cherry Spring soil is in capability subclasses IIIe, irrigated, and VIs, nonirrigated, and the Orovada soil is in capability subclasses IIIe, irrigated, and VIc, nonirrigated.

CL—Chiara-Brock association. This map unit is on dissected terraces. Slope is 4 to 30 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 105 days.

This unit is 40 percent Chiara very stony silt loam, 4 to 15 percent slopes; 20 percent Chiara extremely stony loam, 4 to 15 percent slopes; and 20 percent Brock cobbly loam, 4 to 30 percent slopes. The Chiara soils are on the tops of terraces, and the Brock soil is on the sides of dissected terraces.

Included in this unit are about 10 percent moderately deep, gently sloping to moderately sloping Cherry Spring silt loam on the tops of terraces, 5 percent Orovada soils along intermittent drainageways, and 5 percent Rubble land along the base of moderately steep terrace breaks. Included areas make up about 20 percent of the total acreage.

The Chiara very stony silt loam is shallow and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray very stony silt loam about 4 inches thick. The subsoil is light gray silt loam about 10 inches thick. An indurated, silica-cemented hardpan is at a depth of 14 inches.

Permeability of the Chiara very stony silt loam is moderate. Available water capacity is very low. Effective rooting depth and depth to the indurated hardpan are 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight. The hardpan is slightly to moderately salt- and alkali-affected.

The Chiara extremely stony loam is shallow and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray extremely stony loam about 4 inches thick. The subsoil is light gray silt loam about 10 inches thick. An indurated, silica-cemented hardpan is at a depth of 14 inches.

Permeability of the Chiara extremely stony loam is moderate. Available water capacity is very low. Effective rooting depth and depth to the indurated hardpan are 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight. The hardpan is slightly to moderately salt- and alkali-affected.

The Brock soil is shallow and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray cobbly loam about 5 inches thick. The subsoil is light gray very gravelly sandy clay loam about 9 inches thick. An indurated, silica-cemented hardpan is at a depth of 14 inches.

Permeability of the Brock soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the indurated hardpan are 8 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. The hardpan is slightly to moderately salt- and alkali-affected.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Chiara soils is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, and cheatgrass. The production of vegetation is limited by the very low available water capacity and the shallow depth to the hardpan. The suitability of these soils for rangeland seeding is very poor. The main limitations are the very stony and extremely stony surface layers, the shallow rooting depth, and the very low available water capacity.

The potential plant community on the Brock soil is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, spiny hopsage, and Sandberg bluegrass. The production of vegetation is limited by the very low available water capacity and the shallow depth to the hardpan. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and the very low available water capacity.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is limited for roads because of the indurated hardpan and slope on the Brock soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided because of the underlying hardpan. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage.

This map unit is in capability subclass VIIs, nonirrigated.

CM—Chiara-Cherry Spring association. This map unit is on low terraces and alluvial fans. Slope is 2 to 8 percent. Elevation is 4,800 to 5,000 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 105 days.

This unit is 40 percent Chiara silt loam, 20 percent Cherry Spring silt loam, and 20 percent Cortez silt loam.

Included in this unit are about 10 percent very deep Tomera soils throughout the unit, 5 percent Orovada soils along intermittent drainageways, and 5 percent shallow, strongly sloping Brock soils that have a cobbly surface layer and are on the sides of dissected terraces. Included areas make up about 20 percent of the total acreage.

The Chiara soil is shallow and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light grayish brown silt loam about 4 inches thick. The subsoil is light gray silt loam about 9 inches thick. An indurated, silica-cemented hardpan is at a depth of 13 inches.

Permeability of the Chiara soil is moderate. Available water capacity is very low. Effective rooting depth and depth to the indurated hardpan are 10 to 20 inches. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. The hardpan is slightly to moderately salt- and alkali-affected.

The Cherry Spring soil is moderately deep and well drained. It formed in loess that has a large amount of volcanic ash overlying mixed alluvium derived from mixed rock. Typically, the surface layer is light grayish brown silt loam about 15 inches thick. The subsoil is pale brown and light brownish gray loam about 21 inches thick. The substratum to a depth of 54 inches or more is a strongly silica-cemented hardpan.

Permeability of the Cherry Spring soil is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to the hardpan are 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Cortez soil is moderately deep and well drained. It formed in thin deposits of loess overlying alluvium derived from mixed rock. Typically, the surface layer is light brownish gray silt loam about 10 inches thick. The subsoil is brown clay about 12 inches thick. The upper 26 inches of the substratum is an indurated, silica-cemented hardpan. The lower part to a depth of 60 inches or more is pale brown very gravelly coarse sandy loam.

Permeability of the Cortez soil is slow. Available water capacity is low. Effective rooting depth and depth to the indurated hardpan are 22 to 36 inches. Runoff is slow, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. The subsoil is alkali-affected, and the lower part of the substratum is moderately salt- and alkali-affected.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated crops if water for irrigation is made available and the limitations of slope and limited rooting depth are overcome.

The potential plant community on the Chiara soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, and cheatgrass. The production of vegetation is limited by the very low available water capacity, the shallow depth to the hardpan, and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and the very low available water capacity.

The potential plant community on the Cherry Spring soil is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and Webber ricegrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the moderate available water capacity, the moderately deep rooting depth, and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderate available water capacity and the moderately low average annual precipitation.

The potential plant community on the Cortez soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the low available water capacity, the moderately deep rooting depth, and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the low available water capacity and the moderately low average annual precipitation.

Livestock grazing should be managed to protect the unit from excessive erosion. Loss of the surface layer of the Chiara soil results in a significant decrease in productivity and in the potential of the soil to produce vegetation suitable for grazing. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding of areas of the more favorable Cherry Spring and Cortez soils in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Chiara soil.

This unit is limited for roads mainly because of the indurated hardpan of the Chiara soil and the clay subsoil of the Cortez soil. Roads should be designed to provide surface drainage. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface. Deep cuts should be avoided, especially on the Chiara soil, because of the underlying hardpan.

The Chiara soil is in capability subclasses IVe, irrigated, and VIIs, nonirrigated; the Cherry Spring soil is in capability subclasses IIIe, irrigated, and VIs, nonirrigated; and the Cortez soil is in capability subclasses IVe, irrigated, and VIs, nonirrigated.

CN—Cluro loam, strongly saline. This very deep, somewhat poorly drained soil is on stream terraces. It formed in loess overlying alluvium derived from mixed rock sources. Slope is 0 to 2 percent. Elevation is 4,400 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light brownish gray loam about 7 inches thick. The subsoil is pale brown silt loam about 6 inches thick. The upper 32 inches of the substratum is stratified, pale brown silt loam and very fine sandy loam. It has some durinodes. The lower part to a depth of 60 inches or more is pale brown very gravelly coarse sandy loam.

Included in this unit is about 15 percent Cluro soils that are slightly salt- and alkali-affected. These soils are narrow stringers in slightly depressional areas.

Permeability of this Cluro soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 4 to 6 feet from February to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is strongly salt- and alkali-affected to a depth of 13 inches. It is slightly to moderately salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly black greasewood, rubber rabbitbrush, basin wildrye, and inland saltgrass. The present vegetation in most areas is mainly black greasewood, rubber rabbitbrush, and basin wildrye. The production of vegetation is limited by the strongly salt- and alkali-affected surface layer and the low average annual precipitation.

Grazing should be delayed until the soil in this unit is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the strongly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is limited for roads because of the susceptibility of the soil to frost heaving. To increase trafficability and reduce maintenance costs, roads should be provided with surface drainage, subsurface drainage, and a stable base.

This map unit is in capability subclass VIIw, nonirrigated.

Co—Cluro silt loam, drained. This very deep soil is on stream terraces. Drainage was altered as a result of streams changing channel or by channel entrenchment. The soil formed in loess overlying alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,400 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light brownish gray silt loam about 5 inches thick. The subsoil is light brownish gray silt loam about 7 inches thick. The upper 26 inches of the substratum is stratified, light brownish gray loam, dark grayish brown silty clay loam, and pale brown very fine sandy loam. It has some durinodes. The lower part of the substratum to a depth of 60 inches or more is pale brown very fine sandy loam.

Included in this unit is about 15 percent somewhat poorly drained Cluro soils along the toe slopes of terraces bordering streams and flood plains.

Permeability of this Cluro soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is slightly to moderately salt- and alkali-affected below a depth of 38 inches.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly big sagebrush, black greasewood, basin wildrye, and bottlebrush squirreltail. The present vegetation in most areas is mainly big sagebrush, black greasewood, and basin wildrye. The production of vegetation is limited by the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

This unit is well suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by the moderate content of salts and alkali in the lower part of the soil and the tendency of the silty surface layer to crust, adversely affecting the water intake rate. Crusting of the surface and compaction can be reduced by returning crop residue to the soil and by keeping tillage to a minimum.

To avoid overirrigating and leaching of plant nutrients, applications of irrigation water should be adjusted to the available water capacity, the water intake rate, and the needs of the crop. Proper application of irrigation water is needed to prevent an increase in the content of salt and alkali. Periodic, heavy applications of water are needed to flush out excess salts.

This unit is limited for roads because of the low load-bearing strength and the susceptibility of the soil to frost heaving. To increase trafficability and reduce maintenance costs, roads should be provided with surface drainage and a stable base.

This map unit is in capability subclasses IIc, irrigated, and VIIc, nonirrigated.

Cp—Cluro silt loam, drained, slightly saline. This very deep soil is on stream terraces. Drainage was altered as a result of streams changing channel or by channel entrenchment. The soil formed in loess overlying alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,400 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light brownish gray silt loam about 5 inches thick. The subsoil is light brownish gray silt loam about 7 inches thick. The upper 26 inches of the substratum is stratified, light brownish gray loam, dark grayish brown silty clay loam, and pale brown very fine sandy loam. It has some durinodes. The lower part of the substratum to a depth of 60 inches or more is pale brown very fine sandy loam.

Included in this unit are about 5 percent somewhat poorly drained Cluro soils along the toe slopes of terraces bordering streams and flood plains and 5 percent somewhat poorly drained Cluro soils that are strongly salt- and alkali-affected and are along the slightly higher parts of terraces bordering streams and flood plains. Included areas make up about 10 percent of the total acreage.

Permeability of this Cluro soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly salt- and alkali-affected to a depth of 38 inches. It is slightly or moderately salt- and alkali-affected below this depth.

This unit is used for livestock grazing. It can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available and the content of salts and alkali is controlled.

The potential plant community on this unit is mainly big sagebrush, black greasewood, basin wildrye, and bottlebrush squirreltail. The present vegetation in most areas is mainly big sagebrush, black greasewood, and basin wildrye. The production of vegetation is limited by the content of salts and alkali in the soil and the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this soil for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is moderately limited for roads because of the low load-bearing strength and the susceptibility of the soil to frost heaving. To increase trafficability and reduce maintenance costs, roads should be provided with surface drainage and a stable base.

This map unit is in capability subclasses IIs, irrigated, and VIIs, nonirrigated.

Cr—Cluro silt loam, slightly saline. This very deep, somewhat poorly drained soil is on stream terraces. It formed in loess overlying alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,400 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light brownish gray silt loam about 7 inches thick. The subsoil is pale brown silt loam about 6 inches thick. The upper 32 inches of the substratum is stratified, pale brown silt loam and very fine sandy loam. The lower part to a depth of 60 inches or more is pale brown very gravelly coarse sandy loam.

Included in this unit is about 15 percent Cluro soils that are strongly salt- and alkali-affected and are in the slightly higher parts of the unit.

Permeability of this Cluro soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 4 to 6 feet from February to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly salt- and alkali-affected to a depth of 13 inches. It is slightly to moderately salt- and alkali-affected below this depth.

Most areas of this unit are used for livestock grazing. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly black greasewood, basin wildrye, alkali sacaton, and inland saltgrass. The present vegetation in most areas is mainly black greasewood and basin wildrye. The production of vegetation is limited by the slightly salt- and alkali-affected surface layer and the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this soil for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is moderately suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by the slightly salt- and alkali-affected surface layer and the seasonal high water table. Intensive management is required to reduce the salinity and maintain soil productivity. Drainage is needed to remove salts and alkali from the soil. Proper application of irrigation water is needed to prevent an increase in the content of salts and alkali. Irrigation water should be managed to avoid prolonged periods of wetness. Salt-tolerant crops should be grown. Deep-rooted crops are suited to areas where the natural drainage is adequate or a drainage system has been installed.

This unit is limited for roads because of the susceptibility of the soil to frost heaving. To improve trafficability and reduce maintenance costs, roads should be provided with surface drainage, subsurface drainage, and a stable base.

This map unit is in capability subclasses IIw, irrigated, and VIIw, nonirrigated.

CS—Coff-Denay association. This map unit is on mountain foothills. Slope is 30 to 50 percent. Elevation is 5,500 to 6,500 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

This unit is 50 percent Coff very gravelly silt loam and 40 percent Denay gravelly loam. The Coff soil is on south-facing slopes, and the Denay soil is on north-facing slopes.

Included in this unit are about 5 percent deep, gravelly and loamy soils on narrow flood plains and bottoms along drainageways, 3 percent Rock outcrop along ridgetops and upper side slopes, and 2 percent Rubble land along the base of Rock outcrop. Included areas make up about 10 percent of the total acreage.

The Coff soil is moderately deep and well drained. It formed in material derived from calcareous shale, limestone, and some loess that has a high content of volcanic ash. Typically, the surface layer is light brownish gray very gravelly silt loam about 5 inches thick. The underlying material is very pale brown very gravelly silt loam about 24 inches thick. An indurated, lime-cemented hardpan is at a depth of 29 inches. The underlying material has a high content of lime.

Permeability of the Coff soil is moderate. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 24 to 36 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Denay soil is very deep and well drained. It formed in colluvium derived from limestone and shale. Typically, the surface layer is grayish brown gravelly loam about 10 inches thick. The subsoil is brown very gravelly loam about 8 inches thick. The substratum to a depth of 50 inches is white and very pale brown very gravelly loam. It has a high content of lime.

Permeability of the Denay soil is moderately slow. Available water capacity is moderate. Effective rooting depth is 50 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Coff soil is mainly black sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Nevada bluegrass. The present vegetation in most areas is mainly black sagebrush, bluebunch wheatgrass, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the very low available water capacity and moisture loss because of rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitations are steepness of slope and the very low available water capacity.

The potential plant community on the Denay soil is mainly big sagebrush, bluebunch wheatgrass, Idaho fescue, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, bluebunch wheatgrass, and bottlebrush squirreltail. The production of vegetation is limited by the moderate available water capacity and moisture loss because of rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Livestock grazing should be managed to protect the unit from excessive erosion. Loss of the surface layer of the Coff soil results in a significant decrease in productivity and in the potential of the soil to produce vegetation suitable for grazing. Steepness of slope limits access by livestock and promotes overgrazing of the less sloping areas. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is limited for roads because of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage.

The Coff soil is in capability subclass VIIs, nonirrigated, and the Denay soil is in capability subclass VIIe, nonirrigated.

Ct—Coit loam. This very deep, poorly drained soil is on flood plains. It formed in loamy alluvium derived from mixed rock sources. Slope is 0 to 1 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is grayish brown loam about 10 inches thick. The upper 28 inches of the underlying material is stratified, grayish brown loam and silt loam. The lower part to a depth of 60 inches or more is gray fine sandy loam.

Included in this unit are about 5 percent Ocala soils that are salt- and alkali-affected and are on the outer edges of flood plains bordering low terraces and 4 percent Humboldt soils in depressional areas and shallow drainageways of flood plains. Also included are about 3 percent Coit soils that are salt- and alkali-affected and are on slightly higher parts of flood plains and 3 percent Rose Creek soils along the natural levees of stream channels. Included areas make up about 15 percent of the total acreage.

Permeability of this Coit soil is moderate. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 18 to 24 inches from March to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Occasional, brief periods of flooding occur when the streamflow is high.

This unit is used for livestock grazing, meadow hay, and wildlife habitat.

The potential plant community on this unit is mainly coyote willow, creeping wildrye, basin wildrye, and sedges. The present vegetation in most areas is mainly creeping wildrye and Baltic rush. The production of vegetation is limited by the hazard of flooding in spring.

Grazing should be delayed until the soil in this unit has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this soil for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated meadow hay and pasture. It is limited mainly by the seasonal high water table and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion, and irrigation water should be managed to avoid prolonged periods of wetness. Shallow-rooted, water-tolerant plants should be grown. The use of fertilizer promotes good growth of forage plants and hay. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding and the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage, subsurface drainage, and protection from flooding.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Cu—Coit-Griver complex. This map unit is on flood plains. Slope is 0 to 1 percent. Elevation is 4,500 to 4,600 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

This unit is 45 percent Coit loam and 45 percent Griver loam. The soils in this complex are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit is about 10 percent small stringers and pockets of Alluvial land on flood plains. Alluvial land consists of highly variable material ranging from sand and gravel to silty clay loam.

The Coit soil is very deep and poorly drained. It formed in loamy alluvium derived from mixed rock. Typically, the surface layer is grayish brown loam about 10 inches thick. The upper 28 inches of the underlying material is stratified, grayish brown loam and silt loam. The lower part to a depth of 60 inches or more is gray fine sandy loam.

Permeability of the Coit soil is moderate. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 18 to 24 inches from March to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Occasional, brief periods of flooding occur when the streamflow is high.

The Griver soil is very deep and poorly drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light grayish brown loam about 14 inches thick. The upper 23 inches of the underlying material is stratified, light brownish gray loamy fine sand and very fine sandy loam. The lower part to a depth of 60 inches or more is light brownish gray very gravelly sand.

Permeability of the Griver soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is limited by a seasonal high water table that is at a depth of 24 to 30 inches from February to June. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Frequent, long periods of flooding occur when the streamflow is high. This soil is slightly salt- and alkali-affected throughout.

This unit is used for livestock grazing, meadow hay, and wildlife habitat.

The potential plant community on this unit is mainly coyote willow, creeping wildrye, basin wildrye, and sedges. The present vegetation in most areas is mainly creeping wildrye, sedges, and Baltic rush. The production of vegetation is limited by the hazard of flooding in spring.

Grazing should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated meadow hay and pasture. It is limited mainly by the seasonal high water table and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion, and irrigation water should be managed to avoid prolonged periods of wetness. Shallow-rooted, water-tolerant plants should be grown. The use of fertilizer promotes good growth of forage plants and hay. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding and the susceptibility of the soils to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage, subsurface drainage, and protection from flooding.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

CV—Creva-Chen association. This map unit is on uplands. Slope is 4 to 30 percent. Elevation is 5,500 to 6,500 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 45 degrees F, and the average frost-free period is about 90 days.

This unit is 45 percent Creva gravelly loam, 4 to 30 percent slopes, and 40 percent Chen cobbly loam, 15 to 30 percent slopes. The Creva soil is on ridgetops, and the Chen soil is on mountainous uplands.

Included in this unit are about 10 percent steep Ramires soils on the upper parts of mountainous uplands, 3 percent loamy soils, along drainageways, that are very deep and poorly drained and support meadowlike vegetation, and 2 percent moderately deep, moderately sloping to moderately steep Carstump soils on uplands. Included areas make up about 15 percent of the total acreage.

The Creva soil is shallow and well drained. It formed in residuum derived dominantly from welded tuff and rhyolite. Typically, the surface layer is light brownish gray gravelly loam about 5 inches thick. The subsoil is light brownish gray gravelly clay loam about 14 inches thick. Bedrock is at a depth of 19 inches.

Permeability of the Creva soil is slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 4 to 20 inches. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Chen soil is shallow and well drained. It formed in residuum derived from volcanic rock and some loess that has a high content of volcanic ash. Typically, the surface layer is grayish brown cobbly loam about 8 inches thick. The subsoil is grayish brown and brown very gravelly clay about 9 inches thick. Unweathered andesite is at a depth of 17 inches.

Permeability of the Chen soil is very slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 12 to 20 inches. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Creva soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, littleleaf horsebrush, and Sandberg bluegrass. The production of vegetation is limited by the shallow rooting depth, the very low available water capacity, and moisture loss because of runoff. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and the very low available water capacity.

The potential plant community on the Chen soil is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, bluebunch wheatgrass, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the very low available water capacity and the shallow rooting depth. The suitability of this soil for rangeland seeding is poor. The main limitations are the shallow rooting depth, the cobbly surface layer, and steepness of slope.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Creva soil. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils in this unit to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

This unit is limited for roads because of slope, shallow depth to bedrock, and cobbles on the surface of the Chen soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided because of the underlying bedrock. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage.

This map unit is in capability subclass VIIs, nonirrigated.

CW2—Creva-Ramires association, eroded. This map unit is on uplands. Slope is 4 to 50 percent. Elevation is 5,500 to 7,000 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 95 days.

This unit is 65 percent Creva gravelly loam, 4 to 30 percent slopes, and 20 percent Ramires gravelly loam, 30 to 50 percent slopes. The Creva soil is in areas near ridgetops, and the slightly cooler Ramires soil is on north-facing slopes.

Included in this unit are about 10 percent steep Toeja soils along the lower edges of slopes and 5 percent loamy soils, along drainageways, that are very deep and poorly drained and support meadowlike vegetation. Included areas make up about 15 percent of the total acreage.

The Creva soil is shallow and well drained. It formed in residuum derived from welded tuff and rhyolite. Typically, the surface layer is light brownish gray gravelly loam about 5 inches thick. The subsoil is light brownish gray gravelly clay loam about 14 inches thick. Bedrock is at a depth of 19 inches.

Permeability of the Creva soil is slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 4 to 20 inches. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Ramires soil is moderately deep and well drained. It formed in residuum derived from tuff, rhyolite, and loess that has a high content of volcanic ash. Typically, the surface layer is grayish brown gravelly loam about 6 inches thick. The subsoil is grayish brown gravelly clay to pale brown gravelly sandy clay about 18 inches thick. The substratum is white sandy loam about 6 inches thick. Unweathered bedrock is at a depth of 30 inches.

Permeability of the Ramires soil is slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Creva soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, littleleaf horsebrush, and Sandberg bluegrass. The production of vegetation is limited by the shallow rooting depth, the very low available water capacity, and eroded areas. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and the very low available water capacity.

The potential plant community on the Ramires soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by slow permeability, the low available water capacity, and eroded areas. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope, which limits access and movement of livestock.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Creva soil. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

This unit is limited for roads because of slope, the shallow depth to bedrock of the Creva soil, and the clayey subsoil of the Ramires soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Creva soil, because of the underlying bedrock. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be designed to provide surface drainage. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface.

The Creva soil is in capability subclass VIIs, nonirrigated, and the Ramires soil is in capability subclass VIIe, nonirrigated.

Cx—Crooked Creek silt loam. This very deep, poorly drained soil is on flood plains. It formed in alluvium derived from mixed rock sources. Slope is 0 to 2 percent. Elevation is 5,000 to 6,000 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The upper 30 inches of the underlying material is very dark gray and black silty clay. The lower part to a depth of 60 inches or more is black silty clay loam.

Included in this unit are about 5 percent Bicondoa soils in slightly depressional areas of flood plains and 5 percent Hussa soils along stream channels and bordering alluvial fans. Included areas make up about 10 percent of the total acreage.

Permeability of this Crooked Creek soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 12 to 18 inches from January to July. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Occasional, brief periods of flooding occur when the streamflow is high.

Most areas of this unit are used for irrigated meadow hay and pasture and for wildlife habitat. A few areas are used for livestock grazing.

The potential plant community on this unit is mainly tufted hairgrass, sedges, and Baltic rush. The present vegetation in most areas is mainly tufted hairgrass and Baltic rush. The production of vegetation is limited by the hazard of flooding in spring.

Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is moderately suited to irrigated meadow hay and pasture. It is limited mainly by slow permeability, the seasonal high water table, and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion. Because of the slow permeability of the soil, irrigation should be managed to avoid prolonged periods of wetness. Surface drains can help keep the water table at its present level, shorten the periods of ponding, and inhibit the growth of the less palatable water-tolerant plants. Shallow-rooted, water-tolerant plants should be grown. The use of fertilizer promotes good growth of forage plants and hay.

This unit is limited for roads because of the low load-bearing strength, the hazard of flooding, and the seasonal high water table. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage, subsurface drainage, adequate protection from flooding, and a stable subgrade.

This map unit is in capability subclasses IVw, irrigated, and Vw, nonirrigated.

CY—Crooked Creek clay loam, drained. This very deep soil is on flood plains. It formed in alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 5,000 to 6,000 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 85 days.

Typically, the surface layer is very dark grayish brown clay loam about 8 inches thick. The underlying material to a depth of 60 inches or more is very dark gray to black silty clay and silty clay loam.

Included in this unit are about 5 percent poorly drained Crooked Creek soils in depressional areas and bordering stream channels and 5 percent Marsh in low, wet areas. Marsh consists of areas of peat where water is at or above the surface throughout the year and which support tule vegetation. Included areas make up about 10 percent of the total acreage.

Permeability of this Crooked Creek soil is high. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 42 to 60 inches from January to December. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Occasional, brief periods of flooding occur when the streamflow is high. Drainage was altered when the water table lowered as a result of channel entrenchment and streams changing channel.

This unit is used for irrigated meadow hay, pasture, and wildlife habitat. A few areas are used for livestock grazing.

The potential plant community on this unit is mainly big sagebrush and basin wildrye. The present vegetation in most areas is mainly big sagebrush, rubber rabbitbrush, and Nevada bluegrass. The production of vegetation is limited by the hazard of flooding in spring.

Grazing should be delayed until the soil in this unit has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated meadow hay and pasture. It is limited mainly by slow permeability, the seasonal high water table, and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion. Because of slow permeability and the high water table, irrigation should be managed to avoid prolonged periods of wetness. Water-tolerant plants should be grown. The use of fertilizer promotes good growth of hay and pasture plants.

This unit is limited for roads because of the low load-bearing strength, the hazard of flooding, and the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage, subsurface drainage, adequate protection from flooding, and a stable subgrade.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

DM—Donna-Simon association. This map unit is on high terraces. Slope is 2 to 8 percent. Elevation is 5,800 to 6,200 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

This unit is 60 percent Donna gravelly loam and 20 percent Simon loam.

Included in this unit are about 5 percent Stampede soils that are moderately deep to a hardpan, are interspersed throughout the unit, and support big sagebrush; 5 percent Pie Creek soils that are moderately deep to bedrock, are interspersed throughout the unit, and support low sagebrush; and 10 percent very deep, steep Short Creek soils on the sides of terraces. Included areas make up about 20 percent of the total acreage.

The Donna soil is moderately deep and well drained. It formed in mixed alluvium derived from volcanic rock and some loess that has a high content of volcanic ash. Typically, the surface layer is grayish brown gravelly loam about 8 inches thick. The subsoil is brown heavy clay about 14 inches thick. The upper 16 inches of the substratum is a light yellowish brown to very pale brown, indurated, silica-cemented hardpan. The lower part to a depth of 68 inches is stratified, very gravelly loam and very gravelly sandy clay loam.

Permeability of the Donna soil is very slow. Available water capacity is low. Effective rooting depth and depth to the hardpan are 20 to 26 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Simon soil is very deep and well drained. It formed in loess that has a high content of ash and in the underlying gravelly and cobbly mixed alluvium derived from sedimentary and volcanic rock. Typically, the surface layer is grayish brown loam about 12 inches thick. The subsoil is grayish brown to light yellowish brown clay loam about 29 inches thick. The substratum to a depth of 60 inches or more is yellowish brown very gravelly clay loam to brown very gravelly sandy clay loam.

Permeability of the Simon soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Donna soil is mainly low sagebrush, Thurber needlegrass, bluebunch wheatgrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, Sandberg bluegrass, Thurber needlegrass, and bottlebrush squirreltail. The production of vegetation is limited by the thin surface layer and the low available water capacity. The suitability of this soil for rangeland seeding is poor. The main limitations are the thin, gravelly surface layer and the shallow depth to the clay subsoil.

The potential plant community on the Simon soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by cold temperatures in spring. The suitability of this soil for rangeland seeding is fair. The main limitation is the moderate average annual precipitation.

Livestock grazing should be managed to protect this unit from excessive erosion. Loss of the surface layer of the Donna soil results in a significant decrease in productivity and in the potential of the soil to produce vegetation suitable for grazing. Grazing should be delayed until the soils in this unit are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding of areas of the more favorable Simon soil is difficult because of their small size and the pattern in which they occur with the less favorable Donna soil.

This unit is limited for roads mainly because of the clayey subsoil of the Donna soil. To improve trafficability, minimize erosion, and reduce maintenance costs, roads should be provided with surface drainage, an adequate wearing surface, and a stable base.

The Donna soil is in capability subclass VIIs, nonirrigated, and the Simon soil is in capability subclass VIc, nonirrigated.

DN—Donna-Stampede association. This map unit is on dissected low terraces. Slope is 2 to 50 percent. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 43 degrees F, and the average frost-free season is about 90 days.

This unit is 40 percent Donna gravelly loam, 2 to 8 percent slopes; 20 percent Stampede gravelly loam, 4 to 15 percent slopes; and 20 percent Short Creek gravelly clay loam, 30 to 50 percent slopes. The Donna and Stampede soils are on terraces, and the Short Creek soil is on terrace breaks.

Included in this unit is about 5 percent Pie Creek soils that are moderately deep over bedrock, are interspersed throughout the unit, and support big sagebrush; 5 percent Torro soils along the lower edges of terrace breaks; 5 percent Welch soils along intermittent stream bottoms; and 5 percent Donna and Stampede soils that have a cobbly or stony surface layer. Included areas make up about 20 percent of the total acreage.

The Donna soil is moderately deep and well drained. It formed in mixed alluvium derived from volcanic rock and some loess that has a high content of volcanic ash. Typically, the surface layer is grayish brown gravelly loam about 8 inches thick. The subsoil is brown heavy clay about 14 inches thick. The upper 16 inches of the substratum is a light yellowish brown to very pale brown, indurated, silica-cemented hardpan. The lower part to a depth of 68 inches is stratified very gravelly loam and very gravelly sandy clay loam.

Permeability of the Donna soil is very slow. Available water capacity is low. Effective rooting depth and depth to the hardpan are 20 to 26 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Stampede soil is moderately deep and well drained. It formed in alluvium derived dominantly from tuff. Typically, the surface layer is grayish brown gravelly loam about 12 inches thick. The subsoil is brown clay loam about 16 inches thick. An indurated, silica-cemented hardpan is at a depth of 28 inches.

Permeability of the Stampede soil is very slow. Available water capacity is low. Effective rooting depth and depth to the indurated hardpan are 20 to 32 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Short Creek soil is very deep and well drained. It formed in alluvium derived from mixed rock sources. Typically, the surface layer is light brownish gray and brown gravelly clay loam about 8 inches thick. The upper 15 inches of the subsoil is brown very gravelly clay, and the lower 37 inches is brown and pale brown very gravelly sandy clay.

Permeability of the Short Creek soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Donna soil is mainly low sagebrush, Thurber needlegrass, bluebunch wheatgrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, Sandberg bluegrass, Thurber needlegrass, and bottlebrush squirreltail. The production of vegetation is limited by the thin surface layer and the low available water capacity. The suitability of this soil for rangeland seeding is poor. The main limitation is the thin, gravelly surface layer.

The potential and present plant community on the Stampede soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the low available water capacity. The suitability of this soil for rangeland seeding is fair. The main limitations are the moderate average annual precipitation, the gravelly surface layer, the moderately deep rooting depth, and the shallow depth to the clayey subsoil.

The potential plant community on the Short Creek soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and Sandberg bluegrass. The production of vegetation is limited by the low available water capacity and moisture loss from rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Livestock grazing should be managed to protect this unit from excessive erosion. Loss of the surface layer of the Donna soil results in a significant decrease in productivity and in the potential of the soil to produce vegetation suitable for grazing. Steepness of slope limits access by livestock and promotes overgrazing of the less sloping areas of this unit. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding of areas of the more favorable Stampede soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Donna and Short Creek soils.

This unit is limited for roads mainly because of the clayey subsoil of the Donna and Stampede soils and the slope of the Short Creek soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be designed to provide surface drainage. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface.

The Donna soil is in capability subclass VIIs, nonirrigated, the Stampede soil is in capability subclass VIs, nonirrigated, and the Short Creek soil is in capability subclass VIIe, nonirrigated.

Do—Dunphy silt loam, drained, slightly saline. This very deep soil is on alluvial terraces. It formed in alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light gray silt loam about 3 inches thick. The upper 8 inches of the underlying material is light gray fine sandy loam. The lower part to a depth of 60 inches or more is stratified, very pale brown, pale brown, and light gray very fine sandy loam and silt loam that is weakly cemented with silica.

Included in this unit are about 10 percent drained Dunphy soils that are strongly salt- and alkali-affected and are on the slightly higher parts of terraces and 5 percent somewhat poorly drained Dunphy soils that are slightly salt- and alkali-affected and are in slightly depressional areas of terraces. Included areas make up about 15 percent of the total acreage.

Permeability of this Dunphy soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly salt- and alkali-affected to a depth of 11 inches and slightly or moderately salt- and alkali-affected below this depth. Drainage was altered when the water table lowered to a depth of more than 6 feet as a result of streams changing channel and channel entrenchment. Rare periods of flooding occur during extremely high streamflow.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly black greasewood, basin wildrye, alkali sacaton, and inland saltgrass. The present vegetation in most areas is mainly black greasewood, rubber rabbitbrush, and inland saltgrass. The production of vegetation is limited by the content of salts and alkali in the soil and the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is well suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by the content of salt and alkali in the soil. Intensive management is required to reduce the salinity and maintain soil productivity. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. The method used generally is governed by the crop. Water should be applied slowly over a long period to insure that the root zone is properly wetted. Crusting of the surface and compaction of the soil can be reduced by returning crop residue to the soil and by keeping tillage to a minimum. Grasses and legumes grow well if adequate fertilizer is used.

This unit is moderately limited for roads because of the low load-bearing strength. To improve trafficability and reduce maintenance costs, roads should be provided with surface drainage and a stable base.

This map unit is in capability subclasses IIc, irrigated, and VIIc, nonirrigated.

Dp—Dunphy silt loam, drained, strongly saline. This very deep soil is on alluvial terraces. It formed in alluvium derived from mixed rock sources. Slope is 0 to 2 percent. Elevation is 4;500 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light gray silt loam about 3 inches thick. The upper 8 inches of the underlying material is light gray fine sandy loam. The lower part to a depth of 60 inches or more is stratified, very pale brown, pale brown, and light gray very fine sandy loam and silt loam that is weakly cemented with silica.

Included in this unit are about 5 percent somewhat poorly drained Dunphy soils that are strongly salt- and alkali-affected and are in depressional areas on terraces and 5 percent Ocala soils that are strongly salt- and alkali-affected and are in areas bordering flood plains. Also included is about 5 percent small areas of Playa that are barren of vegetation and are scattered throughout the unit. Included areas make up about 15 percent of the total acreage.

Permeability of this Dunphy soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is strongly salt- and alkali-affected throughout. Drainage was altered when the water table lowered to a depth of more than 6 feet as a result of streams changing channel and channel entrenchment. Rare periods of flooding occur during extremely high streamflow.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly shadscale, black greasewood, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly black greasewood, shadscale, and bud sagebrush. The production of vegetation is limited by the content of salts and alkali in the soil and the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the strongly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is moderately limited for roads because of the low load-bearing strength. To improve trafficability and reduce maintenance costs, roads should be provided with surface drainage and a stable base.

This map unit is in capability subclass VIIs, nonirrigated.

Dr—Dunphy silt loam, slightly saline. This very deep, somewhat poorly drained soil is on low stream terraces and flood plains. It formed in alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light gray silt loam about 7 inches thick. The upper 28 inches of the underlying material is light gray and very pale brown fine sandy loam, very fine sandy loam, and silt loam that is weakly cemented with silica in the lower part. The next 26 inches is stratified, pale yellow loamy sand and light gray silt loam. The lower part to a depth of 65 inches is light gray gravelly sand.

Included in this unit is about 15 percent Dunphy soils that are strongly salt- and alkali-affected and are on the slightly higher parts of terraces and flood plains.

Permeability of this Dunphy soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 30 to 42 inches from March to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly salt- and alkali-affected throughout. Rare periods of flooding occur during extremely high streamflow.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay or pasture.

The potential plant community on this unit is mainly black greasewood, basin wildrye, alkali sacaton, and inland saltgrass. The present vegetation in most areas is mainly rubber rabbitbrush, black greasewood, and basin wildrye. The production of vegetation is limited by the content of salts and alkali in the soil and the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is suited to irrigated hay or pasture. It is limited mainly by the seasonal high water table and the slightly salt- and alkali-affected surface layer. The concentration of salts and alkali in the soil limits the production of plants suitable for hay and pasture. Salt-tolerant species are most suitable for planting. Intensive management is required to reduce the salinity and maintain soil productivity. Leaching the salts from the surface layer is limited by the high water table. Drainage and proper management of irrigation water reduce the content of salts. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff. Grasses and legumes grow well if adequate fertilizer is used.

This unit is limited for roads because of the susceptibility of the soil to frost heaving. To improve trafficability and reduce maintenance costs, roads should be provided with surface drainage, subsurface drainage, and a stable base.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Ds—Dunphy silt loam, strongly saline. This very deep, somewhat poorly drained soil is on the slightly elevated parts of flood plains. It formed in alluvium derived from mixed rock sources. Slope is 0 to 2 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light gray silt loam about 7 inches thick. The upper 28 inches of the underlying material is light gray and very pale brown fine sandy loam, very fine sandy loam, and silt loam that is weakly cemented with silica in the lower part. The next 26 inches is stratified, pale yellow loamy sand and light gray silt loam. The lower part to a depth of 65 inches is light gray gravelly sand.

Included in this unit is about 10 percent Dunphy soils that are slightly salt- and alkali-affected and are in slightly depressional areas of flood plains. Also included is about 5 percent areas of Playa that are barren of vegetation. Included areas make up about 15 percent of the total acreage.

Permeability of this Dunphy soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 30 to 42 inches from March to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is strongly salt- and alkali-affected to a depth of 35 inches and is slightly salt- and alkali-affected below this depth. Rare periods of flooding occur during extremely high streamflow.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community is mainly black greasewood, rubber rabbitbrush, basin wildrye, and inland saltgrass. The present vegetation in most areas is mainly black greasewood and inland saltgrass. The production of vegetation is limited by the content of salts and alkali in the upper part of the soil and the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the strongly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is limited for roads because of the susceptibility of the soil to frost heaving. To improve trafficability and reduce maintenance costs, roads should be provided with surface drainage, subsurface drainage, and a stable base.

This map unit is in capability subclass VIIw, nonirrigated.

FB—Ferdelford-Bucan association. This map unit is on hilly and steep uplands. Slope is 15 to 50 percent. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 45 degrees F, and the average frost-free period is about 90 days.

This unit is 50 percent Ferdelford gravelly clay loam, 15 to 30 percent slopes; 20 percent Ferdelford gravelly clay loam, 30 to 50 percent slopes; and 15 percent Bucan gravelly loam, 30 to 50 percent slopes, eroded. The Ferdelford soils are on south- and west-facing slopes, and the Bucan soil is mainly on north- and east-facing slopes.

Included in this unit are about 7 percent gently sloping and moderately sloping Orovada soils on alluvial fans, 3 percent areas of Badland and Rock outcrop on rims and scarps, 3 percent moderately deep and deep, very gravelly soils on north-facing slopes, and 2 percent alluvial soils on flood plains. Included areas make up about 15 percent of the total acreage.

The Ferdelford gravelly clay loam, 15 to 30 percent slopes, is moderately deep and well drained. It formed in material weathered from interbedded tuffaceous sandstone, tuff, and shale. Typically, the surface layer is grayish brown gravelly clay loam about 3 inches thick. The subsoil is pale brown sandy clay loam about 11 inches thick. The substratum is variegated gravelly sandy clay loam about 24 inches thick over weathered tuffaceous sandstone and tuff.

Permeability of the Ferdelford gravelly clay loam, 15 to 30 percent slopes, is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to weathered bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Ferdelford gravelly clay loam, 30 to 50 percent slopes, is moderately deep and well drained. It formed in material weathered from interbedded tuffaceous sandstone, tuff, and shale. Typically, the surface layer is grayish brown gravelly clay loam about 3 inches thick. The subsoil is pale brown sandy clay loam about 11 inches thick. The substratum is variegated gravelly sandy clay loam about 24 inches thick over weathered tuff.

Permeability of the Ferdelford gravelly clay loam, 30 to 50 percent slopes, is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to weathered bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Bucan soil is deep and well drained. It formed in loess that has a high content of volcanic ash and is underlain by residuum derived dominantly from volcanic rock. Typically, the surface layer is light grayish brown gravelly loam about 4 inches thick. The upper 21 inches of the subsoil is brown clay, and the lower 15 inches is yellowish brown gravelly clay.

Permeability of the Bucan soil is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ferdelford soils is mainly Utah juniper, big sagebrush, Indian ricegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly Utah juniper, Douglas rabbitbrush, and cheatgrass. The production of vegetation is limited by moisture loss because of rapid runoff and the moderate average annual precipitation. The suitability of these soils for rangeland seeding is fair in areas where slopes are less than 30 percent and very poor in areas where slopes are more than 30 percent. The main limitations are competition from trees and shrubs, the gravelly surface layer, and steepness of slope.

The potential plant community on the Bucan soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Thurber needlegrass, and bluebunch wheatgrass. The production of vegetation is limited by the moderate average annual precipitation, moisture loss because of rapid runoff, and eroded areas. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Steepness of slope limits access and movement of livestock on the Ferdelford gravelly clay loam, 30 to 50 percent slopes, and the Bucan soil. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Ferdelford soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce vegetation suitable for grazing. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing. Seeding of areas of the more favorable Ferdelford gravelly clay loam, 15 to 30 percent slopes, is difficult because of their small size and the pattern in which they occur with the less favorable Ferdelford soil and the Bucan soil.

This unit is limited for roads because of slope and the clayey subsoil of the Bucan soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be designed to provide surface drainage. To improve trafficability, roads also need to be provided with a stable base and an adequate wearing surface.

The Ferdelford gravelly clay loam, 15 to 30 percent slopes, is in capability subclass VIe, nonirrigated. The Ferdelford gravelly clay loam, 30 to 50 percent slopes, and the Bucan soil are in capability subclass VIIe, nonirrigated.

FD—Ferdelford-Puett-Berning association. This map unit is on hilly and steep uplands. Slope is 15 to 50 percent. Elevation is 5,300 to 5,700 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 100 days.

This unit is 30 percent Ferdelford gravelly clay loam, 30 to 50 percent slopes; 30 percent Puett fine sandy loam, 15 to 30 percent slopes; and 20 percent Berning gravelly loam, 15 to 30 percent slopes. The Ferdelford soil is on uplands, the Puett soil is on lower lying hilly knobs, and the Berning soil is on uplands.

Included in this unit are about 8 percent moderately sloping to strongly sloping Susie Creek soils, 4 percent very deep and steep Short Creek soils, 3 percent deep, loamy soils in stringers along drainageways, 3 percent areas of Badland, and 2 percent very steep Ferdelford soils. Included areas make up about 20 percent of the total acreage.

The Ferdelford soil is moderately deep and well drained. It formed in material weathered from interbedded tuffaceous sandstone, tuff, and shale. Typically, the surface layer is grayish brown gravelly clay loam about 3 inches thick. The subsoil is pale brown sandy clay loam about 11 inches thick. The substratum is variegated gravelly sandy clay loam about 24 inches thick over weathered tuffaceous sandstone and tuff.

Permeability of the Ferdelford soil is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to weathered bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Puett soil is shallow and well drained. It formed in residuum derived from tuff and tuffaceous sandstone. This soil is light brownish gray fine sandy loam about 18 inches deep over weathered tuff.

Permeability of the Puett soil is moderately rapid. Available water capacity is very low. Effective rooting depth and depth to weathered bedrock are 10 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

The Berning soil is very deep and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray gravelly loam about 8 inches thick. The upper 16 inches of the subsoil is brown very gravelly clay, and the lower 36 inches is brown very gravelly sandy clay loam.

Permeability of the Berning soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ferdelford soil is mainly Utah juniper, big sagebrush, Indian ricegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly Utah juniper, Douglas rabbitbrush, and cheatgrass. The production of vegetation is limited by moisture loss because of rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope, which limits access and movement of livestock.

The potential plant community on the Puett soil is mainly big sagebrush, black sagebrush, Indian ricegrass, and basin wildrye. The present vegetation in most areas is mainly gray horsebrush, spiny hopsage, Indian ricegrass, and cheatgrass. The production of vegetation is limited by the shallow rooting depth, the very low available water capacity, moisture loss because of rapid runoff, and the moderate average annual precipitation. The erratic variation in the rooting depth of this soil determines the species of sagebrush it can support. The suitability of the soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and the very low available water capacity.

The potential plant community on the Berning soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush and bottlebrush squirreltail. The production of vegetation is limited by the low available water capacity, moisture loss because of rapid runoff, and the moderate average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are slope and the gravelly surface layer.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Puett and Berning soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the Ferdelford and Puett soils to produce forage. Grazing should be delayed until the soils in this unit are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing.

This unit is limited for roads because of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Puett soil, because of the underlying bedrock. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage.

The Ferdelford and Puett soils are in capability subclass VIIe, nonirrigated, and the Berning soil is in capability subclass VIe, nonirrigated.

FE—Ferdelford-Puett-Susie Creek association. This map unit is on dissected uplands. Slope is 4 to 50 percent. Elevation is 5,000 to 5,800 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 100 days.

This unit is 35 percent Ferdelford gravelly clay loam, 15 to 30 percent slopes; 25 percent Puett coarse sandy loam, 30 to 50 percent slopes; and 20 percent Susie Creek loam, 4 to 15 percent slopes. The Ferdelford and Puett soils are on the sides of uplands, and the Susie Creek soil is on the upper parts and the less sloping crests of uplands.

Included in this unit are about 12 percent Toeja soils on smooth alluvial fans, 5 percent steep Ferdelford soils, and 3 percent areas of tuff Rock outcrop. Included areas make up about 20 percent of the total acreage.

The Ferdelford soil is moderately deep and well drained. It formed in material weathered from interbedded tuffaceous sandstone, tuff, and shale. Typically, the surface layer is grayish brown gravelly clay loam about 3 inches thick. The subsoil is pale brown sandy clay loam about 11 inches thick. The substratum is variegated gravelly sandy clay loam about 24 inches thick over weathered tuffaceous sandstone and tuff.

Permeability of the Ferdelford soil is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to weathered bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Puett soil is shallow and well drained. It formed in residuum derived from tuff and tuffaceous sandstone. This soil is light brownish gray coarse sandy loam about 13 inches deep over weathered tuff.

Permeability of the Puett soil is moderately rapid. Available water capacity is very low. Effective rooting depth and depth to weathered bedrock are 10 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

The Susie Creek soil is very deep and well drained. It formed in material weathered dominantly from tuff.

Typically, the surface layer is grayish brown loam about 12 inches thick. The subsoil is brown clay about 13 inches thick. The substratum is pale brown loam to light gray coarse sandy loam about 32 inches thick. It is weakly cemented with silica in the lower part. Weathered tuff is at a depth of 57 inches.

Permeability of the Susie Creek soil is slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ferdelford soil is mainly Utah juniper, big sagebrush, Indian ricegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly Utah juniper, Douglas rabbitbrush, and cheatgrass. The production of vegetation is limited by moisture loss because of rapid runoff and the moderate average annual precipitation. The suitability of this soil for rangeland seeding is fair. The main limitations are the competition from trees and shrubs, the gravelly surface layer, and steepness of slope.

The potential plant community on the Puett soil is mainly Utah juniper, big sagebrush, and bluebunch wheatgrass. The present vegetation in most areas is mainly rabbitbrush, bluebunch wheatgrass, and cheatgrass. The production of vegetation is limited by the shallow rooting depth and the very low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth, the very low available water capacity, and steepness of slope, which limits access and movement of livestock.

The potential plant community on the Susie Creek soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and bottlebrush squirreltail. The production of vegetation is limited by the shallow depth to the clay subsoil. The suitability of this soil for rangeland seeding is fair. The main limitations are steepness of slope, the moderate average annual precipitation, and the shallow depth to the clay subsoil.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Susie Creek soil. Loss of the surface layer results in a severe decrease in productivity and in the potential of the Ferdelford and Puett soils to produce vegetation suitable for grazing. Grazing should be delayed until the soils in this unit are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing. Seeding of areas of the more favorable Ferdelford and Susie Creek soils is difficult because of their small size and the pattern in which they occur with the less favorable Puett soil.

This unit is limited for roads because of slope and the clayey subsoil of the Susie Creek soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Puett soil, because of the underlying bedrock. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Ferdelford soil is in capability subclass VIe, nonirrigated; the Puett soil is in capability subclass VIIe, nonirrigated; and the Susie Creek soil is in capability subclass VIs, nonirrigated.

FF—Ferdelford-Ramires association. This map unit is on uplands. Slope is 15 to 75 percent. Elevation is 5,300 to 6,000 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 45 degrees F, and the average frost-free period is about 100 days.

This unit is 70 percent Ferdelford very gravelly clay loam, 50 to 75 percent slopes, and 20 percent very stony Ramires loam, 15 to 30 percent slopes. The Ferdelford soil is on south-facing slopes, and the Ramires soil is on the less sloping, upper parts of uplands and commonly is on north- and east-facing slopes.

Included in this unit are about 5 percent deep, very steep, stony soils on north-facing slopes and 2 percent shallow and very shallow soils overlying shale. Also included are about 2 percent very deep, poorly drained, loamy soils that are in narrow stringers along drainageways and support meadow vegetation and about 1 percent Rock outcrop. Included areas make up about 10 percent of the total acreage.

The Ferdelford soil is moderately deep and well drained. It formed in residuum derived from interbedded tuffaceous sandstone, tuff, and shale. Typically, the surface layer is grayish brown very gravelly clay loam about 3 inches thick. The subsoil is pale brown sandy clay loam about 11 inches thick. The substratum is variegated gravelly sandy clay loam about 12 inches thick over weathered tuffaceous sandstone and tuff.

Permeability of the Ferdelford soil is moderately slow. Available water capacity is low. Effective rooting depth and depth to weathered bedrock are 24 to 30 inches. Runoff is very rapid, and the hazard of water erosion is very high. The hazard of soil blowing is slight.

The Ramires soil is moderately deep and well drained. It formed in residuum derived from tuff, rhyolite, and loess that has a high content of volcanic ash. Typically, the surface layer is grayish brown very stony clay loam about 9 inches thick. The subsoil is grayish brown gravelly clay to pale brown gravelly sandy clay about 17 inches thick. The substratum is white sandy loam about 8 inches thick. Partially weathered tuff is at a depth of 34 inches.

Permeability of the Ramires soil is slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ferdelford soil is mainly Utah juniper, big sagebrush, Indian ricegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly Utah juniper, Douglas rabbitbrush, and cheatgrass. The production of vegetation is limited by the low available water capacity and moisture loss because of rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope, which limits access and movement of livestock.

The potential plant community on the Ramires soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by the low available water capacity, moisture loss because of rapid runoff, and the moderate average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is the very stony surface layer.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Ramires soil. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce vegetation suitable for grazing. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing.

This unit is limited for roads because of slope and the clayey subsoil of the Ramires soil. The stones and cobbles on the surface of the Ramires soil interfere with construction of roads. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be designed to provide surface drainage. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface.

The Ferdelford soil is in capability subclass VIIs, nonirrigated, and the Ramires soil is in capability subclass VIs, nonirrigated.

FH—Ferdelford-Susie Creek association. This map unit is on dissected terraces and uplands. Slope is 4 to 50 percent. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 45 degrees F, and the average frost-free period is about 95 days.

This unit is 50 percent Ferdelford gravelly clay loam, 30 to 50 percent slopes; 20 percent Susie Creek loam, 4 to 15 percent slopes; and 20 percent Toeja loam, 15 to 30 percent slopes. The Ferdelford soil is on the warmer, south-facing slopes; the Susie Creek soil is on terrace tops and the upper parts of side slopes; and the Toeja soil is on the cooler, north-facing slopes in areas slightly lower than the Susie Creek soil.

Included in this unit are about 5 percent moderately steep Ferdelford soils on south-facing slopes, 3 percent steep Singletree soils on north-facing slopes, and 2 percent steep Badland near the upper slope breaks of south-facing slopes. Included areas make up about 10 percent of the total acreage.

The Ferdelford soil is moderately deep and well drained. It formed in material weathered from interbedded tuffaceous sandstone, tuff, and shale. Typically, the surface layer is grayish brown gravelly clay loam about 3 inches thick. The subsoil is pale brown sandy clay loam about 11 inches thick. The substratum is variegated gravelly sandy clay loam about 24 inches thick over weathered tuffaceous sandstone and tuff.

Permeability of the Ferdelford soil is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to weathered bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Susie Creek soil is deep and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is grayish brown loam about 12 inches thick. The subsoil is brown clay about 13 inches thick. The substratum is pale brown loam to light gray coarse sandy loam about 32 inches thick. It is weakly cemented with silica in the lower part. Weathered tuff is at a depth of 57 inches.

Permeability of the Susie Creek soil is slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Toeja soil is deep and well drained. It formed in loess that has a high content of volcanic ash and is underlain by residuum derived dominantly from tuff. Typically, the surface layer is brown loam about 13 inches thick. The subsoil is brown clay loam about 18 inches thick. The substratum is pale brown loam to variegated very gravelly coarse sandy loam about 17 inches thick. Weathered bedrock is at a depth of 48 inches.

Permeability of the Toeja soil is moderately slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ferdelford soil is mainly Utah juniper, big sagebrush, Indian ricegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly Utah juniper, Douglas rabbitbrush, and cheatgrass. The production of vegetation is limited by moderate available water capacity, moisture loss because of rapid runoff, and the moderate average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope, which limits access and movement of livestock.

The potential plant community on the Susie Creek soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and bottlebrush squirreltail. The production of vegetation is limited by the shallow depth to the clay subsoil. The suitability of this soil for rangeland seeding is fair. The main limitations are the moderate average annual precipitation and the shallow depth to the clay subsoil.

The potential plant community on the Toeja soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, low Douglas rabbitbrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by moisture loss because of rapid runoff and the moderate average annual precipitation. The suitability of this soil for rangeland seeding is fair. The main limitations are the moderate average annual precipitation and steepness of slope.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Susie Creek soil. Loss of the surface layer results in a severe decrease in productivity and in the potential of the Ferdelford soil to produce vegetation suitable for grazing. Grazing should be delayed until the soils in this unit are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing.

Range seeding can be applied on the Susie Creek and Toeja soils when species adapted to the moderately low moisture supply are used. Brush management is recommended in areas of these soils where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soils from erosion and provide a seed source. Seeding of areas of these more favorable soils is difficult because of their small size and the pattern in which they occur with the less favorable Ferdelford soil.

This unit is limited for roads because of slope and the clayey subsoil of the Susie Creek soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be designed to provide surface drainage. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface.

The Ferdelford soil is in capability subclass VIIe, nonirrigated; the Susie Creek soil is in capability subclass VIs, nonirrigated; and the Toeja soil is in capability subclass VIe, nonirrigated.

Fk—Four Star loam. This very deep, poorly drained soil is on flood plains. It formed in alluvium derived from mixed rock sources. Slope is 0 to 2 percent. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 90 days.

Typically, the surface layer is dark gray loam about 20 inches thick. The underlying material to a depth of 60 inches or more is stratified, very dark grayish brown and dark olive gray loamy sand to silt loam.

Included in this unit is about 10 percent Hussa soils that are salt- and alkali-affected. These soils are on the outer edges of slightly higher lying areas of flood plains.

Permeability of this Four Star soil is moderately rapid. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 18 to 24 inches from December to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Occasional, brief periods of flooding occur when the streamflow is high.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated meadow hay.

The potential plant community on this unit is mainly tufted hairgrass, carex, meadow barley, and big bluegrass. The present vegetation in most areas is mainly carex, rushes, and willow. The production of vegetation is limited by the hazard of flooding in spring.

Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding in spring. Water-tolerant plants should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated meadow hay and pasture. The main limitations are the hazard of flooding in spring and the seasonal high water table. Protection from flooding is needed to prevent excessive erosion, and water for irrigation should be managed to avoid prolonged periods of wetness. Surface drains can keep the water table at its present level, shorten the periods of ponding, and inhibit the growth of the less palatable water-tolerant plants. Shallow-rooted, water-tolerant plants should be grown. The use of fertilizer promotes good growth of forage and hay plants. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding and the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with protection from flooding, adequate surface and subsurface drainage, and a stable base.

This map unit is in capability subclasses IVw, irrigated, and VIw, nonirrigated.

Fm—Four Star loam, drained. This very deep soil is on flood plains. It formed in alluvium derived from mixed rock sources. Slope is 0 to 2 percent. Elevation is 4,700 to 5,200 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 90 days.

Typically, the surface layer is dark gray loam about 15 inches thick. The underlying material to a depth of 60 inches or more is stratified, very dark grayish brown and dark olive gray loamy sand and silt loam.

Included in this unit are about 10 percent poorly drained Four Star soils in depressional areas of flood plains bordering stream channels and 5 percent gently sloping Four Star soils on the outer edges of flood plains bordering terraces and alluvial fans. Included areas make up about 15 percent of the total acreage.

Permeability of this Four Star soil is moderately rapid. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Occasional, brief periods of flooding occur when the streamflow is high. Drainage was altered when the water table lowered as a result of streams changing channel and channel entrenchment.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated meadow hay.

The potential plant community on this unit is mainly big sagebrush, basin wildrye, and Nevada bluegrass. The present vegetation in most areas is mainly big sagebrush and basin wildrye. The production of vegetation is limited by the moderate average annual precipitation and occasional periods of flooding or ponding.

Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is fair. The main limitations are the hazard of flooding or ponding and the moderate average annual precipitation. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated meadow hay and pasture. The main limitation is the hazard of flooding. Protection from flooding is needed to prevent excessive erosion. Irrigation water should be managed to avoid prolonged periods of wetness and thus inhibit the growth of the less palatable water-tolerant plants.

This unit is limited for roads because of the hazard of flooding. To minimize erosion and reduce maintenance costs, roads should be protected from flooding and provided with adequate surface drainage.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Fn—Four Star-Bosco complex. This map unit is on flood plains. Slope is 0 to 2 percent. Elevation is 5,100 to 5,400 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 90 days.

This unit is 70 percent Four Star loam and 25 percent Bosco very gravelly loam. The Four Star soil is in low drainageways and in depressional areas of flood plains, and the Bosco soil is in higher lying narrow stringers and on stream terraces of flood plains. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 2 percent moderately fine textured Welch soils interspersed throughout the flood plains, 2 percent moderately fine textured Welch soils that are drained and are in narrow stringers interspersed throughout the outer parts of flood plains, and 1 percent drained Four Star soils on the outer parts of flood plains. Included areas make up about 5 percent of the total acreage.

The Four Star soil is very deep and poorly drained. It formed in alluvium derived from mixed rock sources. Typically, the surface layer is dark gray loam about 20 inches thick. The underlying material to a depth of 60 inches or more is stratified, very dark grayish brown and dark olive gray loamy sand to silt loam.

Permeability of the Four Star soil is moderately rapid. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 18 to 24 inches from December to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Occasional, brief periods of flooding occur when the streamflow is high.

The Bosco soil is very deep and somewhat excessively drained. It formed in mixed alluvium derived dominantly from volcanic and sedimentary rock. Typically, the surface layer is grayish brown very gravelly loam about 15 inches thick. The upper 31 inches of the underlying material is stratified, pale brown very gravelly loam and very gravelly sandy loam. The lower part to a depth of 70 inches is variegated very gravelly sand.

Permeability of the Bosco soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated meadow hay and pasture. The main limitations are the hazard of flooding in spring, a seasonal high water table on the Four Star soil, and moderate available water capacity and moderately rapid permeability on the Bosco soil.

The potential plant community on the Four Star soil is mainly tufted hairgrass, carex, meadow barley, and big bluegrass. The present vegetation in most areas is mainly carex, rushes, and willow. The production of vegetation is limited by the hazard of flooding in spring. The suitability of this soil for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding in spring.

The potential plant community on the Bosco soil is mainly big sagebrush, basin wildrye, and Nevada bluegrass. The present vegetation in most areas is mainly big sagebrush, basin wildrye, and cheatgrass. The production of vegetation is limited by moderate available water capacity and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation and the very gravelly surface layer.

Grazing on this unit should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock. Seeding of areas of the more favorable Four Star soil is difficult because of their small size and pattern in which they occur with the less favorable Bosco soil. Water-tolerant plants should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is limited for roads mainly because of the hazard of flooding on the Four Star soil. To minimize erosion and reduce maintenance costs, roads should be provided with protection from flooding, adequate surface and subsurface drainage, and a stable base.

This map unit is in capability subclasses IVw, irrigated, and VIw, nonirrigated.

Fo—Four Star-Bosco complex, drained. This map unit is on flood plains. Slope is 0 to 2 percent. Elevation is 5,700 to 5,900 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 90 days.

This unit is 60 percent Four Star loam, drained, and 35 percent Bosco very gravelly loam. The Four Star soil is in low-lying drainageways and in depressional areas of flood plains, and the Bosco soil is in higher lying narrow stringers and on stream terraces of flood plains. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 3 percent gently sloping Four Star soils on the outer edges of the flood plains bordering terraces and alluvial fans and 1 percent seeps that support marsh vegetation. Also included is 1 percent Riverwash in very narrow stringers along stream channels. Included areas make up about 5 percent of the total acreage.

The Four Star soil is very deep and drained. Drainage was altered when the water table lowered as a result of streams changing channel or by channel entrenchment. The soil formed in alluvium derived from mixed rock sources. Typically, the surface layer is dark gray loam about 15 inches thick. The underlying material to a depth of 60 inches or more is stratified, very dark grayish brown and dark olive gray loamy sand and silt loam.

Permeability of the Four Star soil is moderately rapid. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Occasional, brief periods of flooding occur when the streamflow is high.

The Bosco soil is very deep and somewhat excessively drained. It formed in mixed alluvium derived dominantly from volcanic and sedimentary rock. Typically, the surface layer is grayish brown very gravelly loam about 15 inches thick. The upper 31 inches of the underlying material is stratified, pale brown very gravelly loam and very gravelly sandy loam. The lower part to a depth of 70 inches is variegated very gravelly sand.

Permeability of the Bosco soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated meadow hay and pasture if water for irrigation is made available. The main limitations are the hazard of flooding in spring on the Four Star soil and the moderate available water capacity and moderately rapid permeability of the Bosco soil.

The potential plant community on the Four Star soil is mainly big sagebrush, basin wildrye, and Nevada bluegrass. The present vegetation in most areas is mainly big sagebrush and basin wildrye. The production of vegetation is limited by the moderately low average annual precipitation and occasional periods of flooding or ponding. The suitability of this soil for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding and the moderately low average annual precipitation.

The potential plant community on the Bosco soil is mainly big sagebrush, basin wildrye, and Nevada bluegrass. The present vegetation in most areas is mainly big sagebrush, basin wildrye, and cheatgrass. The production of vegetation is limited by moderate available water capacity and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation and the very gravelly surface layer.

Grazing on this unit should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock. If the plant cover is disturbed on the Four Star soil, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is limited for roads mainly because of the hazard of flooding on the Four Star soil and the susceptibility of the Bosco soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with protection from flooding, adequate surface drainage, and a stable base.

This map unit is in capability subclasses IVs, irrigated, and VIIs, nonirrigated.

Ge—Geysen silt loam. This very deep, well drained soil is on alluvial fans. It formed in loess that has a high content of volcanic ash and is underlain by alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light gray and light brownish gray silt loam about 7 inches thick. The subsoil is brown clay loam about 7 inches thick. The substratum to a depth of 60 inches or more is pale brown and light grayish brown loam. It is weakly cemented in the upper part.

Included in this unit are about 5 percent Iron Blossom soils on toe slopes of alluvial fans, 5 percent Orovada soils on the upper parts of alluvial fans and along drainageways, and 5 percent Cluro soils on stream terraces and along intermittent drainageways. Included areas make up about 15 percent of the total acreage.

Permeability of this Geysen soil is slow to a depth of 14 inches and moderate below this depth. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is slightly salt- and alkali-affected to a depth of 7 inches and moderately or strongly salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat.

This unit can be used for irrigated hay, pasture, and crops if water for irrigation is made available and the limitations of slow permeability and salts and alkali in the soil are overcome by soil reclamation and proper water management.

The potential plant community on this unit is mainly big sagebrush, basin wildrye, and streambank wheatgrass. The present vegetation in most areas is mainly big sagebrush, black greasewood, and Sandberg bluegrass. The production of vegetation is limited by the slightly salt- and alkali-affected surface layer and the moderately low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce vegetation suitable for grazing. The suitability of this unit for rangeland seeding is very poor. The main limitation is the slightly salt- and alkali-affected surface layer.

This unit is limited for roads because of the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage and a stable subgrade.

This map unit is in capability subclasses IIIs, irrigated, and VIIs, nonirrigated.

Gg—Geysen silt loam, strongly saline. This very deep, well drained soil is on low alluvial terraces and toe slopes of alluvial fans. It formed in loess that has a high content of volcanic ash and is underlain by alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light gray and light brownish gray silt loam about 5 inches thick. The subsoil is brown clay loam about 7 inches thick. The substratum to a depth of 60 inches or more is pale brown and light grayish brown loam. It is weakly cemented in the upper part.

Included in this unit are about 10 percent Geysen soils that are slightly salt- and alkali-affected and support big sagebrush and 5 percent Cluro soils on stream terraces and along intermittent drainageways. Included areas make up about 15 percent of the total acreage.

Permeability of this Geysen soil is slow to a depth of 12 inches and moderate below this depth. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is strongly salt- and alkali-affected throughout.

This unit is used for livestock grazing and wildlife habitat. It is suited to irrigated hay, pasture, and other crops if the soil is reclaimed to reduce the content of salts and alkali.

The potential plant community on this unit is mainly shadscale, black greasewood, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly black greasewood, shadscale, and cheatgrass. The production of vegetation is limited by the strongly salt- and alkali-affected surface layer and the moderately low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitation is the strongly salt- and alkali-affected surface layer.

This unit is limited for roads because of the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage and a stable subgrade.

This map unit is in capability subclass VIIs, nonirrigated.

GH—Glean-Rock outcrop association. This map unit is on mountainsides. Slope is 50 to 75 percent. Elevation is 5,500 to 7,200 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 45 degrees F, and the average frost-free period is about 60 days.

This unit is 35 percent Glean extremely stony loam, 50 to 75 percent slopes, 35 percent Rock outcrop, and 20 percent Rubble land. The Glean soil is on north- and west-facing slopes, Rock outcrop is along the upper edges of very steep slopes, and Rubble land consists of stringers extending downslope from the areas of Rock outcrop.

Included in this unit are about 5 percent soils, on ridges, that are shallow to bedrock and 5 percent soils, on south-facing slopes, that have a clay loam subsoil. Included areas make up about 10 percent of the total acreage.

The Glean soil is deep and well drained. It formed in colluvium derived from mixed rock. Typically, the surface layer is brown extremely stony loam about 8 inches thick. The upper 7 inches of the underlying material is very gravelly loam, and the lower part to a depth of 51 inches is brown very cobbly loam. Unweathered andesite is at a depth of 51 inches.

Permeability of the Glean soil is moderately rapid. Available water capacity is low. Effective rooting depth and depth to unweathered bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

Rock outcrop consists of exposed areas of rock along the rims.

Rubble land consists of stringers of cobbles, stones, and boulders below areas of Rock outcrop.

This unit is used for wildlife habitat. It can also be used for livestock grazing.

The potential plant community on the Glean soil is mainly big sagebrush, antelope bitterbrush, Idaho fescue, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, antelope bitterbrush, and bluebunch wheatgrass. The production of vegetation is limited by the moderate average annual precipitation and loss of moisture because of runoff. The suitability of this soil for rangeland seeding is very poor. The main limitations are steepness of slope, stones on the surface, and the areas of Rock outcrop.

Steepness of slope and stones on the surface limit access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soil has warmed up and the plants have achieved sufficient growth.

This unit is limited for roads because of steepness of slope, stones on the surface, and the areas of Rubble land and Rock outcrop. Stones and cobbles on the surface make construction of roads difficult. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided because of the depth to rock. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage.

The Glean soil is in capability subclass VIIe, nonirrigated, and Rock outcrop and Rubble land are in capability subclass VIIIs, nonirrigated.

Gk—Griver loam. This very deep, poorly drained soil is on flood plains. It formed in alluvium derived from mixed rock. Slope is 0 to 1 percent. Elevation is 4,500 to 4,600 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is grayish brown loam and light brownish gray very fine sandy loam about 14 inches thick. The upper 23 inches of the underlying material is stratified, light brownish gray loamy fine sand and very fine sandy loam. The lower part to a depth of 60 inches or more is light brownish gray very gravelly sand.

Included in this unit are about 5 percent Coit soils in slightly depressional areas of flood plains, 5 percent Ocala soils on the outer edges of flood plains bordering low terraces, and 5 percent Alluvial land along stream channels and drainageways. The Alluvial land is stratified, recently deposited sand and gravel. Included areas make up about 15 percent of the total acreage.

Permeability of this Griver soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is limited by a seasonal high water table that is at a depth of 24 to 30 inches from February to June. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Frequent, long periods of flooding occur when the streamflow is high. This soil is slightly salt- and alkali-affected throughout.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated meadow hay and pasture.

The potential plant community on this unit is mainly basin wildrye and creeping wildrye. The present vegetation in most areas is mainly creeping wildrye, sedges, and Baltic rush. The production of vegetation is limited by frequent periods of flooding in spring. Grazing should be delayed until the soil is drained and is firm enough to withstand trampling by livestock.

The suitability of this unit for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding in spring. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated meadow hay and pasture. It is limited mainly by a seasonal high water table and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion, and irrigation water should be managed to avoid prolonged periods of wetness. Shallow-rooted, water-tolerant plants should be grown. The use of fertilizer promotes good growth of forage plants and hay. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding and susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface and subsurface drainage and with protection from flooding.

This unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Gm—Griver loam, drained. This very deep, drained soil is on flood plains. It formed in alluvium derived from mixed rock. Slope is 0 to 1 percent. Elevation is 4,500 to 4,600 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light brownish gray loam about 10 inches thick. The upper 24 inches of the underlying material is stratified, light brownish gray fine sandy loam and loam. The lower part to a depth of 60 inches or more is stratified, light brownish gray very gravelly sand and fine sandy loam.

Included in this unit are about 5 percent Griver soils that have a moderately deep water table and are on slightly lower positions along stream channels, 5 percent Rixie soils in depressional areas and old oxbows on flood plains, and 5 percent Rosney soils that are strongly salt- and alkali-affected and are on the outer edges of flood plains along low terraces. Included areas make up about 15 percent of the total acreage.

Permeability of this Griver soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is limited by a seasonal high water table that is at a depth of 5 to 6 feet from February to June. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Frequent, long periods of flooding occur when the streamflow is high. Drainage was altered when the water table lowered as a result of streams changing channel and channel entrenchment. This soil is slightly salt- and alkali-affected throughout.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated meadow hay and pasture.

The potential plant community on this unit is mainly big sagebrush and basin wildrye. The present vegetation in most areas is mainly big sagebrush, rubber rabbitbrush, mat muhly, and basin wildrye. The production of vegetation is limited by the slightly salt- and alkali-affected surface layer and frequent periods of flooding. Grazing should be delayed until the soil has drained and is firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is very poor. The main limitation is the slightly salt- and alkali-affected surface layer.

This unit is well suited to irrigated meadow hay and pasture. It is limited mainly by the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion, and irrigation water should be managed to avoid prolonged periods of wetness. Proper application of irrigation water is needed to prevent raising the water table and increasing the concentration of salts and alkali. Deep-rooted crops are suited to areas where the natural drainage is adequate or where a drainage system has been installed. Fertilizer is needed for optimum growth of grasses and legumes. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding and susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be designed to provide surface drainage.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Gn—Griver silt loam, clay substratum. This very deep, poorly drained soil is on flood plains. It formed in alluvium derived from mixed rock sources. Slope is 0 to 1 percent. Elevation is 4,500 to 4,600 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light brownish gray silt loam about 7 inches thick. The upper 35 inches of the underlying material is stratified, light brownish gray sandy loam and silt loam. The lower part to a depth of 60 inches or more is gray silty clay.

Included in this unit is about 10 percent Griver soils that do not have fine textured underlying material and are on slightly higher parts of flood plains along stream channels.

Permeability of this Griver soil is moderately rapid to a depth of 42 inches and very slow below. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 24 to 36 inches from February to June. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is slightly salt- and alkali-affected throughout. Frequent, long periods of flooding occur when the streamflow is high.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated meadow hay and pasture.

The potential plant community on this unit is mainly basin wildrye and creeping wildrye. The present vegetation in most areas is mainly creeping wildrye, sedges, and Baltic rush. The production of vegetation is limited by frequent periods of flooding. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

The suitability of this unit for rangeland seeding is very poor. The main limitations are the hazard of flooding and the slightly salt- and alkali-affected surface layer. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated meadow hay and pasture. It is limited mainly by a seasonal high water table, the hazard of flooding in spring, and the slightly saline and alkaline condition of the soil. Protection from flooding is needed to prevent excessive erosion, and irrigation water should be managed to avoid prolonged periods of wetness. To improve the soil, drainage is needed for removal of salts and alkali. Shallow-rooted, water-tolerant plants should be grown. The use of fertilizer promotes good growth of forage plants and hay. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding and susceptibility of the soil to frost heaving. To reduce maintenance costs, roads should be provided with adequate protection from flooding and with surface and subsurface drainage.

This unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Go—Griver silt loam, wet. This very deep, poorly drained soil is on flood plains along stream channels. It formed in alluvium derived from mixed rock. Slope is 0 to 1 percent. Elevation is 4,500 to 4,600 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light brownish gray silt loam about 6 inches thick. The underlying material to a depth of 60 inches or more is stratified, light brownish gray and gray loam to silty clay.

Included in this unit are about 10 percent Griver loams that are on slightly higher positions on flood plains and are moderately deep to the water table, and 5 percent Alluvial land that is stratified, recently deposited sand and gravel along stream channels and drainageways. Included areas make up about 15 percent of the total acreage.

Permeability of this Griver soil is moderately rapid. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 12 to 24 inches from February to August. Runoff is ponded, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Frequent, long periods of flooding occur when the streamflow is high.

This unit is used for livestock grazing and wildlife habitat, mainly for waterfowl.

This unit is not suited to irrigated meadow hay. It should be maintained in its native state because of its susceptibility to ponding and the seasonal high water table.

The potential plant community on this unit is mainly tufted hairgrass, big bluegrass, and sedges. The present vegetation in most areas is mainly coyote willow, sedges, and Baltic rush. The production of vegetation is limited by the susceptibility of the soil to ponding. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

The suitability of this unit for rangeland seeding is poor. The main limitation is the susceptibility of the soil to ponding. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is poorly suited to roads because of the hazard of flooding, the susceptibility of the soil to frost heaving, and the seasonal high water table.

This map unit is in capability subclass Vw, nonirrigated.

Gr—Griver complex. This map unit is on flood plains along stream channels. Slope is 0 to 1 percent. Elevation is 4,500 to 4,600 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

This unit is 70 percent Griver loam and 25 percent Griver silt loam, wet. The Griver loam is on the higher lying and intermediate positions of flood plains, and the Griver silt loam, wet, is in the slightly lower positions that are old oxbows, sloughs, and shallow drainageways. The soils in this complex are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 2 percent soils, in old stream channels, that are shallow or very shallow over sand and gravel, 1 percent Rose Creek soils on natural levees bordering stream channels, 1 percent medium-textured Coit soils scattered throughout the unit, and 1 percent fine-textured Humboldt soils that are slightly salt- and alkali-affected and are scattered throughout the unit. Included areas make up about 5 percent of the total acreage.

The Griver loam is very deep and poorly drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light grayish brown loam about 14 inches thick. The upper 23 inches of the underlying material is stratified, light brownish gray loamy fine sand and very fine sandy loam. The lower part to a depth of 60 inches or more is light brownish gray very gravelly sand.

Permeability of the Griver loam is moderately rapid. Available water capacity is moderate. Effective rooting depth is limited by a seasonal high water table that is at a depth of 24 to 30 inches from February to June. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is slightly salt- and alkali-affected throughout. Frequent, long periods of flooding occur when the streamflow is high.

Griver silt loam, wet, is very deep and poorly drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray silt loam about 6 inches thick. The underlying material to a depth of 60 inches or more is stratified, light brownish gray and gray sand to silty clay.

Permeability of Griver silt loam, wet, is moderately rapid. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 12 to 24 inches from February to August. Runoff is ponded, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Frequent, long periods of flooding occur when the streamflow is high.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on Griver loam is mainly basin wildrye and creeping wildrye. The present vegetation in most areas is mainly bluegrasses and creeping wildrye. The production of vegetation is limited by the hazard of flooding in spring. The suitability of this soil for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding in spring.

The potential plant community on Griver silt loam, wet, is mainly tufted hairgrass, big bluegrass, and sedges. The present vegetation in most areas is mainly coyote willow, sedges, and Baltic rush. The production of vegetation is limited by the susceptibility to ponding and the seasonal high water table. The suitability of this soil for rangeland seeding is poor. The main limitation is the susceptibility to ponding.

Grazing on this unit should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock. Seeding of areas of the more favorable Griver loam in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Griver silt loam, wet. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is limited for roads because of the hazard of flooding, the susceptibility of the soils to frost heaving, and the seasonal high water table. To reduce maintenance costs, roads should be located with care and provided with adequate protection from flooding and with surface and subsurface drainage.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Gx—Griver-Alluvial land complex. This map unit is on flood plains. Slope is 0 to 1 percent. Elevation is 4,500 to 4,600 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 105 days.

This unit is 50 percent Griver loam and 40 percent Alluvial land. The components of this complex are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit is about 5 percent Rose Creek soils in slightly depressional areas of flood plains that are away from the stream channels. Also included is about 5 percent soils, in slightly higher areas along the inside bends of river banks, that have a silty surface layer and shallow depth to sand and gravel. Included areas make up about 10 percent of the total acreage.

The Griver loam is very deep and poorly drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light grayish brown loam about 14 inches thick. The upper 23 inches of the underlying material is stratified, light brownish gray loamy fine sand and very fine sandy loam. The lower part to a depth of 60 inches or more is light brownish gray very gravelly sand.

Permeability of the Griver soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is limited by a seasonal high water table that is at a depth of 24 to 30 inches from February to June. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is slightly salt- and alkali-affected throughout. Frequent, long periods of flooding occur when the streamflow is high.

Alluvial land consists of highly stratified sand to clay and is commonly gravelly or very gravelly. It was recently deposited during periods of high streamflow and is subject to shifts in position along the stream channels. Alluvial land has remained stable long enough for some plants to become established.

This unit is used for livestock grazing and wildlife habitat.

Where the soil areas are large enough, the Griver soil can be used for irrigated meadow hay and pasture if the hazard of flooding is overcome and the seasonal high water table is lowered. Alluvial land is not suited to irrigated meadow hay and pasture.

The potential plant community on the Griver soil is mainly basin wildrye and creeping wildrye. The present vegetation in most areas is mainly creeping wildrye, sedges, and Baltic rush. The production of vegetation is limited by the hazard of flooding and ponding in spring. The suitability of this soil for rangeland seeding is fair.

Grazing on this unit should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. Seeding of areas of the more favorable Griver soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Alluvial land. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is poorly suited to roads because of the hazard of flooding, the susceptibility of the Griver soil to frost heaving, and stream overflow on Alluvial land.

This map unit is in capability subclass VIIw, nonirrigated.

HG—Hapgood-Packer association. This map unit is on mountainsides. Slope is 30 to 50 percent. Elevation is 7,000 to 8,500 feet. The average annual precipitation is about 14 inches, the average annual air temperature is about 42 degrees F, and the average frost-free period is about 60 days.

This unit is 40 percent Hapgood very gravelly loam, 20 percent Hapgood silt loam, and 20 percent Packer very cobbly loam. Hapgood very gravelly loam is on slightly convex, north-facing slopes; Hapgood silt loam is on slightly concave, north-facing slopes; and Packer soil is on south-facing slopes.

Included in this unit are about 10 percent Packer cobbly loam along moderately steep ridgetops and 10 percent Torro soils along the lower margins of steep, south-facing slopes. Included areas make up about 20 percent of the total acreage.

Hapgood very gravelly loam is deep and well drained. It formed in material weathered from tuff, andesite, and basalt. Typically, the surface layer is dark grayish brown very gravelly loam about 8 inches thick. The upper 28 inches of the underlying material is grayish brown very gravelly loam. The lower part, to a depth of 50 inches, is very pale brown very cobbly loam. Unweathered bedrock is at a depth of 50 inches.

Permeability of Hapgood very gravelly loam is moderate. Available water capacity is low. Effective rooting depth and depth to unweathered bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

Hapgood silt loam is deep and well drained. It formed in material weathered from tuff, andesite, and basalt. Typically, the surface layer is very dark grayish brown silt loam about 13 inches thick. The underlying material, to a depth of 50 inches, is dark grayish brown gravelly loam to light brownish gray extremely gravelly sandy loam. Unweathered bedrock is at a depth of 50 inches.

Permeability of Hapgood silt loam is moderate. Available water capacity is low. Effective rooting depth and depth to unweathered bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Packer soil is deep and well drained. It formed in material derived dominantly from chert and quartzite. Typically, the surface layer is grayish brown very cobbly loam about 13 inches thick. The subsoil is brown very cobbly clay loam about 14 inches thick. The substratum, to a depth of 50 inches, is light yellowish brown and brown very cobbly sandy loam.

Permeability of the Packer soil is moderate. Available water capacity is low. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat. Hapgood silt loam has potential for aspen woodland.

The potential plant community on Hapgood very gravelly loam is mainly an open stand of quaking aspen, mountain brome, slender wheatgrass, and Idaho fescue. The present vegetation in most areas is mainly quaking aspen. The production of vegetation is limited by the low available water capacity and short growing season. The suitability of this soil for rangeland seeding is very poor. The main limitations are the very gravelly texture of the surface layer, steepness of slope, and competition from woody plants.

If managed for grazing, the understory plant community on the Hapgood silt loam is mainly quaking aspen, meadowrue, mountain brome, slender wheatgrass, Idaho fescue, and snowberry. Production of air-dry herbage is about 1,000 pounds per acre in normal years, 1,500 pounds per acre in favorable years, and 750 pounds per acre in unfavorable years.

The present vegetation on this woodland soil is mainly snowberry and quaking aspen. The production of vegetation is limited by the short growing season, low available water capacity, and shading and competition from trees. The suitability of this soil for rangeland seeding is very poor. The main limitations are steepness of slope and competition from woody plants.

The potential plant community on the Packer soil is mainly low sagebrush, Idaho fescue, Sandberg bluegrass, and bottlebrush squirreltail. The present vegetation in most areas is mainly low sagebrush, buckwheat, common pricklygilia, and Sandberg bluegrass. The production of vegetation is limited by low available water capacity and the short growing season. The suitability of this soil for rangeland seeding is very poor. The main limitations are cobbles on the surface and steepness of slope.

Steepness of slope limits access and movement of livestock on this unit. Livestock grazing should be managed to protect the unit from excessive erosion and to avoid overuse in the less sloping areas. Removal of trees increases the production of forage on the Hapgood soils. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

This unit is limited for roads because of steepness of slope. The stones and cobbles on the surface of the Packer soil make it difficult to construct roads. If feasible, roads should be located in the less sloping areas to avoid excessive cuts and fills. Disturbed areas need to be stabilized to minimize erosion and reduce maintenance costs. Roads should be provided with surface drainage.

Hapgood very gravelly loam and the Packer soil are in capability subclass VIIs, nonirrigated, and Hapgood silt loam is in capability subclass VIIe, nonirrigated.

Hh—Humboldt silty clay loam, slightly saline. This very deep, poorly drained soil is on flood plains. It formed in alluvium derived dominantly from mixed rock sources. Slope is 0 to 2 percent. Elevation is 4,500 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is dark gray silty clay loam about 18 inches thick. The upper 25 inches of the underlying material is stratified, gray or light gray silty clay loam to clay. The lower part to a depth of 60 inches or more is stratified, gray silt loam to silty clay.

Included in this unit are about 5 percent Humboldt soils that are on slightly higher parts of flood plains and are strongly salt- and alkali-affected, 5 percent Humboldt soils in depressional areas, and 5 percent Ocala soils along the outer edges of flood plains. Included areas make up about 15 percent of the total acreage.

Permeability of this Humboldt soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that commonly is at a depth of 6 to 24 inches from December to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Common, brief to long periods of flooding occur when the streamflow is high. The soil is slightly salt- and alkali-affected in the surface layer, but this condition decreases with depth.

Most areas of this soil are used for irrigated meadow hay and pasture and for wildlife habitat. A few areas are used for livestock grazing.

The potential plant community on this unit is mainly willow, creeping wildrye, basin wildrye, and inland saltgrass. The present vegetation in most areas is mainly creeping wildrye, inland saltgrass, and sedges. The production of vegetation is limited by the hazard of flooding in spring and the slightly salt- and alkali-affected surface layer. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

The suitability of this unit for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and the hazard of flooding or ponding. Plants that tolerate wetness should be seeded.

This unit is well suited to irrigated meadow hay and pasture. It is limited mainly by the slightly salt- and alkali-affected surface layer, the seasonal high water table, and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion, and irrigation water should be managed to avoid prolonged periods of wetness. Without drainage, improvement of the soil by removal of salts and alkali is very difficult. Shallow-rooted, water-tolerant plants should be grown. The use of fertilizer promotes good growth of forage and hay plants. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding, the seasonal high water table, and the susceptibility of the soil to frost heaving. To reduce maintenance costs, roads should be provided with adequate protection from flooding and with surface and subsurface drainage.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Hk—Humboldt silty clay, slightly saline. This very deep, poorly drained soil is on flood plains. It formed in alluvium derived from mixed rock sources. Slope is 0 to 2 percent. Elevation is 4,500 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is dark gray silty clay about 11 inches thick. The upper 32 inches of the underlying material is stratified, gray or light gray silty clay loam to clay. The lower part to a depth of 60 inches or more is stratified, gray silty loam to silty clay.

Included in this unit are about 5 percent Humboldt soils that are on slightly higher parts of flood plains and are strongly salt- and alkali-affected, 13 percent Humboldt soils that are nonsaline and are in old oxbows and drainageways, and 2 percent Ocala soils along the outer edges of flood plains. Included areas make up about 20 percent of the total acreage.

Permeability of this Humboldt soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that commonly is at a depth of 6 to 24 inches from December to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Common, brief to long periods of flooding occur when the streamflow is high. The soil is slightly salt- and alkali-affected in the surface layer, but this condition decreases with depth.

Most areas of this unit are used for irrigated meadow hay and pasture and for wildlife habitat. A few areas are used for livestock grazing.

The potential plant community on this unit is mainly creeping wildrye, basin wildrye, and inland saltgrass. The present vegetation in most areas is mainly creeping wildrye, inland saltgrass, and sedges. The production of vegetation is limited by common periods of flooding in spring and the slightly salt- and alkali-affected surface layer. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

The suitability of this unit for rangeland seeding is very poor. The main limitations for seeding are the slightly salt- and alkali-affected surface layer and the hazard of flooding or ponding. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated meadow hay and pasture. It is limited mainly by the slightly salt- and alkali-affected surface layer, the seasonal high water table, and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion, and irrigation water should be managed to avoid prolonged periods of wetness. Without drainage, improvement of the soil by removal of salts and alkali is very difficult. Shallow-rooted, water-tolerant plants should be grown. The use of fertilizer promotes good growth of forage and hay plants. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding, the seasonal high water table, and the susceptibility of the soil to frost heaving. To reduce maintenance costs, roads should be provided with adequate protection from flooding and with surface and subsurface drainage.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Hm—Humboldt silty clay, strongly saline. This very deep, poorly drained soil is on the slightly higher parts of flood plains. It formed in alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,500 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is dark gray silty clay about 11 inches thick. The upper 32 inches of the underlying material is stratified, gray or light gray silty clay loam to clay. The lower part to a depth of 60 inches or more is stratified, gray silt loam to silty clay.

Included in this unit are about 10 percent slightly salt- and alkali-affected Humboldt soils in narrow stringers in shallow drainageways and 5 percent slightly salt- and alkali-affected Ocala soils along the outer edges of flood plains.

Permeability of this Humboldt soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that commonly is at a depth of 6 to 24 inches from December to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Common, brief to long periods of flooding occur when the streamflow is high. The soil is strongly salt- and alkali-affected in the surface layer, but this condition decreases with depth.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community is mainly black greasewood, inland saltgrass, alkali sacaton, and basin wildrye. The present vegetation in most areas is mainly black greasewood, iodinebush, and bassia. The production of vegetation is limited by common periods of flooding in spring and the strongly salt- and alkali-affected surface layer.

Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is very poor. The main limitation is the strongly salt- and alkali-affected surface layer.

This unit is limited for roads because of the hazard of flooding, the seasonal high water table, and the susceptibility of the soil to frost heaving. To reduce maintenance costs, roads should be provided with adequate protection from flooding and with surface and subsurface drainage.

This map unit is in capability subclass VIIw, nonirrigated.

Hn—Humboldt complex, saline. This map unit is on flood plains. Slope is 0 to 2 percent. Elevation is 4,500 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free season is about 110 days.

This unit is 70 percent Humboldt silty clay, slightly saline, and 25 percent Humboldt silty clay, strongly saline. Humboldt silty clay, slightly saline, is on flood plains; and Humboldt silty clay, strongly saline, is in small, isolated, higher lying areas of flood plains. The soils in this complex are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit is about 5 percent moderately fine textured Humboldt soils that have a slightly salt- and alkali-affected surface layer and are along the edges of shallow drainageways.

Humboldt silty clay, slightly saline, is very deep and poorly drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is dark gray silty clay about 11 inches thick. The upper 32 inches of the underlying material is stratified, gray or light gray silty clay loam to clay. The lower part to a depth of 60 inches or more is stratified, gray silt loam to silty clay.

Permeability of this Humboldt soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that commonly is at a depth of 6 to 24 inches from December to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Common, brief to long periods of flooding occur when the streamflow is high. The soil is slightly salt- and alkali-affected in the surface layer, but this condition decreases with depth.

Humboldt silty clay, strongly saline, is very deep and poorly drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is gray or dark gray silty clay about 11 inches thick. The upper 32 inches of the underlying material is stratified, gray or light gray silty clay loam to clay. The lower part to a depth of 60 inches or more is stratified, gray silt loam to silty clay.

Permeability of this Humboldt soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by the seasonal high water table that commonly is at a depth of 6 to 24 inches from December to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Common, brief to long periods of flooding occur when the streamflow is high. The soil is strongly salt- and alkali-affected in the surface layer, but this condition decreases with depth.

Most areas of this unit are used for irrigated meadow hay and pasture and for wildlife habitat. A few areas are used for livestock grazing.

The potential plant community on Humboldt silty clay, slightly saline, is mainly creeping wildrye, basin wildrye, and inland saltgrass. The present vegetation in most areas is mainly creeping wildrye, inland saltgrass, and sedges. The production of vegetation is limited by common periods of flooding in spring, the seasonal high water table, and the slightly salt- and alkali-affected surface layer. The suitability of this soil for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and the hazard of flooding or ponding.

The potential plant community on Humboldt silty clay, strongly saline, is mainly black greasewood, alkali sacaton, basin wildrye, and inland saltgrass. The present vegetation in most areas is mainly black greasewood, iodinebush, and bassia. The production of vegetation is limited by common periods of flooding in spring and the strongly salt- and alkali-affected surface layer. The suitability of this soil for rangeland seeding is very poor. The main limitation is the strongly salt- and alkali-affected surface layer.

Grazing on this unit should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion. Plants that tolerate wetness should be seeded.

This unit is moderately suited to irrigated meadow hay and pasture. It is limited mainly by the salt- and alkali-affected surface layer, the seasonal high water table, and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion, and irrigation water should be managed to avoid prolonged periods of wetness. Without drainage, improvement of the soil by removal of salts and alkali is very difficult. Shallow-rooted, water-tolerant plants should be grown. The use of fertilizer promotes good growth of forage and hay plants. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding, the seasonal high water table, and the susceptibility of the soils to frost heaving. To reduce maintenance costs, roads should be provided with adequate protection from flooding and with surface and subsurface drainage.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

HO—Humdun-Bucan association. This map unit is on strongly dissected foothills. Slope is 15 to 50 percent. Elevation is 5,200 to 6,000 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 45 degrees F, and the average frost-free period is about 100 days.

This unit is 30 percent Humdun silt loam, 30 to 50 percent slopes; 25 percent Bucan stony loam, 15 to 30 percent slopes; and 25 percent Havingdon gravelly silt loam, 15 to 30 percent slopes. The Humdun soil is on north-facing slopes, the Bucan soil is on south- and west-facing slopes, and the Havingdon soil is on north- and east-facing slopes.

Included in this unit are about 12 percent Bucan loam on hillsides, 6 percent deep, gravelly, and loamy soils in drainageways, and 2 percent Rock outcrop on rims. Included areas make up about 20 percent of the total acreage.

The Humdun soil is very deep and well drained. It formed in loess that has a moderate content of volcanic ash and is underlain by alluvium and residuum derived dominantly from soft tuff. Typically, the surface layer is grayish brown silt loam about 8 inches thick. The subsoil is light brownish gray and pale brown silt loam about 22 inches thick. The substratum to a depth of 60 inches or more is pale brown silt loam. It has some durinodes.

Permeability of the Humdun soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Bucan soil is deep and well drained. It formed in loess that has a high content of volcanic ash overlying residuum derived from volcanic rock. Typically, the surface layer is light grayish brown stony loam about 7 inches thick. The upper 18 inches of the subsoil is brown clay, and the lower 25 inches is yellowish brown cobbly clay.

Permeability of the Bucan soil is slow. Available water capacity is high. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

The Havingdon soil is moderately deep and well drained. It formed in residuum derived dominantly from chert and shale. Typically, the surface layer is light brownish gray gravelly silt loam about 6 inches thick. The subsoil is brown very gravelly sandy clay loam to yellowish brown very gravelly clay about 15 inches thick. Unweathered chert is at a depth of 21 inches.

Permeability of the Havingdon soil is slow. Available water capacity is very low. Effective rooting depth and depth to unweathered bedrock are 20 to 26 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Humdun soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the moderately low average annual precipitation and the loss of moisture because of runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Bucan soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The production of vegetation is limited by the moderately low average annual precipitation and the loss of moisture because of runoff. The suitability of this soil for rangeland seeding is poor. The main limitations are steepness of slope and the moderately low average annual precipitation.

The potential and present plant community on the Havingdon soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the moderately low average annual precipitation and the loss of moisture because of runoff. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation and steepness of slope.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Bucan and Havingdon soils. Seeding of areas of the more favorable Havingdon and Bucan soils is difficult because of their small size and the pattern in which they occur with the less favorable Humdun soil. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils are warm and the plants have achieved sufficient growth to withstand grazing.

This unit is limited for roads mainly because of steepness of slope and the clayey subsoil of the Bucan soil. Stones and cobbles on the surface of the Bucan soil make it difficult to construct roads. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be designed to provide surface drainage. To improve trafficability, roads need to be provided with a stable base and an adequate wearing surface.

The Humdun and Havingdon soils are in capability subclass VIIe, nonirrigated, and the Bucan soil is in capability subclass VIe, nonirrigated.

Hr—Hussa loam. This very deep, very poorly drained soil is on flood plains. It formed in alluvium derived dominantly from mixed rock sources. Slope is 0 to 2 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 45 degrees F, and the average frost-free period is about 90 days.

Typically, the surface layer is gray loam about 7 inches thick. The upper 23 inches of the underlying material is gray loam. The next 18 inches is light gray fine sandy loam. The lower part to a depth of 60 inches or more is light gray gravelly loamy sand.

Included in this unit are about 4 percent Crooked Creek soils in low, flat, depressional areas and old stream channels, 3 percent Four Star soils along stream channels, and 3 percent drained Hussa soils on the outer edges of flood plains bordering terraces and alluvial fans. Included areas make up about 10 percent of the total acreage.

Permeability of this Hussa soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 0 to 12 inches from February to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Frequent, long periods of flooding occur when the streamflow is high.

Most areas of this unit are used for irrigated meadow hay and pasture and for wildlife habitat. A few areas are used for livestock grazing.

The potential plant community on this unit is mainly tufted hairgrass, Nevada bluegrass, and carex. The present vegetation in most areas is mainly carex, rushes, tufted hairgrass, and meadow barley. The production of vegetation is limited by frequent periods of flooding in spring. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

The suitability of this unit for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated meadow hay and pasture. The main limitations are the seasonal high water table and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion, and irrigation water should be managed to avoid prolonged periods of wetness. Shallow-rooted, water-tolerant plants should be grown. Surface drains can shorten the periods of ponding and limit the growth of less palatable water-tolerant plants. The use of fertilizer promotes good growth of forage and hay plants. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding, the seasonal high water table, and the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with protection from flooding, surface and subsurface drainage, and a stable base.

This map unit is in capability subclasses IVw, irrigated, and VIw, nonirrigated.

Hs—Hussa loam, drained. This very deep soil is on flood plains. It formed in alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 45 degrees F, and the average frost-free period is about 90 days.

Typically, the surface layer is black loam about 12 inches thick. The underlying material, to a depth of 48 inches, is stratified, black and grayish brown sandy clay loam to silty clay loam.

Included in this unit are about 3 percent drained Four Star soils along the higher banks of stream channels and 2 percent poorly drained Hussa soils in low depressional areas bordering stream channels. Included areas make up about 5 percent of the total acreage.

Permeability of this Hussa soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 3 to 4 feet from February to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Occasional, brief periods of flooding occur when the streamflow is high.

Drainage was altered when the water table lowered as a result of streams changing channel and channel entrenchment.

Most areas of this unit are used for irrigated meadow hay and pasture and for wildlife habitat. A few areas are used for livestock grazing.

The potential plant community on this unit is mainly big sagebrush, basin wildrye, and western wheatgrass. The present vegetation in most areas is mainly big sagebrush, basin wildrye, and bottlebrush squirreltail. The production of vegetation is limited by occasional periods of flooding in spring. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

The suitability of this unit for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated meadow hay and pasture. The main limitations are the moderate depth to the seasonal high water table and the hazard of flooding. Protection from flooding is needed to prevent excessive erosion, and irrigation water should be managed to avoid prolonged periods of wetness. Deep-rooted crops are suited to areas where natural drainage is adequate or where a drainage system has been installed. The use of fertilizer promotes good growth of forage and hay plants. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding and the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with protection from flooding, surface drainage, and a stable base.

This map unit is in capability subclasses IIw, irrigated, and VIw, nonirrigated.

Ht—Hussa loam, slightly saline. This very deep, poorly drained soil is on flood plains. It formed in alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 45 degrees F, and the average frost-free period is about 90 days.

Typically, the surface layer is gray loam about 10 inches thick. The upper 30 inches of the underlying material is stratified, gray loam and clay loam. The lower part to a depth of 60 inches or more is gray silty clay.

Included in this unit are about 5 percent Welch soils that have a very thick, dark-colored surface layer and are in areas throughout flood plains and 5 percent very poorly drained Hussa soils that are very shallow to the water table and are in slightly depressional areas near stream channels. Also included is about 5 percent strongly salt- and alkali-affected Hussa soils on the slightly higher edges of flood plains. Included areas make up about 15 percent of the total acreage.

Permeability of this Hussa soil is moderately slow to a depth of 40 inches and slow below this depth. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 6 to 18 inches from February to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Occasional, brief periods of flooding occur when the streamflow is high. The soil is slightly saline in the surface layer, but this condition decreases with depth.

This unit is used for livestock grazing and wildlife habitat.

This unit can be used for irrigated meadow hay and pasture if water for irrigation is made available. The main limitations for irrigation are the seasonal high water table, the slow permeability of the underlying material, and the slightly saline surface layer.

The potential plant community on this unit is mainly black greasewood, basin wildrye, alkali sacaton, and inland saltgrass. The present vegetation in most areas is mainly black greasewood, rubber rabbitbrush, and inland saltgrass. The production of vegetation is limited by the slightly saline surface layer and the seasonal high water table. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock.

The suitability of this unit for rangeland seeding is very poor. The main limitations are the slightly saline surface layer and the hazard of flooding or ponding. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is limited for roads because of the hazard of flooding, the seasonal high water table, and the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with protection from flooding, surface and subsurface drainage, and a stable base.

This map unit is in capability subclasses IVw, irrigated, and VIw, nonirrigated.

Ib—Iron Blossom silt loam. This very deep, moderately well drained soil is on toe slopes of alluvial fans. It formed in alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 47 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light gray silt loam about 3 inches thick. The upper 14 inches of the underlying material is very pale brown silt loam. The next 19 inches is stratified, very pale brown silty clay and clay loam. The lower part, to a depth of 50 inches, is white clay loam that is weakly cemented with lime.

Included in this unit are about 5 percent well drained Geysen soils that have a moderately fine textured subsoil, 5 percent Pocker soils, in depressional areas and drainageways, that receive runoff from adjacent soils, and 5 percent well drained Rosney soils that are strongly salt- and alkali-affected. Included areas make up about 15 percent of the total acreage.

Permeability of this Iron Blossom soil is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly salt- and alkali-affected to a depth of 17 inches and moderately or strongly salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat.

This unit can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available and the limitation of the slightly salt- and alkali-affected surface layer is overcome.

The potential plant community on this unit is mainly big sagebrush, black greasewood, and basin wildrye. The present vegetation in most areas is mainly black greasewood, shadscale, inland saltgrass, and bottlebrush squirreltail. The production of vegetation is limited by the slightly salt- and alkali-affected surface layer and the low average annual precipitation. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

The suitability of this unit for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is moderately limited for roads because of the moderately fine textured subsoil. To reduce maintenance costs, roads should be provided with surface drainage, an adequate wearing surface, and a stable subgrade.

This map unit is in capability subclasses IIIs, irrigated, and VIIs, nonirrigated.

Is—Iron Blossom silt loam, strongly saline. This very deep, moderately well drained soil is in shallow depressional areas and on low stream terraces. It formed in alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 47 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is light gray silt loam about 3 inches thick. The upper 14 inches of the underlying material is very pale brown silt loam. The next 19 inches is stratified, very pale brown silty clay and clay loam. The lower part, to a depth of 50 inches, is white clay loam that is weakly cemented with silica.

Included in this unit are about 5 percent fine textured Pocker soils, 5 percent slightly salt- and alkali-affected Iron Blossom soils on toe slopes of terraces, and 5 percent Playa, which is barren of vegetation. Included areas make up about 15 percent of the total acreage.

Permeability of this Iron Blossom soil is slow. Available water capacity is high. Effective rooting depth is 50 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is strongly salt- and alkali-affected throughout.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly black greasewood and shadscale. The present vegetation in most areas is mainly black greasewood, shadscale, and inland saltgrass. The production of vegetation is limited by the strong salinity and alkalinity of the soil and the low average annual precipitation. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

The suitability of this unit for rangeland seeding is very poor. The main limitations are the strongly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is moderately limited for roads because of the moderately fine textured subsoil. To reduce maintenance costs, roads should be provided with surface drainage, an adequate wearing surface, and a stable subgrade.

This map unit is in capability subclass VIIs, nonirrigated.

KAD—Kawich fine sand, 2 to 30 percent slopes. This very deep, excessively drained soil is on dunes along toe slopes of alluvial fans. It formed in sandy eolian material derived from mixed rock. Elevation is 4,600 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 52 degrees F, and the average frost-free season is about 105 days.

Typically, the soil is light gray fine sand to a depth of 60 inches or more.

Included in this unit are about 5 percent Pocker soils on low-lying terraces, 5 percent Iron Blossom soils on the toe slopes of alluvial fans, and 5 percent blowout areas along the windward side of dunes. Included areas make up about 15 percent of the total acreage.

Permeability of this Kawich soil is very rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is very high. The soil is slightly saline throughout.

This unit is used for livestock grazing and wildlife habitat.

This unit can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available and the limitations of low available water capacity and the hazard of soil blowing are overcome.

The potential plant community on this unit is mainly shadscale, black greasewood, bud sagebrush, and bottlebrush squirreltail. The production of vegetation is limited by low available water capacity, low average annual precipitation, and the slight salinity of the soil. Livestock grazing should be managed to protect the unit from excessive soil blowing and to avoid overuse of the less sloping areas.

The suitability of this unit for rangeland seeding is very poor. The main limitations are the sandy texture and slight salinity of the soil.

This unit is limited for roads where slopes are more than 8 percent. During prolonged dry periods, roads are difficult to maintain because of the loose sand that results in poor traction and susceptibility to soil blowing. To improve trafficability when the soil is dry, roads should be provided with an adequate wearing surface.

This map unit is in capability subclasses IVs, irrigated, and VIIs, nonirrigated.

MA—Malpais-Rock outcrop association. This map unit is on low foothills and mountains. Slope is 50 to 75 percent. Elevation is 4,800 to 5,200 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 110 days.

This unit is 40 percent Malpais extremely stony loam, 50 to 75 percent slopes, 30 percent Rock outcrop, and 15 percent Rubble land. The Malpais soil is on north-facing slopes; Rock outcrop is mainly on the upper part of slopes, but a few small areas are tufa below geysers; and Rubble land is narrow stringers that extend downslope from the base of the areas of Rock outcrop.

Included in this unit are about 4 percent gently sloping to strongly sloping Rad soils on alluvial fans, 3 percent nearly level Beowawe soils on river terraces, and 3 percent soils, on terraces, that have a clayey subsoil and a weakly cemented hardpan. Also included are 3 percent clayey soils on low-lying hills and 2 percent gently sloping to moderately steep Tenabo soils on alluvial fans. Included areas make up about 15 percent of the total acreage.

The Malpais soil is very deep and well drained. It formed in colluvium derived dominantly from volcanic rock. Typically, the surface layer is light brownish gray extremely stony loam about 3 inches thick. The subsoil is pale brown very gravelly loam about 27 inches thick. The substratum to a depth of 60 inches or more is very pale brown very stony loam.

Permeabilty of the Malpais soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

Rock outcrop consists of exposed areas of bedrock along rims.

Rubble land consists of stringers of cobbles, stones, and boulders below the areas of Rock outcrop.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, spiny hopsage, and shadscale. The production of vegetation is limited by moderately low available water capacity and low average annual precipitation.

The suitability of this unit for rangeland seeding is very poor. The main limitations are very steep slopes and stones and cobbles on the surface.

Steepness of slope and stones on the surface limit access and movement of livestock on this unit. Livestock grazing should be managed to protect the unit from excessive erosion and to avoid overuse in the less sloping areas of the included soils. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing.

This unit is limited for roads because of steepness of slope. Stones and cobbles on the surface make it difficult to construct roads. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Malpais extremely stony loam is in capability subclass VIIs, nonirrigated, and Rock outcrop and Rubble land are in capability subclass VIIIs, nonirrigated.

Mc—Marsh-Crooked Creek complex. This map unit is on flood plains. Slope is 0 to 2 percent. Elevation is 5,200 to 5,800 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

This unit is 60 percent Marsh and 35 percent Crooked Creek silt loam. Marsh is in slightly depressional areas, and Crooked Creek soils are interspersed throughout the unit. The components of this complex are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit is about 3 percent drained Bicondoa soils that have a silty clay surface layer. These soils are in slightly higher lying areas along the outer edges of flood plains. Also included is about 2 percent Bicondoa soils that have a fine textured surface layer and are in slightly depressional areas of flood plains.

Marsh consists of many small areas of peat in slight depressions near streams and along the edge of springs and seeps. Water is at or above the surface most of the year. The native vegetation consists mainly of tules, sedges, Baltic rush, and cattails.

The Crooked Creek soil is very deep and poorly drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The upper 30 inches of the underlying material is very dark gray and black silty clay. The lower part to a depth of 60 inches or more is black silty clay loam.

Permeability of the Crooked Creek soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 12 to 18 inches from January to July. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Occasional, brief periods of flooding occur when the streamflow is high.

This unit is used for waterfowl habitat and some livestock grazing. It is not suited to irrigated hay, pasture, or cultivated crops unless it is drained and flood control structures are built. Some areas of Marsh are used for pasture in winter.

The potential plant community on the Crooked Creek soil is mainly tufted hairgrass, Nebraska sedge, and Baltic rush. The present vegetation in most areas is mainly tufted hairgrass and Baltic rush. The production of vegetation is limited by occasional periods of flooding in spring. The suitability of this soil for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding.

Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. Seeding of areas of the more favorable Crooked Creek soil is difficult because of their small size and the pattern in which they occur with the less favorable areas of Marsh. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is limited for roads because of free water at or near the surface of the areas of Marsh and because of the low load-bearing strength, the hazard of flooding, flooding, and the seasonal high water table of the Crooked Creek soil. Because these limitations are difficult to overcome, this unit should not be used for roads.

This map unit is in capability subclass VIw, nonirrigated.

ME—Mascamp-Carstump association. This map unit is on uplands and ridgetops. Slope is 4 to 50 percent. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 90 days.

This unit is 60 percent Mascamp very gravelly loam, 30 to 50 percent slopes, and 20 percent Carstump very gravelly loam, 4 to 30 percent slopes. The Mascamp soil is on the sides of uplands, and the Carstump soil is on ridgetops.

Included in this unit are about 9 percent moderately steep Ramires soils and 7 percent Singletree soils along the lower edges of north-facing slopes. Also included is 4 percent very deep, poorly drained, loamy soils that are along canyon bottoms and support meadow vegetation. Included areas make up about 20 percent of the total acreage.

The Mascamp soil is shallow and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is dark grayish brown and brown very gravelly loam about 13 inches thick. The subsoil is brown very gravelly clay loam about 6 inches thick. Unweathered bedrock is at a depth of 19 inches.

Permeability of the Mascamp soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to unweathered bedrock are 12 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Carstump soil is moderately deep and well drained. It formed in material weathered dominantly from chert and shale. Typically, the surface layer is grayish brown very gravelly loam about 4 inches thick. Below this is a layer of grayish brown gravelly loam about 11 inches thick. The subsoil is brown and yellowish brown very gravelly clay about 14 inches thick. Unweathered bedrock is at a depth of 29 inches.

Permeability of the Carstump soil is slow. Available water capacity is low. Effective rooting depth and depth to unweathered bedrock are 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Mascamp soil is mainly big sagebrush, phlox, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and Sandberg bluegrass. The production of vegetation is limited by the shallow rooting depth and the very low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth, very low available water capacity, and steepness of slope.

The potential plant community on the Carstump soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, cheatgrass, and Sandberg bluegrass. The production of vegetation is limited by the low available water capacity and the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation, the very gravelly texture of the surface layer, low available water capacity, and steepness of slope.

Steepness of slope limits access and movement of livestock on the Mascamp soil. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Carstump soil. Loss of the surface layer results in a severe decrease in productivity and in the potential of the Mascamp soil to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

Brush management is recommended in areas of the Carstump soil where unpalatable brush species have increased significantly from the potential plant community. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soil from erosion and provide a seed source. Range seeding can be applied on this soil when species adapted to the moderately low moisture supply are used. Seeding of areas of the more favorable Carstump soil is difficult, however, because of their small size and the pattern in which they occur with the less favorable Mascamp soil.

This unit is limited for roads because of steepness of slope and the shallow depth to bedrock of the Mascamp soil. Roads should be located in the less sloping areas,if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Mascamp soil, because of the underlying bedrock. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Mascamp soil is in capability subclass VIIe, nonirrigated, and the Carstump soil is in capability subclass VIs, nonirrigated.

Mf—McConnel gravelly fine sandy loam. This very deep, somewhat excessively drained soil is on alluvial fans. It formed in gravelly alluvium and some loess derived from mixed rock and volcanic ash. Slope is 0 to 2 percent. Elevation is 4,600 to 4,800 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is pale brown gravelly fine sandy loam about 5 inches thick. The subsoil is very pale brown gravelly fine sandy loam about 15 inches thick. The substratum to a depth of 60 inches or more is brown very gravelly coarse sand.

Included in this unit are about 5 percent Blackhawk soils on slightly higher lying knolls, 2 percent slightly salt- and alkali-affected Dunphy soils on the borders of drainageways and flood plains, 3 percent drained Dunphy soils that are slightly salt- and alkali-affected and are on stream terraces, and 5 percent gravelly, medium textured, frequently flooded soils along intermittent drainageways. Included areas make up about 15 percent of the total acreage.

Permeability of this McConnel soil is moderately rapid to a depth of 20 inches and very rapid below this depth. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly salt- and alkali-affected in some places below a depth of 20 inches.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and bluebunch wheatgrass. The present vegetation is mainly big sagebrush and bottlebrush squirreltail. The production of vegetation is limited by low available water capacity and the moderately low average annual precipitation. The included soils along intermittent drainageways produce more vegetation because of the runoff they receive from adjacent areas. The suitability of this unit for rangeland seeding is poor. The main limitations are the gravelly surface layer, the depth to very gravelly material, and the moderately low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by low available water capacity and the hazard of erosion when it is irrigated. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. Sprinkler irrigation is the most suitable method of applying water. Use of this method permits the even, controlled application of water, reduces runoff, and minimizes the risk of erosion. Applications of irrigation water should be adjusted to the available water capacity, the water intake rate, and the crop needs to avoid overirrigating and leaching of plant nutrients. Because this unit is droughty, light and frequent applications of irrigation water are needed. Maintaining crop residue on or near the surface reduces runoff, reduces soil blowing, and helps to maintain soil tilth and organic matter content.

This unit is well suited to roads. Roads should be provided with surface drainage.

This map unit is in capability subclasses IVs, irrigated, and VIIs, nonirrigated.

Mh—McConnel-Blackhawk complex. This map unit is on alluvial fans. Slopes are 0 to 2 percent. Elevation is 4,600 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free season is about 110 days.

This unit is 45 percent McConnel gravelly fine sandy loam and 45 percent Blackhawk gravelly loam. The McConnel soil is in slightly depressional areas and on lower lying parts of alluvial fans, and the Blackhawk soil is on slightly higher lying ridges of alluvial fans. The soils in this complex are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 5 percent Midas soils that are weakly cemented with silica and are scattered throughout the unit and 5 percent deep Midas soils along the base of slightly higher lying ridges. Included areas make up about 10 percent of the total acreage.

The McConnel soil is very deep and somewhat excessively drained. It formed in gravelly alluvium and some loess derived from mixed rock and volcanic ash. Typically, the surface layer is pale brown gravelly fine sandy loam about 5 inches thick. The subsoil is very pale brown gravelly fine sandy loam about 15 inches thick. The substratum to a depth of 60 inches or more is brown very gravelly coarse sand.

Permeability of the McConnel soil is moderately rapid to a depth of 20 inches and very rapid below this depth.

Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly salt- and alkali-affected in some places below a depth of 20 inches.

The Blackhawk soil is shallow and well drained. It formed in a thin mantle of loess overlying alluvium derived from mixed rock. Typically, the surface layer is light brownish gray gravelly loam about 6 inches thick. The subsoil is pale brown gravelly loam about 9 inches thick. The upper 4 inches of the substratum is a very pale brown hardpan that is strongly cemented with silica. The next 23 inches is light brownish gray very gravelly fine sandy loam, and the lower part to a depth of 60 inches or more is light brownish gray very gravelly sand.

Permeability of the Blackhawk soil is moderate above the hardpan. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 12 to 18 inches. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is strongly salt- and alkali-affected in the hardpan and in the lower part of the substratum.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available.

The potential plant community on the McConnel soil is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush and bottlebrush squirreltail. The production of vegetation is limited by low available water capacity and the low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

The potential plant community on the Blackhawk soil is mainly shadscale, bud sagebrush, bottlebrush squirreltail, and Indian ricegrass. The present vegetation in most areas is mainly shadscale, bud sagebrush, and some scattered areas of big sagebrush. The production of vegetation is limited by the shallow depth to the hardpan, very low available water capacity, and the low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow depth to the hardpan, very low available water capacity, and the low average annual precipitation.

Grazing on this unit should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is moderately limited for roads because of the strongly silica-cemented hardpan of the Blackhawk soil. Deep cuts should be avoided on the Blackhawk soil because of the underlying hardpan. To reduce maintenance costs, roads should be carefully located and should be provided with surface drainage.

This map unit is in capability subclasses IVs, irrigated, and VIIs, nonirrigated.

Mo—McConnel-Ocala complex. This map unit is on interfluves between major streams. Slope is 0 to 2 percent. Elevation is 4,400 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

This unit is 60 percent McConnel gravelly fine sandy loam and 35 percent Ocala silt loam, strongly saline. The McConnel soil is on slightly higher lying alluvial fans and knolls, and the Ocala soil is in lower lying areas and in depressional areas between knolls. The soils in this complex are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit is about 5 percent Dunphy soils that are slightly to strongly salt- and alkali-affected and are on the outer rims of depressional areas bordering knolls.

The McConnel soil is very deep and somewhat excessively drained. It formed in gravelly alluvium and some loess derived from mixed rock and volcanic ash. Typically, the surface layer is pale brown gravelly fine sandy loam about 5 inches thick. The subsoil is very pale brown gravelly fine sandy loam about 15 inches thick. The substratum to a depth of 60 inches or more is brown very gravelly coarse sand.

Permeability of the McConnel soil is moderately rapid to a depth of 20 inches and very rapid below this depth. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly salt- and alkali-affected in some places below a depth of 20 inches.

The Ocala soil is very deep and somewhat poorly drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is very pale brown silt loam about 15 inches thick. The upper 30 inches of the underlying material is light gray silt loam that is weakly cemented with silica. The lower part to a depth of 60 inches or more is white gravelly very fine sandy loam.

Permeability of the Ocala soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 36 to 42 inches from February to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Occasional, long periods of flooding occur when the streamflow is high. The soil is strongly salt- and alkali-affected to a depth of 45 inches and slightly salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat. It is not suited to irrigated crops because of the small size and irregular shape of areas of the favorable McConnel soil.

The potential plant community on the McConnel soil is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and bottlebrush squirreltail. The present vegetation in most areas is mainly big sagebrush and bottlebrush squirreltail. The production of vegetation is limited by low available water capacity and the low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

The potential plant community on the Ocala soil is mainly black greasewood, basin wildrye, and inland saltgrass. The present vegetation in most areas is mainly black greasewood, rubber rabbitbrush, and inland saltgrass. The production of vegetation is limited by the strongly salt- and alkali-affected surface layer, the low average annual precipitation, and occasional periods of flooding. The suitability of this soil for rangeland seeding is very poor. The main limitations are the strongly salt- and alkali-affected surface layer and the low average annual precipitation.

Grazing on this unit should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

The Ocala soil is limited for roads because of low load-bearing strength, occasional periods of flooding, and the susceptibility of the soil to frost heaving. The McConnel soil is well suited to roads. Proper location of roads is very important. To reduce maintenance costs, roads should be provided with surface drainage, adequate protection from flooding, and a stable base.

This map unit is in capability subclass VIIw, nonirrigated.

Mr—Midas silt loam. This very deep, well drained soil is on toe slopes of alluvial fans. It formed in a thin mantle of loess overlying alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,700 to 4,900 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 47 degrees F, and the average frost-free season is about 105 days.

Typically, the surface layer is pale brown silt loam about 4 inches thick. The subsoil is pale brown silt loam about 17 inches thick. The upper 9 inches of the substratum is pale brown and white very gravelly fine sandy loam that is weakly cemented with silica. The lower part, to a depth of 50 inches, is variegated very gravelly coarse sand.

Included in this unit is about 15 percent Midas soils that are deep to very gravelly sand. Areas of these soils are scattered throughout the unit.

Permeability of this Midas soil is slow. Available water capacity is moderate. Effective rooting depth is 50 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The upper 9 inches of the substratum is slightly salt- and alkali-affected.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly big sagebrush, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, bud sagebrush, and bottlebrush squirreltail. The production of vegetation is limited by moderate available water capacity and low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

This unit is moderately suited to irrigated hay, pasture, and crops. It is limited mainly by slow permeability, moderate available water capacity, and a silty surface layer that tends to crust, which adversely affects the water intake rate. Because of the slow permeability of the soil, the length of runs should be adjusted to permit adequate infiltration of water. Water should be applied slowly over a long period of time to insure that the rooting zone is properly wetted. Because the unit is droughty, frequent applications of irrigation water are needed. Crusting of the surface and compaction can be reduced by returning crop residue to the soil and by keeping tillage to a minimum.

This unit is suited to roads. It has few, if any, limitations. To reduce maintenance costs, roads should be provided with surface drainage.

This map unit is in capability subclasses IIIs, irrigated, and VIIs, nonirrigated.

Ms—Midas complex. This map unit is on toe slopes of alluvial fans. Slope is 0 to 2 percent. Elevation is 4,700 to 4,900 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 47 degrees F, and the average frost-free season is about 105 days.

This unit is 70 percent Midas silt loam, deep, and 25 percent Midas silt loam. The soils in this complex are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 3 percent gravelly to very gravelly, moderately coarse textured McConnel soils that are in areas throughout the unit and 2 percent Rad soils along shallow, intermittent drainageways. Included areas make up about 5 percent of the total acreage.

Midas silt loam, deep, is well drained. It formed in a thin mantle of loess overlying alluvium derived from mixed rock. Typically, the surface layer is pale brown silt loam about 4 inches thick. The subsoil is pale brown silt loam about 26 inches thick. The upper 18 inches of the substratum is pale brown and white very gravelly fine sandy loam that is weakly cemented with silica. The lower part to a depth of 50 inches is variegated very gravelly coarse sand.

Permeability of Midas silt loam, deep, is slow. Available water capacity is moderate. Effective rooting depth is 50 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The upper 18 inches of the substratum is slightly salt- and alkali-affected.

Midas silt loam is very deep and well drained. It formed in a thin mantle of loess overlying alluvium derived from mixed rock. Typically, the surface layer is pale brown silt loam about 4 inches thick. The subsoil is pale brown silt loam about 17 inches thick. The upper 9 inches of the substratum is pale brown and white very gravelly fine sandy loam that is weakly cemented with silica. The lower part to a depth of 50 inches is variegated very gravelly coarse sand.

Permeability of Midas silt loam is slow. Available water capacity is moderate. Effective rooting depth is 50 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The upper 9 inches of the substratum is slightly salt- and alkali-affected.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly big sagebrush, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, bud sagebrush, and bottlebrush squirreltail. The production of vegetation is limited by moderate available water capacity and the low average annual precipitation.

Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

This unit is moderately suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by slow permeability, moderate available water capacity, and a silty surface layer that tends to crust, which adversely affects the water intake rate. Because of the slow permeability of the soils in this unit, the length of irrigation runs should be adjusted to permit adequate infiltration of water. Water should be applied slowly over a long period of time to insure that the rooting zone is properly wetted. Because the unit is droughty, frequent applications of irrigation water are needed. Crusting of the surface and compaction can be reduced by returning crop residue to the soil and by keeping tillage to a minimum.

This unit is suited to roads. It has few, if any, limitations. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage.

This map unit is in capability subclasses IIs, irrigated, and VIIs, nonirrigated.

Oc—Ocala fine sandy loam. This very deep, somewhat poorly drained soil is on flood plains bordering stream channels. It formed in alluvium derived from mixed rock sources. Slope is 0 to 1 percent. Elevation is 4,400 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is about 110 days.

Typically, the surface layer is very pale brown fine sandy loam about 15 inches thick. The upper 30 inches of the underlying material is light gray silt loam that is weakly cemented with silica. The lower part to a depth of 60 inches or more is white gravelly very fine sandy loam.

Included in this unit are about 5 percent slightly salt- and alkali-affected Humboldt soils in remnant drainageways and in shallow depressional areas of flood plains, 5 percent Ocala soils in slightly depressional areas on the edges of flood plains, and 5 percent Cluro soils along the edges of flood plains on stream terraces. Included areas make up about 15 percent of the total acreage.

Permeability of this Ocala soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 36 to 42 inches from February to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is high. Occasional, long periods of flooding occur when the streamflow is high. The soil is slightly salt- and alkali-affected throughout.

This unit is used for livestock grazing and wildlife habitat.

This unit can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available and the limitations of slow permeability, moderate depth to the seasonal high water table, the slight salinity and alkalinity of the soil, and the high hazard of soil blowing are overcome.

The potential plant community on this unit is mainly black greasewood, basin wildrye, alkali sacaton, and inland saltgrass. The present vegetation in most areas is mainly creeping wildrye, basin wildrye, and inland saltgrass. The production of vegetation is limited by the slight salinity and alkalinity of the soil and the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is limited for roads because of low load-bearing strength, the hazard of flooding, and the susceptibility of the soil to frost heaving. To reduce maintenance costs, roads should be provided with surface and subsurface drainage, adequate protection from flooding, and a stable base.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Od—Ocala silt loam, drained, slightly saline. This very deep soil is on low stream terraces. It formed in alluvium derived from mixed rock sources. Slope is 0 to 1 percent. Elevation is 4,500 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is about 110 days.

Typically, the surface layer is very pale brown silt loam about 4 inches thick. The upper 12 inches of the underlying material is very pale brown silt loam. The lower part to a depth of 60 inches or more is very pale brown silt loam that is weakly cemented with silica in the upper part.

Included in this unit is about 15 percent Iron Blossom soils on toe slopes of alluvial fans.

Permeability of this Ocala soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 42 to 60 inches from February to May. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Drainage was altered when the water table lowered as a result of streams changing channel and channel entrenchment. Rare periods of flooding occur when the streamflow is extremely high. The soil is slightly salt- and alkali-affected to a depth of 16 inches and moderately salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available and the limitations of slow permeability and the content of salts and alkali areovercome.

The potential plant community on this unit is mainly black greasewood, basin wildrye, alkali sacaton, and inland saltgrass. The present vegetation in most areas is mainly rubber rabbitbrush, basin wildrye, and inland saltgrass. The production of vegetation is limited by the content of salts and alkali in the soil and the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is limited for roads because of low load-bearing strength, the hazard of flooding, and the susceptibility of the soil to frost heaving. To reduce maintenance costs, roads should be provided with surface and subsurface drainage and a stable base.

This map unit is in capability subclasses IIw, irrigated, and VIw, nonirrigated.

Og—Ocala silt loam, strongly saline. This very deep, somewhat poorly drained soil is on flood plains. It formed in alluvium derived from mixed rock sources. Slope is 0 to 1 percent. Elevation is 4,400 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is about 110 days.

Typically, the surface layer is very pale brown silt loam about 15 inches thick. The upper 30 inches of the underlying material is light gray silt loam that is weakly cemented with silica. The lower part, to a depth of 60 inches or more, is white gravelly very fine sandy loam.

Included in this unit is about 15 percent slightly salt- and alkali-affected Ocala soils in depressional areas and shallow drainageways.

Permeability of this Ocala soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 36 to 42 inches from February to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Occasional, long periods of flooding occur when the streamflow is high. The soil is strongly salt- and alkali-affected to a depth of 45 inches and slightly salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat. It is not suited to irrigated crops because of the high content of salts and alkali in the soil.

The potential plant community on this unit is mainly black greasewood, basin wildrye, and inland saltgrass. The present vegetation in most areas is mainly black greasewood, rubber rabbitbrush, and inland saltgrass. The production of vegetation is limited by the strong salinity and alkalinity of the soil and the low average annual precipitation.

If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion. Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is very poor. The main limitations are the strongly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is limited for roads because of low load-bearing strength, the hazard of flooding, and the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface and subsurface drainage, adequate protection from flooding, and a stable base.

This map unit is in capability subclass VIIw, nonirrigated.

Oh—Ocala silty clay loam, drained, strongly saline. This very deep soil is on low terraces along the toe slopes of broad alluvial fans. It formed in alluvium derived from mixed rock. Slope is 0 to 1 percent. Elevation is 4,500 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is about 110 days.

Typically, the surface layer is very pale brown silty clay loam about 4 inches thick. The upper 12 inches of the underlying material is very pale brown silty clay loam. The lower part to a depth of 60 inches or more is very pale brown silt loam that is weakly cemented with silica in the upper part.

Included in this unit are about 5 percent moderately well drained Iron Blossom soils on toe slopes of alluvial fans, 5 percent well drained Rosney soils on toe slopes of alluvial fans, and 5 percent Wholan soils on slightly higher lying parts of terraces. Included areas make up about 15 percent of the total acreage.

Permeability of this Ocala soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 42 to 60 inches from February to May. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Drainage was altered when the water table lowered as a result of streams changing channel and channel entrenchment. Rare periods of flooding occur when the streamflow is extremely high or during unusual weather conditions. The soil is strongly salt- and alkali-affected to a depth of 16 inches and moderately salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat. It is not suited to irrigated crops because of slow permeability and the high content of salts and alkali in the soil.

The potential plant community on this unit is mainly shadscale, black greasewood, and bottlebrush squirreltail. The present vegetation in most areas is mainly black greasewood and shadscale. The production of vegetation is limited by the strong salinity and alkalinity of the soil and the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the strongly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is limited for roads because of low load-bearing strength and the susceptibility of the soil to frost heaving. To reduce maintenance costs, roads should be provided with surface and subsurface drainage and a stable base.

This map unit is in capability subclass VIIw, nonirrigated.

Ok—Ocala silty clay loam, slightly saline. This very deep, somewhat poorly drained soil is on flood plains. It formed in alluvium derived from mixed rock sources. Slope is 0 to 1 percent. Elevation is 4,400 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is about 110 days.

Typically, the surface layer is very pale brown silty clay loam about 15 inches thick. The upper 30 inches of the underlying material is light gray silt loam that is weakly cemented with silica. The lower part to a depth of 60 inches or more is white gravelly very fine sandy loam.

Included in this unit are about 5 percent strongly salt- and alkali-affected Ocala soils in the slightly higher lying areas on flood plains, 5 percent Dunphy soils in areas bordering stream terraces, and 5 percent slightly salt- and alkali-affected Humboldt soils in remnant drainageways and shallow depressional areas of flood plains. Included areas make up about 15 percent of the total acreage.

Permeability of this Ocala soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 36 to 42 inches from February to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Occasional, long periods of flooding occur when the streamflow is high. The soil is slightly salt- and alkali-affected throughout.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available and the limitations of slow permeability, the seasonal high water table, and the slight salinity and alkalinity of the soil are overcome.

The potential plant community on this unit is mainly black greasewood, alkali sacaton, inland saltgrass, and basin wildrye. The present vegetation in most areas is mainly rubber rabbitbrush, basin wildrye, and inland saltgrass. The production of vegetation is limited by the slight salinity and alkalinity of the soil and the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is limited for roads because of low load-bearing strength, the hazard of flooding, and the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface and subsurface drainage, adequate protection from flooding, and a stable subgrade.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Om—Ocala complex, saline. This map unit is on flood plains. Slope is 0 to 1 percent. Elevation is 4,400 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is about 110 days.

This unit is 60 percent Ocala silty clay loam, slightly saline, and 35 percent Ocala silt loam, strongly saline. Ocala silty clay loam, slightly saline, is in slightly depressional areas, and Ocala silt loam, strongly saline, is in the slightly higher lying areas of flood plains. The soils in this complex are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit are about 2 percent Griver soils along stream channels and drainageways, 2 percent slightly salt- and alkali-affected Dunphy soils on the outer rims of flood plains bordering stream terraces, and 1 percent strongly salt- and alkali-affected Dunphy soils in slightly higher lying areas of flood plains bordering stream terraces. Included areas make up about 5 percent of the total acreage.

Ocala silty clay loam, slightly saline, is very deep and somewhat poorly drained. It formed in alluvium derived from mixed rock sources. Typically, the surface layer is very pale brown silty clay loam about 15 inches thick. The upper 30 inches of the underlying material is light gray silt loam that is weakly cemented with silica. The lower part to a depth of 60 inches or more is white gravelly very fine sandy loam.

Permeability of this soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 36 to 42 inches from February to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Occasional, long periods of flooding occur when the streamflow is high. The soil is slightly salt- and alkali-affected throughout.

Ocala silt loam, strongly saline, is very deep and somewhat poorly drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is very pale brown silt loam about 15 inches thick. The upper 30 inches of the underlying material is light gray silt loam that is weakly cemented with silica. The lower part to a depth of 60 inches or more is white gravelly very fine sandy loam.

Permeability of this soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 36 to 42 inches from February to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Occasional, long periods of flooding occur when the streamflow is high. The soil is strongly salt- and alkali-affected to a depth of 45 inches and slightly salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on Ocala silty clay loam, slightly saline, is mainly black greasewood, basin wildrye, alkali sacaton, and inland saltgrass. The present vegetation in most areas is mainly basin wildrye and inland saltgrass. The production of vegetation is limited by the slight salinity and alkalinity of the soil and the low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and the low average annual precipitation.

The potential plant community on Ocala silt loam, strongly saline, is mainly black greasewood, basin wildrye, and inland saltgrass. The present vegetation in most areas is mainly black greasewood, rubber rabbitbrush, and inland saltgrass. The production of vegetation is limited by the strongly salt- and alkali-affected surface layer and the low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the strongly salt- and alkali-affected surface layer and the low average annual precipitation.

If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion. Grazing should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock.

This unit is limited for roads because of low load-bearing strength, the hazard of flooding, and the susceptibility of the soils to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface and subsurface drainage, adequate protection from flooding, and a stable subgrade.

This map unit is in capability subclass VIIw, nonirrigated.

OP—Ocala-Playa association. This map unit is on flood plains. Slope is 0 to 1 percent. Elevation is 4,400 to 4,700 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 50 degrees F, and the average frost-free period is about 110 days.

This unit is 50 percent Ocala silt loam, strongly saline; 20 percent Ocala silty clay loam, drained, strongly saline; and 20 percent Playa. Ocala silt loam is on flood plains, Ocala silty clay loam is on small, higher lying knolls along the edges of flood plains, and Playa is shallow, depressional areas on flood plains throughout the unit.

Included in mapping, and making up about 5 percent of the unit, are Beowawe soils on remnant alluvial fans and terraces along the edge of flood plains. Broyles soils on alluvial fans and terraces along the edge of flood plains also make up 5 percent of the unit. Included areas make up about 10 percent of the total acreage.

Ocala silt loam is very deep and somewhat poorly drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is very pale brown silt loam about 4 inches thick. The underlying material to a depth of 60 inches or more is light gray silt loam that is weakly cemented with silica in the upper part.

Permeability of Ocala silt loam is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 36 to 42 inches from February to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Occasional, long periods of flooding occur when the streamflow is high. The soil is strongly salt- and alkali-affected to a depth of 4 inches and slightly to moderately salt- and alkali-affected below this depth.

Ocala silty clay loam is very deep and drained. Drainage was altered when the water table lowered as a result of streams changing channel and channel entrenchment. The soil formed in alluvium derived from mixed rock. Typically, the surface layer is very pale brown silty clay loam about 9 inches thick. The underlying material to a depth of 60 inches or more is very pale brown silty clay loam that is weakly cemented with silica in the upper part.

Permeability of Ocala silty clay loam is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 42 to 60 inches from February to May. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Rare periods of flooding occur when the streamflow is extremely high. The soil is strongly salt- and alkali-affected to a depth of about 9 inches and moderately salt- and alkali-affected below this depth.

Playa consists of nearly level, stratified silts and clays in basins. These areas have no external drainage. The high content of salts prevents growth of plants. The water infiltration rate and permeability are very slow. Water from rainfall and runoff from higher lying areas ponds in these areas for a short period and then evaporates.

This unit is used for livestock grazing and wildlife habitat. It is not suited to irrigated crops because of the high content of salts and alkali.

The potential plant community on Ocala silt loam is mainly black greasewood, basin wildrye, and inland saltgrass. The present vegetation in most areas is mainly black greasewood, rubber rabbitbrush, and inland saltgrass. The production of vegetation is limited by the slight salinity and alkalinity of the soil and the low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the strongly salt- and alkali-affected surface layer and the low average annual precipitation.

The potential plant community on Ocala silty clay loam is mainly shadscale, black greasewood, and bottlebrush squirreltail. The present vegetation in most areas is mainly black greasewood and shadscale. The production of vegetation is limited by the strongly salt- and alkali-affected surface layer and the low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the strongly salt- and alkali-affected surface layer and the low average annual precipitation.

If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is limited for roads because of low load-bearing strength, the susceptibility of the soils to frost heaving, and the hazard of flooding on Ocala silt loam. Roads should be located in areas that are not subject to flooding. To reduce maintenance costs, roads should be provided with surface and subsurface drainage and a stable base.

The Ocala soils are in capability subclass VIIw, nonirrigated, and Playa is in capability subclass VIIIw, nonirrigated.

ORC—Orovada fine sandy loam, 4 to 15 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived from mixed volcanic rock and loess that is high in content of volcanic ash. Elevation is 4,900 to 5,100 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 45 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light brownish gray fine sandy loam about 5 inches thick. The subsoil is light gray and pale brown fine sandy loam about 13 inches thick. The substratum to a depth of 60 inches or more is stratified, pale brown and light brownish gray very fine sandy loam and silt loam. It has some durinodes.

Included in this unit is about 15 percent gently sloping to moderately sloping Rad soils along the lower edges of alluvial fans and terraces.

Permeability of this Orovada soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is high. The substratum is slightly to moderately salt- and alkali-affected.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Indian ricegrass. The present vegetation in most areas is mainly big sagebrush and Sandberg bluegrass. The production of vegetation is limited by the moderately low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

This unit is moderately suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by slope, the hazard of excessive water erosion, and a high hazard of soil blowing. Sprinkler irrigation is the most suitable method of applying water. Use of this method permits the even, controlled application of water, reduces runoff, and minimizes the risk of erosion. The risk of sheet and rill erosion on the steeper slopes can be reduced by the use of gradient terraces and contour farming. Maintaining crop residue on or near the surface reduces runoff, reduces soil blowing, and helps to maintain soil tilth and organic matter content.

This unit is moderately limited for roads because of low load-bearing strength, the susceptibility of the soil to frost heaving, and slopes that are more than 8 percent. Roads should be located in the less sloping areas to minimize cuts and fills. To reduce maintenance costs, roads should be provided with surface drainage and a stable base.

This map unit is in capability subclasses IIIe, irrigated, and VIc, nonirrigated.

OSB—Orovada gravelly fine sandy loam, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived from mixed volcanic rock and loess that is high in content of volcanic ash. Elevation is 4,700 to 5,200 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 45 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light brownish gray gravelly fine sandy loam about 5 inches thick. The subsoil is light grayish brown and pale brown fine sandy loam about 13 inches thick. The substratum to a depth of 60 inches or more is stratified, pale brown and light brownish gray very fine sandy loam and silt loam. It has some durinodes.

Included in this unit are about 10 percent Bosco soils on narrow bottom lands and alluvial fans that are drained by intermittent channels and about 5 percent Welch soils in low-lying, wet areas adjacent to stream channels. Included areas make up about 15 percent of the total acreage.

Permeability of this Orovada soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The substratum is slightly to moderately salt- and alkali-affected.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Indian ricegrass. The present vegetation in most areas is mainly big sagebrush. The production of vegetation is limited by the moderately low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation and the gravelly surface layer.

This unit is well suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by slope and the hazard of excessive erosion. Sprinkler irrigation is the most suitable method of applying water. Use of this method permits the even, controlled application of water, reduces runoff, and minimizes the risk of erosion. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Maintaining crop residue on or near the surface reduces runoff, reduces soil blowing, and helps to maintain soil tilth and organic matter content.

This unit is moderately limited for roads because of low load-bearing strength. To reduce maintenance costs, roads should be provided with surface drainage and a stable base.

This map unit is in capability subclasses IIe, irrigated, and VIc, nonirrigated.

OtA—Orovada silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived from mixed volcanic rock and loess that is high in content of volcanic ash. Elevation is 4,800 to 5,600 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 45 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light brownish gray silt loam about 9 inches thick. The subsoil is light gray and pale brown fine sandy loam about 21 inches thick. The substratum to a depth of 60 inches or more is stratified, pale brown and light brownish gray very fine sandy loam and silt loam. It has some durinodes.

Included in this unit is about 15 percent gently sloping Orovada gravelly fine sandy loam on the upper parts of alluvial fans and adjacent to stream channels.

Permeability of this Orovada soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The substratum is slightly to moderately salt- and alkali-affected.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush. The production of vegetation is limited by the moderately low average annual precipitation and the silty surface layer that tends to crust, which adversely affects the water intake rate.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

This unit is well suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by the silty surface layer. Furrow, border, corrugation, and sprinkler irrigation systems are suited to this unit. The method used generally is governed by the crop. Water should be applied slowly over a long period to insure that the rooting zone is properly wetted. Crusting of the surface and compaction can be reduced by returning crop residue to the soil and by keeping tillage to a minimum.

This unit is moderately limited for roads because of low load-bearing strength. To reduce maintenance costs, roads should be provided with surface drainage and a stable base.

This map unit is in capability subclasses IIc, irrigated, and VIc, nonirrigated.

OU—Orovada-Humdun association. This map unit is on upland terraces and alluvial fans. Slope is 4 to 30 percent. Elevation is 4,900 to 5,300 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 46 degrees F, and the average frost-free season is about 100 days.

This unit is 50 percent Orovada fine sandy loam, 4 to 15 percent slopes; 20 percent Humdun silt loam, 15 to 30 percent slopes; and 15 percent Puett fine sandy loam, 15 to 30 percent slopes. The Orovada soil is in lower lying, less sloping areas of alluvial fans, the Humdun soil is on the north-facing slopes of alluvial fans and terraces, and the Puett soil is in the higher lying, steeper areas of upland alluvial fans and terraces.

Included in this unit are about 10 percent Badland that consists of soft tuff and supports sparse vegetation and about 5 percent very deep, gravelly, loamy soils along intermittent drainageways. Included areas make up about 15 percent of the total acreage.

The Orovada soil is very deep and well drained. It formed in alluvium derived from mixed volcanic rock and loess that is high in content of volcanic ash. Typically, the surface layer is light brownish gray fine sandy loam about 5 inches thick. The subsoil is light gray and pale brown fine sandy loam about 13 inches thick. The substratum to a depth of 60 inches or more is stratified, pale brown and light brownish gray very fine sandy loam and silt loam. It has some durinodes.

Permeability of the Orovada soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is high. The substratum is slightly to moderately salt- and alkali-affected.

The Humdun soil is very deep and well drained. It formed in loess that is moderate in content of volcanic ash and is underlain by alluvium and residuum derived from soft tuff. Typically, the surface layer is grayish brown silt loam about 8 inches thick. The subsoil is light brownish gray and pale brown silt loam about 22 inches thick. The substratum to a depth of 60 inches or more is pale brown silt loam. It has some durinodes.

Permeability of the Humdun soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

The Puett soil is shallow and well drained. It formed in residuum derived from tuff and tuffaceous sandstone. Typically, this soil is light brownish gray fine sandy loam about 18 inches deep over weathered tuff.

Permeability of the Puett soil is moderately rapid. Available water capacity is very low. Effective rooting depth and depth to weathered bedrock are 10 to 20 inches. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat. It is poorly suited to irrigated crops because individual areas of the more favorable Orovada soils are too small to manage separately.

The potential plant community on the Orovada and Humdun soils is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Thurber needlegrass, and Sandberg bluegrass. The production of vegetation is limited by the moderately low average annual precipitation and moisture loss because of medium runoff on the Humdun soil. The suitability of these soils for rangeland seeding is poor. The main limitations are the moderately low average annual precipitation and steepness of slope on the Humdun soil.

The potential plant community on the Puett soil is mainly big sagebrush, black sagebrush, Indian ricegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush and basin wildrye. The production of vegetation is limited by shallow rooting depth, very low available water capacity, water loss because of medium runoff, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are shallow rooting depth and very low available water capacity.

Grazing on this unit should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Livestock grazing should be managed to protect the Puett soil from excessive erosion, which results in a significant decrease in productivity. Large areas of the more favorable Orovada and Humdun soils can be seeded, but small areas of the less favorable Puett soil should be avoided. Range seeding can be applied on this unit when species adapted to the moderately low moisture supply are used.

This unit is limited for roads mainly because of steepness of slope. Roads should be located with care. They should be designed to provide surface drainage and to minimize cuts and fills. Deep cuts should be avoided, especially on the Puett soil, because of the underlying bedrock. To minimize erosion and reduce maintenance costs, disturbed areas should be stabilized.

The Orovada soil is in capability subclass VIc, nonirrigated; the Humdun soil is in capability subclass VIe, nonirrigated; and the Puett soil is in capability subclass VIIe, nonirrigated.

OV—Orovada-Puett association. This map unit is on alluvial fans and upland terraces. Slope is 4 to 30 percent. Elevation is 5,000 to 5,300 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 46 degrees F, and the average frost-free season is about 110 days.

This unit is 50 percent Orovada fine sandy loam, 4 to 15 percent slopes, and 35 percent Puett fine sandy loam, 15 to 30 percent slopes. The Orovada soil is on alluvial fans, and the Puett soil is on the upper parts of upland alluvial terraces.

Included in this unit is about 15 percent barren areas of Badland.

The Orovada soil is very deep and well drained. It formed in alluvium derived from mixed rock and loess that is high in content of volcanic ash. Typically, the surface layer is light brownish gray fine sandy loam about 5 inches thick. The subsoil is light gray and pale brown fine sandy loam about 13 inches thick. The substratum to a depth of 61 inches is stratified, pale brown and light brownish gray very fine sandy loam and silt loam. It has some durinodes.

Permeability of the Orovada soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is high.

The substratum is slightly to moderately salt- and alkali-affected.

The Puett soil is shallow and well drained. It formed in residuum derived from tuff and tuffaceous sandstone. Typically, the soil is light brownish gray fine sandy loam about 18 inches deep over weathered tuff.

Permeability of the Puett soil is moderately rapid. Available water capacity is very low. Effective rooting depth and depth to weathered bedrock are 10 to 20 inches. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat. It is not suited to irrigated crops because of the small size and irregular shape of areas of the more favorable Orovada soils.

The potential plant community on the Orovada soil is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush and Sandberg bluegrass. The production of vegetation is limited by the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

The potential plant community on the Puett soil is mainly big sagebrush, black sagebrush, Indian ricegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush and basin wildrye. The production of vegetation is limited by the shallow rooting depth, very low available water capacity, steepness of slope, and moisture loss because of medium runoff. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and very low available water capacity.

Grazing on this unit should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Livestock grazing should be managed to protect the Puett soil from excessive erosion, which results in a significant decrease in productivity. Large areas of the more favorable Orovada soil can be seeded, but the less favorable Puett soil should be avoided. Range seeding can be applied on this unit when species adapted to the moderately low moisture supply are used.

This unit is limited for roads mainly because of steepness of slope on the Puett soil. It is also limited by low load-bearing strength, the susceptibility of the soils to frost heaving, and slopes of more than 8 percent on the Orovada soil. Roads should be located with care. They should be designed to provide surface drainage and to minimize cuts and fills. Deep cuts should be avoided, especially on the Puett soil, because of the underlying bedrock. To minimize erosion and reduce maintenance costs, disturbed areas should be stabilized.

The Orovada soil is in capability subclass VIc, nonirrigated, and the Puett soil is in capability subclass VIIe, nonirrigated.

OW—Orovada-Puett-Ferdelford association. This map unit is on alluvial fans and terraces. Slope is 4 to 75 percent. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 46 degrees F, and the average frost-free season is about 100 days.

This unit is 50 percent Orovada fine sandy loam, 4 to 15 percent slopes; 20 percent Puett fine sandy loam, 15 to 30 percent slopes; and 20 percent Ferdelford very gravelly clay loam, 50 to 75 percent slopes. The Orovada soil is in lower lying areas of alluvial fans, and the Puett and Ferdelford soils are on the sides of upland terraces.

Included in this unit are about 3 percent moderately deep, moderately steep Boulflat soils that are gravelly, medium textured, and on the sides of uplands; and 2 percent shallow, very gravelly Brock soils that are moderately fine textured and are on the sides of uplands. Also included is about 2 percent barren areas of Rock outcrop and Badland in the higher lying areas of the unit. Included areas make up about 10 percent of the total acreage.

The Orovada soil is very deep and well drained. It formed in alluvium derived from mixed volcanic rock and loess that is high in content of volcanic ash. Typically, the surface layer is light brownish gray fine sandy loam about 5 inches thick. The subsoil is light gray and pale brown fine sandy loam about 13 inches thick. The substratum to a depth of 60 inches or more is stratified, pale brown and light brownish gray very fine sandy loam and silt loam. It has some durinodes.

Permeability of the Orovada soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is high. The substratum is slightly to moderately salt- and alkali-affected.

The Puett soil is shallow and well drained. It formed in residuum derived from tuff and tuffaceous sandstone. Typically, the soil is light brownish gray fine sandy loam about 18 inches deep over weathered tuff.

Permeability of the Puett soil is moderately rapid. Available water capacity is very low. Effective rooting depth and depth to weathered bedrock are 10 to 20 inches. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

The Ferdelford soil is moderately deep and well drained. It formed in residuum derived from interbedded tuffaceous sandstone, tuff, and shale. Typically, the surface layer is grayish brown very gravelly clay loam about 3 inches thick. The upper 11 inches of the underlying material is pale brown sandy clay loam. The lower part to a depth of 26 inches is variegated gravelly sandy clay loam. Weathered tuff is at a depth of 26 inches.

Permeability of the Ferdelford soil is moderately slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is very rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat. It is not suited to irrigated crops because of the small size and irregular shape of areas of the favorable Orovada soils.

The potential plant community on the Orovada soil is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

The potential plant community on the Puett soil is mainly big sagebrush, black sagebrush, Indian ricegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush and basin wildrye. The production of vegetation is limited by the shallow rooting depth, very low available water capacity, and moisture loss because of medium runoff. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and very low available water capacity.

The potential plant community on the Ferdelford soil is mainly Utah juniper, big sagebrush, Indian ricegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly Utah juniper, Douglas rabbitbrush, and cheatgrass. The production of vegetation is limited by low available water capacity and very rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Grazing on this unit should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Livestock grazing should be managed to protect the Puett and Ferdelford soils from excessive erosion that results in a significant decrease in productivity. Steepness of slope limits access by livestock and promotes overgrazing in the less sloping areas. Seeding of areas of the more favorable Orovada soil is difficult because of their small size and the pattern in which they occur with the less favorable Puett and Ferdelford soils.

This unit is limited for roads mainly because of steepness of slope on the Puett and Ferdelford soils. Roads should be located with care. They should be designed to provide surface drainage and to minimize cuts and fills. Deep cuts should be avoided, especially on the Puett soil, because of the depth to the underlying bedrock. To minimize erosion and reduce maintenance costs, disturbed areas should be stabilized.

The Orovada soil is in capability subclass VIc, nonirrigated; the Puett soil is in capability subclass VIIe, nonirrigated; and the Ferdelford soil is in capability subclass VIIe, nonirrigated.

PC—Pie Creek-Susie Creek association. This map unit is on uplands. Slope is 4 to 30 percent. Elevation is 5,500 to 6,300 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 90 days.

This unit is 40 percent Pie Creek loam, 15 to 30 percent slopes; 20 percent Susie Creek loam, 4 to 15 percent slopes; and 20 percent Toeja loam, 15 to 30 percent slopes. The Pie Creek soil is on side slopes, the Susie Creek soil is on ridge crests and the upper parts of side slopes, and the Toeja soil is in slightly depressional stringers of ridge crests and side slopes.

Included in this unit are about 8 percent Pattani soils near the bottom of slopes and in ridge saddles, 6 percent Chen soils on ridge crests near areas of Rock outcrop, 3 percent Rock outcrop, and 3 percent deep, poorly drained, loamy soils along narrow drainageways. Included areas make up about 20 percent of the total acreage.

The Pie Creek soil is moderately deep and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is grayish brown loam about 5 inches thick. The upper 16 inches of the subsoil is brown and pale brown fine clay, and the lower 14 inches is pale brown clay. Unweathered bedrock is at a depth of 35 inches.

Permeability of the Pie Creek soil is very slow. Available water capacity is moderate. Effective rooting depth and depth to unweathered bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Susie Creek soil is deep and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is grayish brown loam about 12 inches thick. The subsoil is brown clay about 13 inches thick. The substratum is pale brown loam to light gray coarse sandy loam about 32 inches thick. It is weakly cemented with silica in the lower part. Weathered tuff is at a depth of 57 inches.

Permeability of the Susie Creek soil is slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Toeja soil is deep and well drained. It formed in loess that is high in content of volcanic ash and is underlain by residuum derived dominantly from tuff. Typically, the surface layer is grayish brown loam about 13 inches thick. The subsoil is brown clay loam about 18 inches thick. The substratum is pale brown loam to very gravelly coarse sandy loam about 17 inches thick over weathered tuff. It is weakly cemented with silica.

Permeability of the Toeja soil is moderately slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Pie Creek soil is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly low sagebrush, Sandberg bluegrass, bottlebrush squirreltail, and Thurber needlegrass. The production of vegetation is limited by the moderate available water capacity, the shallow depth to the clay subsoil, and the moderate average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the shallow depth to the clay subsoil and steepness of slope.

The potential plant community on the Susie Creek soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and bottlebrush squirreltail. The production of vegetaton is limited by the shallow depth to the clay subsoil and the moderate average annual precipitation. The suitability of this soil for rangeland seeding is fair. The main limitations are the moderate average annual precipitation and the shallow depth to the clay subsoil.

The potential plant community on the Toeja soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The production of vegetation is limited by moisture loss because of rapid runoff and the moderate average annual precipitation. The suitability of this soil for rangeland seeding is fair. The main limitations are steepness of slope and moderate average annual precipitation.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Susie Creek soil. Loss of the surface layer results in a significant decrease in productivity and in the potential of the Pie Creek soil to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

Brush management is needed in areas of the Susie Creek and Toeja soils where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soils from erosion and provide a seed source. Range seeding is feasible on this unit when adapted species and suitable seeding methods are used. Seeding of areas of the more favorable Susie Creek and Toeja soils is difficult because of their small size and the pattern in which they occur with the less favorable Pie Creek soil.

This unit is limited for roads because of steepness of slope on the Pie Creek and Toeja soils and the clayey subsoil of the Pie Creek and Susie Creek soils. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. To improve trafficability, roads also need to be provided with a stable base and an adequate wearing surface.

The Pie Creek soil is in capability subclass VIIe, nonirrigated; the Susie Creek soil is in capability subclass VIs, nonirrigated; and the Toeja soil is in capability subclass VIe, nonirrigated.

Pk—Pocker silt loam. This very deep, moderately well drained soil is on terraces. It formed in alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light gray silt loam and pale brown sandy loam about 10 inches thick. The upper 36 inches of the underlying material is light gray clay. The lower part to a depth of 60 inches or more is white clay. It has concretions of lime.

Included in this unit are about 10 percent slightly salt- and alkali-affected Iron Blossom soils on toe slopes of terraces and 5 percent strongly salt- and alkali-affected Iron Blossom soils in shallow depressional areas. Included areas make up about 15 percent of the total acreage.

Permeability of this Pocker soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 5 to 6 feet from March to July. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is moderately salt- and alkali-affected to a depth of 10 inches and strongly salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, or cultivated crops if water for irrigation is made available and the limitation of the moderately salt- and alkali-affected surface layer is overcome.

The potential plant community on this unit is mainly big sagebrush and basin wildrye. The present vegetation in most areas is mainly black greasewood, big sagebrush, and basin wildrye. The production of vegetation is limited by the moderately salt- and alkali-affected surface layer and low average annual precipitation.

The suitability of this unit for rangeland seeding is very poor. The main limitations are the moderately salt- and alkali-affected surface layer and low average annual precipitation. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is limited for roads because of the clayey underlying material. To reduce maintenance costs, roads should be provided with surface drainage, an adequate wearing surface, and a stable base.

This map unit is in capability subclasses IVs, irrigated, and VIIs, nonirrigated.

PM—Primeaux-Packer association. This map unit is on mountainsides. Slope is 15 to 50 percent. Elevation is 6,500 to 7,500 feet. The average annual precipitation is about 16 inches, the average annual air temperature is about 42 degrees F, and the average frost-free period is about 60 days.

This unit is 40 percent Primeaux gravelly loam, 15 to 30 percent slopes; 20 percent Packer very cobbly loam, 15 to 30 percent slopes; and 20 percent Tusel very gravelly loam, 30 to 50 percent slopes. The Primeaux soil is on the south- and west-facing slopes, the Packer soil is on mountain ridges, and the Tusel soil is on the north-facing slopes.

Included in this unit are about 7 percent deep, very gravelly soils along the lower edges of slopes, 6 percent Hapgood soils in small, concave areas on north-facing slopes, 3 percent Rock outcrop along ridgetops, and 2 percent deep, loamy, wet soils in drainageways. Also included is 2 percent springs and seeps at the heads and along the edges of drainageways. Included areas make up about 20 percent of the total acreage.

The Primeaux soil is moderately deep and well drained. It formed in residuum derived from chert, quartzite, shale, and some loess that contains volcanic ash. Typically, the surface layer is dark grayish brown gravelly loam about 11 inches thick. The upper 9 inches of the subsoil is brown clay loam, and the lower 15 inches is brown very gravelly loam. Unweathered chert is at a depth of 35 inches.

Permeability of the Primeaux soil is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to bedrock are 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Packer soil is deep and well drained. It formed in material weathered dominantly from chert and quartzite. Typically, the surface layer is grayish brown very cobbly loam about 9 inches thick. The subsoil is brown very cobbly clay loam about 4 inches thick. The substratum, to a depth of 50 inches, is light yellowish brown and brown very cobbly sandy loam.

Permeability of the Packer soil is moderate. Available water capacity is low. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Tusel soil is very deep and well drained. It formed in material derived from quartzite, chert, shale, and some loess that is high in content of pyroclastic material. Typically, the surface layer is dark grayish brown very gravelly loam about 17 inches thick. The subsoil is brown very gravelly clay loam to pale brown very gravelly sandy clay loam about 33 inches thick.

Permeability of the Tusel soil is moderately slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Primeaux soil is mainly big sagebrush, bluebunch wheatgrass, and Idaho fescue. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and basin wildrye. The production of vegetation is limited by the short growing season and cold temperatures in spring. The suitability of this soil for rangeland seeding is fair. The main limitations are the gravelly surface layer and steepness of slope.

The potential plant community on the Packer soil is mainly low sagebrush, Idaho fescue, Sandberg bluegrass, and bottlebrush squirreltail. The present vegetation in most areas is mainly low sagebrush, buckwheat, common pricklygilia, and Sandberg bluegrass. The production of vegetation is limited by the very cobbly surface layer, low available water capacity, and loss of moisture because of the drying action of the wind. The suitability of this soil for rangeland seeding is poor. The main limitations are cobbles on the surface, low available water capacity, and loss of moisture because of the drying action of the wind.

The potential plant community on the Tusel soil is mainly big sagebrush, antelope bitterbrush, Idaho fescue, and snowberry. The present vegetation in most areas is mainly big sagebrush, snowberry, slender wheatgrass, and lupine. The production of vegetation is limited by the short growing season. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Steepness of slope limits access and movement of livestock on the Tusel soil. Livestock grazing should be managed to protect the unit from excessive erosion and to avoid overuse in the less sloping areas of the Primeaux and Packer soils. Loss of the surface layer results in a significant decrease in productivity and in the potential of the Primeaux soil to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

Brush management is needed in areas of the Primeaux and Packer soils where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soils from erosion and provide a seed source. Range seeding is feasible on this unit if adapted species and suitable seeding methods are used. Seeding of areas of the more favorable Primeaux and Packer soils in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Tusel soil.

This unit is limited for roads because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Primeaux soil is in capability subclass VIe, nonirrigated; the Packer soil is in capability subclass VIIs, nonirrigated; and the Tusel soil is in capability subclass VIIe, nonirrigated.

PS—Puett-Orovada association. This map unit is on dissected terraces, alluvial fans, and upland escarpments. Slope is 4 to 30 percent. Elevation is 5,200 to 5,400 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 110 days.

This unit is 60 percent Puett fine sandy loam, 15 to 30 percent slopes, and 25 percent Orovada fine sandy loam, 4 to 15 percent slopes. The Puett soil is on eroded upland escarpments, and the Orovada soil is on alluvial fans and terraces at the base of escarpments and along drainageways.

Included in this unit are about 10 percent nearly level to gently sloping Orovada soils on alluvial fans and 5 percent highly calcareous Triplen soils in areas throughout the dissected terraces. Included areas make up about 15 percent of the total acreage.

The Puett soil is shallow and well drained. It formed in residuum derived dominantly from tuff and tuffaceous sandstone. Typically, the Puett soil is light brownish gray fine sandy loam about 18 inches deep over weathered tuff.

Permeability of the Puett soil is moderately rapid. Available water capacity is very low. Effective rooting depth and depth to weathered bedrock are 10 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is high.

The Orovada soil is very deep and well drained. It formed in alluvium derived dominantly from mixed rock and loess that is high in content of volcanic ash. Typically, the surface layer is light brownish gray fine sandy loam about 5 inches thick. The subsoil is light gray and pale brown fine sandy loam about 13 inches thick. The substratum to a depth of 61 inches or more is stratified, pale brown and light brownish gray very fine sandy loam and silt loam. It has some durinodes.

Permeability of the Orovada soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is high. The substratum is slightly to moderately salt- and alkali-affected.

This unit is used for livestock grazing and wildlife habitat. It is not suited to irrigated crops because of the small size and irregular shape of areas of the more favorable Orovada soil.

The potential plant community on the Puett soil is mainly big sagebrush, black sagebrush, Indian ricegrass, and basin wildrye. The present vegetation in most areas is mainly gray horsebrush, spiny hopsage, Indian ricegrass, and cheatgrass. The production of vegetation is limited by the shallow rooting depth, very low available water capacity, and the loss of moisture because of runoff. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and very low available water capacity.

The potential plant community on the Orovada soil is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, bottlebrush squirreltail, and Indian ricegrass. The production of vegetation is limited by the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

Livestock grazing should be managed to protect the unit from excessive erosion. Loss of the surface layer on the Puett soil results in a significant decrease in productivity and in the potential of the soil to produce vegetation suitable for grazing. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding of areas of the more favorable Orovada soil is difficult because of their small size and the pattern in which they occur with the less favorable Puett soil.

This unit is limited for roads mainly because of steepness of slope on the Puett soil. It is also limited by low load-bearing strength, susceptibility to frost heaving, and slopes of more than 8 percent on the Orovada soil. Roads should be located with care. They should be designed to provide surface drainage and to minimize cuts and fills. Deep cuts should be avoided, especially on the Puett soil, because of the depth to underlying bedrock. To minimize erosion and reduce maintenance costs, disturbed areas should be stabilized.

The Puett soil is in capability subclass VIIe, nonirrigated, and the Orovada soil is in capability subclass VIc, nonirrigated.

RaA—Rad silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in loess overlying loamy alluvium derived from mixed rock. Elevation is 4,400 to 5,000 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is pale brown silt loam about 8 inches thick. The subsoil is pale brown loam about 12 inches thick. The upper 10 inches of the substratum is light gray and white very fine sandy loam that is weakly cemented with silica. The lower part to a depth of 60 inches or more is very pale brown silt loam.

Included in this unit are about 5 percent Orovada soils in low-lying areas adjacent to intermittent drainageways and 5 percent gently sloping Rad soils along the upper parts of alluvial fans. Included areas make up about 10 percent of the total acreage.

Permeability of this Rad soil is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly to moderately salt- and alkali-affected below a depth of 18 inches.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly big sagebrush, spiny hopsage, Sandberg bluegrass, and Indian ricegrass. The present vegetation in most areas is mainly big sagebrush. The production of vegetation is limited by the moderately low average annual precipitation and the silty surface layer that tends to crust, which adversely affects the water intake rate.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation. Range seeding can be applied on this unit if species adapted to the moderately low moisture supply are used.

This unit is well suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by the tendency of the silty surface layer to crust and slow permeability. Because of the slow permeability, the length of irrigation runs should be adjusted to permit adequate infiltration of water. Water should be applied slowly over a long period of time to insure that the rooting zone is properly wetted. Crusting of the surface and compaction can be reduced by returning crop residue to the soil and by keeping tillage to a minimum.

This unit is moderately limited for roads because of low load-bearing strength. To reduce maintenance costs, roads should be designed to provide surface drainage and a stable subgrade.

This map unit is in capability subclasses IIc, irrigated, and VIc, nonirrigated.

RaB—Rad silt loam, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in loess overlying loamy alluvium derived from mixed rock sources. Elevation is 4,600 to 5,000 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is pale brown silt loam about 8 inches thick. The subsoil is pale brown loam about 10 inches thick. The upper 27 inches of the substratum is light gray and white very fine sandy loam that is weakly cemented with silica. The lower part to a depth of 60 inches or more is very pale brown silt loam.

Included in this unit are about 5 percent moderately coarse textured, gently sloping Orovada soils on alluvial fans, 5 percent nearly level Orovada soils on toe slopes of alluvial fans, and 5 percent nearly level Rad soils on alluvial fans. Included areas make up about 15 percent of the total acreage.

Permeability of this Rad soil is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly to moderately salt- and alkali-affected below a depth of 18 inches.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly big sagebrush, spiny hopsage, Sandberg bluegrass, and Indian ricegrass. The present vegetation in most areas is mainly big sagebrush and bud sagebrush. The production of vegetation is limited by the moderately low average annual precipitation and the silty surface layer that tends to crust, which adversely affects the water intake rate.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation. Range seeding can be applied on this unit if species adapted to the moderately low moisture supply are used.

This unit is well suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by steepness of slope, slow permeability, and the tendency of the silty surface layer to crust. Because of the slow permeability, the length of irrigation runs should be adjusted to permit adequate infiltration of water. If furrow or corrugation irrigation systems are used, runs should be on the contour or across the slope. Water should be applied slowly over a long period of time to insure that the rooting zone is properly wetted. Crusting of the surface and compaction can be reduced by returning crop residue to the soil and by keeping tillage to a minimum.

This unit is moderately limited for roads because of low load-bearing strength. To reduce maintenance costs, roads should be provided with surface drainage and a stable subgrade.

This map unit is in capability subclasses IIe, irrigated, and VIc, nonirrigated.

RAC—Rad silt loam, 2 to 8 percent slopes. This very deep, well drained soil is on alluvial fans and terraces. It formed in loess overlying loamy alluvium derived from mixed rock sources. Elevation is 4,800 to 5,000 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is pale brown silt loam about 6 inches thick. The subsoil is pale brown loam about 12 inches thick. The upper 27 inches of the substratum is light gray and white very fine sandy loam that is weakly cemented with silica. The lower part to a depth of 60 inches or more is very pale brown silt loam.

Included in this unit is about 10 percent Orovada soils along drainageways.

Permeability of this Rad soil is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is slightly to moderately salt- and alkali-affected below a depth of 18 inches.

Most areas of this unit are used for livestock grazing and wildlife habitat. This unit can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available and the limitations of slope, slow permeability, and the tendency of the silty surface layer to crust are overcome.

The potential plant community on this unit is mainly big sagebrush, spiny hopsage, Indian ricegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush and bud sagebrush. The production of vegetation is limited by the moderately low average annual precipitation and the silty surface layer that tends to crust, which adversely affects the water intake rate.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation. Range seeding can be applied on this unit if species adapted to the moderately low moisture supply are used.

This unit is moderately limited for roads because of low load-bearing strength. To reduce maintenance costs, roads should be provided with surface drainage and a stable subgrade.

This map unit is in capability subclasses IIIe, irrigated, and VIc, nonirrigated.

RbB—Rad silt loam, slightly alkali, 0 to 4 percent slopes. This very deep, well drained soil is on slightly higher lying remnants of terraces. It formed in loess overlying loamy alluvium derived from mixed rock sources. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light brownish gray silt loam about 7 inches thick. The subsoil is pale brown silt loam about 10 inches thick. The upper 15 inches of the substratum is pale brown silt loam. The lower part to a depth of 60 inches or more is pale brown silt loam. The substratum is weakly cemented with silica.

Included in this unit are about 5 percent nearly level Rad soils in the lower lying areas of terraces and 5 percent gently sloping Rad soils in the higher lying areas of terraces. These soils support big sagebrush. Included areas make up about 10 percent of the total acreage.

Permeability of this Rad soil is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is slightly alkali-affected in the upper 17 inches. It is slightly or moderately saline and strongly alkali below this depth.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available. It is limited by slow permeability and slight alkalinity where slopes are 0 to 2 percent and by the hazard of erosion where slopes are 2 to 4 percent.

The potential plant community on this unit is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale. The production of vegetation is limited by the slightly alkali-affected surface layer, moderately low average annual precipitation, and the silty surface layer that tends to crust, which adversely affects the water intake rate.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is poor. The main limitations are the slightly alkali-affected surface layer and the moderately low average annual precipitation.

This unit is moderately limited for roads because of low load-bearing strength. To reduce maintenance costs, roads should be provided with surface drainage and a stable subgrade.

This map unit is in capability subclasses IIe, irrigated, and VIIc, nonirrigated.

RC—Rad association. This map unit is on low alluvial terraces near major streams. Slope is 0 to 8 percent. Elevation is 4,600 to 5,000 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 110 days.

This unit is 70 percent Rad silt loam, slightly alkali, 0 to 4 percent slopes, and 20 percent Rad silt loam, 2 to 8 percent slopes. Rad silt loam, slightly alkali, is on the upper parts of alluvial terraces, and Rad silt loam is on sides of alluvial fans and terrace breaks.

Included in this unit is about 5 percent nearly level Rad soils that are along intermittent drainageways and support big sagebrush. Also included is 5 percent deep, gravelly and sandy soil material on the sides of terrace escarpments. Included areas make up about 10 percent of the total acreage.

Rad silt loam, slightly alkali, is very deep and well drained. It formed in loess overlying loamy alluvium derived from mixed rock sources. Typically, the surface layer is light brownish gray silt loam about 7 inches thick. The subsoil is pale brown silt loam about 10 inches thick. The upper 15 inches of the substratum is pale brown silt loam. The lower part to a depth of 60 inches or more is pale brown silt loam. The substratum is weakly cemented with silica.

Permeability of Rad silt loam, slightly alkali, is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is slightly alkali-affected to a depth of 17 inches and is slightly saline and strongly alkali below this depth.

Rad silt loam is very deep and well drained. It formed in loess overlying loamy alluvium derived from mixed rock sources. Typically, the surface layer is pale brown silt loam about 6 inches thick. The subsoil is pale brown loam about 12 inches thick. The upper 27 inches of the substratum is light gray and white very fine sandy loam that is weakly cemented with silica. The lower part to a depth of 60 inches or more is very pale brown silt loam.

Permeability of Rad silt loam is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is moderately salt- and alkali-affected below a depth of 18 inches.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and cultivated crops.

The potential plant community on Rad silt loam, slightly alkali, is mainly shadscale and bud sagebrush. The present vegetation in most areas is mainly shadscale. The production of vegetation is limited by the slightly alkali surface layer, the moderately low average annual precipitation, and the silty surface layer that tends to crust, which adversely affects the water intake rate. The suitability of this soil for rangeland seeding is very poor. The main limitation is the slightly alkali surface layer.

The potential plant community on Rad silt loam is mainly big sagebrush, spiny hopsage, Indian ricegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush and bud sagebrush. The production of vegetation is limited by the moderately low average annual precipitation and the silty surface layer that tends to crust, which adversely affects the water intake rate. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding areas of the more favorable Rad silt loam is difficult because of their small size and the pattern in which they occur with the less favorable Rad silt loam, slightly alkali.

If this unit is used for irrigated hay, pasture, or cultivated crops, the main limitations are slow permeability, the hazard of soil blowing, and the alkalinity of Rad silt loam, slightly alkali. The length of runs should be adjusted to permit adequate infiltration of water. If furrow or corrugation irrigation is used, runs should be on the contour or across the slope. Water should be applied slowly over a long period of time to insure that the rooting zone is properly wetted. Crusting of the surface and compaction can be reduced by returning crop residue to the soil and by keeping tillage to a minimum. If Rad silt loam, slightly alkali, is used for irrigated crops, the content of toxic salts can be reduced by leaching, applying proper amounts of soil amendments, and returning crop residue to the soil.

This unit is moderately limited for roads because of low bearing strength. To reduce maintenance costs, roads should be designed to provide surface drainage and a stable subgrade.

Rad silt loam, slightly alkali, is in capability subclasses IIe, irrigated, and VIIc, nonirrigated; and Rad silt loam is in capability subclasses IIIe, irrigated, and VIc, nonirrigated.

Rd—Rad-Blackhawk complex. This map unit is on alluvial fans. Slope is 0 to 2 percent. Elevation is 4,600 to 4,900 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 50 degrees F, and the average frost-free season is about 110 days.

This unit is 55 percent Rad silt loam and 40 percent Blackhawk gravelly loam. The soils in this complex are so intricately intermingled that it was not practical to map them separately at the scale used.

Included in this unit is about 3 percent stringers of slightly saline Rad soils that are along toe slopes of alluvial fans and support shadscale. Also included is 2 percent Midas soils along drainageways and toe slopes of alluvial fans. Included areas make up about 5 percent of the total acreage.

The Rad soil is very deep and well drained. It formed in loess overlying loamy alluvium derived from mixed rock. Typically, the surface layer is pale brown silt loam about 6 inches thick. The subsoil is pale brown loam about 12 inches thick. The upper 27 inches of the substratum is light gray and white very fine sandy loam that is weakly cemented with silica. The lower part to a depth of 60 inches or more is very pale brown silt loam.

Permeability of the Rad soil is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is moderately salt- and alkali-affected below a depth of 18 inches.

The Blackhawk soil is shallow and well drained. It formed in a thin mantle of loess overlying alluvium derived from mixed rock. Typically, the surface layer is light brownish gray gravelly loam about 6 inches thick. The subsoil is pale brown gravelly loam about 9 inches thick. The upper 4 inches of the substratum is a very pale brown hardpan that is strongly cemented. The next 23 inches is light brownish gray very gravelly fine sandy loam. The lower part to a depth of 60 inches or more is light brownish gray very gravelly sand.

Permeability of the Blackhawk soil is moderate above the hardpan. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 12 to 18 inches. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is strongly salt- and alkali-affected below the hardpan.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available.

The potential plant community on the Rad soil is mainly big sagebrush, spiny hopsage, Indian ricegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush. The production of vegetation is limited by the moderately low average annual precipitation and the silty texture of the surface layer that tends to crust, which adversely affects the water intake rate. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation. Range seeding can be applied on this soil if species adapted to the moderately low moisture supply are used.

The potential plant community on the Blackhawk soil is mainly shadscale, bud sagebrush, bottlebrush squirreltail, and Indian ricegrass. The present vegetation in most areas is mainly shadscale and bud sagebrush. The production of vegetation is limited by the shallow depth to the hardpan, very low available water capacity, and low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are shallow depth to the hardpan, very low available water capacity, and low average annual precipitation.

Grazing on this unit should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding areas of the more favorable Rad soil is difficult because of their small size and the pattern in which they occur with the less favorable Blackhawk soil.

This unit is moderately limited for roads because of the low load-bearing strength of the Rad soil and the strongly silica-cemented hardpan of the Blackhawk soil. To minimize erosion and reduce maintenance costs, roads should be provided with drainage, an adequate wearing surface, and a stable subgrade.

This map unit is in capability subclasses IVs, irrigated, and VIIs, nonirrigated.

RE—Rad-Brock association. This map unit is on terraces. Slope is 2 to 30 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 47 degrees F, and the average frost-free season is about 110 days.

This unit is 60 percent Rad silt loam, 2 to 8 percent slopes, and 20 percent Brock cobbly loam, 4 to 30 percent slopes. The Rad soil is on the tops of terraces, and the Brock soil is on terrace breaks and the sides of terraces.

Included in this unit is about 15 percent Orovada soils on north-facing slopes and along drainageways and about 5 percent Boulflat soils along the upper parts of terraces at higher elevations. Included areas make up about 20 percent of the total acreage.

The Rad soil is very deep and well drained. It formed in loess overlying loamy alluvium derived from mixed rock. Typically, the surface layer is pale brown silt loam about 6 inches thick. The subsoil is pale brown loam about 12 inches thick. The upper 27 inches of the substratum is light gray and white very fine sandy loam that is weakly cemented with silica. The lower part to a depth of 60 inches is very pale brown silt loam.

Permeability of the Rad soil is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is moderately salt- and alkali-affected below a depth of 18 inches.

The Brock soil is shallow and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray cobbly loam about 5 inches thick. The subsoil is light gray very gravelly sandy clay loam about 9 inches thick. An indurated, silica-cemented hardpan is at a depth of 14 inches.

Permeability of the Brock soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 8 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. It is slightly to moderately salt- and alkali-affected in the hardpan.

This unit is used for livestock grazing and wildlife habitat. It is not suited to irrigated hay, pasture, or cultivated crops because of steepness of slope and the small size and irregular shape of areas of the more favorable Rad soil.

The potential plant community on the Rad soil is mainly big sagebrush, spiny hopsage, Indian ricegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush and bud sagebrush. The production of vegetation is limited by the moderately low average annual precipitation and the silty surface layer that tends to crust, which adversely affects the water intake rate. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation. Range seeding can be applied on this soil if species adapted to the moderately low moisture supply are used.

The potential plant community on the Brock soil is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, spiny hopsage, and Sandberg bluegrass. The production of vegetation is limited by very low available water capacity and the shallow depth to the hardpan. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and very low available water capacity.

Grazing on this unit should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Loss of the surface layer of the Brock soil results in a significant decrease in productivity and in the potential to produce vegetation suitable for grazing. Seeding areas of the more favorable Rad soil is difficult because of their small size and the pattern in which they occur with the less favorable Brock soil.

This unit is limited for roads mainly because of steepness of slope in areas of the Brock soil. It is also limited by the low load-bearing strength of the Rad soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Brock soil, because of the depth to the underlying hardpan. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Rad soil is in capability subclass VIc, nonirrigated, and the Brock soil is in capability subclass VIIs, nonirrigated.

RF—Ramires-Chen-Bobs association. This map unit is on upland terraces and mountainsides. Slope is 4 to 50 percent. Elevation is 6,000 to 7,000 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 90 days.

This unit is 40 percent Ramires gravelly loam, 30 to 50 percent slopes; 20 percent Chen cobbly loam, 15 to 30 percent slopes; and 20 percent Bobs gravelly loam, 4 to 15 percent slopes. The Ramires soil is on the upper parts of mountainous uplands, the Chen soil is on intermediate parts of mountainous uplands, and the Bobs soil is on the lower lying upland terraces.

Included in this unit are about 10 percent steep Taylor Creek soils on the north-facing slopes of mountainous uplands, 5 percent Rock outcrop on intermediate parts of mountainsides, and 5 percent moderately steep Pie Creek soils on upland terraces. Included areas make up about 20 percent of the total acreage.

The Ramires soil is moderately deep and well drained. It formed in residuum derived from tuff, rhyolite, and loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown gravelly loam about 6 inches thick. The subsoil is grayish brown gravelly clay to pale brown gravelly sandy clay about 18 inches thick. The substratum is white sandy loam about 6 inches thick. Unweathered bedrock is at a depth of 30 inches.

Permeability of the Ramires soil is slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Chen soil is shallow and well drained. It formed in residuum derived from volcanic rock and some loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown cobbly loam about 8 inches thick. The subsoil is grayish brown and brown very gravelly clay about 9 inches thick. Bedrock is at a depth of 17 inches.

Permeability of the Chen soil is very slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 12 to 20 inches. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Bobs soil is shallow and well drained. It formed in loamy alluvium derived dominantly from limestone. Typically, the surface layer is grayish brown gravelly loam about 4 inches thick. The underlying material, to a depth of 12 inches, is grayish brown gravelly loam. An indurated, lime-cemented hardpan is at a depth of 12 inches.

Permeability of the Bobs soil is moderate. Available water capacity is very low. Effective rooting depth and depth to the indurated hardpan are 10 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ramires soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by low available water capacity and the loss of moisture because of runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Chen soil is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, bluebunch wheatgrass, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by very low available water capacity and the shallow rooting depth. The suitability of this soil for rangeland seeding is poor. The main limitations are the shallow rooting depth, the cobbly surface layer, and steepness of slope.

The potential plant community on the Bobs soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, antelope bitterbrush, and bluebunch wheatgrass. The production of vegetation is limited by the shallow rooting depth, very low available water capacity, and the moderate average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and very low available water capacity.

Livestock grazing should be managed to protect the unit from excessive erosion. Loss of the surface layer of the Chen and Bobs soils results in a significant decrease in productivity and in the potential of these soils to produce vegetation suitable for grazing. Steepness of slope limits access by livestock on the Ramires soil and promotes overgrazing in the less sloping areas. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding areas of the more favorable Chen soil is difficult because of their small size and the pattern in which they occur with the less favorable Ramires and Bobs soils.

This unit is limited for roads because of slope and the clayey subsoil of the Ramires soil, slope and the depth to bedrock of the Chen soil, and the indurated, lime-cemented hardpan of the Bobs soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Chen and Bobs soils, because of the depth to the underlying bedrock and hardpan. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Ramires soil is in capability subclass VIIe, nonirrigated, and the Chen and Bobs soils are in capability subclass VIIs, nonirrigated.

RG—Ramires-Chen-Pie Creek association. This map unit is on upland hills. Slope is 15 to 30 percent. Elevation is 5,500 to 6,200 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 90 days.

This unit is 40 percent Ramires very stony loam, 20 percent Chen cobbly loam, and 20 percent Pie Creek very cobbly loam. The Ramires soil is on hillsides, the Chen soil is on the higher parts of hillsides, and the Pie Creek soil is on the lower parts of hillsides.

Included in this unit are about 10 percent Ramires soils that have a gravelly surface layer and are scattered throughout areas of the Ramires soil, 5 percent small areas of Pie Creek soils that do not have cobbles and are scattered throughout areas of the Chen and Pie Creek soils, and 5 percent areas of Rock outcrop that are scattered throughout the unit. Included areas make up about 20 percent of the total acreage.

The Ramires soil is moderately deep and well drained. It formed in residuum derived from tuff, rhyolite, and loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown very stony loam about 9 inches thick. The subsoil is grayish brown gravelly clay to pale brown gravelly sandy clay about 17 inches thick. The substratum is white sandy loam about 8 inches thick. Unweathered bedrock is at a depth of 34 inches.

Permeability of the Ramires soil is slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

The Chen soil is shallow and well drained. It formed in residuum derived from volcanic rock and some loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown cobbly loam about 8 inches thick. The subsoil is grayish brown and brown very gravelly clay about 9 inches thick. Bedrock is at a depth of 17 inches.

Permeability of the Chen soil is very slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 12 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

The Pie Creek soil is moderately deep and well drained. It formed in residuum derived from tuff. Typically, the surface layer is grayish brown and light brownish gray very cobbly loam about 5 inches thick. The upper 16 inches of the subsoil is brown and pale brown fine clay, and the lower 9 inches is pale brown clay. Bedrock is at a depth of 30 inches.

Permeability of the Pie Creek soil is very slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ramires soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by low available water capacity and the loss of moisture because of runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is the very stony surface layer.

The potential plant community on the Chen soil is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, bluebunch wheatgrass, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the very low available water capacity and the shallow rooting depth. The suitability of this soil for rangeland seeding is poor. The main limitations are the shallow rooting depth, the cobbly surface layer, and steepness of slope.

The potential plant community on the Pie Creek soil is mainly low sagebrush, bluebunch wheatgrass, Sandberg bluegrass, and Thurber needlegrass. The present vegetation in most areas is mainly low sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. The production of vegetation is limited by the low available water capacity and loss of moisture because of runoff. The suitability of this soil for rangeland seeding is poor. The main limitations are the very cobbly surface layer and steepness of slope.

Livestock grazing should be managed to protect the unit from excessive erosion. Loss of the surface layer of the Chen and Pie Creek soils results in a significant decrease in productivity and in the potential of these soils to produce vegetation suitable for grazing. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding of areas of the more favorable Chen and Pie Creek soils in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Ramires soil.

This unit is limited for roads because of steepness of slope, the clayey subsoil, and the depth to bedrock of the Chen soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Chen soil, because of the depth to the underlying bedrock. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be designed to provide surface drainage.

The Ramires soil is in capability subclass VIs, nonirrigated, and the Chen and Pie Creek soils are in capability subclass VIIs, nonirrigated.

RH—Ramires-Creva association. This map unit is on uplands. Slope is 4 to 30 percent. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

This unit is 65 percent Ramires gravelly clay loam, 15 to 30 percent slopes, and 25 percent Creva gravelly loam, 4 to 30 percent slopes. The Ramires soil is on the sides of uplands, and the Creva soil is on ridge crests.

Included in this unit are about 2 percent moderately steep Taylor Creek soils on north-facing slopes, 3 percent moderately steep Ramires soils that have a cobbly and stony surface layer and are on side slopes, and 5 percent Rock outcrop along ridgetops. Included areas make up about 10 percent of the total acreage.

The Ramires soil is moderately deep and well drained. It formed in residuum derived from tuff, rhyolite, and loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown gravelly clay loam about 9 inches thick. The subsoil is grayish brown gravelly clay to pale brown gravelly sandy clay about 17 inches thick. The substratum is white sandy loam about 8 inches thick. Unweathered bedrock is at a depth of 34 inches.

Permeability of the Ramires soil is slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

The Creva soil is shallow and well drained. It formed in residuum derived from welded tuff and rhyolite. Typically, the surface layer is light brownish gray gravelly loam about 5 inches thick. The subsoil is light brownish gray gravelly clay loam about 14 inches thick. Bedrock is at a depth of 19 inches.

Permeability of the Creva soil is slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 4 to 20 inches. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ramires soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by the low available water capacity and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are steepness of slope and moderately low average annual precipitation.

The potential plant community on the Creva soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, littleleaf horsebrush, and Sandberg bluegrass. The production of vegetation is limited by the shallow rooting depth and very low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and very low available water capacity.

Livestock grazing should be managed to protect the unit from excessive erosion. Loss of the surface layer of the Creva soil results in a significant decrease in productivity and in the potential of the soil to produce vegetation suitable for grazing. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding of areas of the more favorable Ramires soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Creva soil.

This unit is limited for roads because of steepness of slope, the clayey subsoil of the Ramires soil, and the shallow depth to bedrock of the Creva soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Creva soil, because of the depth to the underlying bedrock. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Ramires soil is in capability subclass VIe, nonirrigated, and the Creva soil is in capability subclass VIIe, nonirrigated.

RH2—Ramires-Creva association, eroded. This map unit is on uplands. Slope is 4 to 50 percent. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

This unit is 60 percent Ramires gravelly loam, 30 to 50 percent slopes, eroded, and 20 percent Creva gravelly loam, 4 to 30 percent slopes. The Ramires soil is on the sides of uplands, and the Creva soil is on ridge crests.

Included in this unit are about 10 percent moderately steep Ramires soils on north-facing slopes, 5 percent steep Taylor Creek soils on north-facing slopes, and 5 percent shallow Chen soils that have a cobbly surface layer and are on ridge crests. Included areas make up about 20 percent of the total acreage.

The Ramires soil is moderately deep and well drained. It formed in residuum derived from tuff, rhyolite, and loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown gravelly loam about 6 inches thick. The subsoil is grayish brown gravelly clay to pale brown gravelly sandy clay about 18 inches thick. The substratum is white sandy loam about 6 inches thick. Unweathered bedrock is at a depth of 30 inches. About 25 to 75 percent of the original surface layer has been removed by water erosion.

Permeability of the Ramires soil is slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Creva soil is shallow and well drained. It formed in residuum derived from welded tuff and rhyolite. Typically, the surface layer is light grayish brown gravelly loam about 5 inches thick. The subsoil is light brownish gray gravelly clay loam about 14 inches thick. Bedrock is at a depth of 19 inches.

Permeability of the Creva soil is slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 4 to 20 inches. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ramires soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by low available water capacity and eroded areas. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Creva soil is mainly big sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, littleleaf horsebrush, and Sandberg bluegrass. The production of vegetation is limited by the shallow rooting depth, very low available water capacity, and loss of moisture because of medium runoff. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and very low available water capacity.

Livestock grazing should be managed to protect the unit from excessive erosion. Loss of the surface layer of the Creva soil results in a significant decrease in productivity and in the potential of the soil to produce vegetation suitable for grazing. Steepness of slope limits access by livestock and promotes overgrazing of the less sloping areas. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Rangeland seeding on this unit is not practical.

This unit is limited for roads because of steepness of slope, the clayey subsoil of the Ramires soil, and the shallow depth to bedrock of the Creva soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Creva soil, because of the underlying bedrock. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

This map unit is in capability subclass VIIe, nonirrigated.

RK—Ramires-Creva association, stony. This map unit is on uplands. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

This unit is 60 percent Ramires very stony loam, 15 to 30 percent slopes, and 25 percent Creva gravelly loam, 4 to 30 percent slopes. The Ramires soil is on the sides of uplands, and the Creva soil is on ridge crests.

Included in this unit is about 15 percent deep, moderately steep Bucan soils on the sides of uplands.

The Ramires soil is moderately deep and well drained. It formed in residuum derived from tuff, rhyolite, and loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown very stony loam about 9 inches thick. The subsoil is grayish brown gravelly clay to pale brown gravelly sandy clay about 17 inches thick. The substratum is white sandy loam about 8 inches thick. Unweathered bedrock is at a depth of 34 inches.

Permeability of the Ramires soil is slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Creva soil is shallow and well drained. It formed in residuum derived from welded tuff and rhyolite. Typically, the surface layer is light grayish brown gravelly loam about 5 inches thick. The subsoil is light brownish gray gravelly clay loam about 14 inches thick. Bedrock is at a depth of 19 inches.

Permeability of the Creva soil is slow. Available water capacity is very low. Effective rooting depth is 4 to 20 inches. Runoff is medium, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ramires soil is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by low available water capacity, moisture loss because of medium runoff, and moderate rainfall. The suitability of this soil for rangeland seeding is very poor. The main limitation is the very stony surface layer.

The potential plant community on the Creva soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, littleleaf horsebrush, and Sandberg bluegrass. The production of vegetation is limited by the shallow rooting depth, very low available water capacity, loss of moisture because of medium runoff, and moderate rainfall. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth and very low available water capacity.

Livestock grazing should be managed to protect the unit from excessive erosion. Loss of the surface layer of the Creva soil results in a significant decrease in productivity and in the potential of the soil to produce vegetation suitable for grazing. Grazing on this unit should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is limited for roads because of steepness of slope, the clayey subsoil of the Ramires soil, and the shallow depth to bedrock of the Creva soil. Stones on the surface of the Ramires soil make it difficult to construct roads. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Creva soil, because of the depth to the underlying bedrock. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Ramires soil is in capability subclass VIs, nonirrigated, and the Creva soil is in capability subclass VIIe, nonirrigated.

RL—Ramires-Singletree association. This map unit is on uplands. Slope is 30 to 75 percent. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 90 days.

This unit is 40 percent Ramires gravelly loam, 30 to 50 percent slopes, and 40 percent Singletree gravelly loam, 50 to 75 percent slopes. The Ramires soil is on south-facing slopes, and the Singletree soil is on north-facing slopes.

Included in this unit are about 5 percent moderately steep Ramires soils on south-facing slopes, 5 percent very deep, steep Taylor Creek soils on north-facing slopes, 5 percent steep Singletree soils that have a medium textured surface layer and are on north-facing slopes, and 5 percent deep, gravelly and loamy soils along canyon bottoms and drainageways. Included areas make up about 20 percent of the total acreage.

The Ramires soil is moderately deep and well drained. It formed in residuum derived from tuff, rhyolite, and loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown gravelly loam about 6 inches thick. The subsoil is grayish brown gravelly clay to pale brown gravelly sandy clay about 18 inches thick. The substratum is white sandy loam about 6 inches thick. Unweathered bedrock is at a depth of 30 inches.

Permeability of the Ramires soil is slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Singletree soil is deep and well drained. It formed in residuum derived from mixed volcanic rock, volcanic ash, and loess. Typically, the surface layer is dark grayish brown gravelly loam about 17 inches thick. The subsoil is brown clay loam about 15 inches thick. The substratum is light brownish gray sandy loam to pale brown sandy clay loam about 17 inches thick. Soft tuff is at a depth of 49 inches.

Permeability of the Singletree soil is moderately slow. Available water capacity is moderate. Effective rooting depth is 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ramires soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by low available water capacity and moisture loss because of rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Singletree soil is mainly bluebunch wheatgrass, Idaho fescue, big sagebrush, and antelope bitterbrush. The present vegetation in most areas is mainly big sagebrush, bluebunch wheatgrass, Idaho fescue, and antelope bitterbrush. The production of vegetation is limited by cold temperatures in spring, moderate available water capacity, and moisture loss because of rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Livestock grazing should be managed to protect the unit from excessive erosion. Steepness of slope limits access by livestock and promotes overgrazing of the less sloping areas. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soils are warm and the plants have achieved sufficient growth.

This unit is limited for roads because of steepness of slope and the clayey subsoil of the Ramires soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

This map unit is in capability subclass VIIe, nonirrigated.

RM—Ramires-Taylor Creek association. This map unit is on uplands. Slope is 30 to 50 percent. Elevation is 5,700 to 6,500 feet. The average annual precipitation is about 13 inches, the average annual air temperature is about 43 degrees F, and the average frost-free season is about 90 days.

This unit is 40 percent Ramires gravelly loam and 40 percent Taylor Creek loam. The Ramires soil is on the warmer south-facing slopes. The Taylor Creek soil is on the higher lying and cooler north-facing slopes.

Included in this unit are about 10 percent Singletree soils along the lower edges of slopes, 5 percent moderately steep Ramires soils, and 5 percent Chen soils on ridge crests. Included areas make up about 20 percent of the total acreage.

The Ramires soil is moderately deep and well drained. It formed in residuum derived from tuff, rhyolite, and loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown gravelly loam about 6 inches thick. The subsoil is grayish brown gravelly clay to pale brown gravelly sandy clay about 18 inches thick. The substratum is white sandy loam about 6 inches thick. Unweathered bedrock is at a depth of 30 inches.

Permeability of the Ramires soil is slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Taylor Creek soil is very deep and well drained. It formed in residuum derived from mixed volcanic rock. Typically, the surface layer is grayish brown loam about 15 inches thick. The upper 25 inches of the subsoil is pale brown gravelly fine clay, and the lower 20 inches is pale brown gravelly clay.

Permeability of the Taylor Creek soil is very slow. Available water capacity is high. Effective rooting depth and depth to bedrock is 60 to 80 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ramires soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by low available water capacity and moisture loss because of rapid runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Taylor Creek soil is mainly big sagebrush, bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and Idaho fescue. The production of vegetation is limited by cold temperatures in spring and the short growing season. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Livestock grazing should be managed to protect the unit from excessive erosion. Loss of the surface layer results in a significant decrease in productivity and in the potential of the Taylor Creek soil to produce vegetation suitable for grazing. Steepness of slope limits access by livestock and promotes overgrazing of the less sloping areas. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Rangeland seeding on this unit is not practical.

This unit is limited for roads because of steepness of slope and the clayey subsoil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Roads located on this unit are difficult to maintain because the soils are clayey and have low strength when wet. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be designed to provide surface drainage.

This map unit is in capability subclass VIIe, nonirrigated.

Rn—Rixie silty clay loam, drained, slightly saline. This very deep, drained soil is on flood plains bordering streams. It formed in alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is gray silty clay loam about 10 inches thick. The underlying material to a depth of 60 inches or more is stratified, light gray silt loam, silty clay loam, and silty clay. It is weakly cemented with silica in some places.

Included in this unit is about 10 percent somewhat poorly drained Rixie soils that are strongly salt- and alkali-affected. These soils are in depressional areas near the outer edges of flood plains. Also included is 5 percent somewhat poorly drained Rixie soils that are slightly saline. These soils are in depressional areas of flood plains, and they support creeping wildrye. Included areas make up about 15 percent of the total acreage.

Permeability of this Rixie soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 4 to 6 feet from February to July. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Drainage was altered when the water table lowered as a result of streams changing channel and channel entrenchment. Rare, brief periods of flooding occur when the streamflow is extremely high. The soil is slightly salt- and alkali-affected throughout except following the brief periods of flooding, when the surface layer is free of salts.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for meadow hay following periods of flooding or during periods when precipitation in spring is higher than normal. A few small areas are used for irrigated meadow hay and pasture.

The potential plant commuity on this unit is mainly black greasewood, inland saltgrass, alkali sacaton, and basin wildrye. The present vegetation in most areas is mainly rubber rabbitbrush and basin wildrye. The production of vegetation is limited by the slight salinity and alkalinity of the soil and the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the slightly salt- and alkali-affected surface layer and the low average annual precipitation.

This unit is well suited to irrigated meadow hay, pasture, and cultivated crops. It is limited mainly by a seasonal high water table, the content of salt and alkali in the soil, and slow permeability. Deep-rooted crops are suited to areas of this unit where natural drainage is adequate or where drainage of the somewhat poorly drained included soils has been improved by use of a drainage system. Water should be applied slowly over a long period to insure that the rooting zone is properly wetted. Because of slow permeability, the application of water should be regulated so that water does not stand on the surface and damage crops. Without drainage, improvement of the soil by removal of salts and alkali is difficult. If this unit is used for irrigated crops, salinity influences the choice of crops. Fertilizer is needed for optimum growth of grasses and legumes.

This unit is limited for roads because of low load-bearing strength and the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage and a stable subgrade.

This map unit is in capability subclasses IIIw, irrigated, and VIIw, nonirrigated.

Ro—Rixie silty clay loam, strongly saline. This very deep, somewhat poorly drained soil is on slightly higher lying flood plains bordering streams. It formed in alluvium derived from mixed rock sources. Slope is 0 to 2 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is gray silty clay loam about 10 inches thick. The underlying material to a depth of 60 inches or more is stratified, light gray silt loam, silty clay loam, and silty clay. It is weakly cemented with silica in some places.

Included in this unit is about 15 percent slightly saline Rixie soils in long, narrow, slightly depressional areas. These soils support creeping wildrye and basin wildrye.

Permeability of this Rixie soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 24 to 48 inches from February to July. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Occasional, brief to long periods of flooding occur when the streamflow is high. The soil is strongly salt- and alkali-affected in the surface layer, but this condition decreases with depth.

This unit is used for livestock grazing and wildlife habitat. It is poorly suited to irrigated meadow hay, pasture, or cultivated crops because of the seasonal high water table, slow permeability, and the strong concentrations of salts and alkali in the surface layer.

The potential plant community on this unit is mainly inland saltgrass, alkali sacaton, and basin wildrye. The present vegetation in most areas is mainly inland saltgrass. The production of vegetation is limited by the high content of salts and alkali in the soil and the hazard of flooding in spring.

Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is very poor. The main limitation is the high content of salts and alkali in the surface layer.

This unit is limited for roads because of the hazard of flooding, the susceptibility of the soil to frost heaving, and low load-bearing strength. To minimize erosion and reduce maintenance costs, roads should be designed to provide surface drainage and a stable subgrade.

This map unit is in capability subclass VIIw, nonirrigated.

Rr—Rixie silty clay, slightly saline. This very deep, somewhat poorly drained soil is on flood plains bordering streams. It formed in alluvium derived from mixed rock sources. Slope is 0 to 2 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is gray silty clay about 10 inches thick. The underlying material to a depth of 60 inches or more is stratified, light gray silt loam, silty clay loam, and silty clay. It is weakly cemented with silica in some places.

Included in this unit are about 9 percent strongly saline Rixie soils in slightly higher lying areas of flood plains and 6 percent Rixie soils that are deep to the seasonal high water table and are in entrenched stream channels.

Included areas make up about 15 percent of the total acreage.

Permeability of this Rixie soil is slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 24 to 48 inches from February to July. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Occasional, brief to long periods of flooding occur when the streamflow is high. The soil is slightly salt- and alkali-affected in the surface layer, but this condition decreases with depth.

This unit is used for livestock grazing, irrigated meadow hay and pasture, and wildlife habitat.

The potential plant community on this unit is mainly willows, creeping wildrye, and basin wildrye. The present vegetation in most areas is mainly creeping wildrye and basin wildrye. The production of vegetation is limited by occasional periods of flooding in spring.

Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is poor. The main limitations are the low content of salt and alkali in the surface layer and the hazard of flooding or ponding. Plants that are salt-, alkali-, and water-tolerant should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated meadow hay and pasture. It is limited mainly by the seasonal high water table, slow permeability, and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion. Irrigation water should be managed to avoid prolonged periods of wetness. Shallow-rooted, water-tolerant plants should be grown. The use of fertilizer promotes good growth of forage and hay plants. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding, the susceptibility of the soil to frost heaving, and low load-bearing strength. To minimize erosion and reduce maintenance costs, roads should be provided with adequate protection from flooding, surface and subsurface drainage, and a stable subgrade.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

Rs—Rose Creek loam. This very deep, poorly drained soil is on flood plains bordering streams. It formed in loamy and sandy alluvium derived from mixed rock sources. Slope is 0 to 2 percent. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is dark gray loam about 10 inches thick. The underlying material to a depth of 60 inches or more is stratified, light gray silt loam to gravelly sand.

Included in this unit are about 5 percent slightly saline Humboldt soils in depressional areas of flood plains, 5 percent Griver soils on the outer edges of flood plains, and 5 percent Alluvial land in old oxbows. Included areas make up about 15 percent of the total acreage.

Permeability of this Rose Creek soil is moderate. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 18 to 36 inches from December to July. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Common, brief to long periods of flooding occur when the streamflow is high.

Most areas of this unit are used for irrigated meadow hay and pasture and wildlife habitat. A few areas are used for livestock grazing.

The potential plant community on this unit is mainly willows, creeping wildrye, and basin wildrye. The present vegetation in most areas is mainly willows and creeping wildrye. Some big sagebrush is in slightly higher lying areas. The production of vegetation is limited by common periods of flooding in spring.

Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding. Plants that are water-tolerant should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated meadow hay and pasture. It is limited mainly by the seasonal high water table and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion. Irrigation water should be managed to avoid prolonged periods of wetness. Shallow-rooted, water-tolerant plants should be grown. The use of fertilizer promotes good growth of forage and hay plants. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is limited for roads because of the hazard of flooding and the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with adequate protection from flooding and with drainage.

This map unit is in capability subclasses IVw, irrigated, and Vw, nonirrigated.

Rt—Rose Creek loam, drained. This very deep, drained soil is on flood plains bordering streams. It formed in loamy and sandy alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,400 to 5,000 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 48 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is dark gray loam about 16 inches thick. The underlying material to a depth of 60 inches or more is stratified, light gray silt loam to gravelly sand.

Included in this unit are about 5 percent Geysen soils on toe slopes of alluvial fans and terraces along the edge of flood plains, 5 percent Ocala soils in slightly higher lying areas of flood plains, and 5 percent poorly drained Rose Creek soils in old drainageways and along stream channels. Included areas make up about 15 percent of the total acreage.

Permeability of this Rose Creek soil is moderate. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 4 to 6 feet from February to July. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Drainage was altered when the water table lowered as a result of streams changing channel and channel entrenchment. Periods of flooding occur when the streamflow is extremely high.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly big sagebrush, basin wildrye, and western wheatgrass. The present vegetation in most areas is mainly big sagebrush and basin wildrye. The production of vegetation is limited by the low average annual precipitation and rare periods of flooding in spring when the streamflow is extremely high.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

This unit is well suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by the seasonal high water table and rare periods of flooding. Most climatically adapted plants can be grown if the unit is protected from flooding late in spring and early in summer. Deep-rooted crops are suited to most areas of the unit where the natural drainage is adequate or where drainage of the poorly drained included soils has been improved by use of a drainage system. Irrigation water should be managed to avoid prolonged periods of wetness.

This unit is limited for roads because of the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with adequate surface drainage.

This map unit is in capability subclasses IIw, irrigated, and VIw, nonirrigated.

Ru—Rosney silt loam. This very deep, well drained soil is on low alluvial terraces. It formed in a thin mantle of loess overlying alluvial sediment derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light gray silt loam about 10 inches thick. The underlying material to a depth of 60 inches or more is stratified, very pale brown silt loam and silty clay loam.

Included in this unit are about 10 percent slightly alkali Rad soils along the toe slopes of terraces and alluvial fans and 5 percent strongly saline and alkali Wholan soils that are on toe slopes of terraces and in drainageways. Included areas make up about 15 percent of the total acreage.

Permeability of this Rosney soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The soil is moderately to strongly salt- and alkali-affected to a depth of 10 inches. It is strongly salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available and the limitation of moderate to high salinity and alkalinity of the soil is overcome.

The potential plant community on this unit is mainly Nuttall saltbush, shadscale, and black greasewood. The present vegetation in most areas is mainly black greasewood, Nuttall saltbush, shadscale, and seepweed. The production of vegetation is limited by the moderate to high salinity and alkalinity of the soil and low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the moderate to high salinity and alkalinity of the soil and low average annual precipitation.

This unit is limited for roads because of low load-bearing strength. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage and a stable subgrade.

This map unit is in capability subclasses IIIs, irrigated, and VIIs, nonirrigated.

SA—Short Creek association. This map unit is on breaks of strongly dissected terraces. Slope is 30 to 75 percent. Elevation is 5,200 to 5,600 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 95 days.

This unit is 40 percent Short Creek gravelly clay loam, 30 to 50 percent slopes, and 40 percent Short Creek gravelly clay loam, 50 to 75 percent slopes. Short Creek gravelly clay loam, 30 to 50 percent slopes, is mainly on south-facing slopes, and Short Creek gravelly clay loam, 50 to 75 percent slopes, is mainly on north-facing slopes.

Included in this unit are about 10 percent steep Berning soils that have a medium-textured surface layer and are on south-facing slopes, 5 percent moderately steep Ramires soils on the lower edges of north-facing slopes, and 5 percent moderately sloping to strongly sloping Orovada soils along drainageways and at the base of terraces. Included areas make up about 20 percent of the total acreage.

Short Creek gravelly clay loam, 30 to 50 percent slopes, is very deep and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray and brown gravelly clay loam about 8 inches thick. The upper 15 inches of the subsoil is brown very gravelly clay, and the lower 37 inches is brown and pale brown very gravelly sandy clay.

Permeability of this soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

Short Creek gravelly clay loam, 50 to 75 percent slopes, is very deep and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray and brown gravelly clay loam about 8 inches thick. The upper 15 inches of the subsoil is brown very gravelly clay, and the lower 37 inches is brown and pale brown very gravelly sandy clay.

Permeability of this soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is very rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on Short Creek gravelly clay loam, 30 to 50 percent slopes, is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, and bluebunch wheatgrass. The potential plant community on Short Creek gravelly loam, 50 to 75 percent slopes, is mainly big sagebrush, Idaho fescue, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and Idaho fescue.

The production of vegetation on this unit is limited by low available water capacity, loss of moisture because of rapid runoff, and moderate average annual precipitation. The suitability for rangeland seeding is very poor. The main limitation is steepness of slope.

Livestock grazing should be managed to protect the unit from excessive erosion. Steepness of slope limits access by livestock and promotes overgrazing of the less sloping areas. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Rangeland seeding on this unit is not practical.

This unit is limited for roads because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

This map unit is in capability subclass VIIe, nonirrigated.

SBB—Simon loam, 2 to 8 percent slopes. This very deep, well drained soil is on low stream terraces. It formed in loess that is high in content of ash and in the underlying gravelly and cobbly mixed alluvium derived dominantly from sedimentary and volcanic rock. Elevation is 5,800 to 6,000 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 44 degrees F, and the average frost-free season is about 95 days.

Typically, the surface layer is grayish brown loam about 12 inches thick. The subsoil is grayish brown clay loam to light yellowish brown cobbly clay loam about 29 inches thick. The substratum to a depth of 60 inches or more is yellowish brown very gravelly clay loam to brown very gravelly sandy clay loam.

Included in this unit are about 5 percent drained, nearly level to gently sloping Welch soils in drainageways, 5 percent gently sloping to moderately sloping Donna soils that are on alluvial fans and remnants of terraces and support low sagebrush, and 5 percent moderately sloping to strongly sloping Stampede soils that are moderately deep to a hardpan and are on alluvial fans and remnants of terraces. Included areas make up about 15 percent of the total acreage.

Permeability of this Simon soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available.

The potential plant community on this unit is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by cold temperatures in spring.

Livestock grazing should be managed to protect the unit from excessive erosion. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Brush management is needed in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soil from erosion and provide a seed source. The suitability of this unit for rangeland seeding is fair. The main limitation is the moderate average annual precipitation.

This unit is moderately limited for roads because of the moderately fine textured subsoil and the susceptibility of the soil to frost heaving. To reduce maintenance costs, roads should be provided with surface drainage, an adequate wearing surface, and a stable subgrade.

This map unit is in capability subclasses IIIe, irrigated, and VIc, nonirrigated.

SC—Simon-Bosco association. This map unit is on alluvial fans and stream terraces. Slope is 0 to 8 percent. Elevation is 5,200 to 5,400 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 90 days.

This unit is 50 percent Simon loam, 2 to 8 percent slopes, and 40 percent Bosco very gravelly loam, 0 to 2 percent slopes. The Simon soil is on alluvial fans, and the Bosco soil is on stream terraces.

Included in this unit are about 5 percent Orovada soils on the upper edges of alluvial fans and 5 percent Cluro soils along intermittent streams and drainageways. Included areas make up about 10 percent of the total acreage.

The Simon soil is very deep and well drained. It formed in loess that is high in content of ash and in the underlying gravelly and cobbly mixed alluvium derived dominantly from sedimentary and volcanic rock. Typically, the surface layer is grayish brown loam about 12 inches thick. The subsoil is grayish brown clay loam to light yellowish brown cobbly clay loam about 29 inches thick. The substratum to a depth of 60 inches or more is yellowish brown very gravelly clay loam to brown very gravelly sandy clay loam.

Permeability of the Simon soil is moderately slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Bosco soil is very deep and somewhat excessively drained. It formed in mixed alluvium derived from volcanic and sedimentary rock. Typically, the surface layer is grayish brown very gravelly loam about 15 inches thick. The upper 31 inches of the underlying material is stratified, pale brown very gravelly loam and very gravelly sandy loam. The lower part to a depth of 70 inches is stratified, variegated sand and gravel.

Permeability of the Bosco soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available.

The potential plant community on the Simon soil is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by cold temperatures in spring. The suitability of this soil for rangeland seeding is fair. The main limitation is the moderate average annual precipitation.

The potential plant community on the Bosco soil is mainly big sagebrush and basin wildrye. The present vegetation in most areas is mainly big sagebrush, basin wildrye, and cheatgrass. The production of vegetation is limited by moderate available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitation is the very gravelly surface layer.

Livestock grazing should be managed to protect the unit from excessive erosion. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding of areas of the more favorable Simon soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Bosco soil.

This unit is moderately limited for roads because of the moderately fine textured subsoil of the Simon soil and the susceptibility of the soils to frost heaving. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage, an adequate wearing surface, and a stable subgrade.

The Simon soil is in capability subclasses IIIe, irrigated, and VIc, nonirrigated; and the Bosco soil is in capability subclasses IVs, irrigated, and VIIs, nonirrigated.

SD—Slaven-Mascamp association. This map unit is on hilly uplands. Slope is 15 to 50 percent. Elevation is 5,500 to 6,500 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 90 days.

This unit is 40 percent Slaven very gravelly loam, 15 to 30 percent slopes; 30 percent Slaven very gravelly loam, 30 to 50 percent slopes; and 20 percent Mascamp very gravelly loam, 30 to 50 percent slopes. Slaven very gravelly loam, 15 to 30 percent slopes, is on hilly uplands; Slaven very gravelly loam, 30 to 50 percent slopes, is on the lower parts of the sides of uplands; and the Mascamp soil is on the upper parts of the sides of uplands.

Included in this unit are about 6 percent very deep, poorly drained, loamy soils that are along drainageways and support meadow vegetation; 2 percent deep, very steep, loamy and sandy soils that are very gravelly; 1 percent springs and seeps scattered throughout the unit; and 1 percent Rock outcrop. Included areas make up about 10 percent of the total acreage.

Slaven very gravelly loam, 15 to 30 percent slopes, is moderately deep and well drained. It formed in residuum derived from chert, shale, and quartzite. Typically, the surface layer is grayish brown very gravelly loam about 5 inches thick. The subsoil is brown very gravelly clay loam to pale brown very gravelly clay about 17 inches thick. Unweathered chert is at a depth of 22 inches.

Permeability of this soil is slow. Available water capacity is very low. Effective rooting depth and depth to unweathered bedrock are 20 to 36 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

Slaven very gravelly loam, 30 to 50 percent slopes, is moderately deep and well drained. It formed in residuum derived from chert, shale, and quartzite. Typically, the surface layer is grayish brown very gravelly loam about 8 inches thick. The subsoil is brown very gravelly clay loam to pale brown very gravelly clay about 22 inches thick. Unweathered chert is at a depth of 30 inches.

Permeability of this soil is slow. Available water capacity is very low. Effective rooting depth and depth to unweathered bedrock are 20 to 36 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Mascamp soil is shallow and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is dark grayish brown and brown very gravelly loam about 13 inches thick. The subsoil is brown very gravelly clay loam about 6 inches thick. Unweathered tuff is at a depth of 19 inches.

Permeability of the Mascamp soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to unweathered bedrock are 12 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on Slaven very gravelly loam, 15 to 30 percent slopes, is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, antelope bitterbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by the very low available water capacity. The suitability of this soil for rangeland seeding is poor. The main limitations are the very gravelly surface layer, the very low available water capacity, and steepness of slope.

The potential plant community on Slaven very gravelly loam, 30 to 50 percent slopes, is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, antelope bitterbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by the very low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Mascamp soil is mainly big sagebrush, phlox, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Thurber needlegrass, bottlebrush squirreltail, and Sandberg bluegrass. The production of vegetation is limited by the shallow rooting depth and the very low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitations are the shallow rooting depth, the very low available water capacity, and steepness of slope.

Steepness of slope limits access and movement of livestock on the steeper Slaven soil and on the Mascamp soil. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping Slaven soil. Loss of the surface layer results in a significant decrease in productivity and in the potential of the unit to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils are warm and the plants have achieved sufficient growth.

This unit is limited for roads because of steepness of slope and the shallow depth to bedrock of the Mascamp soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Mascamp soil, because of the depth to the underlying bedrock. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Slaven soils are in capability subclass VIIs, nonirrigated, and the Mascamp soil is in capability subclass VIIe, nonirrigated.

SE—Slaven-Primeaux association. This map unit is on foothills. Slope is 15 to 30 percent. Elevation is 5,600 to 6,500 feet. The average annual precipitation is about 14 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 80 days.

This unit is 60 percent Slaven very gravelly loam and 25 percent Primeaux gravelly loam. The Slaven soil is in the lower lying areas of foothills, and the Primeaux soil is in the higher lying areas of foothills.

Included in this unit are about 5 percent steep Singletree soils, 5 percent steep Tusel soils on north-facing slopes, 2 percent steep Slaven soils on south-facing slopes, and 2 percent very deep, poorly drained, loamy soils that are along the major drainageways and support meadow vegetation. Also included is 1 percent seeps and springs scattered throughout the unit. Included areas make up about 15 percent of the total acreage.

The Slaven soil is moderately deep and well drained. It formed in residuum derived from chert, shale, and quartzite. Typically, the surface layer is grayish brown very gravelly loam about 5 inches thick. The subsoil is brown very gravelly clay loam to pale brown very gravelly clay about 17 inches thick. Unweathered chert is at a depth of 22 inches.

Permeability of the Slaven soil is slow. Available water capacity is very low. Effective rooting depth and depth to unweathered bedrock are 20 to 36 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Primeaux soil is moderately deep and well drained. It formed in residuum derived from chert, quartzite, shale, and some loess that contains volcanic ash. Typically, the surface layer is dark grayish brown gravelly loam about 11 inches thick. The upper 9 inches of the subsoil is brown clay loam, and the lower 15 inches is brown very gravelly loam. Unweathered chert is at a depth of 35 inches.

Permeability of the Primeaux soil is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to bedrock are 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Slaven soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, antelope bitterbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by the very low available water capacity. The suitability of this soil for rangeland seeding is poor. The main limitations are the very gravelly surface layer, the very low available water capacity, and steepness of slope.

The potential plant community on the Primeaux soil is mainly big sagebrush, bluebunch wheatgrass, and Idaho fescue. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, and Sandberg bluegrass. The production of vegetation is limited by cold temperatures in spring and a short growing season. The suitability of this soil for rangeland seeding is fair. The main limitations are the gravelly surface layer and steepness of slope.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas. Loss of the surface layer results in a significant decrease in productivity and in the potential of the unit to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils are warm and the plants have achieved sufficient growth.

Brush management is needed on the Primeaux soil in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soil from erosion and provide a seed source. Seeding of areas of the more favorable Primeaux soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Slaven soil.

This unit is limited for roads because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Slaven soil is in capability subclass VIIs, nonirrigated, and the Primeaux soil is in capability subclass VIe, nonirrigated.

SF—Slaven-Ramires association. This map unit is on uplands. Slope is 15 to 30 percent. Elevation is 5,500 to 6,500 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 90 days.

This unit is 45 percent Slaven very gravelly loam and 45 percent Ramires gravelly clay loam.

Included in this unit are about 4 percent steep Ramires soils and 4 percent very steep Mascamp soils in areas throughout the unit. Also included is 2 percent deep, very gravelly soils in narrow stringers along the lower edges of slopes. Included areas make up about 10 percent of the total acreage.

The Slaven soil is moderately deep and well drained. It formed in residuum derived from chert, shale, and quartzite. Typically, the surface layer is grayish brown very gravelly loam about 5 inches thick. The subsoil is brown very gravelly clay loam to pale brown very gravelly clay about 17 inches thick. Unweathered chert is at a depth of 22 inches.

Permeability of the Slaven soil is slow. Available water capacity is very low. Effective rooting depth and depth to unweathered bedrock are 20 to 36 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Ramires soil is moderately deep and well drained. It formed in residuum derived from tuff, rhyolite, and loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown gravelly loam about 9 inches thick. The subsoil is grayish brown gravelly clay to pale brown gravelly sandy clay about 17 inches thick. The substratum is white sandy loam about 8 inches thick. Unweathered tuff is at a depth of 34 inches.

Permeability of the Ramires soil is slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Slaven soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, antelope bitterbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by the very low available water capacity. The suitability of this soil for rangeland seeding is poor. The main limitations are the very gravelly surface layer, the very low available water capacity, and steepness of slope.

The potential plant community on the Ramires soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by low available water capacity, moisture loss because of rapid runoff, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is fair. The main limitations are the gravelly surface layer, low available water capacity, and steepness of slope.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas. Loss of the surface layer results in a significant decrease in productivity and in the potential of the unit to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

Brush management is needed on the Ramires soil in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soil from erosion and provide a seed source. Seeding of areas of the more favorable Ramires soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Slaven soil.

This unit is limited for roads because of steepness of slope and the clayey subsoil of the Ramires soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Slaven soil is in capability subclass VIIs, nonirrigated, and the Ramires soil is in capability subclass VIe, nonirrigated.

SG—Slaven-Toeja association. This map unit is on uplands. Slope is 15 to 30 percent. Elevation is 5,400 to 6,000 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 90 days.

This unit is 40 percent Slaven very gravelly loam and 40 percent Toeja loam.

Included in this unit are about 9 percent steep Slaven soils, 7 percent steep Mascamp soils, and 4 percent deep, loamy and gravelly soils along intermittent streams. Included areas make up about 20 percent of the total acreage.

The Slaven soil is moderately deep and well drained. It formed in residuum derived from chert, shale, and quartzite. Typically, the surface layer is grayish brown very gravelly loam about 5 inches thick. The subsoil is brown very gravelly clay loam to pale brown very gravelly clay about 17 inches thick. Unweathered chert is at a depth of 22 inches.

Permeability of the Slaven soil is slow. Available water capacity is very low. Effective rooting depth and depth to unweathered bedrock are 20 to 36 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Toeja soil is deep and well drained. It formed in loess that is high in content of volcanic ash and is underlain by residuum derived from tuff. Typically, the surface layer is grayish brown loam about 13 inches thick. The subsoil is brown clay loam about 18 inches thick. The substratum is pale brown loam to variegated very gravelly coarse sandy loam about 17 inches thick. Weathered tuff is at a depth of 48 inches.

Permeability of the Toeja soil is moderately slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Slaven soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, antelope bitterbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by the very low available water capacity, moisture loss because of rapid runoff, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are the very gravelly surface layer, the very low available water capacity, and the steepness of slope.

The potential plant community on the Toeja soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The production of vegetation is limited by loss of moisture because of rapid runoff and moderate average annual precipitation. The suitability of this soil for rangeland seeding is fair. The main limitations are steepness of slope and moderate average annual precipitation.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas. Loss of the surface layer results in a significant decrease in productivity and in the potential of the Slaven soil to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

Brush management is needed on the Toeja soil in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soil from erosion and provide a seed source. Seeding of areas of the more favorable Toeja soil in this unit is difficult because of their size and the pattern in which they occur with the less favorable Slaven soil.

This unit is limited for roads because of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Slaven soil is in capability subclass VIIs, nonirrigated, and the Toeja soil is in capability subclass VIe, nonirrigated.

SH—Slaven-Torro association. This map unit is on uplands. Slope is 30 to 50 percent. Elevation is 6,000 to

7,000 feet. The average annual precipitation is about 15 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 75 days.

This unit is 40 percent Slaven very gravelly loam, 20 percent Torro very gravelly loam, and 20 percent Tusel very gravelly loam. The Slaven soil is in the lower lying areas, and the Torro soil is on south-facing slopes that are mainly in higher lying areas. The Tusel soil is mainly in higher lying snow pocket areas on north-facing slopes; thus, it receives more effective moisture than the rest of the unit.

Included in this unit are about 9 percent moderately steep Slaven very gravelly loam, 7 percent moderately steep Primeaux gravelly loam, and 4 percent steep Mascamp soils that are shallow to tuff. Included areas make up about 20 percent of the total acreage.

The Slaven soil is moderately deep and well drained. It formed in residuum derived from chert, shale, and quartzite. Typically, the surface layer is grayish brown very gravelly loam about 8 inches thick. The subsoil is brown very gravelly clay loam to pale brown very gravelly clay about 22 inches thick. Unweathered chert is at a depth of 30 inches.

Permeability of the Slaven soil is slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 20 to 36 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Torro soil is very deep and well drained. It formed in residuum and colluvium derived from chert, shale, and some volcanic ash and loess. Typically, the surface layer is grayish brown very gravelly loam about 13 inches thick. The subsoil is light yellowish brown very gravelly clay loam about 12 inches thick. The substratum, to a depth of 50 inches or more, is pale brown very gravelly coarse sandy loam.

Permeability of the Torro soil is moderate. Available water capacity is low. Effective rooting depth is 50 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Tusel soil is very deep and well drained. It formed in material derived from quartzite, chert, shale, and some loess that is high in content of pyroclastic material. Typically, the surface layer is dark grayish brown very gravelly loam about 17 inches thick. The subsoil is brown very gravelly clay loam to pale brown very gravelly sandy clay loam about 33 inches thick.

Permeability of the Tusel soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Slaven soil is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, antelope bitterbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by the very low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Torro soil is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, rabbitbrush, bluebunch wheatgrass, and basin wildrye. The production of vegetation is limited by the low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Tusel soil is mainly big sagebrush, snowberry, antelope bitterbrush, and Idaho fescue. The present vegetation in most areas is mainly big sagebrush, snowberry, slender wheatgrass, and lupine. The production of vegetation is limited by cold temperatures in spring and a short growing season. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse of the less sloping areas. Loss of the surface layer results in a significant decrease in productivity and in the potential of the Slaven soil to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

This unit is limited for roads because of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Slaven soil is in capability subclass VIIs, nonirrigated, and the Torro and Tusel soils are in capability subclass VIIe, nonirrigated.

SR—Stampede-Donna association. This map unit is on high alluvial terraces. Slope is 2 to 15 percent. Elevation is 5,500 to 6,200 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 90 days.

This unit is 40 percent Stampede gravelly loam, 4 to 15 percent slopes, and 40 percent Donna gravelly loam, 2 to 8 percent slopes.

Included in this unit are about 10 percent steep Short Creek soils on the sides of dissected terrace breaks, 5 percent gently sloping to moderately sloping Simon soils on the upper edges of terraces, and 5 percent Stampede and Donna soils that have a cobbly or stony surface layer. Included areas make up about 20 percent of the total acreage.

The Stampede soil is moderately deep and well drained. It formed in alluvium derived dominantly from tuff. Typically, the surface layer is grayish brown gravelly loam about 12 inches thick. The subsoil is brown clay about 16 inches thick. An indurated, silica-cemented hardpan is at a depth of 28 inches.

Permeability of the Stampede soil is very slow. Available water capacity is low. Effective rooting depth and depth to the indurated hardpan are 20 to 32 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Donna soil is moderately deep and well drained. It formed in mixed alluvium derived from volcanic rock and some loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown gravelly loam about 8 inches thick. The subsoil is brown clay about 14 inches thick. The upper 16 inches of the substratum is a light yellowish brown to very pale brown indurated hardpan that is cemented with silica. The lower part to a depth of 68 inches is stratified, very gravelly loam and very gravelly sandy clay loam. The subsoil is 60 to 70 percent clay.

Permeability of the Donna soil is very slow. Available water capacity is low. Effective rooting depth and depth to the indurated hardpan are 20 to 26 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential and present plant community on the Stampede soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the low available water capacity. The suitability of this soil for rangeland seeding is fair. The main limitations are the gravelly surface layer, the low available water capacity, and the shallow depth to the clay subsoil.

The potential plant community on the Donna soil is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, Thurber needlegrass, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the thin surface layer and low available water capacity. The suitability of this soil for rangeland seeding is poor. The main limitations are the thin, gravelly surface layer and the shallow depth to the clay subsoil.

Livestock grazing should be managed to protect the unit from excessive erosion. Loss of the surface layer results in a significant decrease in productivity and in the potential of the unit to produce vegetation suitable for grazing. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding of areas of the more favorable Stampede soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Donna soil.

This unit is limited for roads because of the clayey subsoil. To minimize erosion and reduce maintenance costs, roads should be provided with surface drainage, an adequate wearing surface, and a stable subgrade.

The Stampede soil is in capability subclass VIs, nonirrigated, and the Donna soil is in capability subclass VIIs, nonirrigated.

SS—Stampede-Donna-Short Creek association. This map unit is on dissected high terraces. Slope is 2 to 50 percent. Elevation is 5,500 to 6,200 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 90 days.

This unit is 40 percent Stampede gravelly loam, 4 to 15 percent slopes; 20 percent Donna gravelly loam, 2 to 8 percent slopes; and 20 percent Short Creek gravelly clay loam, 30 to 50 percent slopes. The Stampede and Donna soils are on terraces, and the Short Creek soil is on terrace breaks.

Included in this unit are about 5 percent very deep, gently sloping to moderately sloping Simon soils that are moderately fine textured and are on the upper edges of terraces, 10 percent Stampede and Donna soils that have a cobbly and stony surface layer, and 5 percent Welch soils on narrow stringers along intermittent drainageways. Included areas make up about 20 percent of the total acreage.

The Stampede soil is moderately deep and well drained. It formed in alluvium derived dominantly from tuff. Typically, the surface layer is grayish brown gravelly loam about 12 inches thick. The subsoil is brown clay about 16 inches thick. An indurated, silica-cemented hardpan is at a depth of 28 inches.

Permeability of the Stampede soil is very slow. Available water capacity is low. Effective rooting depth and depth to the indurated hardpan are 20 to 32 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Donna soil is moderately deep and well drained. It formed in mixed alluvium derived from volcanic rock and some loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown gravelly loam about 8 inches thick. The subsoil is brown clay about 14 inches thick. The upper 16 inches of the substratum is a light yellowish brown to very pale brown indurated hardpan that is cemented with silica. The lower part to a depth of 68 inches is stratified, very gravelly loam and very gravelly sandy clay loam.

Permeability of the Donna soil is very slow. Available water capacity is low. Effective rooting depth and depth to the indurated hardpan are 20 to 26 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Short Creek soil is very deep and well drained. It formed in alluvium derived from mixed rock sources. Typically, the surface layer is light brownish gray and brown gravelly clay loam about 8 inches thick. The upper 15 inches of the subsoil is brown very gravelly clay, and the lower 37 inches is brown and pale brown very gravelly sandy clay.

Permeability of the Short Creek soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential and present plant community on the Stampede soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the low available water capacity. The suitability of this soil for rangeland seeding is fair. The main limitations for seeding are the moderate average annual precipitation, the gravelly surface layer, and the moderately deep rooting zone.

The potential plant community on the Donna soil is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, Thurber needlegrass, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by the thin surface layer and low available water capacity. The suitability of this soil for rangeland seeding is poor. The main limitations are the thin, gravelly surface layer and the shallow depth to the clay subsoil.

The potential plant community on the Short Creek soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by low available water capacity, moisture loss because of rapid runoff, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Livestock grazing should be managed to protect the unit from excessive erosion. Loss of the surface layer results in a significant decrease in productivity and in the potential of the unit to produce vegetation suitable for grazing. Steepness of slope on the Short Creek soil limits access by livestock and promotes overgrazing of the less sloping areas. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding of areas of the more favorable Stampede soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Donna and Short Creek soils.

This unit is limited for roads because of the clayey subsoil on the Stampede and Donna soils and slope on the Short Creek soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Stampede soil is in capability subclass VIs, nonirrigated; the Donna soil is in capability subclass VIIs, nonirrigated; and the Short Creek soil is in capability subclass VIIe, nonirrigated.

ST—Stampede-Short Creek association. This map unit is on dissected low terraces. Slope is 4 to 50 percent. Elevation is 5,400 to 5,800 feet. The average annual precipitation is about 12 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 90 days.

This unit is 65 percent Stampede gravelly loam, 4 to 15 percent slopes, and 20 percent Short Creek gravelly clay loam, 30 to 50 percent slopes. The Stampede soil is on the tops of terraces, and the Short Creek soil is on terrace breaks.

Included in this unit are about 10 percent Donna soils that have a thin surface layer and are on rims and tops of terraces and 5 percent Welch soils in narrow stringers along intermittent drainageways. Included areas make up about 15 percent of the total acreage.

The Stampede soil is moderately deep and well drained. It formed in alluvium derived from tuff. Typically, the surface layer is grayish brown gravelly loam about 12 inches thick. The subsoil is brown clay about 16 inches thick. An indurated, silica-cemented hardpan is at a depth of 28 inches.

Permeability of the Stampede soil is very slow. Available water capacity is low. Effective rooting depth and depth to the indurated hardpan are 20 to 32 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Short Creek soil is very deep and well drained. It formed in alluvium derived from mixed rock sources. Typically, the surface layer is light brownish gray and brown gravelly clay loam about 8 inches thick. The upper 15 inches of the subsoil is brown very gravelly clay, and the lower 37 inches is brown and pale brown very gravelly sandy clay.

Permeability of the Short Creek soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat. The Stampede soil can be used for irrigated hay, pasture, and cultivated crops if water for irrigation is made available and the limitations of slow permeability, effective rooting depth, and slope are overcome.

The potential and present plant community on the Stampede soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the low available water capacity. The suitability of this soil for rangeland seeding is fair. The main limitations for seeding are moderate average annual precipitation, the gravelly surface layer, the moderately deep rooting zone, and the shallow depth to the clay subsoil.

The potential plant community on the Short Creek soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by low available water capacity and loss of moisture because of runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Livestock grazing should be managed to protect the unit from excessive erosion. Steepness of slope on the Short Creek soil limits access by livestock and promotes overgrazing of the less sloping areas. Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. Seeding of areas of the more favorable Stampede soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Short Creek soil.

This unit is limited for roads because of the clayey subsoil of the Stampede soil and the steepness of slope of the Short Creek soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Stampede soil is in capability subclasses IVe, irrigated, and VIs, nonirrigated; and the Short Creek soil is in capability subclass VIIe, nonirrigated.

SU—Susie Creek-Pattani association. This map unit is on uplands. Slope is 4 to 15 percent. Elevation is 5,300 to 6,000 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 90 days.

This unit is 40 percent Susie Creek loam and 40 percent Pattani clay. The Susie Creek soil is on the upper parts of the sides of uplands, and the Pattani soil is on the lower parts of uplands.

Included in this unit are about 15 percent Toeja soils along the lower edges of slopes and 5 percent moderately steep Pie Creek soils that are in areas throughout the unit and support low sagebrush. Included areas make up about 20 percent of the total acreage.

The Susie Creek soil is deep and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is grayish brown loam about 12 inches thick. The subsoil is brown clay about 13 inches thick. The substratum is pale brown loam to light gray coarse sandy loam about 32 inches thick. It is weakly cemented with silica. Weathered tuff is at a depth of 57 inches.

Permeability of the Susie Creek soil is slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

The Pattani soil is moderately deep and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is grayish brown clay about 10 inches thick. The subsoil is grayish brown clay about 10 inches thick. Weathered tuff is at a depth of 20 inches.

Permeability of the Pattani soil is very slow. Available water capacity is very low. Effective rooting depth and depth to weathered bedrock are 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Susie Creek soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and bottlebrush squirreltail. The production of vegetation is limited by the moderate average annual precipitation. The suitability of this soil for rangeland seeding is fair. The main limitation is the moderate average annual precipitation.

The potential plant community on the Pattani soil is mainly big sagebrush, rubber rabbitbrush, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, rubber rabbitbrush, basin wildrye, and bottlebrush squirreltail. The production of vegetation is limited by the very low available water capacity, moisture loss because of runoff, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitation is the very low available water capacity.

Loss of the surface layer results in a significant decrease in productivity and in the potential of the Pattani soil to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

Brush management is needed on the Susie Creek soil in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soil from erosion and provide a seed source. Range seeding is feasible on this unit when adapted species and suitable seeding methods are used. Seeding of areas of the more favorable Susie Creek soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Pattani soil.

This unit is limited for roads because of the content of clay in the Pattani soil and the clayey subsoil of the Susie Creek soil. Roads should be designed to provide surface drainage. Roads located on these clayey soils are difficult to maintain because they have low strength when wet. To improve trafficability, roads need to be provided with a stable base and an adequate wearing surface.

This map unit is in capability subclass VIs, nonirrigated.

SV—Susie Creek-Pie Creek association. This map unit is on uplands. Slope is 4 to 30 percent. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 90 days.

This unit is 50 percent Susie Creek loam, 4 to 15 percent slopes; 20 percent Pie Creek loam, 15 to 30 percent slopes; and 20 percent Pattani clay, 4 to 15 percent slopes. The Susie Creek soil is on ridge crests and the upper parts of side slopes, the Pie Creek soil is on side slopes, and the Pattani soil is in saddles and on the lower parts of slopes.

Included in this unit are about 4 percent moderately steep Pie Creek cobbly loam near the upper parts of slope breaks, 4 percent Toeja soils along the lower edges of slopes, and 2 percent steep Short Creek soils in areas above drainageways. Also included are small outcroppings of tuff. Included areas make up about 10 percent of the total acreage.

The Susie Creek soil is deep and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is grayish brown loam about 12 inches thick. The subsoil is brown clay about 13 inches thick. The substratum is pale brown loam to light gray coarse sandy loam about 32 inches thick. It is weakly cemented with silica in the lower part. Weathered tuff is at a depth of 57 inches.

Permeability of the Susie Creek soil is slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Pie Creek soil is moderately deep and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is grayish brown loam about 5 inches thick. The upper 16 inches of the subsoil is brown and pale brown fine clay, and the lower 14 inches is brown and pale brown clay. Unweathered bedrock is at a depth of 35 inches.

Permeability of the Pie Creek soil is very slow. Available water capacity is moderate. Effective rooting depth and depth to weathered bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

The Pattani soil is moderately deep and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is grayish brown clay about 10 inches thick. The subsoil is grayish brown clay about 10 inches thick. Weathered tuff is at a depth of 20 inches.

Permeability of the Pattani soil is very slow. Available water capacity is very low. Effective rooting depth and depth to weathered bedrock are 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Susie Creek soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and bottlebrush squirreltail. The production of vegetation is limited by the moderate average annual precipitation. The suitability of this soil for rangeland seeding is fair. The main limitations are the shallow depth to the clay subsoil and moderate average annual precipitation.

The potential plant community on the Pie Creek soil is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly low sagebrush, Sandberg bluegrass, bottlebrush squirreltail, and Thurber needlegrass. The production of vegetation is limited by the moderate available water capacity, the shallow depth to the clay subsoil, moisture loss because of rapid runoff, and the moderate average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitation is the shallow depth to the clay subsoil.

The potential plant community on the Pattani soil is mainly big sagebrush, rubber rabbitbrush, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, rubber rabbitbrush, basin wildrye, and bottlebrush squirreltail. The production of vegetation is limited by the very low available water capacity, moisture loss because of rapid runoff, and the moderate average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitation is the very low available water capacity.

Livestock grazing should be managed to protect the soils from excessive erosion and to avoid overuse of the less sloping areas of the Susie Creek and Pattani soils. Loss of the surface layer results in a significant decrease in productivity and reduces the potential of the Pie Creek and Pattani soils to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils are warm and the plants have made enough growth to withstand grazing.

Brush management is needed on the Susie Creek soil in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soil from erosion and provide a seed source. Range seeding is feasible on this unit if adapted species and suitable seeding methods are used. Seeding of areas of the more favorable Susie Creek soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Pie Creek and Pattani soils.

This unit is limited for roads because of steepness of slope on the Pie Creek soil, the clayey texture of the Pattani soil, and the clayey subsoil of the Susie Creek soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface. Roads located on the clayey Pattani soil are difficult to maintain because they have low strength when wet.

The Susie Creek soil is in capability subclass VIs, nonirrigated; the Pie Creek soil is in capability subclass VIIe, nonirrigated; and the Pattani soil is in capability subclass VIs, nonirrigated.

SW—Susie Creek-Short Creek association. This map unit is on gently rolling to hilly uplands. Slope is 4 to 50 percent. Elevation is 5,500 to 6,200 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 90 days.

This unit is 40 percent Susie Creek loam, 4 to 15 percent slopes; 20 percent Short Creek gravelly clay loam, 30 to 50 percent slopes; and 20 percent Toeja loam, 15 to 30 percent slopes. The Susie Creek soil is on hillcrests and the upper parts of side slopes, the Short Creek soil is on short slope breaks, and the Toeja soil is on the intermediate slopes of stringers in slightly depressional areas throughout the unit.

Included in this unit are about 8 percent gently sloping and moderately sloping Toeja soils in stringers in slightly depressional areas; 6 percent moderately deep, moderately steep Ramires soils; and 6 percent deep, moderately steep Bucan soils that have a fine textured subsoil and are scattered throughout the area. Included areas make up about 20 percent of the total acreage.

The Susie Creek soil is deep and well drained. It formed in material weathered dominantly from tuff. Typically, the surface layer is grayish brown loam about 12 inches thick. The subsoil is brown clay about 13 inches thick. The substratum is pale brown loam to light gray coarse sandy loam about 32 inches thick. It is weakly cemented with silica in the lower part. Weathered tuff is at a depth of 57 inches.

Permeability of the Susie Creek soil is slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Short Creek soil is very deep and well drained. It formed in alluvium derived from mixed rock sources. Typically, the surface layer is light brownish gray and brown gravelly clay loam about 8 inches thick. The upper 15 inches of the subsoil is brown very gravelly clay, and the lower 37 inches is brown and pale brown very gravelly sandy clay.

Permeability of the Short Creek soil is slow. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Toeja soil is deep and well drained. It formed in loess that is high in content of volcanic ash and is underlain by residuum derived dominantly from tuff. Typically, the surface layer is grayish brown loam about 13 inches thick. The subsoil is brown clay loam about 18 inches thick. The substratum is pale brown loam to variegated very gravelly coarse sandy loam about 17 inches thick. Weathered tuff is at a depth of 48 inches.

Permeability of the Toeja soil is moderately slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Susie Creek soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and bottlebrush squirreltail. The production of vegetation is limited by the shallow depth to clay and the moderate average annual precipitation. The suitability of this soil for rangeland seeding is fair. The main limitations are the moderate average annual precipitation and the shallow depth to clay.

The potential plant community on the Short Creek soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, and bluebunch wheatgrass. The production of vegetation is limited by low available water capacity, moisture loss because of rapid runoff, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Toeja soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The production of vegetation is limited by moisture loss because of rapid runoff and moderate average annual precipitation. The suitability of this soil for rangeland seeding is fair. The main limitations are steepness of slope and moderate average annual precipitation.

Steepness of slope limits access and movement of livestock on the Short Creek soil. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Susie Creek soil. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soils have warmed up and the plants have achieved sufficient growth.

Brush management is needed on the Susie Creek and Toeja soils in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soils from erosion and provide a seed source. Range seeding is feasible on this unit when adapted species and suitable seeding methods are used. Seeding of areas of the more favorable Susie Creek and Toeja soils in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Short Creek soil.

This unit is limited for roads because of steepness of slope on the Short Creek and Toeja soils and the clayey subsoil of the Susie Creek soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Susie Creek soil is in capability subclass VIs, nonirrigated; the Short Creek soil is in capability subclass VIIe, nonirrigated; and the Toeja soil is in capability subclass VIe, nonirrigated.

TA—Taylor Creek-Chen association. This map unit is on mountainsides and ridgetops. Slope is 15 to 50 percent. Elevation is 6,000 to 7,000 feet. The average annual precipitation is about 13 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 80 days.

This unit is 40 percent Taylor Creek loam, 30 to 50 percent slopes; 20 percent Chen cobbly loam, 15 to 30 percent slopes; and 20 percent Ramires gravelly loam, 30 to 50 percent slopes. The Taylor Creek soil is in snow pocket areas on the north-facing, slightly concave slopes; thus, the soil receives slightly more effective moisture than the rest of the unit. The Chen soil is on ridgetops, and the Ramires soil is on the south-facing slopes.

Included in this unit are about 10 percent strongly sloping Mosquet soils on narrow ridgetops and 7 percent deep, poorly drained, gravelly and loamy soils that are along drainageways and support meadow vegetation. Also included are 2 percent cobbly and stony Taylor Creek and Ramires soils and 1 percent Rock outcrop in areas throughout the unit. Included areas make up about 20 percent of the total acreage.

The Taylor Creek soil is very deep and well drained. It formed in residuum derived from mixed rock sources, volcanic ash, and loess. Typically, the surface layer is grayish brown loam about 15 inches thick. The upper 25 inches of the subsoil is pale brown gravelly fine clay, and the lower 20 inches is pale brown gravelly clay.

Permeability of the Taylor Creek soil is very slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Chen soil is shallow and well drained. It formed in residuum derived dominantly from volcanic rock and some loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown cobbly loam about 8 inches thick. The subsoil is grayish brown and brown very gravelly clay about 9 inches thick. Unweathered andesite is at a depth of 17 inches.

Permeability of the Chen soil is very slow. Available water capacity is very low. Effective rooting depth and depth to bedrock are 12 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Ramires soil is moderately deep and well drained. It formed in residuum derived dominantly from tuff, rhyolite, and loess that is high in content of volcanic ash. Typically, the surface layer is grayish brown gravelly loam about 6 inches thick. The subsoil is grayish brown gravelly clay to pale brown gravelly sandy clay about 18 inches thick. The substratum is white sandy loam about 6 inches thick over partially weathered tuff.

Permeability of the Ramires soil is slow. Available water capacity is low. Effective rooting depth and depth to bedrock are 24 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Taylor Creek soil is mainly big sagebrush, bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, bluebunch wheatgrass, and Idaho fescue. The production of vegetation is limited by the short growing season and cold temperatures in spring. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Chen soil is mainly low sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Webber ricegrass. The present vegetation in most areas is mainly low sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by the very low available water capacity and the shallow rooting depth. The suitability of this soil for rangeland seeding is poor. The main limitations are shallow depth to clay, shallow rooting depth, the cobbly surface layer, and steepness of slope.

The potential plant community on the Ramires soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Douglas rabbitbrush, and Sandberg bluegrass. The production of vegetation is limited by low available water capacity and the loss of moisture because of runoff. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Chen soil. Loss of the surface layer results in a significant decrease in productivity and in the potential of the Chen soil to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils are warm and the plants have achieved sufficient growth.

This unit is limited for roads because of steepness of slope, the clayey subsoil of the Taylor Creek and Ramires soils, and the shallow depth to bedrock of the Chen soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Chen soil, because of the depth to the underlying bedrock. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Taylor Creek and Ramires soils are in capability subclass VIIe, nonirrigated, and the Chen soil is in capability subclass VIIs, nonirrigated.

TC—Taylor Creek-Singletree association. This map unit is on mountainsides. Slope is 30 to 50 percent. Elevation is 6,500 to 7,000 feet. The average annual precipitation is 13 inches, the average annual air temperature is 43 degrees F, and the average frost-free period is 80 days.

This unit is 40 percent Taylor Creek loam, 20 percent Singletree loam, and 20 percent Torro very gravelly loam. The Taylor Creek soil is in snow pocket areas on the upper part of north-facing slopes; thus, it receives more effective moisture than the rest of the unit. The Singletree soil is mainly in lower lying areas on north-facing slopes, and the Torro soil is on the lower part of south-facing slopes.

Included with this unit in mapping are about 9 percent Mascamp soils near the tops of slopes, 6 percent medium-textured soils that are shallow to bedrock and are on narrow ridgetops, 4 percent deep, gravelly loamy soils along narrow bottoms of steep canyons, and 1 percent springs and seeps at the head and along the edge of drainageways. Included areas make up about 20 percent of the total acreage.

The Taylor Creek soil is very deep and well drained. It formed in residuum derived from mixed rock, volcanic ash, and loess. Typically, the surface layer is grayish brown loam about 15 inches thick. In the upper 25 inches the subsoil is pale brown gravelly fine clay, and in the lower 20 inches it is pale brown gravelly loam.

Permeability of the Taylor Creek soil is very slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Singletree soil is deep and well drained. It formed in residuum and colluvium derived dominantly from volcanic rock. Typically, the surface layer is dark grayish brown loam about 17 inches thick. The subsoil is brown clay loam about 15 inches thick. The substratum is light brownish gray sandy loam to pale brown sandy clay loam about 17 inches thick over weathered bedrock.

Permeability of the Singletree soil is moderately slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Torro soil is very deep and well drained. It formed in residuum and colluvium derived from chert, shale, and some volcanic ash and loess. Typically, the surface layer is grayish brown very gravelly clay loam about 13 inches thick. The subsoil is light yellowish brown very gravelly clay loam about 12 inches thick. The substratum, to a depth of 50 inches or more, is pale brown very gravelly coarse sandy loam.

Permeability of the Torro soil is moderate. Available water capacity is low. Effective rooting depth is 50 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

Most areas of this unit are used for livestock grazing and wildlife habitat.

The potential plant community on the Taylor Creek soil is mainly big sagebrush, bluebunch wheatgrass, Idaho fescue, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, bluebunch wheatgrass, and Idaho fescue. The production of vegetation is limited by the short growing season and cold temperatures in spring. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Singletree soil is mainly big sagebrush, antelope bitterbrush, Idaho fescue, and bluebunch wheatgrass. The present vegetation in most areas is mainly big sagebrush, bluebunch wheatgrass, Idaho fescue, and antelope bitterbrush. The production of vegetation is limited by cold temperatures in spring. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Torro soil is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, rabbitbrush, and bluebunch wheatgrass. The production of vegetation suitable for livestock grazing is limited by cold temperatures in spring. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect the soils from excessive erosion and to avoid overgrazing in the less sloping areas of the included soils in drainageways and in seeps. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils are warm and plant growth is sufficient.

This unit is limited for roads because of steepness of slope and the clayey subsoil of the Taylor Creek soil. Roads should be located in the less sloping areas, if feasible, to avoid excessive cutting and filling. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

This map unit is in capability subclass VIIe, nonirrigated.

TDA—Tenabo silt loam, 0 to 2 percent slopes. This shallow, well drained soil is on toe slopes of alluvial fans. It formed in loess that is high in content of volcanic ash and in the underlying mixed alluvium derived dominantly from sandstone, siltstone, conglomerate, and pyroclastic material interbedded with tuff. Elevation is 4,800 to 6,000 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 47 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light gray silt loam about 7 inches thick. The subsoil is light yellowish brown and brown clay loam about 11 inches thick. The upper 8 inches of the substratum is a light gray, indurated hardpan that is cemented with silica. The lower part, to a depth of 40 inches, is light gray very gravelly sandy loam.

Included in this unit is about 10 percent gently sloping to moderately sloping Whirlo soils.

Permeability of this Tenabo soil is moderately slow. Available water capacity is low. Effective rooting depth and depth to the hardpan are 9 to 20 inches. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The subsoil is alkali-affected.

Most areas of this unit are used for irrigated hay and pasture. A few areas are used as rangeland and for wildlife habitat.

The potential plant community on this unit is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale and bud sagebrush. The production of vegetation is limited by the low average annual precipitation, the shallow rooting depth, and the content of alkali in the subsoil.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure. The suitability of this unit for rangeland seeding is very poor. The main limitations are the low average annual precipitation and the content of alkali in the subsoil.

This unit is moderately suited to hay and pasture. The main limitations are the shallow depth to the hardpan and the content of alkali in the subsoil. Shallow-rooted crops can be grown if irrigation water is carefully applied. The unit is suited to all climatically adapted crops if the hardpan is ripped and the alkali is leached from the subsoil.

This unit is moderately limited for roads because of the shallow depth to the hardpan and the susceptibility of the soil to frost heaving. Deep cuts should be avoided because of the underlying hardpan. To improve trafficability, roads need to be provided with a stable base and an adequate wearing surface. Roads should also be provided with surface drainage.

This map unit is in capability subclasses IVs, irrigated, and VIIs, nonirrigated.

TEC—Tenabo cobbly silt loam, 2 to 15 percent slopes. This shallow, well drained soil is on alluvial fans. It formed in loess that is high in content of volcanic ash and in the underlying mixed alluvium derived from sandstone, siltstone, conglomerate, and pyroclastic material interbedded with tuff. Elevation is 4,900 to 5,200 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 47 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light gray cobbly silt loam about 7 inches thick. The subsoil is light yellowish brown and brown clay loam about 11 inches thick. The upper 8 inches of the substratum is a light gray, indurated hardpan that is cemented with silica. The lower part, to a depth of 40 inches, is light gray very gravelly sandy loam.

Included in this unit are about 9 percent nearly level Tenabo soils on alluvial fans and 6 percent moderately sloping to moderately steep Tenabo soils that have an extremely stony surface layer and are on the sides of alluvial fans. Included areas make up about 15 percent of the total acreage.

Permeability of this Tenabo soil is moderately slow. Available water capacity is low. Effective rooting depth and depth to the hardpan are 9 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight. The subsoil is alkali-affected.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale and bud sagebrush. The production of vegetation is limited by low average annual precipitation, the shallow rooting depth, and the content of alkali in the subsoil.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing. The suitability of this unit for rangeland seeding is very poor. The main limitations are low average annual precipitation, the shallow rooting depth, and the content of alkali in the subsoil.

This unit is moderately limited for roads because of steepness of slope, the shallow depth to the hardpan, and the susceptibility of the soil to frost heaving. Cobbles on the surface make it difficult to construct roads. Deep cuts should be avoided because of the underlying hardpan. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface. Roads should also be provided with surface drainage.

This map unit is in capability subclasses IVe, irrigated, and VIIs, nonirrigated.

TF—Tenabo association. This map unit is on alluvial fans that are dissected and hilly. Slope is 2 to 30 percent. Elevation is 5,000 to 5,300 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 47 degrees F, and the average frost-free period is about 110 days.

This unit is 60 percent Tenabo extremely stony loam, 8 to 30 percent slopes, and 25 percent Tenabo cobbly silt loam, 2 to 15 percent slopes. Tenabo extremely stony loam generally is on the steeper side slopes, and Tenabo cobbly silt loam is on the tops of fans.

Included in this unit are about 9 percent Whirlo soils on the lower parts of recent fans, 4 percent Bucan soils that have an extremely stony surface layer and are on alluvial fans at higher elevations, and 2 percent stringers of Rubble land on side slopes. Included areas make up about 15 percent of the total acreage.

Tenabo extremely stony loam is shallow and well drained. It formed in loess that is high in content of volcanic ash and in the underlying mixed alluvium derived from sandstone, siltstone, conglomerate, and pyroclastic material interbedded with tuff. Typically, 3 to 15 percent of the surface is covered with stones that are 10 to 18 inches in diameter. The surface layer is light gray extremely stony loam about 7 inches thick. The subsoil is brown clay loam about 11 inches thick. The upper 8 inches of the substratum is a light gray, indurated hardpan that is cemented with silica. The lower part, to a depth of 40 inches, is light gray very gravelly sandy loam.

Permeability of Tenabo extremely stony loam is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 12 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight. The subsoil is alkali-affected.

Tenabo cobbly silt loam is shallow and well drained. It formed in loess that is high in content of volcanic ash and in the underlying mixed alluvium derived from sandstone, siltstone, conglomerate, and pyroclastic material interbedded with tuff. Typically, 25 to 50 percent of the surface is covered with cobbles that are 3 to 10 inches in diameter. The surface layer is light gray cobbly silt loam about 7 inches thick. The subsoil is light yellowish brown and brown clay loam about 11 inches thick. The upper 8 inches of the substratum is a light gray, indurated hardpan that is cemented with silica. The lower part, to a depth of 40 inches, is light gray very gravelly sandy loam.

Permeability of Tenabo cobbly silt loam is moderately slow. Available water capacity is low. Effective rooting depth and depth to the hardpan are 9 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight. The subsoil is alkali-affected.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale and bud sagebrush. The production of vegetation is limited by low average annual precipitation, shallow rooting depth, and the content of alkali in the subsoil.

Stones on the surface of the Tenabo extremely stony loam limit access and movement of livestock. Grazing should be delayed until the soils in this unit are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing. The suitability of this unit for rangeland seeding is very poor. The main limitations are low average annual precipitation, shallow rooting depth, the content of alkali in the subsoil, and stones and cobbles on the surface.

This unit is limited for roads mainly because of steepness of slope. Stones and cobbles on the surface make it difficult to construct roads. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided because of the underlying hardpan. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

This map unit is in capability subclass VIIs, nonirrigated.

TG—Tenabo-Brock association. This map unit is on alluvial fans and terraces. Slope is 2 to 30 percent. Elevation is 4,500 to 5,300 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 48 degrees F, and the average frost-free period is about 110 days.

This unit is 50 percent Tenabo cobbly silt loam, 2 to 15 percent slopes; 20 percent Brock cobbly loam, 4 to 30 percent slopes; and 20 percent Whirlo gravelly silt loam, 2 to 8 percent slopes. The Tenabo soil is on the older alluvial fans, the Brock soil generally is on terraces and short breaks along drainageways, and the Whirlo soil is mainly on more recent alluvial fans.

Included in this unit is about 7 percent deep, gravelly soils that are free of salt and alkali in the upper part, are on recent alluvial fans, and support big sagebrush and Whirlo soils that have a stony surface layer and are at the heads of alluvial fans. Also included are 2 percent steep Alley soils adjacent to terraces and 1 percent extremely stony Brock soils that generally are below or near small areas of Rock outcrop. Included areas make up about 10 percent of the total acreage.

The Tenabo soil is shallow and well drained. It formed in loess that is high in content of volcanic ash and in the underlying mixed alluvium derived from sandstone, siltstone, conglomerate, and pyroclastic material interbedded with tuff. Typically, the surface layer is light gray cobbly silt loam about 7 inches thick. The subsoil is light yellowish brown and brown clay loam about 11 inches thick. The upper 8 inches of the substratum is a light gray, indurated hardpan that is cemented with silica. The lower part to a depth of 40 inches is light gray very gravelly sandy loam.

Permeability of the Tenabo soil is moderately slow. Available water capacity is low. Effective rooting depth and depth to the hardpan are 9 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight. The subsoil is alkali-affected.

The Brock soil is shallow and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray cobbly loam about 5 inches thick. The subsoil is light gray very gravelly sandy clay loam about 9 inches thick. An indurated, silica-cemented hardpan is at a depth of 14 inches.

Permeability of the Brock soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 8 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. The hardpan and the lower part of the substratum are slightly to moderately salt- and alkali-affected.

The Whirlo soil is very deep and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is pale brown gravelly silt loam about 12 inches thick. The subsoil is very pale brown very gravelly fine sandy loam about 12 inches thick. The substratum to a depth of 60 inches or more is variegated very gravelly coarse sandy loam.

Permeability of the Whirlo soil is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The subsoil is slightly salt- and alkali-affected to a depth of 24 inches and slightly or moderately salt- and alkali-affected below this depth.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Tenabo soil is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale and bud sagebrush. The production of vegetation is limited by low average annual precipitation, shallow rooting depth, and the content of alkali in the soil. The suitability of this soil for rangeland seeding is very poor. The main limitations are low average annual precipitation, shallow rooting depth, and the content of alkali in the subsoil.

The potential plant community on the Brock soil is mainly big sagebrush, spiny hopsage, Thurber needlegrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush and spiny hopsage. The production of vegetation is limited by the low average annual precipitation, shallow rooting depth, and very low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitations are the low average annual precipitation, shallow rooting depth, and very low available water capacity.

The potential plant community on the Whirlo soil is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale and bud sagebrush. The production of vegetation is limited by low average annual precipitation.

Grazing on this unit should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing.

This unit is limited for roads mainly because of steepness of slope. It is also limited by the susceptibility of the soils to frost heaving and the depth to the hardpan of the Brock and Tenabo soils. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Tenabo and Brock soils, because of the underlying hardpan. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. To improve trafficability, roads should also be designed to provide a stable base and an adequate wearing surface.

The Tenabo and Brock soils are in capability subclass VIIs, nonirrigated, and the Whirlo soil is in capability subclasses IIIe, irrigated, and VIIs, nonirrigated.

TH—Tenabo-Rubble land association. This map unit is on the upper parts of alluvial fans. Elevation is 4,600 to 5,500 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 47 degrees F, and the average frost-free period is about 110 days.

This unit is 60 percent Tenabo extremely stony loam, 8 to 30 percent slopes, and 25 percent Rubble land. The Tenabo soil generally is on the less sloping parts of alluvial fans, and Rubble land is in the steeper areas.

Included in this unit are about 8 percent less sloping Tenabo soils that have fewer stones on the surface and generally are near the tops of fans, 4 percent Rock outcrop on rims and ridges adjacent to fans, and 3 percent steep Alley soils on adjacent hillsides. Included areas make up about 15 percent of the total acreage.

The Tenabo soil is shallow and well drained. It formed in loess that is high in content of volcanic ash and in the underlying mixed alluvium derived from sandstone, siltstone, conglomerate, and pyroclastic material interbedded with tuff. Typically, 3 to 15 percent of the surface is covered with stones that are 10 to 18 inches in diameter. The surface layer is light gray extremely stony loam about 7 inches thick. The subsoil is brown clay loam about 11 inches thick. The upper 8 inches of the substratum is a light gray, indurated hardpan that is cemented with silica. The lower part to a depth of 40 inches is light gray very gravelly sandy loam.

Permeability of the Tenabo soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 12 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight. The subsoil is alkali-affected.

Rubble land consists of barren stringers of cobbles, stones, and boulders.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Tenabo soil is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale and bud sagebrush. The production of vegetation is limited by low average annual precipitation, shallow rooting depth, and the content of alkali in the subsoil. The suitability of this unit for rangeland seeding is very poor. The main limitations are low average annual precipitation, shallow rooting depth, the content of alkali in the subsoil, and stones on the surface.

Stones on the surface limit access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas and in areas that have fewer stones on the surface. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing.

This unit is limited for roads because of steepness of slope and stones on the surface. The stones on the surface make construction of roads difficult. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided because of the underlying hardpan. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Tenabo soil is in capability subclass VIIs, nonirrigated, and Rubble land is in capability subclass VIIIs, nonirrigated.

TL—Toeja-Puett association. This map unit is on upland terraces. Slope is 4 to 30 percent. Elevation is 5,400 to 5,600 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 100 days.

This unit is 40 percent Toeja loam, 15 to 30 percent slopes; 30 percent Toeja loam, 4 to 15 percent slopes; and 15 percent Puett fine sandy loam, 15 to 30 percent slopes. The Toeja loam, 4 to 15 percent slopes, is on the cooler, higher lying, north-facing slopes; the Toeja loam, 4 to 15 percent slopes, is in the lower lying areas adjacent to intermittent drainageways; and the Puett soil is on south-facing slopes in areas above the Toeja loam, 4 to 15 percent slopes.

Included in this unit are about 10 percent areas of Badland along the south-facing slopes of ridgetops, 4 percent steep Singletree soils on north-facing slopes, and 1 percent Bosco soils along drainageways. Included areas make up about 15 percent of the total acreage.

Toeja loam, 15 to 30 percent slopes, is deep and well drained. It formed in loess that is high in content of volcanic ash and is underlain by residuum derived dominantly from tuff. Typically, the surface layer is brown loam about 13 inches thick. The subsoil is brown clay loam about 18 inches thick. The substratum is pale brown loam to variegated gravelly coarse sandy loam about 17 inches thick. Weathered tuff is at a depth of 48 inches.

Permeability of Toeja loam, 15 to 30 percent slopes, is moderately slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

Toeja loam, 4 to 15 percent slopes, is deep and well drained. It formed in loess that is high in content of volcanic ash and is underlain by residuum derived dominantly from tuff. Typically, the surface layer is brown loam about 13 inches thick. The subsoil is brown clay loam about 18 inches thick. The substratum is pale brown loam to variegated gravelly coarse sandy loam about 17 inches thick. Weathered tuff is at a depth of 48 inches.

Permeability of Toeja loam, 4 to 15 percent slopes, is moderately slow. Available water capacity is high. Effective rooting depth is 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

The Puett soil is shallow and well drained. It formed in residuum derived dominantly from tuff and tuffaceous sandstone. This soil is light brownish gray fine sandy loam about 18 inches deep over weathered tuff.

Permeability of the Puett soil is moderately rapid. Available water capacity is very low. Effective rooting depth and depth to weathered bedrock are 10 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Toeja soils is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, low rabbitbrush, bluebunch wheatgrass, and Thurber needlegrass.

The production of vegetation on Toeja loam, 15 to 30 percent slopes, is limited by the moderate average annual precipitation and moisture loss because of rapid runoff. The suitability of this soil for rangeland seeding is fair. The main limitations are the moderate average annual precipitation and steepness of slope.

The production of vegetation on Toeja loam, 4 to 15 percent slopes, is limited by the moderate average annual precipitation and moisture loss because of medium runoff. The suitability of this soil for rangeland seeding is fair. The main limitation is the moderate average annual precipitation.

The potential plant community on the Puett soil is mainly big sagebrush, black sagebrush, Indian ricegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush and basin wildrye. The production of vegetation is limited by shallow rooting depth, very low available water capacity, moisture loss because of medium runoff, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitations are shallow rooting depth and very low available water capacity.

Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Toeja soils. Loss of the surface layer results in a significant decrease in productivity and in the potential of the Puett soil to produce vegetation suitable for grazing. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soils are warm and the plants have achieved sufficient growth.

Brush management is needed on the Toeja soils in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soil from erosion and provide a seed source. Range seeding is feasible on this unit when adapted species and suitable seeding methods are used. Seeding of areas of the more favorable Toeja soils in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Puett soil.

This unit is limited for roads mainly because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. Deep cuts should be avoided, especially on the Puett soil, because of the underlying bedrock. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

Toeja loam, 15 to 30 percent slopes, is in capability subclass VIe, nonirrigated; Toeja loam, 4 to 15 percent slopes, is in capability subclass VIc, nonirrigated; and the Puett soil is in capability subclass VIIe, nonirrigated.

TM—Toeja-Ucopia association. This map unit is on uplands. Slope is 15 to 50 percent. Elevation is 5,500 to 6,200 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 95 days.

This unit is 45 percent Toeja loam, 15 to 30 percent slopes; 25 percent Ucopia loamy fine sand, 15 to 30 percent slopes; and 20 percent Ucopia gravelly sandy loam, 30 to 50 percent slopes, eroded. The Toeja loam is in areas that are moderately steep, the Ucopia loamy fine sand is throughout areas of the Toeja soil, and the Ucopia gravelly sandy loam is in steep areas that are above the Ucopia loamy fine sand.

Included in this unit are about 5 percent areas of Badland scattered throughout the unit and 5 percent deep, poorly drained, loamy soils that are in narrow stringers along the bottoms of drainageways and support meadow vegetation. Included areas make up about 10 percent of the total acreage.

The Toeja soil is deep and well drained. It formed in loess that is high in content of volcanic ash and is underlain by residuum derived dominantly from tuff. Typically, the surface layer is brown loam about 13 inches thick. The subsoil is brown clay loam about 18 inches thick. The substratum is pale brown loam to variegated very gravelly coarse sandy loam about 17 inches thick. Weathered tuff is at a depth of 48 inches.

Permeability of the Toeja soil is moderately slow. Available water capacity is high. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

Ucopia loamy fine sand is deep and well drained. It formed in residuum derived dominantly from pumiceous tuff. Typically, the surface layer is grayish brown loamy fine sand about 5 inches thick. The underlying material, to a depth of 50 inches, is grayish brown and light brownish gray sandy loam. Weathered pumiceous tuff is at a depth of 50 inches.

Permeability of Ucopia loamy fine sand is moderately rapid. Available water capacity is moderate. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

Ucopia gravelly sandy loam is deep and well drained. It formed in residuum derived dominantly from pumiceous tuff. Typically, the surface layer is grayish brown gravelly sandy loam about 5 inches thick. The underlying material, to a depth of 50 inches, is grayish brown and light brownish gray sandy loam. Weathered pumiceous tuff is at a depth of 50 inches.

Permeability of Ucopia gravelly sandy loam is moderately rapid. Available water capacity is moderate. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Toeja soil is mainly big sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, low rabbitbrush, bluebunch wheatgrass, and Thurber needlegrass. The production of vegetation is limited by cold temperatures in spring. The suitability of this soil for rangeland seeding is fair. The main limitations are the moderate average annual precipitation and steepness of slope.

The potential plant community on the Ucopia soils is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, needleandthread, Indian ricegrass, and thickspike wheatgrass.

The production of vegetation on the Ucopia loamy fine sand is limited by moderate available water capacity, the sandy texture of the surface layer, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are steepness of slope and the sandy texture of the surface layer.

The production of vegetation on the Ucopia gravelly sandy loam is limited by moderate available water capacity, eroded areas, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Steepness of slope limits access and movement of livestock on the Ucopia gravelly sandy loam. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils are warm and the plants have made enough growth to withstand it.

Brush management is needed on the Toeja soil in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soil from erosion and provide a seed source. Range seeding is feasible on the Toeja soil if adapted species and suitable seeding methods are used. Seeding of areas of the more favorable Toeja soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Ucopia soils.

This unit is limited for roads mainly because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. During prolonged dry periods, roads on the Ucopia loamy fine sand are difficult to maintain because the loose sand provides poor traction and is susceptible to blowing.

The Toeja soil is in capability subclass VIe, nonirrigated, and the Ucopia soils are in capability subclass VIIe, nonirrigated.

TN—Tomera-Cherry Spring association. This map unit is on low terraces. Slope is 2 to 8 percent. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 9 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 105 days.

This unit is 45 percent Tomera silt loam and 45 percent Cherry Spring silt loam.

Included in this unit are about 5 percent moderately deep Cortez soils that have a fine textured subsoil and are scattered throughout the unit and 5 percent Orovada soils in narrow stringers along shallow, intermittent drainageways. Included areas make up about 10 percent of the total acreage.

The Tomera soil is very deep and well drained. It formed in alluvium derived from mixed sedimentary and pyroclastic material. Typically, the surface layer is light brownish gray silt loam about 9 inches thick. The subsoil is light brownish gray and brown gravelly clay to pale brown gravelly sandy clay loam about 30 inches thick. The substratum to a depth of 60 inches or more is light gray very gravelly sandy loam.

Permeability of the Tomera soil is slow. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. The subsoil is slightly salt- and alkali-affected, and the substratum is moderately salt- and alkali-affected.

The Cherry Spring soil is moderately deep and well drained. It formed in loess that is high in content of volcanic ash and is underlain by alluvium derived from mixed rock sources. Typically, the surface layer is light grayish brown silt loam about 15 inches thick. The subsoil is pale brown and light brownish gray loam about 21 inches thick. The substratum, to a depth of 54 inches or more, is a hardpan that is strongly cemented with silica.

Permeability of the Cherry Spring soil is moderately slow. Available water capacity is moderate. Effective rooting depth and depth to the hardpan are 20 to 40 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate.

This unit is used for livestock grazing and wildlife habitat. It can be used for irrigated crops if water for irrigation is made available, and the limitations of slope, the moderate rooting depth of the Cherry Spring soil, and the slightly salt- and alkali-affected subsoil of the Tomera soil are overcome.

The potential plant community on the Tomera soil is mainly big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, cheatgrass, and annual forbs. The production of vegetation is limited by the moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitation is the moderately low average annual precipitation.

The potential plant community on the Cherry Spring soil is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and Webber ricegrass. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, and bottlebrush squirreltail. The production of vegetation is limited by moderate available water capacity and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations for seeding are moderate available water capacity and moderately low average annual precipitation.

Loss of the surface layer results in a significant decrease in productivity and in the potential of the

Cherry Spring soil to produce vegetation suitable for grazing. Grazing should be delayed until the soils in this unit are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing.

Brush management is recommended in areas where unpalatable brush species have increased significantly from the potential plant community. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soils from erosion and provide a seed source. Range seeding can be applied on this unit when species adapted to the moderately low moisture supply are used.

This unit is limited for roads mainly because of the clayey subsoil of the Tomera soil. It is also limited by low load-bearing strength and the susceptibility of the Cherry Spring soil to frost heaving. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface. Roads should be designed to provide surface drainage.

This map unit is in capability subclasses IIIe, irrigated, and VIs, nonirrigated.

TO—Torro-Jack Creek association. This map unit is on mountainsides. Slope is 30 to 75 percent. Elevation is 6,000 to 7,000 feet. The average annual precipitation is about 14 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 80 days.

This unit is 40 percent Torro very gravelly loam, 30 to 50 percent slopes, and 40 percent Jack Creek very gravelly loamy coarse sand, 50 to 75 percent slopes. The Torro soil is on south-facing slopes, and the Jack Creek soil is on mountainsides.

Included in this unit is about 13 percent very steep Singletree soils on north-facing slopes; 5 percent deep, gravelly and loamy soils that are poorly drained, are along narrow canyon bottoms, and support meadow vegetation; and 2 percent springs and seeps at the heads and along the edges of drainageways. Included areas make up about 20 percent of the total acreage.

The Torro soil is very deep and well drained. It formed in residuum and colluvium derived from chert, shale, and some volcanic ash and loess. Typically, the surface layer is grayish brown very gravelly loam about 13 inches thick. The subsoil is light yellowish brown very gravelly clay loam about 12 inches thick. The underlying material, to a depth of 50 inches, is pale brown very gravelly coarse sandy loam.

Permeability of the Torro soil is moderate. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Jack Creek soil is deep and excessively drained. It formed in material weathered dominantly from chert and shale. Typically, the surface layer is dark gray very gravelly loamy coarse sand about 15 inches thick. The underlying material to a depth of 60 inches or more is dark gray very gravelly loamy coarse sand.

Permeability of the Jack Creek soil is rapid. Available water capacity is low. Effective rooting depth and depth to bedrock are 48 to 62 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Torro soil is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, rabbitbrush, bluebunch wheatgrass, and basin wildrye. The production of vegetation is limited by the low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Jack Creek soil is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and cheatgrass. The production of vegetation is limited by the low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitations are the very gravelly texture of the surface layer and steepness of slope.

Steepness of slope limits access and movement of livestock on this unit. Livestock grazing should be managed to protect the unit from excessive erosion and to avoid overuse in the less sloping areas of the Torro soil. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils are warm and the plants have achieved sufficient growth.

This unit is limited for roads because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be designed to provide surface drainage.

The Torro soil is in capability subclass VIIe, nonirrigated, and the Jack Creek soil is in capability subclass VIIs, nonirrigated.

TR—Torro-Tusel association. This map unit is on mountainsides. Slope is 30 to 50 percent. Elevation is 6,500 to 7,500 feet. The average annual precipitation is about 16 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 70 days.

This unit is 40 percent Torro very gravelly loam and 40 percent Tusel very gravelly loam. The Torro soil is on south-facing slopes. The Tusel soil is in snow pocket areas mainly on north- and west-facing slopes; thus, it receives more effective moisture than the rest of the unit.

Included in this unit are about 6 percent moderately steep Packer soils near ridgetops; 6 percent moderately steep Primeaux soils on west-facing slopes; and 3 percent soils, on narrow ridgetops, that are shallow to bedrock. Also included are 3 percent deep, loamy soils on the bottoms of drainageways, 1 percent Rock outcrop, and 1 percent very steep Ferdelford soils. Included areas make up about 20 percent of the total acreage.

The Torro soil is very deep and well drained. It formed in residuum and colluvium derived from chert, shale, and some volcanic ash and loess. Typically, the surface layer is grayish brown very gravelly loam about 13 inches thick. The subsoil is light yellowish brown very gravelly clay loam about 12 inches thick. The substratum, to a depth of 50 inches or more, is pale brown very gravelly coarse sandy loam.

Permeability of the Torro soil is moderate. Available water capacity is low. Effective rooting depth is 50 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Tusel soil is very deep and excessively drained. It formed in material derived from quartzite, chert, shale, and loess that is high in content of pyroclastic material. Typically, the surface layer is dark grayish brown very gravelly loam about 17 inches thick. The subsoil is brown very gravelly clay loam to pale brown very gravelly sandy clay loam about 33 inches thick.

Permeability of the Tusel soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Torro soil is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, rabbitbrush, bluebunch wheatgrass, and basin wildrye. The production of vegetation is limited by the low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Tusel soil is mainly big sagebrush, snowberry, antelope bitterbrush, and Idaho fescue. The present vegetation in most areas is mainly big sagebrush, snowberry, slender wheatgrass, and lupine. The production of vegetation is limited by the short growing season and cold temperatures in spring. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Steepness of slope limits access and movement of livestock on this unit. Livestock grazing should be managed to protect the unit from excessive erosion and to avoid overuse in the less sloping areas. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils are warm and the plants have achieved sufficient growth.

This unit is limited for roads because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

This map unit is in capability subclass VIIe, nonirrigated.

TS—Torro-Tusel-Badland association. This map unit is on mountainsides. Slope is 30 to 50 percent. Elevation is 6,500 to 7,500 feet. The average annual precipitation is about 15 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 70 days.

This unit is 50 percent Torro very gravelly loam, 30 to 50 percent slopes, 20 percent Tusel very gravelly loam, 30 to 50 percent slopes, and 20 percent Badland. The Torro soil is on south-facing slopes. The Tusel soil is in snow pocket areas on north-facing slopes; thus, it receives more effective moisture than the rest of the unit. Badland is barren areas on very steep knobs and near ridgetops.

Included in this unit are about 5 percent Rock outcrop, 2 percent steep Mascamp soils that are shallow to bedrock, 2 percent very steep Ferdelford soils, and 1 percent steep Packer soils that have a cobbly surface layer. Included areas make up about 10 percent of the total acreage.

The Torro soil is very deep and well drained. It formed in residuum and colluvium derived from chert, shale, and some volcanic ash and loess. Typically, the surface layer is grayish brown very gravelly loam about 13 inches thick. The subsoil is light yellowish brown very gravelly clay loam about 12 inches thick. The substratum, to a depth of 50 inches or more, is pale brown very gravelly coarse sandy loam.

Permeability of the Torro soil is moderate. Available water capacity is low. Effective rooting depth is 50 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Tusel soil is very deep and well drained. It formed in material derived from quartzite, chert, shale, and loess that is high in content of pyroclastic material. Typically, the surface layer is dark grayish brown very gravelly loam about 17 inches thick. The subsoil is brown very gravelly clay loam to pale brown very gravelly sandy clay loam about 33 inches thick.

Permeability of the Tusel soil is moderate. Available water capacity is moderate. Effective rooting depth is 50 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

Badland consists of very steep, severely eroded areas that are nearly barren of vegetation. Runoff is very rapid, and the hazard of water erosion is very high.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Torro soil is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, rabbitbrush, bluebunch wheatgrass, and basin wildrye. The production of vegetation is limited by the low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Tusel soil is mainly big sagebrush, snowberry, antelope bitterbrush, and Idaho fescue. The present vegetation in most areas is mainly big sagebrush, snowberry, slender wheatgrass, and lupine. The production of vegetation is limited by the short growing season and cold temperatures in spring. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Steepness of slope limits access and movement of livestock on this unit. Livestock grazing should be managed to protect the unit from excessive erosion and to avoid overuse in the less sloping areas. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils are warm and the plants have matured enough to withstand grazing.

This unit is limited for roads because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

The Torro and Tusel soils are in capability subclass VIIe, nonirrigated, and Badland is in capability subclass VIIIe.

TT—Torro-Tusel-Packer association. This map unit is on mountainsides. Slope is 30 to 50 percent. Elevation is 6,500 to 7,500 feet. The average annual precipitation is about 15 inches, the average annual air temperature is about 42 degrees F, and the average frost-free period is about 70 days.

This unit is 40 percent Torro very gravelly loam, 20 percent Tusel very gravelly loam, and 20 percent Packer very cobbly loam. The Torro soil is on south-facing slopes, the Tusel soil is mainly on north-facing slopes, and the Packer soil is mainly in the cooler, higher lying areas near ridgetops. The Tusel soil receives more annual precipitation than the rest of the unit.

Included in this unit are about 7 percent moderately steep Packer very cobbly loam, 5 percent soils that are shallow to bedrock, and 4 percent Rock outcrop along the narrow ridgetops. Also included are 2 percent steep Singletree soils along the lower edges of north-facing slopes and 2 percent moderately steep Taylor Creek loam. Included areas make up about 20 percent of the total acreage.

The Torro soil is very deep and well drained. It formed in residuum and colluvium derived from chert, shale, and some volcanic ash and loess. Typically, the surface layer is grayish brown very gravelly loam about 13 inches thick. The subsoil is light yellowish brown very gravelly clay loam about 12 inches thick. The substratum, to a depth of 50 inches, is pale brown very gravelly coarse sandy loam.

Permeability of the Torro soil is moderate. Available water capacity is low. Effective rooting depth is 50 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Tusel soil is very deep and well drained. It formed in residuum and colluvium derived from quartzite, chert, shale, and loess that is high in content of pyroclastic material. Typically, the surface layer is dark grayish brown very gravelly loam about 17 inches thick. The subsoil is brown very gravelly clay loam to pale brown very gravelly sandy clay loam about 33 inches thick.

Permeability of the Tusel soil is moderate. Available water capacity is moderate. Effective rooting depth is 50 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Packer soil is deep and well drained. It formed in material weathered dominantly from chert and quartzite. Typically, the surface layer is grayish brown very cobbly loam about 6 inches thick. The subsoil is brown very cobbly clay loam about 7 inches thick. The substratum, to a depth of 50 inches, is light yellowish brown and brown very cobbly sandy loam.

Permeability of the Packer soil is moderate. Available water capacity is low. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Torro soil is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, rabbitbrush, bluebunch wheatgrass, and basin wildrye. The production of vegetation is limited by the low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Tusel soil is mainly big sagebrush, snowberry, antelope bitterbrush, and Idaho fescue. The present vegetation in most areas is mainly big sagebrush, snowberry, slender wheatgrass, and lupine. The production of vegetation is limited by the short growing season and the cold temperatures in spring. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Packer soil is mainly low sagebrush, Idaho fescue, Sandberg bluegrass, and bottlebrush squirreltail. The present vegetation in most areas is mainly low sagebrush, buckwheat, common pricklygilia, and Sandberg bluegrass. The production of vegetation is limited by the low available water capacity and the loss of moisture because of the drying action of the wind. The suitability of this soil for rangeland seeding is very poor. The main limitations are cobbles on the surface and steepness of slope.

Steepness of slope limits access and movement of livestock on this unit. Livestock grazing should be managed to protect the unit from excessive erosion and to avoid overuse in the less sloping areas. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soils are warm and the plants have achieved sufficient growth.

This unit is limited for roads because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. Stones and cobbles in the Packer soil can cause road hazards and increase maintenance costs unless an adequate wearing surface is maintained.

The Torro and Tusel soils are in capability subclass VIIe, nonirrigated, and the Packer soil is in capability subclass VIIs, nonirrigated.

TU—Triplen-Tenabo association. This map unit is on alluvial fans and terraces. Slope is 0 to 15 percent. Elevation is 5,000 to 5,200 feet. The average annual precipitation is about 8 inches, the average annual air temperature is about 46 degrees F, and the average frost-free period is about 110 days.

This unit is 65 percent Triplen silt loam, 4 to 15 percent slopes, and 20 percent Tenabo silt loam, 0 to 2 percent slopes, eroded. The Triplen soil is on terraces, and the Tenabo soil is in slightly concave depressional areas of alluvial fans around the head of and along shallow, intermittent drainageways.

Included in this unit are about 5 percent Puett soils on south-facing slopes and on remnant hills, 5 percent areas of Badland in eroded areas on terraces and steep, south-facing slopes, 3 percent Cherry Spring soils on dissected areas of terraces, and 2 percent shallow, gently sloping and moderately sloping Chiara soils on terraces. Included areas make up about 15 percent of the total acreage.

The Triplen soil is very deep and well drained. It formed in calcareous alluvium derived from tuff and some loess that is high in content of volcanic ash. Typically, the surface layer is light brownish gray silt loam about 3 inches thick. The subsoil is light brownish gray silt loam about 5 inches thick. The substratum to a depth of 60 inches or more is stratified, pale brown and white silt loam, fine sandy loam, and gravelly sandy loam. Durinodes are in the upper part of the substratum.

Permeability of the Triplen soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is moderate. The soil is slightly salt- and alkali-affected below a depth of 8 inches.

The Tenabo soil is shallow and well drained. It formed in loess that is high in content of volcanic ash and in the underlying mixed alluvium derived from sandstone, siltstone, conglomerate, and pyroclastic material interbedded with tuff. Typically, the surface layer is light gray silt loam about 2 inches thick. The subsoil is light yellowish brown and brown clay loam about 10 inches thick. The upper 5 inches of the substratum is an indurated hardpan that is cemented with silica. The lower part, to a depth of 40 inches, is light gray very gravelly sandy loam.

Permeability of the Tenabo soil is moderately slow. Available water capacity is very low. Effective rooting depth and depth to the hardpan are 9 to 20 inches. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The subsoil is alkali-affected.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Triplen soil is mainly big sagebrush, Thurber needlegrass, bluebunch wheatgrass, and Sandberg bluegrass. The present vegetation in most areas is mainly big sagebrush, Thurber needlegrass, and Sandberg bluegrass. The production of vegetation is limited by the moderately low average annual precipitation; however, this soil receives some runoff from adjacent areas. The suitability of this soil for rangeland seeding is poor. The main limitation is moderately low average annual precipitation.

The potential plant community on the Tenabo soil is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale and bud sagebrush. The production of vegetation is limited by low average annual precipitation, shallow rooting depth, and the content of alkali in the subsoil. The suitability of this soil for rangeland seeding is very poor. The main limitations are low average annual precipitation, shallow rooting depth, and the content of alkali in the subsoil.

Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing. Seeding of areas of the more favorable Triplen soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Tenabo soil.

This unit is moderately limited for roads because of the susceptability of the soils to frost heaving, the depth to the hardpan of the Tenabo soil, and slope of the Triplen soil. Deep cuts should be avoided, especially on the Tenabo soil, because of the underlying hardpan. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. To improve trafficability, roads should also be provided with a stable base and an adequate wearing surface.

The Triplen soil is in capability subclasses IVe, irrigated, and VIs, nonirrigated; and the Tenabo soil is in capability subclass VIIe, nonirrigated.

TV—Tusel-Hapgood association. This map unit is on north-facing mountainsides. Slope is 30 to 50 percent. Elevation is 7,000 to 8,500 feet. The average annual precipitation is about 15 inches, the average annual air temperature is about 42 degrees F, and the average frost-free period is about 60 days.

This unit is 40 percent Tusel very gravelly loam, 20 percent Hapgood silt loam, and 20 percent Packer very cobbly loam. The Tusel soil is in slightly convex areas, the Hapgood soil is in slightly concave areas, and the Packer soil is on ridges.

Included in this unit are about 8 percent steep Torro soils on south-facing slopes, 7 percent steep, very gravelly Hapgood soils in areas throughout the unit, 3 percent Rock outcrop near or on ridgetops, and 2 percent small, isolated areas of nearly barren snow pockets near the upper edges of north-facing slopes. Included areas make up about 20 percent of the total acreage.

The Tusel soil is very deep and well drained. It formed in residuum and colluvium derived from quartzite, chert, shale, and some loess that is high in content of pyroclastic material. Typically, the surface layer is dark grayish brown very gravelly loam about 17 inches thick. The subsoil is brown very gravelly clay loam to pale brown very gravelly sandy clay loam about 33 inches thick.

Permeability of the Tusel soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Hapgood soil is deep and well drained. It formed in material weathered dominantly from tuff, andesite, and basalt. Typically, the surface layer is very dark grayish brown silt loam about 13 inches thick. The underlying material to a depth of 50 inches is dark grayish brown gravelly loam to light brownish gray extremely gravelly sandy loam. Unweathered bedrock is at a depth of 50 inches.

Permeability of the Hapgood soil is moderate. Available water capacity is low. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

The Packer soil is deep and well drained. It formed in material weathered dominantly from chert and quartzite. Typically, the surface layer is grayish brown very cobbly loam about 13 inches thick. The subsoil is brown very cobbly clay loam about 14 inches thick. The substratum, to a depth of 50 inches, is light yellowish brown and brown very cobbly sandy loam.

Permeability of the Packer soil is moderate. Available water capacity is low. Effective rooting depth and depth to bedrock are 40 to 60 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat. The Hapgood soil has potential for aspen woodland.

The potential plant community on the Tusel soil is mainly big sagebrush, snowberry, antelope bitterbrush, and Idaho fescue. The present vegetation in most areas is mainly big sagebrush, snowberry, slender wheatgrass, and lupine. The production of vegetation is limited by the short growing season and the cold temperatures in spring. The suitability of this soil for rangeland seeding is very poor. The main limitation is the steepness of slope.

If managed for livestock grazing, the plant community on the Hapgood soil is mainly quaking aspen, mountain brome, slender wheatgrass, Idaho fescue, meadowrue, and snowberry. Production of air-dry forage is about 1,000 pounds per acre in normal years, 1,500 pounds in favorable years, and 750 pounds in unfavorable years. The present vegetation in most areas is mainly snowberry and quaking aspen. The production of vegetation suited for livestock grazing is limited by the short growing season, shading and competition from trees, and low available water capacity. The suitability of this soil for rangeland seeding is very poor. The main limitations are steepness of slope and competition from woody plants.

The potential plant community on the Packer soil is mainly low sagebrush, Idaho fescue, Sandberg bluegrass, and bottlebrush squirreltail. The present vegetation in most areas is mainly low sagebrush, buckwheat, common pricklygilia, and Sandberg bluegrass. The production of vegetation suitable for livestock grazing is limited by the low available water capacity and the loss of moisture because of the drying action of the wind. The suitability of this soil for rangeland seeding is very poor. The main limitations are cobbles on the surface and steepness of slope.

Steepness of slope limits access and movement of livestock. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas. Removal of trees increases forage production on the Hapgood soil. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soils are warm and the plants have achieved sufficient growth.

This unit is limited for roads because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Cobbles in the Packer soil can cause road hazards and increase maintenance costs unless an adequate wearing surface is maintained. Roads should be designed to provide surface drainage.

The Tusel and Hapgood soils are in capability subclass VIIe, nonirrigated, and the Packer soil is in capability subclass VIIs, nonirrigated.

UHE—Ucopia-Humdun association, hilly. This map unit is on hilly uplands. Slope is 15 to 50 percent. Elevation is 5,600 to 6,000 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 95 days.

This unit is 50 percent Ucopia loamy fine sand, 15 to 30 percent slopes; 20 percent Ucopia gravelly sandy loam, 30 to 50 percent slopes, eroded; and 20 percent Humdun silt loam, 15 to 30 percent slopes. The Ucopia loamy fine sand is in the lower lying areas, the Ucopia gravelly sandy loam is in the higher lying areas, and the Humdun soil is in the middle areas.

Included in this unit are about 5 percent areas of Badland and 5 percent deep, poorly drained, loamy soils that are along narrow creek bottoms and support meadow vegetation. Included areas make up about 10 percent of the total acreage.

Ucopia loamy fine sand is deep and well drained. It formed in residuum derived dominantly from pumiceous tuff. Typically, the surface layer is grayish brown loamy fine sand about 5 inches thick. The underlying material, to a depth of 50 inches, is grayish brown and light brownish gray sandy loam. Weathered pumiceous tuff is at a depth of 50 inches.

Permeability of Ucopia loamy fine sand is moderately rapid. Available water capacity is moderate. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

Ucopia gravelly sandy loam is deep and well drained. It formed in residuum derived dominantly from pumiceous tuff. Typically, the surface layer is grayish brown gravelly sandy loam about 5 inches thick. The underlying material, to a depth of 50 inches, is grayish brown and light brownish gray sandy loam. Weathered pumiceous tuff is at a depth of 50 inches.

Permeability of Ucopia gravelly sandy loam is moderately rapid. Available water capacity is moderate. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

The Humdun soil is very deep and well drained. It formed in loess that is moderate in content of volcanic ash and is underlain by alluvium and residuum derived dominantly from soft tuff. Typically, the surface layer is grayish brown silt loam about 8 inches thick. The subsoil is light brownish gray and pale brown silt loam about 22 inches thick. The substratum to a depth of 60 inches or more is pale brown silt loam that is weakly cemented with silica. It has some durinodes.

Permeability of the Humdun soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ucopia soils is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, needleandthread, Indian ricegrass, and thickspike wheatgrass.

The production of vegetation on the Ucopia loamy fine sand is limited by moderate available water capacity, the sandy texture of the surface layer, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are steepness of slope and the sandy texture of the surface layer.

The production of vegetation on the Ucopia gravelly sandy loam is limited by moderate available water capacity, eroded areas, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Humdun soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, cheatgrass, and bluebunch wheatgrass. The production of vegetation is limited by loss of moisture because of rapid runoff and moderate average annual precipitation. The suitability of this soil for rangeland seeding is fair. The main limitations are the moderate average annual precipitation and steepness of slope.

Steepness of slope limits access and movement of livestock on the Ucopia gravelly sandy loam. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas. Cold soil temperatures delay plant growth. Therefore, grazing should be delayed until the soils are warm and the plants have made sufficient growth.

Brush management is recommended on the Humdun soil in areas where unpalatable brush species have increased significantly. Range seeding should follow if the desirable plants are not present in sufficient amounts to protect the soil from erosion and provide a seed source. Range seeding is feasible on the Humdun soil if adapted species and suitable seeding methods are used. Seeding of areas of the more favorable Humdun soil in this unit is difficult because of their small size and the pattern in which they occur with the less favorable Ucopia soils.

This unit is limited for roads mainly because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage. During prolonged dry periods, roads on the Ucopia loamy fine sand are difficult to maintain because of the loose sand that results in poor traction and is susceptible to blowing.

The Ucopia soils are in capability subclass VIIe, nonirrigated, and the Humdun soil is in capability subclass VIe, nonirrigated.

UHF—Ucopia-Humdun association, steep. This map unit is on uplands. Slope is 15 to 50 percent. Elevation is 5,400 to 5,800 feet. The average annual precipitation is about 11 inches, the average annual air temperature is about 44 degrees F, and the average frost-free period is about 95 days.

This unit is 40 percent Ucopia loamy fine sand, 15 to 30 percent slopes; 25 percent Ucopia gravelly sandy loam, 30 to 50 percent slopes, eroded; and 20 percent Humdun silt loam, 30 to 50 percent slopes. The Ucopia loamy fine sand is in the lower lying areas of the unit, the Ucopia gravelly sandy loam is on south- and west-facing slopes in higher lying areas, and the Humdun soil is on north-facing slopes.

Included in this unit are about 8 percent moderately steep Humdun soils, 5 percent steep, moderately coarse textured soils that are shallow to bedrock, and 2 percent areas of Badland. Included areas make up about 15 percent of the total acreage.

Ucopia loamy fine sand is deep and well drained. It formed in residuum derived dominantly from pumiceous tuff. Typically, the surface layer is grayish brown loamy fine sand about 5 inches thick. The underlying material, to a depth of 50 inches, is grayish brown and light brownish gray sandy loam. Weathered pumiceous tuff is at a depth of 50 inches.

Permeability of Ucopia loamy fine sand is moderately rapid. Available water capacity is moderate. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is high.

Ucopia gravelly sandy loam is deep and well drained. It formed in residuum derived dominantly from pumiceous tuff. Typically, the surface layer is grayish brown gravelly sandy loam about 5 inches thick. The underlying material, to a depth of 50 inches, is grayish brown and light brownish gray sandy loam. Weathered pumiceous tuff is at a depth of 50 inches.

Permeability of Ucopia gravelly sandy loam is moderately rapid. Available water capacity is moderate. Effective rooting depth and depth to weathered bedrock are 40 to 60 inches. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is slight.

The Humdun soil is very deep and well drained. It formed in loess that is moderate in content of volcanic ash and is underlain by alluvium and residuum derived dominantly from soft tuff. Typically, the surface layer is grayish brown silt loam about 8 inches thick. The subsoil is light brownish gray and pale brown silt loam about 22 inches thick. The substratum to a depth of 60 inches or more is pale brown silt loam. It has some durinodes.

Permeability of the Humdun soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Ucopia soils is mainly big sagebrush, antelope bitterbrush, bluebunch wheatgrass, and Thurber needlegrass. The present vegetation in most areas is mainly big sagebrush, needleandthread, Indian ricegrass, and thickspike wheatgrass.

The production of vegetation on the Ucopia loamy fine sand is limited by moderate available water capacity, the sandy texture of the surface layer, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are steepness of slope and the sandy texture of the surface layer.

The production of vegetation on the Ucopia gravelly sandy loam is limited by moderate available water capacity, eroded areas, and moderate average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

The potential plant community on the Humdun soil is mainly big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and basin wildrye. The present vegetation in most areas is mainly big sagebrush, Sandberg bluegrass, cheatgrass, and bluebunch wheatgrass. The production of vegetation is limited by loss of moisture because of rapid runoff and moderate average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is steepness of slope.

Steepness of slope limits access and movement of livestock on the Ucopia gravelly sandy loam and the Humdun soil. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas of the Ucopia loamy fine sand. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soils are warm and the plants have achieved sufficient growth.

This unit is limited for roads because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be designed to provide surface drainage. During prolonged dry periods, roads on the Ucopia loamy fine sand are difficult to maintain because of the loose sand that results in poor traction and is susceptible to blowing.

This map unit is in capability subclass VIIe, nonirrigated.

UKF—Urtah gravelly loam, 30 to 50 percent slopes. This moderately deep, well drained soil is on foothills and mountainsides. It formed in residuum and colluvium derived dominantly from limestone. Elevation is 6,700 to 8,200 feet. The average annual precipitation is about 14 inches, the average annual air temperature is about 43 degrees F, and the average frost-free season is about 65 days.

Typically, the surface layer is grayish brown gravelly loam about 4 inches thick. The upper 12 inches of the underlying material is light brownish gray gravelly sandy loam. The lower part to a depth of 36 inches is light brownish gray and pale brown very gravelly sandy clay loam. Unweathered limestone is at a depth of 36 inches.

Included in this unit are about 10 percent Rock outcrop and 10 percent soils, on narrow ridgetops, that are shallow to bedrock. Included areas make up about 20 percent of the total acreage.

Permeability of this Urtah soil is moderate. Available water capacity is very low. Effective rooting depth and depth to unweathered bedrock are 20 to 40 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight.

This unit is used for wildlife habitat. It can be used for livestock grazing and wood production if the limitations of restricted access and movement on the steep slopes are overcome.

If managed for livestock grazing, the understory plant community on this unit is mainly curlleaf mountainmahogany, antelope bitterbrush, Indian ricegrass, and bottlebrush squirreltail. The production of air-dry forage on this woodland site is about 450 pounds per acre in normal years, 600 pounds in favorable years, and 300 pounds in unfavorable years. The present vegetation in most areas is mainly Utah juniper and singleleaf pinyon with an understory of big sagebrush and Thurber needlegrass. The production of vegetation is limited by the very low available water capacity, competition from unpalatable woody plants, and the short growing season. The suitability of this unit for rangeland seeding is very poor. The main limitation is steepness of slope.

Steepness of slope limits access and movement of livestock on this unit. Livestock grazing should be managed to protect this unit from excessive erosion and to avoid overuse in the less sloping areas. Cold soil temperatures delay plant growth and readiness for grazing. Therefore, grazing should be delayed until the soil is warm and the plants have achieved sufficient growth. Loss of the surface layer results in a significant decrease in productivity and in the potential of the unit to produce vegetation suitable for grazing.

This unit is moderately suited to the production of trees for firewood and fenceposts. It can produce 10 cords per acre in a stand of trees that average 5 inches in diameter at a height of 1 foot. The main concerns in producing and harvesting timber are limited accessibility because of steepness of slope and the high hazard of erosion.

This unit is limited for roads because of steepness of slope. Roads should be located in the less sloping areas, if feasible, to avoid excessive cuts and fills. To minimize erosion and reduce maintenance costs, disturbed areas need to be stabilized. Roads should be provided with surface drainage.

This map unit is in capability subclass VIIe, nonirrigated.

Wc—Welch loam. This very deep, poorly drained soil is on flood plains. It formed in alluvium derived from mixed rock sources. Slope is 0 to 2 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 43 degrees F, and the average frost-free season is about 80 days.

Typically, the surface layer is very dark gray loam about 5 inches thick. The underlying material to a depth of 60 inches or more is stratified, very dark gray silty clay loam and dark gray and gray sandy clay loam.

Included in this unit is about 15 percent Bosco soils on slightly higher lying stream terraces along the outer edges of flood plains.

Permeability of this Welch soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 12 to 18 inches from March to June. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Frequent, brief periods of flooding occur when the streamflow is high.

Most areas of this unit are used for irrigated meadow hay, pasture, and wildlife habitat. A few areas are used for livestock grazing.

The potential plant community on this unit is mainly tufted hairgrass, big bluegrass, and sedges. The present vegetation in most areas is mainly sedges, big bluegrass, and Baltic rush. The production of vegetation is limited by frequent periods of flooding in spring.

Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is moderately suited to irrigated meadow hay and pasture. The main limitations are a seasonal high water table and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion, and irrigation water should be managed to avoid prolonged periods of wetness. Surface drains can hold the water table at its present level, shorten the periods of ponding, and inhibit the growth of the less palatable water-tolerant plants. Shallow rooted, water-tolerant plants should be grown. The use of fertilizer will promote good growth of forage and hay plants. Grazing when the soil is wet results in compaction of the surface layer, poor tilth, and excessive runoff.

This unit is poorly suited to roads and should be avoided where possible. It is limited mainly by low load-bearing strength, the hazard of flooding, and the susceptibility of the soil to frost heaving.

This map unit is in capability subclass Vw, irrigated.

Wd—Welch loam, drained. This very deep, drained soil is on flood plains. It formed in alluvium derived from mixed rock. Slope is 0 to 2 percent. Elevation is 4,800 to 6,000 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 43 degrees F, and the average frost-free season is about 90 days.

Typically, the surface layer is dark gray loam about 7 inches thick. The underlying material to a depth of 60 inches or more is stratified, dark gray, dark grayish brown, and grayish brown clay loam and gravelly clay loam.

Included in this unit are about 10 percent Bosco soils on low lying stream terraces along the outer edges of flood plains and 5 percent poorly drained Welch soils in slightly depressional areas bordering stream channels. The Welch soils support meadow grasses. Included areas make up about 15 percent of the total acreage.

Permeability of this Welch soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 48 to 72 inches from February to May. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Frequent, brief periods of flooding occur when the streamflow is high. Drainage was altered when the water table lowered as a result of streams changing channel and channel entrenchment.

Most areas of this unit are used for irrigated hay and pasture and for wildlife habitat. A few areas are used for livestock grazing.

The potential plant community on this unit is mainly big sagebrush, basin wildrye, and western wheatgrass. The present vegetation in most areas is mainly big sagebrush, rubber rabbitbrush, and basin wildrye. The production of vegetation is limited by frequent periods of flooding or ponding in spring.

Grazing should be delayed until the soil has drained sufficiently and is firm enough to withstand trampling by livestock. The suitability of this unit for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding in spring. Plants that tolerate wetness should be seeded. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is well suited to irrigated hay and pasture. It is limited mainly by the seasonal high water table and the hazard of flooding in spring. Protection from flooding is needed to prevent excessive erosion. Irrigation water should be managed to avoid prolonged periods of wetness. Proper placement of rows, field ditches, and vegetated outlets are needed to remove excess surface water and hold the water table at its present level. Deep-rooted crops are suited to the unit except in areas of the poorly drained included soils.

This unit is limited for roads because of low load-bearing strength, the hazard of flooding, and the susceptibility of the soil to frost heaving. To minimize erosion and reduce maintenance costs, roads should be designed to provide protection from flooding, surface drainage, and a stable subgrade.

This map unit is in capability subclasses IIIw, irrigated, and VIw, nonirrigated.

WE—Welch-Bosco association. This map unit is on very narrow flood plains along stream channels. Slope is 0 to 2 percent. Elevation is 5,000 to 6,000 feet. The average annual precipitation is about 10 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 90 days.

This unit is 70 percent Welch loam, drained, and 20 percent Bosco very gravelly loam. The Welch soil is in slightly lower lying areas of flood plains, and the Bosco soil is narrow stringers in slightly higher lying areas of stream terraces throughout the flood plains.

Included in this unit are about 5 percent poorly drained Welch soils in slightly depressional areas bordering stream channels and 5 percent poorly drained, moderately coarse textured Four Star soils in areas bordering stream channels. These soils support meadow grasses. Included areas make up about 10 percent of the total acreage.

The Welch soil is very deep and drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is dark gray loam about 7 inches thick. The underlying material to a depth of 60 inches or more is stratified, dark gray, dark grayish brown, and grayish brown clay loam and gravelly clay loam.

Permeability of the Welch soil is moderately slow. Available water capacity is high. Effective rooting depth is limited by a seasonal high water table that is at a depth of 48 to 72 inches from March to May. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Frequent, brief periods of flooding occur when the streamflow is high. Drainage was altered when the water table lowered as a result of streams changing channel or by channel entrenchment.

The Bosco soil is very deep and somewhat excessively drained. It formed in mixed alluvium derived dominantly from volcanic and sedimentary rock. Typically, the surface layer is grayish brown very gravelly loam about 15 inches thick. The upper 31 inches of the underlying material is stratified, pale brown very gravelly loam and very gravelly sandy loam. The lower part to a depth of 70 inches is variegated very gravelly sand.

Permeability of the Bosco soil is moderately rapid. Available water capacity is moderate. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight.

Most areas of this unit are used for livestock grazing and wildlife habitat. Some areas can be used for irrigated hay, pasture, or cultivated crops if water for irrigation is made available. The main limitations are the hazard of flooding and the seasonal high water table on the Welch soil and moderate available water capacity and moderately rapid permeability on the Bosco soil.

The potential plant community on the Welch soil is mainly big sagebrush, basin wildrye, and western wheatgrass. The present vegetation in most areas is mainly big sagebrush, rubber rabbitbrush, and basin wildrye. The production of vegetation is limited by frequent periods of flooding or ponding in spring. The suitability of this soil for rangeland seeding is fair. The main limitation is the hazard of flooding or ponding.

The potential plant community on the Bosco soil is mainly big sagebrush, basin wildrye, and Nevada bluegrass. The present vegetation in most areas is mainly big sagebrush, basin wildrye, and cheatgrass. The production of vegetation is limited by moderate available water capacity and moderately low average annual precipitation. The suitability of this soil for rangeland seeding is poor. The main limitations are moderately low average annual precipitation and the very gravelly surface layer.

Grazing on this unit should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock. This unit should be seeded with plants that tolerate wetness. If the plant cover is disturbed, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion.

This unit is limited for roads mainly because of the susceptibility of the soils to frost heaving and the low load-bearing strength and hazard of flooding on the Welch soil. To minimize erosion and reduce maintenance costs, roads should be protected from flooding and provided with surface drainage and a stable subgrade.

The Welch soil is in capability subclasses IIIw, irrigated, and VIw, nonirrigated; and the Bosco soil is in capability subclasses IVs, irrigated, and VIIs, nonirrigated.

WGB—Whirlo gravelly silt loam, 2 to 8 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in alluvium derived from mixed rock sources. Elevation is 4,500 to 5,000 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is pale brown gravelly silt loam about 7 inches thick. The subsoil is very pale brown very gravelly fine sandy loam about 5 inches thick. The substratum to a depth of 60 inches or more is variegated very gravelly coarse sandy loam.

Included in this unit is about 10 percent moderately deep Cherry Spring soils on alluvial fans.

Permeability of this Whirlo soil is moderately rapid. Available water capacity is low. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The substratum is slightly or moderately salt- and alkali-affected. The content of salts and alkali increases with depth.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale, bud sagebrush, and a small amount of big sagebrush. The production of vegetation is limited by the low average annual precipitation. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing pressure.

This unit is well suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by steepness of slope, low available water capacity, the slight or moderate salinity and alkalinity of the substratum, and a silty surface layer that tends to crust, which adversely affects the water intake rate. Applications of irrigation water should be adjusted to the available water capacity, the water intake rate, and the crop needs to avoid overirrigating and leaching of plant nutrients. Proper application of irrigation water is needed to prevent an increase in the content of salts and alkali. Heavy, periodic applications of water are needed to leach out excess salts. Crusting of the surface and compaction can be reduced by returning crop residue to the soil and by keeping tillage to a minimum.

This unit is moderately limited for roads because of the susceptibility of the soil to frost heaving. To improve trafficability, roads should be provided with surface drainage, a stable base, and an adequate wearing surface.

This map unit is in capability subclasses IIIe, irrigated, and VIIs, nonirrigated.

WH—Whirlo-Tenabo association. This map unit is on alluvial fans. Slope is 2 to 15 percent. Elevation is 4,900 to 5,100 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 48 degrees F, and the average frost-free period is about 110 days.

This unit is 60 percent Whirlo very stony fine sandy loam, 4 to 15 percent slopes, and 20 percent Tenabo cobbly silt loam, 2 to 15 percent slopes. The Whirlo soil is in the higher lying areas, and the Tenabo soil is in the lower lying areas.

Included in this unit are about 10 percent extremely stony soils and Rock outcrop scattered throughout areas of the Whirlo soil, 8 percent nearly level Tenabo soils and strongly sloping and moderately steep Tenabo soils that have an extremely stony surface, and 2 percent deep, loamy soils on small mounds from old badger diggings. Included areas make up about 20 percent of the total acreage.

The Whirlo soil is very deep and well drained. It formed in alluvium derived from mixed rock. Typically, the surface layer is light brownish gray very stony fine sandy loam about 7 inches thick. The subsoil is very pale brown fine sandy loam about 6 inches thick. The substratum to a depth of 60 inches or more is pale brown very gravelly sandy loam.

Permeability of the Whirlo soil is moderately rapid. Available water capacity is low. Effective rooting depth is

60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The subsoil is slightly salt- and alkali-affected.

The Tenabo soil is shallow and well drained. It formed in loess that is high in content of volcanic ash and in the underlying mixed alluvium derived from mixed rock. Typically, the surface layer is light gray cobbly silt loam about 7 inches thick. The subsoil is light yellowish brown and brown clay loam about 11 inches thick. The upper 8 inches of the substratum is a light gray, indurated hardpan that is cemented with silica. The lower part, to a depth of 40 inches, is light gray very gravelly sandy loam.

Permeability of the Tenabo soil is moderately slow. Available water capacity is low. Effective rooting depth and depth to the hardpan are 9 to 20 inches. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is slight. The subsoil is alkali-affected.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on the Whirlo soil is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale, bud sagebrush, and a small amount of big sagebrush. The production of vegetation is limited by the low average annual precipitation. The suitability of this soil for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

The potential plant community on the Tenabo soil is mainly shadscale, bud sagebrush, and bottlebrush squirreltail. The present vegetation in most areas is mainly shadscale and bud sagebrush. The production of vegetation is limited by the low average annual precipitation, shallow rooting depth, and the content of alkali in the subsoil. The suitability of this soil for rangeland seeding is very poor. The main limitations are low average annual precipitation, shallow rooting depth, and the content of alkali in the subsoil.

Grazing should be delayed until the soils are firm and the more desirable forage plants have achieved sufficient growth to withstand grazing. Loss of the surface layer results in a significant decrease in productivity and in the potential of the Tenabo soil to produce vegetation suitable for grazing.

This unit is moderately limited for roads because of steepness of slope, the susceptibility of the soils to frost heaving, depth to the hardpan on the Tenabo soil, and stones on the Whirlo soil. Stones and cobbles on the surface make it difficult to construct roads. Deep cuts should be avoided, especially on the Tenabo soil, because of the underlying hardpan. To improve trafficability, roads should be provided with a stable base and an adequate wearing surface. Roads should also be provided with surface drainage.

This map unit is in capability subclass VIIs, nonirrigated.

WIA—Wholan silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in loess and alluvium derived from mixed rock. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light brownish gray silt loam about 6 inches thick. The subsoil is pale brown silt loam about 16 inches thick. The substratum to a depth of 60 inches or more is pale brown silt loam.

Included in this unit are about 5 percent gently sloping Wholan soils and 5 percent Wholan soils that are slightly saline. Included areas make up about 10 percent of the total acreage.

Permeability of this Wholan soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Rare periods of flooding may occur during high intensity storms in spring and summer. The substratum is slightly to moderately salt- and alkali-affected. The content of salts and alkali increases with depth.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for hay and pasture.

The potential plant community on this unit is mainly winterfat and bud sagebrush. The present vegetation in most areas is mainly cheatgrass, pepperweed, bud sagebrush, and some shadscale. The production of vegetation is limited by the low average annual precipitation. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

This unit is well suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by the small amount of water available for irrigation, rare periods of flooding, the slight to moderate content of salts and alkali in the substratum, and a silty surface layer that tends to crust, which adversely affects the water intake rate. To avoid overirrigating and leaching of plant nutrients, applications of irrigation water should be adjusted to the available water capacity, the water intake rate, and the crop needs. Proper application of irrigation water is needed to prevent an increase in the content of salts and alkali in the root zone. Heavy, periodic applications of water are needed to leach out excess salts. Crusting of the surface and compaction can be reduced by returning crop residue to the soil and by keeping tillage to a minimum.

This unit is moderately limited for roads because of low load-bearing strength and the susceptibility of the soil to frost heaving. Roads should be designed to provide surface drainage. Roads on this unit need an adequate wearing surface to limit maintenance costs and to reduce dustiness when the soil is dry.

This map unit is in capability subclasses IIc, irrigated, and VIIc, nonirrigated.

WlB—Wholan silt loam, 2 to 4 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in loess and alluvium derived from mixed rock. Elevation is 4,600 to 5,000 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light brownish gray silt loam about 6 inches thick. The subsoil is pale brown silt loam about 16 inches thick. The substratum to a depth of 60 inches or more is pale brown silt loam.

Included in this unit are about 5 percent nearly level Wholan soils, 5 percent gently sloping Wholan soils that are slightly saline, and 5 percent gently sloping Rad soils that are weakly cemented with silica in the lower part. Included areas make up about 15 percent of the total acreage.

Permeability of this Wholan soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Rare periods of flooding may occur during high intensity storms in spring and summer.

Most areas of this unit are used for livestock grazing and wildlife habitat. Some areas can be used for hay and pasture if water for irrigation is made available and the limitations of steepness of slope and the rare periods of flooding are overcome.

The potential plant community on this unit is mainly winterfat and bud sagebrush. The present vegetation in most areas is mainly cheatgrass, pepperweed, bud sagebrush, and some shadscale. The production of vegetation is limited by the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

This unit is moderately limited for roads because of low load-bearing strength and the susceptibility of the soil to frost heaving. Roads should be designed to provide surface drainage. Roads on this unit need an adequate wearing surface to limit maintenance costs and to reduce dustiness when the soil is dry.

This map unit is in capability subclasses IIe, irrigated, and VIIc, nonirrigated.

WmA—Wholan silt loam, overflow, 0 to 2 percent slopes. This very deep, well drained soil is on alluvial fans. It formed in loess and alluvium derived from mixed rock. Elevation is 4,400 to 4,800 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light brownish gray silt loam about 6 inches thick. The subsoil is pale brown silt loam about 39 inches thick. The substratum to a depth of 60 inches or more is stratified, pale brown very gravelly loam and very gravelly sand.

Included in this unit is about 10 percent slightly saline Cluro soils.

Permeability of this Wholan soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The substratum is slightly to moderately salt- and alkali-affected. The content of salts and alkali increases with depth. Rare periods of flooding may occur during high intensity storms in spring and summer.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay, pasture, and cultivated crops.

The potential plant community on this unit is mainly winterfat and bud sagebrush. The present vegetation in most areas is mainly cheatgrass, pepperweed, bud sagebrush, and some shadscale. The production of vegetation is limited by the low average annual precipitation.

Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

This unit is well suited to irrigated hay, pasture, and cultivated crops. It is limited mainly by the low amount of water available for irrigation, rare periods of flooding, the slight to moderate content of salts and alkali in the substratum, and a silty surface layer that tends to crust, adversely affecting the water intake rate. To avoid overirrigating and leaching of plant nutrients, applications of irrigation water should be adjusted to the available water capacity, the water intake rate, and the crop needs. Proper application of irrigation water is needed to prevent an increase in the content of salts and alkali. Heavy, periodic applications of water are needed to leach out excess salts. Crusting of the surface and compaction can be reduced by returning crop residue to the soil and by keeping tillage to a minimum.

This unit is moderately limited for roads because of low load-bearing strength and the susceptibility of the soil to frost heaving. Roads should be provided with surface drainage. Roads on this unit need an adequate wearing surface to limit maintenance costs and to reduce dustiness when the soil is dry.

This map unit is in capability subclasses IIc, irrigated, and VIIc, nonirrigated.

WnA—Wholan silt loam, slightly alkali. This very deep, well drained soil is on alluvial fans. It formed in loess and alluvium derived from mixed rock sources. Slope is 2 to 4 percent. Elevation is 4,600 to 5,000 feet. The average annual precipitation is about 7 inches, the average annual air temperature is about 49 degrees F, and the average frost-free season is about 110 days.

Typically, the surface layer is light brownish gray silt loam about 6 inches thick. The subsoil is pale brown silt loam about 16 inches thick. The substratum to a depth of 60 inches or more is pale brown silt loam.

Included in this unit are about 5 percent nearly level Wholan soils and 5 percent slightly alkali Rad soils that are weakly cemented with silica in the lower part. Included areas make up about 10 percent of the total acreage.

Permeability of this Wholan soil is moderate. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. Rare periods of flooding may occur during high intensity storms in spring and summer. The surface layer is slightly salt- and alkali-affected. The soil is slightly or moderately salt- and alkali-affected below the surface layer.

This unit is used for livestock grazing and wildlife habitat. It can be used for hay and pasture if water for irrigation is made available and the limitations of steepness of slope, the rare periods of flooding, and the salinity and alkalinity of the soil are overcome.

The potential plant community on this unit is mainly winterfat and bud sagebrush. The present vegetation in most areas is mainly cheatgrass, pepperweed, shadscale, and greasewood. The production of vegetation is limited by the low average annual precipitation. Grazing should be delayed until the soil is firm and the more desirable forage plants have achieved sufficient growth to withstand grazing. The suitability of this unit for rangeland seeding is very poor. The main limitation is the low average annual precipitation.

This unit is moderately limited for roads because of low load-bearing strength and the susceptibility of the soil to frost heaving. Roads should be provided with surface drainage. Roads on this unit need an adequate wearing surface to limit maintenance costs and to reduce dustiness when the soil is dry.

This map unit is in capability subclasses IIe, irrigated, and VIIc, nonirrigated.

Use and management of the soils

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

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior 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; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

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

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

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

Crops and pasture

The major management concerns in the use of the soils for crops and pasture are described in this section. In addition, the estimated yields of the main crops and hay and pasture plants are given for each soil and the system of land capability classification used by the Soil Conservation Service is explained.

This section provides information about the overall agricultural potential of the survey area and about the management practices that are needed. The information is useful to equipment dealers, land improvement contractors, fertilizer companies, processing companies, planners, conservationists, and others. For each kind of soil, information about management is presented in the section "Soil maps for detailed planning."

The aim of good land use is to produce the greatest amount of the most needed crops, while protecting and improving the soil. To achieve this goal, the land must be protected according to its needs and used within its capabilities. This can be done by using plants that are well suited to the soil, applying soil management practices that protect the soil, and keeping the soil in good condition.

In the following paragraphs the principal soil management practices needed in the survey area are described generally. Although the soils in the area differ in management needs, certain practices apply to all the soils that are cultivated.

Conservation cropping systems.—A conservation cropping system is growing crops in combination with needed cultural and management practices. If soil-improving crops and management practices more than offset the soil-depleting crops and deteriorating practices, it is a good conservation cropping system.

Soil-improving practices include the use of rotations that contain grasses and legumes, returning crop residue to the soil, proper tillage, adequate fertilization, weed and pest control, and other good management practices.

Several cropping systems are used in the survey area. A typical one is growing alfalfa for about 8 to 10 years, small grain for 2 years, and then alfalfa with a protective nurse crop of oats. The crop residue from small grain is returned to the soil, and minimum tillage is used.

Erosion control.—Erosion control prevents the excessive wearing away of the land surface by wind, running water, and other geological agents. The protection of the surface layer is important because it contains most of the organic matter and generally is more fertile than the subsoil. Erosion can be controlled by using cover crops to protect the surface during windy or stormy periods, by tilling in spring and then seeding right away, and by leveling to the proper grade and applying water at the proper rate.

Addition of plant nutrients.—Most of the irrigated soils used for crops in this survey area respond well to liquid or solid fertilizer. The specific fertilizer needed depends on the kind of crop grown and the nutrient level of the soil. Applying fertilizer that contains nitrogen and phosphorus increases production of small grain and aids in establishing alfalfa. Thereafter, alfalfa benefits from applying phosphorus every 2 years for the life of the stand, except where the soil contains enough available phosphorus.

Irrigation water management.—Irrigation water management is applying irrigation water at rates and in amounts that will insure high crop production and minimize soil and water losses. It is needed in all irrigated areas. Good irrigation is applying water according to the crop needs and the characteristics of the soil.

Efficient delivery of water to farms is the first step in supplying the moisture needed for growing crops. A good distribution system is one that has enough capacity to meet the needs of the crops to be irrigated, that is located and controlled so that seepage losses are minimal, and that carries the required flow safely.

An efficient system for transporting water to the individual fields on a farm or ranch is one that is designed and constructed to carry the required flow without excessive seepage and erosion. Control structures are needed to facilitate the handling of water.

The design of an irrigation system is governed by the method of irrigation to be used, the amount of land-leveling needed, and the expected efficiency in applying water.

To apply water efficiently, a farmer needs to know the available water capacity of the soil, the rate that water enters and moves through the soil, and the amount of water required by the crop. Most crops should be irrigated when 40 to 50 percent of the available moisture in the top half of the root zone has been used. A soil check can be made 2 days after irrigation to determine whether the desired amount of moisture was added.

Managing saline soils.—Like most soils in arid and subarid regions, the soils in this survey area contain at least small quantities of soluble salts and alkali. Because rainfall is low and the rate of evaporation is high, percolating rainfall is insufficient to leach salts out of the root zone. In some soils high concentrations of salts and alkali limit or prevent the growth of crops. In addition, many low-lying areas receive salty water from runoff or seepage. Surface evaporation of this water generally results in an increase of soluble salts on or in the soils. In some areas that have a high water table, water rises in the soil by capillary action and carries dissolved salts with it. The soluble salts are readily dissolved in water and can be moved to any part of the soil profile.

A soil that contains excessive amounts of soluble salts is called a saline soil. One that contains excessive amounts of absorbed sodium is called an alkali soil. A soil that contains excessive amounts of both soluble salts and alkali is a saline-alkali soil.

Saline phases of several of the soils in the survey area have been mapped. The map unit name does not give the degree to which these soils are affected, nor does it indicate that they contain both salt and alkali. This information is given in the map unit description. Three saline and alkali classes are used as soil phases. These classes are:

1. Soils that are free of excess salts and alkali and contain less than 0.15 percent salts. The conductivity of the saturation extract is less than 4 millimhos per centimeter at 25 degrees C, and the content of exchangeable sodium is less than 15 percent.
2. Slightly saline-alkali soils that contain 0.15 to 0.35 percent salts, or the conductivity of the saturation extract is 4 to 8 millimhos per centimeter at 25 degrees C. The content of exchangeable sodium is 15 to 20 percent for soils of moderately coarse, medium, moderately fine, and fine texture.
3. Strongly saline-alkali soils that contain more than 0.65 percent salts, or the conductivity of the saturation extract is more than 16 millimhos per centimeter at 25 degrees C. The content of exchangeable sodium is more than 25 percent for soils of moderately coarse, medium, moderately fine, and fine texture.

Although a distinct gap occurs between the second class and the third, an intermediate, or moderate, class is not needed in this survey area because a very small percentage of the samples analyzed was moderately saline-alkali.

Some soils mapped as slightly saline-alkali are free of excess salts and alkali in the upper 4 or 5 inches, but they contain slight or moderate concentrations just below the plow layer. Several soils mapped as strongly saline-alkali are only slightly affected in the plow layer.

Soils differ in the kinds of salt they contain and in the practices needed for improvement. For this reason, each soil requires individual treatment; however, some general guidelines can be given.

A good supply of irrigation water and adequate drainage must be provided to reclaim any soil in this survey area. Two methods of applying water for reclamation are commonly used. One method is to level the areas to form basins and then to pond water within these basins. The other is to level the areas to a uniform grade and then to flood them between border dikes. If drainage is adequate and large amounts of water are used, either method is effective in leaching the soluble salts out of the root zone.

Proper pasture management.—Proper pasture management is grazing pasture at a rate that maintains high-quality grasses and legumes. This can be accomplished by adjusting the stocking rates or season of use to maximize growth and survival of plants.

A common method of pasture management is to use several pastures in a rotation system that allows adequate regrowth in each. Care should be taken to keep the livestock off the pastures when they are wet. Grazing when the pastures are wet results in compaction of the soil, a decrease in water intake rate, and destruction of the structure. Pastures should be properly irrigated, and drainage should be provided. Increased yields can be obtained by applying commercial fertilizers and barnyard manure if it is available. Weeds generally can be controlled by mowing. Droppings of manure can be spread with a drag each spring.

Hayland management.—Hayland management is the proper treatment and use of hayland to prolong the life of desirable forage plants, to maintain or improve the quality and quantity of the forage, to protect the soil, and to reduce water loss. Management includes the establishment and renovation of alfalfa-type hayfields with long-term stands of adapted plants.

An important method of increasing crop yields is to use adapted plants. To renovate and establish hayland, plants should be selected that will withstand climatic extremes and produce high yields during a relatively short growing season. High-quality, certified seed should be planted. Inoculated legume seeds should also be used. Land leveling, grading, shaping, and subsoiling should be completed prior to seedbed preparation. An annual crop should be grown for a year before reestablishing a forage crop to control weeds, to provide final smoothing, and to control erosion. Seed can be drilled directly into the stubble of the annual crop. Irrigation is needed to prepare a seedbed.

Companion crops may be needed if soil blowing is a hazard. Disease can be controlled by the use of resistant plants, crop rotation, and proper irrigation management.

Fertilization is essential to insure that growth is not limited. The amount needed depends on the properties of the soil and the crops grown.

The frequency and amount of irrigation water applied depend on the available water capacity of the soil and the rate of evapotranspiration. Subirrigation requires special management to control the level of the water table and to prevent the accumulation of excess soluble salts.

Native meadow hayland has low forage production because of excessive water in spring and a shortage of water in summer. Practices to improve production should include better water management, fertilization, and control of excess salt and alkali.

Drainage.—Soils along the flood plains of perennial and intermittent streams have a seasonal high water table from December to July. The water table begins to rise when the rate of evapotranspiration decreases in fall, and it is at a maximum height in spring because of runoff.

Soils that are flooded, either naturally or by flood irrigation, support a cover of native meadow that is used for hay and pasture. Soils that are not flooded accumulate salts and support salt-tolerant shrubs and some grasses.

On most of the wet flood plain soils, adequate water for irrigation is not available. In a few areas the supply is adequate because of ground water resources. It is not anticipated that additional ground water will be available for development in the immediate future.

The wet flood plain soils, particularly those supporting meadow vegetation, are an important wetland resource. These areas should be managed to maintain the present soil, moisture, and vegetative conditions. Surface drainage in some areas can be used to distribute floodwater. Extensive subsurface drainage should be avoided. Extensive drainage destroys the wetland resource and reduces productivity.

Yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

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

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue and green-manure crops; and harvesting that insures 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 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils.

Land capability classification

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

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

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, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the section "Soil maps for detailed planning."

Rangeland

Jim W. Doughty, range conservationist, Soil Conservation Service, helped to write this section.

About 90 percent of the survey area is rangeland. Almost all of the agricultural income is derived from livestock, principally cattle. Cow-calf-steer operations are dominant, but cow-calf-steer-yearling operations are also conducted. Ranches vary in size from about 220,000 acres to a few small ranches of about 5,000 acres. Most of the grazing in the area is on land administered by the Bureau of Land Management.

On many ranches the forage produced on rangeland is supplemented by aftermath grazing on hayland and small grain stubble fields in fall. In winter the native forage is supplemented by hay. Creep feeding of calves and yearlings to increase their market weight is practiced on some ranches.

In areas that have similar climate and topography, the kind and amount of vegetation produced on rangeland are closely related to the kinds of soil. Effective management is based on the relationship between the soils and vegetation and water.

Table 7 shows, for each soil in the survey area, the range site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. Only those soils that are used as or are suited to rangeland are listed. Explanation of the column headings in table 7 follows.

A *range site* is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other range sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was established during this survey; thus, range sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table are also important.

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 temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

Dry weight is the total annual yield per acre reduced to a common percent of air-dry moisture.

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 range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only. It does not have a specific meaning that pertains to the present plant community in a given use.

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, 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.

Grazing management should be at an intensity that maintains enough cover to protect the soil and maintains or improves the quantity and quality of desirable vegetation. This management applies to all grazing animals, including livestock, game animals, and wild horses.

The most practical and efficient way to achieve good management of livestock grazing is with a planned grazing system. This involves a system in which two or more grazing units are alternately rested from grazing in a planned sequence over a period of years. The rest period should extend at least through the growing season of the key plants. The important feature is that the same unit is not grazed at the same time year after year.

Planned grazing systems should be designed to fit the individual operating unit but still meet management objectives and practice specifications. To provide uniform distribution of grazing, these systems may need supporting practices such as stock water developments, fencing, salting, or stock trails.

Sometimes it is feasible to apply practices to accelerate range improvement. Good grazing management needs to be applied in conjunction with these practices.

Brush management should be applied when less desirable woody species increase to amounts in excess of what is natural for the site. This practice can be effectively planned and applied to benefit both livestock and wildlife while reducing sedimentation and improving watershed quality.

Use of chemicals is effective in brush management. When chemicals are applied according to the manufacturer's recommendations and at the proper time, good results can be expected. There must be adequate desirable plant species in the understory to respond to the treatment.

Prescribed burning is another brush management practice available. It is relatively inexpensive but requires precautions. Its success requires a good understory to provide fuel, and proper timing of the burning is critical. It is not so selective as chemical treatment.

Mechanical treatment practices such as plowing, chaining, or beating are effective on certain sites, but the cost is high.

Range seeding should be applied when the range has deteriorated to a point where desired plant species have disappeared. On the basis of the soil, climate, topography, and planned use, sites to be seeded should be evaluated to determine the species that are adapted and seeding techniques that can be used.

Even though adapted species and improved techniques are applied, successful results of seeding in this survey area will be strongly influenced by rainfall. Precipitation fluctuates drastically from one year to the next even in the higher rainfall zones. The success of range seeding depends on the amount of moisture available during the growing season.

Woodland management and productivity

Woodland in this survey area is limited to small amounts of pinyon and juniper and a few small stands of quaking aspen. Productivity is relatively low, and the main use is understory grazing by livestock and wildlife habitat. Limited use is made of pinyon and juniper for posts and firewood. The soils that support woodland are discussed in the section "Soil maps for detailed planning."

Windbreaks and environmental plantings

Windbreaks are established to protect livestock, buildings, and yards from wind and snow. Windbreaks also help to protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and tall-growing broadleaf and coniferous species provide the most protection.

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

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

Windbreak planting in this survey area is limited. Windbreaks may be desirable for protection of livestock and buildings. However, any windbreak planting in this area needs to be irrigated.

Species adapted to the specific soils should be selected. Species suited to deep, well drained soils include Fremont cottonwood (male), Siberian elm, Scotch pine, cotoneaster, and caragana. Poplar, cottonwood, Russian-olive, golden willow, buffaloberry, redosier dogwood, honeysuckle, and rugosa rose are suited to wet soils. Species adapted to saline-alkali soils include Siberian elm, mulberry, Russian-olive, buffaloberry, and fourwing saltbush. Species suited to shallow soils include honeylocust, Rocky Mountain juniper, chokecherry, cotoneaster, currant, caragana, and pyracantha.

Recreation

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation uses. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in these ratings, but important in evaluating a site, are location and accessibility of the area, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public sewerlines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreation use by the duration and intensity of flooding and the season when flooding occurs. Onsite assessment of height, duration, intensity, and frequency of flooding is essential in planning recreation facilities.

The degree of the limitation of the soils is expressed as slight, moderate, or severe. *Slight* means that the soil properties are generally favorable and that the limitations are minor and easily overcome. *Moderate* means that the limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 11, and interpretations for dwellings without basements and for local roads and streets, given in table 10.

Camp areas require such site preparation as shaping and leveling for 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 best soils for this use have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing camping sites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for use as picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that will increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones or boulders, is firm after rains, and is not dusty when dry. If shaping is required to obtain a uniform grade, the depth of the soil over bedrock or hardpan should be enough to allow necessary grading.

Paths and trails for walking, horseback riding, bicycling, and other uses should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once during the annual period of use. They should have moderate slopes and have few or no stones or boulders on the surface.

Wildlife habitat

Wildlife is a valuable resource in the survey area. It provides opportunities for such outdoor activities as hunting and fishing.

Wildlife is a product of the soil and, like other crops, responds to good management. The level of production of adapted wildlife usually is in balance with essential habitat containing food and cover. Most managed wildlife habitat is created, improved, or maintained by planting suitable vegetation, by manipulating existing vegetation to bring about the natural establishment of desired plants, or by a combination of both. The complete habitat elements needed by a specific species of wildlife generally require several kinds of soil and a combination of land uses. For this reason, interpretations of the soils of the survey area can best be related to the map units described in the section "General soil map for broad land use planning."

In the following paragraphs the general soil map units of the survey area are described as wildlife areas that differ in potential species and environmental factors.

Wildlife Area 1 is in general soil map unit 1. The soils in this area are nearly level and are on flood plains of perennial streams and creeks. This area is suited to a wide variety of wildlife because of the amount of water available, the meadow-type vegetation and scattered patches of willows on the poorly drained soils, and the big sagebrush and basin wildrye on the better drained soils.

Wildlife species in this area include beaver, cottontail, jackrabbit, mule deer, sage grouse, quail, coyote, and bobcat. Hungarian partridge often winter in the area. Most of the wildlife is dependent on the meadows. Sage grouse, for example, bring their young to the meadows to feed on insects. Management, therefore, should be directed toward improving or maintaining the meadows. Proper use of areas for pasture and range is needed to avoid accelerated stream entrenchment and deterioration of the habitat. Some of the streams in this area support trout and catfish.

Wildlife Area 2 is in general soil map unit 2. The soils in this area are nearly level and are on slightly elevated flood plains and low stream terraces. The native vegetation on the somewhat poorly drained soils is mostly big sagebrush and basin wildrye in the slightly salt- and alkali-affected areas and black greasewood in the strongly salt- and alkali-affected areas. The well drained soils support mostly Nuttall saltbush and shadscale. Some of this wildlife area is used for cropland. Almost all the water in the area comes from wells.

Wildlife species in this area include jackrabbit, coyote, and bobcat. Wildlife population is higher in areas near Wildlife Area 3. Some quail are on or near the cropland. A few mule deer and Hungarian partridge use this area in winter. Fence rows and ditchbanks can be planted with desirable plants in the cultivated areas to make a more attractive habitat for quail and other openland wildlife. The availability of water is the main concern for management of wildlife in this area. The rangeland should be managed to avoid increasing the salt and alkali content of the soils, which results in a less desirable plant community. Small ponds constructed to provide livestock and wildlife watering facilities can be stocked with fish.

Wildlife Area 3 is in the general soil map unit 3. The soils in this area are nearly level and are on the broad flood plains of the Humboldt River. The vegetation is mostly native meadow grasses in the slightly salt- and alkali-affected areas and saltgrass and black greasewood in the strongly salt- and alkali-affected areas. A few small areas are used for cropland. Water is available in this area, and it is one of the areas most used by wildlife.

Wildlife species in this area include ducks, geese, beaver, muskrat, cottontail, jackrabbit, deer, coyote, bobcat, pheasant, and quail. Management of the area should include proper use and practices to reduce the content of salt and alkali. Long term management practices are limited by periods of flooding caused by the uncontrolled flow of the Humboldt River. The river supports species such as catfish and carp.

Wildlife Area 4 is in general soil map units 4, 5, 6, 7, and 14. This area is on alluvial fans, terraces, and low-lying foothills. The native vegetation is variable. The types of vegetation include big sagebrush and grass, black greasewood, bud sagebrush and shadscale, and black sagebrush and grass. Because of a shortage of water, the kinds and number of wildlife in the area are relatively few. Some of the area is used for cropland.

Wildlife species in this area include jackrabbit, coyote, and bobcat. Quail is in or near the cropland. A few mule deer and Hungarian partridge use this area in winter. In cultivated areas, fence rows and ditchbanks planted with desirable plants provide a more attractive habitat for quail and other openland wildlife. The availability of water is the main concern for management of wildlife in this area.

Wildlife Area 5 is in general soil map units 8 and 9. This area is on alluvial fans and terraces adjacent to Wildlife Areas 1 and 3 and the streams and rivers in these areas. The native vegetation is mostly big sagebrush, grass, and some low sagebrush. A few areas are used for cropland.

Water in drainageways and adjacent areas encourages the use of this area by several species of wildlife. These include sage grouse, cottontail, jackrabbit, coyote, bobcat, and quail along the edges of the area and along drainageways. Deer and Hungarian partridge pass through this area to obtain water. Proper grazing use is a good management practice in this area.

Wildlife Area 6 is in general soil map units 10, 12, and 13. This area is on moderately sloping to steep foothills and low mountainsides. The native vegetation is mostly big sagebrush, low sagebrush, and grasses.

Wildlife species in this area include jackrabbit, cottontail, deer, coyote, bobcat, sage grouse, chukar, and Hungarian partridge. Drainageways, seeps, and springs provide some water in this area. The wildlife habitat can be enhanced by properly locating watering facilities. Proper range use helps to preserve the habitat.

Wildlife Area 7 is in general soil map unit 11. This area is on steep and very steep, high mountainsides. The native vegetation is mostly big sagebrush and antelope bitterbrush and an understory of bluebunch wheatgrass and Idaho fescue. Drainageways and canyon bottoms provide water for this area. The drainageways need to be preserved because they are the main source of water.

Included in this area are small wet meadows, snow pockets that support quaking aspen, and ridges that support low sagebrush. These areas are significant to the overall potential for habitat, and good management is needed. The small meadows need to be protected from gullying and the resulting deterioration. Proper range use is needed to maintain the habitat.

Wildlife species in this area include mule deer, sage grouse, chukar, jackrabbit, cottontail, coyote, bobcat, and some beaver on the canyon bottoms.

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover, and they affect the construction of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, and water. If any one of these elements is missing, is inadequate, or is inaccessible, wildlife either are scarce or do not inhabit the area.

If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by helping the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential to support the main kinds of wildlife habitat in the area. This information can be used in planning for parks, wildlife refuges, nature study areas, and other developments for wildlife; selecting areas that are suitable for wildlife; selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat; and determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose. A rating of *fair* means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* means that restrictions for the element of wildlife habitat or kind of wildlife are very severe, and that unsatisfactory results can be expected. Wildlife habitat is impractical or even impossible to create, improve, or maintain on soils having such a rating.

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

Grain and seed crops are seed-producing annuals used by wildlife. The major soil properties that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley. Irrigation is needed to produce grain and seed crops in this area.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are planted for wildlife food and cover. Major soil properties that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lovegrass, bromegrass, clover, and alfalfa. Irrigation is needed to produce grasses and legumes in this area.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds, that provide food and cover for wildlife. Examples are bluebunch wheatgrass, Sandberg bluegrass, Indian ricegrass, hawksbeard, and globe mallow. Major soil properties that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, or foliage used by wildlife or that provide cover and shade for some species of wildlife. Examples are mountainmahogany, bitterbrush, fourwing saltbush, and big sagebrush. Major soil properties that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and moisture.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged or floating aquatics. They produce food or cover for wildlife that use wetland as habitat. Examples of wetland plants are saltgrass, rushes, sedges, and reeds. Major soil properties affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness.

Shallow water areas are bodies of water that have an average depth of less than 5 feet and that are useful to wildlife. They can be naturally wet areas, or they can be created by dams or levees or by water-control devices in marshes or streams. Examples are marshes, waterfowl feeding areas, and ponds. Major soil properties affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. The availability of a dependable water supply is important if water areas are to be developed.

The kinds of wildlife habitat are briefly described in the following paragraphs.

Openland habitat consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The kinds of wildlife attracted to these areas include quail, pheasant, meadowlark, field sparrow, and cottontail rabbit.

Wetland habitat consists of open, marshy or swampy, shallow water areas where water-tolerant plants grow. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, and beaver.

Rangeland habitat consists of areas of wild herbaceous plants and shrubs. Wildlife attracted to rangeland include coyote, bobcat, desert mule deer, sage grouse, and meadowlark.

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. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil properties" section.

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

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

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same o 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

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, and loca roads and streets. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

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

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

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Sanitary facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

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

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to effectively filter the effluent. Many local ordinances require that this material be of a certain thickness.

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. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

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

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 needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

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

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction materials

The suitability of each soil as a source of roadfill, sand, gravel, and topsoil is indicated in table 12 by ratings of good, fair, or poor. The texture, thickness, and organic-matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed, generally about 6 feet.

Roadfill is soil material used in embankments for roads. Soils are evaluated as a source of roadfill for low embankments, which generally are less than 6 feet high and less exacting in design than high embankments. The ratings reflect the ease of excavating and working the material and the expected performance of the material where it has been compacted and adequately drained. The performance of soil after it is stabilized with lime or cement is not considered in the ratings, but information about some of the soil properties that influence such performance is given in the descriptions of the soil series.

The ratings apply to the soil material between the A horizon and a depth of 5 to 6 feet. It is assumed that soil horizons will be mixed during excavation and spreading. Many soils have horizons of contrasting suitability within their profile. The estimated engineering properties in table 14 provide specific information about the nature of each horizon. This information can help determine the suitability of each horizon for roadfill.

Soils rated *good* are coarse grained. They have low shrink-swell potential, low potential frost action, and few cobbles and stones. They are at least moderately well drained and have slopes of 15 percent or less. Soils rated *fair* have a plasticity index of less than 15 and have other limiting features, such as moderate shrink-swell potential, moderately steep slopes, wetness, or many stones. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor.*

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 12 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 14.

Topsoil is used in areas where vegetation is to be established and maintained. Suitability is affected mainly by the ease of working and spreading the soil material in preparing a seedbed and by the ability of the soil material to support plantlife. Also considered is the damage that can result at the area from which the topsoil is taken.

The ease of excavation is influenced by the thickness of suitable material, wetness, slope, and amount of stones. The ability of the soil to support plantlife is determined by texture, structure, and the amount of soluble salts or toxic substances. Organic matter in the A1 or Ap horizon greatly increases the absorption and retention of moisture and nutrients. Therefore, the soil material from these horizons should be carefully preserved for later use.

Soils rated *good* have at least 16 inches of friable loamy material at their surface. They are free of stones and cobbles, are low in content of gravel, and have gentle slopes. They are low in soluble salts that can limit or prevent plant growth. They are naturally fertile or respond well to fertilizer. They are not so wet that excavation is difficult during most of the year.

Soils rated *fair* are loose sandy soils or firm loamy or clayey soils in which the suitable material is only 8 to 16 inches thick or soils that have appreciable amounts of gravel, stones, or soluble salt.

Soils rated *poor* are very sandy soils and very firm clayey soils; soils with suitable layers less than 8 inches thick; soils having large amounts of gravel, stones, or soluble salt; steep soils; and poorly drained soils.

Although a rating of *good* is not based entirely on high content of organic matter, a surface horizon is generally preferred for topsoil because of its organic-matter content. This horizon is designated as A1 or Ap in the soil series descriptions. The absorption and retention of moisture and nutrients for plant growth are greatly increased by organic matter.

Water management

Many soil properties and site features that affect water management practices have been identified in this soil survey. This information is significant in planning, installing, and maintaining water control structures.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have a low seepage potential, which is determined by permeability and the depth to fractured or permeable bedrock or other permeable material.

Embankments, dikes, and levees require soil material that is resistant to seepage, erosion, and piping and has favorable stability, shrink-swell potential, shear strength, and compaction characteristics. Large stones and organic matter in a soil downgrade the suitability of a soil for use in embankments, dikes, and levees.

Drainage of soil is affected by such soil properties as permeability; texture; depth to bedrock, hardpan, or other layers that affect the rate of water movement; depth to the water table; slope; stability of ditchbanks; susceptibility to flooding; salinity and alkalinity; and availability of outlets for drainage.

Irrigation is affected by such features as slope, susceptibility to flooding, hazards of water erosion and soil blowing, texture, presence of salts and alkali, depth of root zone, rate of water intake at the surface, permeability of the soil below the surface layer, available water capacity, need for drainage, and depth to the water table.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to intercept runoff. They allow water to soak into the soil or flow slowly to an outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to bedrock, hardpan, or other unfavorable material; large stones; permeability; ease of establishing vegetation; and resistance to water erosion, soil blowing, soil slipping, and piping.

Soil properties

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

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

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

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

Engineering index properties

Table 14 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 "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 a soil contains particles coarser than sand, 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 (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (*1*).

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, MH, and CH; and highly organic soils as Pt. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

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

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

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

The estimates of grain-size distribution, liquid limit, and plasticity index are 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 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

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, and 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.

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, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

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.

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.

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, by the frequency of water application, and by drainage. 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.

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

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

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is not used in this area.

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) 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 (up to 4 percent), on percentage of the surface protected by rock fragments, and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

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

1. Sands, coarse sands, fine sands, and very fine sands. These soils have many limitations for crops. They are extremely erodible, and vegetation is difficult to establish.

2. Loamy sands, loamy fine sands, and loamy very fine sands. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

3. Sandy loams, coarse sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loamy soils that are less than 35 percent clay and more than 5 percent finely divided calcium carbonate. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

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

5. Loamy soils that are less than 18 percent clay and less than 5 percent finely divided calcium carbonate and sandy clay loams and sandy clays that are less than 5 percent finely divided calcium carbonate. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.

6. Loamy soils that are 18 to 35 percent clay and less than 5 percent finely divided calcium carbonate, except silty clay loams. These soils are very slightly erodible. Crops can easily be grown.

7. Silty clay loams that are less than 35 percent clay and less than 5 percent finely divided calcium carbonate. These soils are very slightly erodible. Crops can easily be grown.

8. Stony or gravelly soils and other soils not subject to wind erosion.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter of the surface layer is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, erodibility, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and water features

Tables 16 and 17 give estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils 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 permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams or by runoff from adjacent slopes. Water standing for short periods after rainfall or snowmelt and water in swamps and marshes are not considered flooding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding is most likely to occur during the period November through May.

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 absence of distinctive horizons that form in soils that are not subject to flooding.

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.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An apparent water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An artesian water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A perched water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated.

Depth to bedrock is shown for all soils that are underlain by bedrock at a depth of 5 to 6 feet or less. For many soils, the limited depth to bedrock is a part of the definition of the soil series. The depths shown are based on measurements made in many soil borings and on other observations during the soil mapping. The kind of bedrock and its hardness as related to ease of excavation is also shown. Rippable bedrock can be excavated with a single-tooth ripping attachment on a 200-horsepower tractor, but hard bedrock generally requires blasting.

Cemented pans are hard subsurface layers, within a depth of 5 feet, that are strongly cemented or indurated. Such pans cause difficulty in excavation. The hardness of pans is similar to that of bedrock. A rippable pan can be excavated, but a hard pan generally requires blasting.

Potential frost action refers to the likelihood of damage to pavements and other structures by frost heaving and low soil strength after thawing. Frost action results from the movement of soil moisture into the freezing temperature zone in the soil, which causes ice lenses to form. Soil texture, temperature, moisture content, porosity, permeability, and content of organic matter are the most important soil properties that affect frost action. It is assumed that the soil is not covered by insulating vegetation or snow and is not artificially drained. Silty and clayey soils that have a high water table in winter are most susceptible to frost action. Well drained, very gravelly, or sandy soils are the least susceptible.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*4*). 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. In table 18, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized, of which 4 are used in this area. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Aridisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Orthid (*Orth*, meaning true, plus *id*, from Aridisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; 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 Camborthids (*Camb*, meaning change, plus *orthid*, the suborder of the Aridisols).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic 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 known kind of soil. 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 Camborthids.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, soil reaction, temperature regime, depth of the root zone, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-silty, mixed, mesic Typic Camborthids.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

Soil series and their morphology

In this section, each soil series recognized in the survey areas is described. The descriptions are arranged in alphabetic order.

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 (*15*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*16*). Unless otherwise stated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed soil map units."

Alley series

The Alley series consists of very deep, well drained, moderately slowly permeable soils on the low foothills of mountains. These soils formed in mixed alluvium derived from volcanic and sedimentary rock and some loess. Slopes are 30 to 75 percent.

Typical pedon of an Alley cobbly fine sandy loam in Eureka County; about 1,850 feet north and 550 feet east of the southwest corner of sec. 35, T. 33 N., R. 48 E.

A1—0 to 7 inches; light brownish gray (10YR 6/2) cobbly fine sandy loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; many very fine roots and common fine roots; many very fine and fine tubular and interstitial pores; 15 percent cobbles; neutral; clear smooth boundary.

B1t—7 to 12 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine and fine roots; many fine tubular pores; mildly alkaline; clear smooth boundary.

B2t—12 to 18 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common fine tubular pores; common thin clay bridges between sand grains and clay films in pores; 20 percent gravel; moderately alkaline; abrupt wavy boundary.

B3ca—18 to 28 inches; pale brown (10YR 6/3) gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; many fine and medium distinct white (10YR 8/2) lime filaments; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few fine tubular pores; few thin clay bridges between sand grains; 20 percent gravel; matrix is slightly effervescent and strongly effervescent in filaments; moderately alkaline; abrupt smooth boundary.

C1sica—28 to 34 inches; white (10YR 8/2) gravelly fine sandy loam that is weakly cemented with silica and lime, yellowish brown (10YR 5/4) moist; massive; hard, firm, nonsticky and nonplastic; very few very fine roots; common very fine tubular pores and few fine tubular pores; few discontinuous very pale brown (10YR 7/3) very thin (less than 2 millimeters thick) silica laminae that are 3 to 4 inches across and very hard and very firm; 30 percent gravel; violently effervescent; moderately alkaline; gradual wavy boundary.

C2ca—34 to 50 inches; light gray (10YR 7/2) very cobbly fine sandy loam, brown (10YR 5/3) moist; massive; soft and slightly hard, friable, nonsticky and nonplastic; very few very fine roots; common fine interstitial pores; 45 percent cobbles and gravel; violently effervescent; moderately alkaline.

Thickness of the solum and depth to the weakly silica- and lime-cemented layer range from 16 to 30 inches. Few to many lime segregations that are fine to large are in the lower part of the solum in places where depth to the Csica horizon is more than 22 inches. The B2t horizon is mainly gravelly clay loam but ranges to sandy clay loam or heavy loam modified by gravel, cobbles, or stones. Content of rock fragments ranges from 15 to 30 percent. The C horizon averages 40 to 60 percent rock fragments, mainly gravel and cobbles.

Beowawe series

The Beowawe series consists of very deep, well drained, moderately slowly permeable soils on alluvial fans and terraces. These soils formed in alluvium derived from volcanic and sedimentary rock. Slopes are 0 to 8 percent.

Typical pedon of a Beowawe silt loam, in Eureka County, about 5 miles southeast of Beowawe, Nevada, and about 1,500 feet west and 200 feet north of the southeast corner of sec. 3, T. 30 N., R. 49 E.

A11—0 to 3 inches; pale brown (I0YR 6/3) light silt loam, dark grayish brown (10YR 4/2) moist; moderate thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many vesicular pores; slightly effervescent in a few spots; neutral; clear wavy boundary.

A12—3 to 9 inches; pale brown (10YR 6/3) silt loam, dark grayish brown (10YR 4/2) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots and few fine roots; many very fine and fine tubular pores; neutral; abrupt smooth boundary.

IIB2t—9 to 16 inches; brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to weak medium and coarse subangular blocky; hard, friable, sticky and plastic; many very fine, fine, and medium roots; many very fine and fine tubular pores; few thin clay films on peds and in pores; strongly alkaline; abrupt wavy boundary.

IIC1sica—16 to 23 inches; brown (10YR 5/3) loam that is weakly cemented with silica and lime, brown (10YR 4/3) moist; massive; hard, firm, brittle; many very fine roots and few fine roots; common very fine interstitial pores; common thin discontinuous silica laminae in pores and bridging sand grains; many coarse soft white (10YR 8/2) secondary carbonate seams and coatings; slightly effervescent; strongly alkaline; diffuse wavy boundary.

IIIC2sica—23 to 35 inches; pale brown (10YR 6/3) coarse sandy loam, brown (10YR 5/3) moist; massive; hard, friable, nonsticky and nonplastic; common very fine roots; many very fine interstitial pores and common very fine tubular pores; about 25 percent very hard, firm, and brittle durinodes 1/4 to 1/2 inch in diameter; strongly effervescent; strongly alkaline; abrupt wavy boundary.

IIIC3sica—35 to 50 inches; light gray (10YR 7/2) coarse sandy loam that is weakly cemented with silica and lime, pale brown (10YR 6/3) moist; massive; hard, firm, brittle; common very fine roots; many fine interstitial pores and few very fine tubular pores; few thin silica films in pores and bridging sand grains; violently effervescent; strongly alkaline.

Thickness of the solum and depth to the weakly silica- and lime-cemented C horizon range from 11 to 24 inches. The B2t horizon is mainly loam, but it is silt loam in places. It is 20 percent or less gravel. The Csica horizon is 28 to 34 inches thick or more.

Beowawe, heavy subsoil variant

The Beowawe variant consists of very deep, moderately well drained, very slowly permeable soils on the toe slopes of alluvial fans. These soils formed in alluvium derived from mixed rock. Slopes are 0 to 2 percent.

Typical pedon of Beowawe silty clay loam, heavy subsoil variant, in Lander County, about 5 miles east of Battle Mountain, Nevada, and about 1,700 feet east and 350 feet south of the northwest corner of sec. 30, T. 32 N., R. 46 E.

A1—0 to 1 inch; light gray (10YR 7/1) silty clay loam, light brownish gray (10YR 6/2) moist; moderate medium platy structure; hard, friable, sticky and plastic; few very fine roots; many fine and very fine vesicular pores; strongly effervescent; very strongly alkaline; abrupt smooth boundary.

B21t—1 inch to 4 inches; light gray (10YR 7/2) heavy silty clay loam, grayish brown (10YR 5/2) moist; strong fine and medium columnar structure; very hard, very firm, very sticky and very plastic; many fine roots and common very fine roots; few very fine and fine tubular pores; many thin clay films in pores; violently effervescent; very strongly alkaline; clear wavy boundary.

B22t—4 to 9 inches; light gray (10YR 7/2) clay, brown (10YR 5/3) moist; moderate medium prismatic structure parting to strong fine and medium subangular blocky; very hard, firm, very sticky and very plastic; many very fine roots and common fine roots; common fine tubular pores and few very fine tubular pores; common thin clay films on peds and continuous thin clay films in pores; violently effervescent; very strongly alkaline; clear wavy boundary.

B3t—9 to 15 inches; light gray (10YR 7/2) heavy silty clay loam, brown (10YR 5/3) moist; weak medium and coarse subangular blocky structure; hard, friable, very sticky and very plastic; many very fine roots and common fine roots; common fine and very fine tubular pores and many very fine interstitial pores; few thin clay films bridging mineral grains and common thin clay films in pores; violently effervescent; very strongly alkaline; clear wavy boundary.

C1—15 to 29 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 5/3) moist; massive; hard, friable, sticky and plastic; few very fine and fine roots; many very fine interstitial pores and few fine and medium tubular pores; violently effervescent; very strongly alkaline; gradual smooth boundary.

C2si—29 to 60 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 5/3) moist; massive; very hard, firm and very firm, brittle, sticky and plastic; few very fine roots; many very fine tubular pores and few fine tubular pores; violently effervescent; continuous and weakly silica-cemented; very strongly alkaline.

The solum generally ranges from 11 to 15 inches in thickness; however, it ranges from 8 inches in areas where neither a B1 nor a B3 horizon is present to 22 inches in areas where both a B1 and B3 horizon are present. Depth to the C2si horizon ranges from 13 to 32 inches. Structure of the B2t horizon is moderate or strong, fine or coarse, and columnar or prismatic. It is 5 to 11 inches thick. A B1 horizon occurs in a few pedons. The B3 horizon is absent in some pedons.

Berning series

The Berning series consists of very deep, well drained, slowly permeable soils on the sides of terraces. These soils formed in alluvium derived from mixed rock. Slopes are 15 to 50 percent.

Typical pedon of a Berning gravelly loam, in Eureka County, about 12 miles north of Carlin, Nevada, and in the center of sec. 25, T. 35 N., R. 51 E.

A1—0 to 3 inches; light brownish gray (I0YR 6/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots and few fine roots; many very fine interstitial pores; 25 percent gravel; slightly acid; abrupt smooth boundary.

B1t—3 to 8 inches; light brownish gray (10YR 6/2) clay loam, dark grayish brown (10YR 4/2) moist; weak very fine granular structure; slightly hard, friable, sticky and plastic; many very fine roots and few fine roots; many very fine interstitial pores and few fine and very fine tubular pores; many thin clay films coating sand grains; 10 percent gravel; slightly acid; clear smooth boundary.

B21t—8 to 14 inches; brown (10YR 5/3) very gravelly clay, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; hard, friable, very sticky and very plastic; common very fine roots and few fine roots; few fine interstitial pores and many very fine interstitial pores; common moderately thick clay films on peds; 50 percent gravel and 10 percent cobbles; neutral; gradual smooth boundary.

B22t—14 to 24 inches; brown (10YR 5/3) very gravelly clay, dark grayish brown (10YR 4/2) moist; massive; very hard, firm, very sticky and very plastic; few very fine roots; common very fine interstitial pores; common moderately thick clay films coating sand grains and in pores; 50 percent gravel and 20 percent cobbles; neutral; gradual smooth boundary.

B3t—24 to 60 inches; brown (10YR 5/3) very gravelly sandy clay loam, dark grayish brown (10YR 4/2) moist; massive; very hard, firm, sticky and plastic; few fine roots; many very fine and fine interstitial pores; few thin clay films coating sand grains and in pores; 50 percent gravel and 20 percent cobbles; neutral.

The solum ranges from 40 to 60 inches or more in thickness. The B2t horizon is clay, sandy clay, or heavy clay loam. It is 50 to 75 percent gravel and cobbles. The B3 horizon is very gravelly or very cobbly sandy clay loam or sandy loam.

Bicondoa series

The Bicondoa series consists of very deep, poorly drained, slowly permeable soils on flood plains. These soils formed in clayey alluvium derived dominantly from tuff and basalt. Slopes are 0 to 2 percent.

Typical pedon of a Bicondoa silty clay, in Eureka County, about 2,000 feet west and 1,100 feet north of the southeast corner of sec. 17, T. 36 N., R. 52 E.

A11—0 to 1 inch; gray (10YR 5/1) silty clay, very dark brown (10YR 2/2) moist; massive; very hard, friable, sticky and plastic; common very fine and fine roots; few very fine and fine tubular pores; neutral; abrupt smooth boundary.

A12—1 inch to 10 inches; gray (10YR 5/1) silty clay, very dark brown (10YR 2/2) moist; moderate fine subangular blocky structure; very hard, friable, very sticky and very plastic; common very fine and fine roots; common very fine tubular pores; neutral; clear wavy boundary.

A13g—10 to 22 inches; gray (10YR 5/1) silty clay loam, black (10YR 2/1) moist; massive; very hard, friable, very sticky and very plastic; common very fine and fine roots; common very fine tubular pores; effervescent; moderately alkaline; gradual smooth boundary.

C1g—22 to 40 inches; light gray (5Y 6/1) silty clay loam, very dark gray (5Y 3/1) moist; many medium distinct light brownish gray (10YR 6/2) mottles and common fine distinct brown (10YR 4/3) mottles; massive; hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; effervescent; moderately alkaline; gradual wavy boundary.

IIC2g—40 to 60 inches; light gray (5Y 6/1) gravelly loam, very dark gray (5Y 3/1) moist; common medium distinct black (10YR 2/1) and dark gray (10YR 4/1) mottles; massive; hard, friable, sticky and plastic; very few very fine roots; few very fine tubular pores; mildly alkaline.

The mollic epipedon is 10 to 20 inches thick. The control section is heavy silty clay loam, heavy clay loam, clay, or silty clay. The profile is gravelly loam or gravelly clay loam below a depth of 40 inches. The C horizon is slightly calcareous to noncalcareous.

Blackhawk series

The Blackhawk series consists of shallow, well drained, moderately permeable soils on alluvial fans. These soils formed in a thin mantle of loess over alluvium derived from mixed rock sources. Slopes are 0 to 4 percent.

Typical pedon of Blackhawk gravelly loam in Eureka County; about 2,600 feet north and 1,300 feet west of the southeast corner of sec. 16, T. 34 N., R. 48 E.

A1—0 to 6 inches; light brownish gray (10YR 6/2) gravelly loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine roots; many fine and medium vesicular pores; 15 percent gravel; mildly alkaline; clear smooth boundary.

B2—6 to 10 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; common fine tubular pores; 30 percent gravel; moderately alkaline; abrupt smooth boundary.

C1si—10 to 15 inches; pale brown (10YR 6/3) very weakly cemented gravelly loam, brown (10YR 4/3) moist; weak medium angular blocky structure; hard, firm, nonsticky and slightly plastic; common very fine and fine roots; common fine tubular pores; common moderately thick silica bridges; about 25 percent durinodes that are very hard, very firm, and brittle; 20 percent gravel; slightly effervescent; moderately alkaline; abrupt wavy boundary.

C2sim—15 to 19 inches; very pale brown (10YR 7/3) strongly cemented duripan, brown (10YR 5/3) moist; several strongly cemented lenses 1/8 to 1 inch thick separated by strata of slightly hard and friable gravelly fine sandy loam; massive; very hard, very firm, nonsticky and nonplastic; common very fine roots matted on lenses; common fine tubular pores; effervescent; moderately alkaline; clear smooth boundary.

C3ca—19 to 42 inches; light brownish gray (10YR 6/2) very gravelly fine sandy loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; very few very fine roots; common fine interstitial pores; 60 percent gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

IIC4—42 to 60 inches; light brownish gray (10YR 6/2) very gravelly sand, dark grayish brown (10YR 4/2) moist; single grained; loose, nonsticky and nonplastic; 65 percent gravel; slightly effervescent; strongly alkaline.

Depth to the strongly silica-cemented duripan is 12 to 20 inches. The B2 horizon is silt loam, loam, or very fine sandy loam that is modified by gravel in places. Any given pedon has 1 or more duripans 2 to 10 inches thick. Nonconforming very gravelly sand or very gravelly loamy coarse sand is below a depth of 30 inches in some pedons.

Bobs series

The Bobs series consists of shallow, well drained, moderately permeable soils on upland terraces and fans. These soils formed in alluvium derived dominantly from limestone. Slopes are 4 to 15 percent.

Typical pedon of a Bobs gravelly loam in Eureka County; about 800 feet south and 500 feet west of the northeast corner of sec. 3, T. 34 N., R. 50 E.

A11—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many fine interstitial pores; 15 percent gravel; violently effervescent; moderately alkaline; clear wavy boundary.

A12—4 to 12 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine interstitial pores; 20 percent gravel; violently effervescent; moderately alkaline; abrupt smooth boundary.

C1cam—12 to 25 inches; white (10YR 8/2) indurated lime hardpan, light gray (10YR 7/2) moist; very thin (less than 1 millimeter thick) continuous laminae on the surface; massive; extremely hard, extremely firm; few very fine interstitial pores, no pores in laminae; violently effervescent; strongly alkaline.

The petrocalcic horizon is at a depth of 10 to 20 inches. The mollic epipedon is 7 to 13 inches thick. The control section is 15 to 35 percent gravel and cobbles.

Bosco series

The Bosco series consists of very deep, somewhat excessively drained, moderately rapidly permeable soils on low terraces and flood plains. These soils formed in mixed alluvium derived from volcanic and sedimentary rock. Slopes are 0 to 2 percent.

Typical pedon of a Bosco very gravelly loam in Elko County; about 1,300 feet southwest of the northwest corner of sec. 18, T. 36 N., R. 51 E.

A11—0 to 1 inch; gray (10YR 5/1) very gravelly loam, very dark gray (10YR 3/1) moist; massive; soft, friable, nonsticky and nonplastic; many very fine and fine roots; very porous sod mat; 55 percent gravel; medium acid; abrupt smooth boundary.

A12—1 to 3 inches; grayish brown (10YR 5/2) very gravelly loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 50 percent gravel; slightly acid; abrupt smooth boundary.

A13—3 to 15 inches; grayish brown (10YR 5/2) very gravelly loam, very dark brown (10YR 2/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots and few coarse roots; many very fine and fine interstitial pores; 55 percent gravel; slightly acid; clear wavy boundary.

C1—15 to 37 inches; pale brown (10YR 6/3) very gravelly loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 60 percent gravel; neutral; gradual smooth boundary.

C2—37 to 46 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; many very fine and fine interstitial pores; 65 percent gravel; neutral; gradual smooth boundary.

IIC3—46 to 70 inches; variegated white to very dark gray (10YR 8/2 to 3/1) stratified sand and gravel, light gray to very dark gray (10YR 7/2 to 3/1) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine interstitial pores; neutral.

The mollic epipedon ranges from 10 to 18 inches in thickness. The control section is loam, fine sandy loam, or sandy loam and is 50 to 75 percent gravel.

Boulflat series

The Boulflat series consists of moderately deep, well drained, moderately slowly permeable soils on uplands. These soils formed in colluvium and residuum derived from chert, shale, quartzite, and loess that is high in content of ash. Slopes are 15 to 30 percent.

Typical pedon of a Boulflat gravelly loam in Eureka County; about 2,900 feet north of the southwest corner of sec. 2, T. 32 N., R. 49 E.

A1—0 to 4 inches; light brownish gray (10YR 6/2) gravelly loam, dark brown (10YR 4/3) moist; strong very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine interstitial pores and many very fine vesicular pores; 20 percent gravel; mildly alkaline; clear smooth boundary.

B1—4 to 8 inches; pale brown (10YR 6/3) gravelly loam, dark yellowish brown (10YR 3/4) moist; moderate very fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine tubular pores and few very fine interstitial pores; 25 percent gravel; neutral; clear wavy boundary.

B2t—8 to 13 inches; pale brown (10YR 6/3) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine roots, common fine roots and few medium and coarse roots; common very fine interstitial pores; continuous thick clay films in pores, few thin clay films on peds, and common thin clay films bridging sand grains; 20 percent gravel; neutral; abrupt smooth boundary.

C1ca—13 to 23 inches; light gray (10YR 7/2) very gravelly loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; many very fine roots, common fine roots, and few medium roots; common very fine interstitial pores; 40 percent gravel; strongly effervescent; moderately alkaline; clear smooth boundary.

C2sicam—23 to 34 inches; gray (10YR 7/2) and white (10YR 8/1) strongly cemented gravelly hardpan, light gray (10YR 7/2), white (10YR 8/2), and very pale brown (10YR 7/4) moist; many very pale brown (10YR 7/4) discontinuous unoriented silica laminae; massive; extremely hard, very firm; few very fine roots and very few fine and medium roots; many very fine interstitial pores; violently effervescent; strongly alkaline; abrupt wavy boundary.

R—34 to 41 inches; fractured quartzite and chert.

The solum ranges from 10 to 20 inches in thickness. Depth to the strongly cemented hardpan ranges from 20 to 34 inches, and depth to bedrock ranges from 22 to 40 inches. The B2t horizon is heavy loam, clay loam, or sandy clay loam and is 15 to 35 percent gravel. The Cca horizon is very gravelly loam or very gravelly sandy loam. It is violently effervescent or strongly effervescent. The hardpan is 2 to 15 inches thick over bedrock.

Brock series

The Brock series consists of shallow, well drained, moderately slowly permeable soils on the sides of dissected terraces and alluvial fans. These soils formed in mixed alluvium. Slopes are 4 to 30 percent.

Typical pedon of a Brock cobbly loam in Eureka County; about 2,400 feet north and 2,200 feet west of the southeast corner of sec. 15, T. 32 N., R. 49 E.

A11—0 to 2 inches; light brownish gray (10YR 6/2) cobbly loam, dark grayish brown (10YR 4/2) moist; moderate thin and medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and fine vesicular pores and common fine tubular pores; 15 percent cobbles and 20 percent gravel; strongly effervescent; moderately alkaline; abrupt smooth boundary.

A12—2 to 5 inches; light gray (10YR 7/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; moderate thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine and fine vesicular and tubular pores; 25 percent gravel and 10 percent cobbles; strongly effervescent; moderately alkaline; clear wavy boundary.

B2t—5 to 9 inches; light gray (10YR 7/2) very gravelly sandy clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, very friable, sticky and plastic; common very fine roots; common very fine and fine tubular pores; common thin clay films in pores and many thin clay films on peds; 30 percent gravel and 15 percent cobbles; slightly effervescent; moderately alkaline; clear wavy boundary.

B3ca—9 to 14 inches; light gray (10YR 7/2) very cobbly sandy loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium horizontal roots; common very fine and fine tubular pores; few thin clay films in pores; 25 percent cobbles and 35 percent gravel; strongly effervescent in soft lime filaments and slightly effervescent in the rest of the horizon; strongly alkaline; abrupt boundary.

Csicam—14 to 19 inches; light gray (10YR 7/2) and very pale brown (10YR 7/3) indurated duripan, pale brown (10YR 6/3) and light yellowish brown (10YR 6/4) moist; massive; very hard and extremely hard, very firm and extremely firm; violently effervescent; strongly alkaline.

The solum is dominantly 12 to 16 inches thick, but it ranges from 8 to 18 inches in thickness. The A horizon is 20 to 50 percent rock fragments. The B2t horizon is sandy clay loam, clay loam, or loam and is 45 to 75 percent rock fragments. The duripan is at a depth of 8 to 20 inches. It commonly has very thin, continuous, indurated silica laminae separated by strata of strongly cemented material 1 to 6 inches thick. A few inches of weakly cemented material is between these layers in some pedons.

Broyles series

The Broyles series consists of very deep, well drained, moderately rapidly permeable soils on alluvial fans and terraces. These soils formed in mixed alluvium. Slopes are 0 to 8 percent.

Typical pedon of a Broyles silt loam in Eureka County; about 1,850 feet west and 250 feet south of the northeast corner of sec. 5, T. 30 N., R. 49 E.

A1—0 to 5 inches; light brownish gray (l0YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure; slightly hard, friable, nonsticky and slightly plastic; common very fine roots and few fine and medium roots; many very fine vesicular pores; strongly alkaline; abrupt smooth boundary.

B2—5 to 13 inches; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and nonplastic; many very fine roots, common fine roots, and few medium roots; many very fine tubular and interstitial pores; slightly effervescent in spots; strongly alkaline; clear smooth boundary.

C1—13 to 22 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; massive; hard, friable, nonsticky and nonplastic; many very fine roots and few fine roots; many very fine tubular and interstitial pores; slightly effervescent in most of the horizon but strongly effervescent in spots; strongly alkaline; clear wavy boundary.

IIC2sica—22 to 44 inches; very pale brown (10YR 7/3) stratified light sandy loam and loamy sand, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine roots and few fine roots; many very fine interstitial pores; 30 percent very hard, very firm, and brittle durinodes; slightly effervescent in most of the horizon but strongly effervescent in many coarse distinct very pale brown (10YR 7/3) segregated seams of lime; strongly alkaline; abrupt smooth boundary.

IIC3sica—44 to 56 inches; white (10YR 8/2) sandy loam, brown (10YR 5/3) moist; many large distinct brown (10YR 4/3) mottles; massive; hard, friable, nonsticky and nonplastic; common very fine roots; many very fine interstitial pores; 50 percent extremely hard and extremely firm durinodes; violently effervescent; strongly alkaline; abrupt smooth boundary.

IIC4—56 to 60 inches; very pale brown (10YR 7/3) gravelly light sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; 20 percent gravel; violently effervescent; strongly alkaline.

The solum is 10 to 22 inches thick. The 10- to 40-inch control section is stratified fine sandy loam, very fine sandy loam, or silt loam in the upper part. It is loam, fine sandy loam, sandy loam, or loamy sand in the lower part. The control section is 0 to 30 percent gravel, and the gravel is commonly in the lower part. Depth to the Csica horizon ranges from 12 to 24 inches. This horizon is 20 to 75 percent durinodes. The matrix surrounding the durinodes is very weakly silica-cemented in many pedons. Some pedons have a strongly cemented hardpan below a depth of 40 inches.

Bucan series

The Bucan series consists of deep, well drained, slowly permeable soils on upland hills. These soils formed in loess that is high in content of volcanic ash and in the underlying residuum derived from volcanic rock. Slopes are 15 to 50 percent.

Typical pedon of a Bucan loam in Lander County; about 2,150 feet west and 500 feet south of the northeast corner of sec. 34, T. 31 N., R. 47 E.

A11—0 to 4 inches; light brownish gray (10YR 6/2) loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; common very fine tubular pores and many fine interstitial pores; neutral; clear wavy boundary.

A12—4 to 7 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, very friable, sticky and plastic; common fine and very fine roots and few medium roots; common very fine tubular pores and many fine interstitial pores; neutral; abrupt smooth boundary.

B21t—7 to 11 inches; grayish brown (10YR 5/2) cobbly clay, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; hard, friable, very sticky and very plastic; common fine and very fine roots and few medium roots; common moderately thick clay films in pores and on peds; 10 percent cobbles and 5 percent gravel; neutral; abrupt smooth boundary.

B22t—11 to 25 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; strong fine and medium prismatic structure; very hard, firm, very sticky and very plastic; common very fine roots and few medium and coarse roots; common fine and very fine tubular pores; continuous moderately thick clay films on peds and in pores; many pressure faces and fine slickensides; 5 percent cobbles; slightly effervescent on undersides of cobbles; neutral; clear wavy boundary.

IIB31tca—25 to 35 inches; yellowish brown (10YR 5/4) gravelly clay, brown (10YR 4/3) moist; common medium and coarse prominent white (10YR 8/1) lime segregations on peds; moderate medium and fine angular blocky structure; very hard, firm, very sticky and very plastic; few very fine roots; common fine and very fine tubular pores; many thick clay films in pores and on peds; 30 percent gravel and cobbles; matrix is noneffervescent, but the horizon is violently effervescent in spots and on undersides of gravel and cobbles; strongly alkaline; clear wavy boundary.

IIB32tca—35 to 50 inches; pale brown (10YR 6/3) gravelly clay, brown (10YR 4/3) moist; many medium and coarse prominent white (10YR 8/2) lime segregations; massive; hard, friable, sticky and plastic; few very fine tubular pores and common fine interstitial pores; few thick clay films bridging gravel, and common moderately thick clay films in pores; 30 percent gravel and cobbles; violently effervescent; strongly alkaline.

Thickness of the solum and depth to bedrock range from 40 to 60 inches. The A horizon is as much as 30 percent rock fragments. The B3 horizon is clay or clay loam modified by gravel and cobbles.

Bunky series

The Bunky series consists of moderately deep, well drained, moderately permeable soils on dissected terraces and alluvial fans. These soils formed mainly in alluvium derived from tuff, rhyolite, andesite, and some loess that is high in content of volcanic ash. Slopes are 2 to 8 percent.

Typical pedon of a Bunky loam in Eureka County; about 2,400 feet west and 1,200 feet north of the southeast corner of sec. 23, T. 31 N., R. 50 E.

A1—0 to 9 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and plastic; many very fine and fine roots; common fine interstitial pores; 10 percent gravel; neutral; clear smooth boundary.

B2—9 to 16 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; hard, very friable, slightly sticky and plastic; common fine and very fine roots; few very fine tubular pores and common fine interstitial pores; few thin clay films in pores; 10 percent gravel; slightly effervescent in spots; neutral; clear smooth boundary.

C1sica—16 to 22 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; hard, friable, slightly sticky and plastic; few fine and very fine roots; few very fine tubular pores and common fine interstitial pores; 40 percent gravel; 30 percent very hard, firm, and brittle durinodes 1 inch in diameter; few fine and medium strongly effervescent soft masses of lime; slightly effervescent; mildly alkaline; abrupt wavy boundary.

C2sicam—22 to 28 inches; light gray (10YR 7/2) strongly cemented duripan, brown (10YR 5/3) moist; many discontinuous very pale brown (10YR 7/3) silica laminae less than 3 millimeters thick; massive; extremely hard, very firm; few very fine and fine roots, mainly matted on laminae; few very fine tubular pores and common very fine interstitial pores; violently effervescent; moderately alkaline; gradual smooth boundary.

IIC3sicam—28 to 42 inches; very pale brown (10YR 7/3) strongly cemented very gravelly duripan, brown

(10YR 5/3) moist; many discontinuous silica laminae less than 3 millimeters thick; massive; very hard, very firm; many very fine and fine interstitial pores; violently effervescent; moderately alkaline.

The solum ranges from 10 to 18 inches in thickness. Depth to the hardpan ranges from 20 to 36 inches. The B2 horizon is loam, silt loam, or light clay loam. The C1 horizon is sandy loam, loam, or silt loam and is 15 to 45 percent gravel. Texture is loam or gravelly loam if the B2 and C1 horizons are mixed.

Carstump series

The Carstump series consists of moderately deep, well drained, slowly permeable soils on uplands. These soils formed in material derived from chert and shale. Slopes are 4 to 30 percent.

Typical pedon of a Carstump very gravelly loam in Elko County; about 2,100 feet north and 250 feet east of the southwest corner of sec. 25, T. 32 N., R. 52 E.

A11—0 to 4 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots, common fine roots, and few medium roots; many very fine and fine tubular and interstitial pores; 50 percent gravel; neutral; clear smooth boundary.

A12—4 to 11 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable, sticky and slightly plastic; common very fine roots and few fine, medium, and coarse roots; common fine continuous tubular and vesicular pores; 30 percent gravel; neutral; abrupt smooth boundary.

A3—11 to 15 inches; light brownish gray (10YR 6/2) very gravelly sandy clay loam, dark brown (10YR 3/3) moist; weak fine granular structure; slightly hard, friable, sticky and plastic; few very fine, fine, and medium roots; few very fine continuous tubular pores and many very fine vesicular pores; 40 percent gravel; many bleached sand grains; neutral; abrupt smooth boundary.

B21t—15 to 20 inches; brown (10YR 5/3) very gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate very fine and fine angular blocky structure; very hard, firm, very sticky and plastic; few very fine roots; common very fine continuous tubular pores; 40 percent gravel; continuous moderately thick clay films on peds and in pores; neutral; gradual wavy boundary.

B22tca—20 to 29 inches; yellowish brown (10YR 5/4) very gravelly clay, yellowish brown (10YR 5/4) moist; strong very fine and fine angular blocky structure; very hard, friable, very sticky and plastic; common very fine continuous tubular pores; continuous moderately thick clay films on peds and in pores; 35 percent gravel; strongly effervescent; moderately alkaline; clear irregular boundary.

R—29 to 36 inches; fractured bedrock; fractures coated with lime.

Thickness of the solum and depth to bedrock range from 20 to 40 inches. The A1 horizon, when mixed, and the B2t horizon are 35 to 50 percent subrounded to angular gravel.

Chen series

The Chen series consists of shallow, well drained, very slowly permeable soils on uplands. These soils formed in residuum derived from volcanic rock and some loess that is high in content of volcanic ash. Slopes are 8 to 30 percent.

Typical pedon of a Chen cobbly loam in Elko County; about 1,500 feet east and 100 feet north of the southwest corner of sec. 35, T. 36 N., R. 52 E.

A11—0 to 3 inches; grayish brown (10YR 5/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots, common fine roots, and few medium roots; many medium and fine interstitial pores and common fine tubular pores; 20 percent cobbles and 10 percent gravel; neutral; abrupt smooth boundary.

A12—3 to 8 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium fine and very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common fine and very fine roots and few medium roots; many fine and very fine interstitial pores and common fine tubular pores; 20 percent gravel; neutral; abrupt smooth boundary.

B21t—8 to 13 inches; grayish brown (10YR 5/2) very gravelly clay, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, very sticky and very plastic; common very fine and fine roots and few medium roots; few fine tubular pores and many fine and very fine interstitial pores; common pressure faces; 45 percent gravel; neutral; abrupt irregular boundary.

B22t—13 to 17 inches; brown (10YR 5/3) very gravelly clay, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, friable, very sticky and very plastic; common very fine roots; common fine tubular pores and many fine and very fine interstitial pores; 55 percent gravel; continuous pressure faces; neutral; abrupt irregular boundary.

R—17 to 23 inches; unweathered andesite.

Thickness of the solum and depth to bedrock range from 12 to 20 inches. The mollic epipedon ranges from

10 to 14 inches in thickness and commonly includes the upper part of the argillic horizon. The A11 and A12 horizons average 25 to 50 percent rock fragments. The B2t horizon is 40 to 65 percent rock fragments.

Cherry Spring series

The Cherry Spring series consists of moderately deep, well drained, moderately slowly permeable soils on dissected terraces. These soils formed in loess that is high in content of volcanic ash and is underlain by mixed alluvium. Slopes are 2 to 8 percent.

Typical pedon of a Cherry Spring silt loam in Eureka County; about 1,850 feet north and 1,600 feet west of the southeast corner of sec. 24, T. 35 N., R. 51 E.

A11—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, dark brown (10YR 3/3) moist; moderate thick platy structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine vesicular pores and few medium vesicular pores; neutral; abrupt smooth boundary.

A12—3 to 7 inches; grayish brown (10YR 5/2) silt loam, dark grayish brown (10YR 4/2) moist; strong medium platy structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine vesicular pores and few medium vesicular pores; neutral; abrupt smooth boundary.

A3—7 to 15 inches; light grayish brown (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, nonsticky and nonplastic; many very fine and fine vesicular pores and few medium vesicular pores; neutral; clear smooth boundary.

B2t—15 to 29 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; hard, friable, sticky and plastic; many very fine and fine roots; few very fine and fine tubular pores and common medium and very fine interstitial pores; common thin clay films lining pores and few thin clay films on peds; mildly alkaline; clear smooth boundary.

B3tsica—29 to 36 inches; light brownish gray (10YR 6/2) loam that is weakly cemented with silica, brown (10YR 4/3) moist; many fine white (10YR 8/1) lime filaments; weak medium and fine subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; few fine roots; few fine tubular pores and many fine and very fine interstitial pores; common thin clay films in pores and few thin clay films on peds; effervescent; moderately alkaline; clear wavy boundary.

IIC1sicam—36 to 41 inches; pale brown (10YR 6/3) strongly cemented gravelly duripan, dark grayish brown (10YR 4/2) moist; many fine and medium white (10YR 8/1) lime filaments; weak medium and thick platy structure; extremely hard, extremely firm and very firm, brittle; very few very fine roots along fracture planes; many very fine and medium interstitial pores; violently effervescent; strongly alkaline; abrupt wavy boundary.

IIC2sicam—41 to 54 inches; white (10YR 8/1) strongly cemented duripan, pale brown (10YR 6/3) and brown (10YR 4/3) moist; brown (10YR 5/3) discontinuous silica laminae 1/2 millimeter thick; weak coarse platy structure; extremely hard and very hard, extremely firm and very firm; very few very fine roots; many very fine and fine interstitial pores; violently effervescent in matrix and noneffervescent in silica laminae; strongly alkaline.

Thickness of the solum and depth to the duripan range from 20 to 40 inches. The B2t horizon is dominantly loam or silt loam, but it is clay loam in places. The lower part of the B horizon is as much as 15 percent durinodes.

Chiara series

The Chiara series consists of shallow, well drained, moderately permeable soils on alluvial fans. These soils formed in mixed alluvium. Slopes are 2 to 30 percent.

Typical pedon of a Chiara silt loam in Eureka County; about 2,400 feet north and 2,000 feet east of the southwest corner of sec. 17, T. 32 N., R. 50 E.

A1—0 to 4 inches; light brownish gray (10YR 6/2) silt loam, dark brown (10YR 3/3) moist; moderate thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; few fine and very fine tubular pores; neutral; clear smooth boundary.

B2—4 to 8 inches; light gray (10YR 7/2) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; few very fine and medium roots; few very fine and fine tubular pores; mildly alkaline; clear smooth boundary.

C1si—8 to 13 inches; light gray (10YR 7/2) silt loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, nonsticky and slightly plastic; few very fine and medium roots; few very fine and fine tubular pores; many very hard, very firm, and brittle durinodes 0.3 inch in diameter; slightly effervescent; strongly alkaline; abrupt wavy boundary.

IIC2sicam—13 to 21 inches; light gray (10YR 7/2) indurated duripan, pale brown (10YR 6/3) and dark yellowish brown (10YR 4/4) moist; continuous very thin pale brown (10YR 6/3) silica laminae less than 3 millimeters thick; massive; extremely hard, extremely firm; few very fine interstitial pores; violently effervescent; strongly alkaline.

The solum ranges from 7 to 13 inches in thickness. Depth to the duripan commonly is 12 to 15 inches, but it ranges from 10 to 20 inches in some pedons. As much as 40 percent of the surface is covered by stones and cobbles. The control section is very fine sandy loam, loam, or silt loam. The C1 horizon is calcareous in some pedons, and it is 20 to 60 percent weakly cemented durinodes. A substratum of gravel and sand is below a depth of 40 inches in some pedons.

Clurde series

The Clurde series consists of very deep, well drained, moderately slowly permeable soils on alluvial fans and terraces. These soils formed in loess that is high in content of volcanic ash and is underlain by mixed alluvium. Slopes are 4 to 15 percent.

Typical pedon of a Clurde silt loam in Eureka County; about 590 feet north and 60 feet west of the southeast corner of sec. 13, T. 31 N., R. 50 E.

A1—0 to 5 inches; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate thin and medium platy structure; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine roots; common fine vesicular and interstitial pores; neutral; clear smooth boundary.

B1—5 to 11 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; common fine interstitial and tubular pores; neutral; gradual smooth boundary.

B2—11 to 17 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common fine and very fine roots; common fine tubular pores; few thin clay films in pores; moderately alkaline; clear smooth boundary.

C1sica—17 to 29 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; many medium distinct light gray (10YR 7/2) lime mottles; weak fine subangular blocky structure; hard, friable, sticky and slightly plastic; few fine roots; common fine tubular pores; about 20 percent very hard, firm, and brittle durinodes; strongly effervescent; strongly alkaline; clear wavy boundary.

IIC2sica—29 to 50 inches; very pale brown (10YR 7/3) gravelly loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and nonplastic; very few very fine roots; few fine interstitial pores; about 50 percent very hard, firm, and brittle durinodes; 30 percent gravel; violently effervescent; very strongly alkaline.

Thickness of the solum and depth to silica and carbonate accumulations range from 12 to 20 inches. The B2 horizon is clay loam to loam or silt loam. The C horizon is sandy clay loam, loam, or sandy loam and is as much as 30 percent gravel. It is slightly effervescent to violently effervescent and is 20 to 60 percent durinodes.

Cluro series

The Cluro series consists of very deep, somewhat poorly drained, moderately slowly permeable soils on stream terraces. These soils formed in mixed alluvium. Slopes are 0 to 2 percent.

Typical pedon of a Cluro silt loam in Eureka County; about 1,100 feet west of the northeast corner of sec. 35, T. 34 N., R. 48 E.

A11—0 to 2 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine vesicular pores and few medium vesicular pores; neutral; abrupt smooth boundary.

A12—2 to 5 inches; light brownish gray (10YR 6/2) silt loam on plate tops and grayish brown (10YR 5/2) silt loam on undersides, dark grayish brown (10YR 4/2) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and very few medium roots; few very fine tubular pores; neutral; abrupt smooth boundary.

B2—5 to 12 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium and coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots, common fine roots, and few medium roots; many very fine and fine tubular and interstitial pores; mildly alkaline; clear smooth boundary.

B3—12 to 17 inches; light brownish gray (10YR 6/2) heavy loam, very dark grayish brown (10YR 3/2) moist; common fine and medium distinct dark brown (7.5YR 3/2) mottles; massive; slightly hard, very friable, slightly sticky and plastic; many very fine roots and few fine and medium roots; few very fine and fine tubular pores; noneffervescent in matrix but effervescent in spots; mildly alkaline; clear smooth boundary.

IIA1sicab—17 to 24 inches; very dark grayish brown (10YR 3/2) and dark grayish brown (10YR 4/2, rubbed) silty clay loam, very dark brown (10YR 2/2) moist; common medium faint dark brown (7.5YR 3/2) and very dark brown (7.5YR 2/2) iron stains and few fine prominent white (10YR 8/1) lime segregations; weak medium prismatic structure; hard, friable, sticky and plastic; many very fine roots and few fine roots; common very fine tubular pores and few fine tubular pores; 30 percent very hard, firm, and brittle durinodes 1/4 to 1/2 inch in diameter; effervescent in matrix but strongly effervescent in lime seams; mildly alkaline; abrupt wavy boundary.

IIIC1sica—24 to 38 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; few fine distinct yellowish brown (10YR 5/6) iron mottles and common fine and medium distinct dark brown (7.5YR 3/2) iron mottles; few fine distinct white (10YR 8/1) lime segregations; massive; slightly hard, friable, nonsticky and slightly plastic; few very fine roots; many very fine tubular pores and few fine tubular pores; 70 percent very hard, firm, and brittle durinodes 1/4 to 3/4 inch in diameter; noneffervescent in matrix but strongly effervescent in lime segregations; mildly alkaline; gradual smooth boundary.

IIIC2sica—38 to 60 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; few fine distinct pinkish white (7.5YR 8/2) lime segregations; few fine prominent strong brown (7.5YR 5/8) iron mottles and common medium and coarse distinct dark brown (10YR 3/2) and very dark brown (10YR 2/2) iron mottles; massive; slightly hard, friable, nonsticky and slightly plastic; few fine and very fine roots; many very fine tubular pores; 40 percent very hard, firm, and brittle durinodes 1/4 to 1/2 inch in diameter; noneffervescent in matrix but strongly effervescent in lime segregations; mildly alkaline.

Thickness of the solum ranges from 12 to 17 inches. Depth to the horizons that have durinodes ranges from 13 to 30 inches. The control section is weakly stratified and is silty clay loam to very fine sandy loam. The horizons that have accumulations of lime and silica are 30 to 80 percent durinodes and are slightly saline to moderately saline.

Coff series

The Coff series consists of moderately deep, well drained, moderately permeable soils on the foothills of mountains. These soils formed in material derived from calcareous shale, limestone, and some loess that is high in content of volcanic ash. Slopes are 30 to 50 percent.

Typical pedon of a Coff very gravelly silt loam in Eureka County; about 2,200 feet south and 1,950 feet east of the northwest corner of sec. 27, T. 35 N., R. 50 E.

A11—0 to 2 inches; light brownish gray (10YR 6/2) very gravelly silt loam, dark grayish brown (10YR 4/2) moist; strong medium platy structure; slightly hard, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine and fine vesicular pores and few medium vesicular pores; 60 percent gravel; slightly effervescent; moderately alkaline; abrupt smooth boundary.

A12—2 to 5 inches; light brownish gray (10YR 6/2) very gravelly silt loam, dark grayish brown (10YR 4/2) moist; moderate very thin platy structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine interstitial pores and few medium tubular pores; 50 percent gravel; strongly effervescent; moderately alkaline; clear smooth boundary.

C1ca—5 to 10 inches; pale brown (10YR 6/3) very gravelly silt loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; many very fine roots, common fine roots, and few medium roots; few very fine and medium tubular pores; 60 percent gravel; few fine and medium soft masses of lime; violently effervescent; moderately alkaline; clear smooth boundary.

C2ca—10 to 20 inches; very pale brown (10YR 7/3) very gravelly silt loam, brown (10YR 5/3) moist; massive; hard, friable, nonsticky and slightly plastic; many very fine and fine roots; few fine and very fine tubular pores; 60 percent gravel; common fine and medium soft masses of lime; coating of lime 1/4 inch thick or less on pebbles; violently effervescent; moderately alkaline; clear wavy boundary.

C3ca—20 to 29 inches; very pale brown (10YR 7/3) very gravelly silt loam, brown (10YR 5/3) moist; many medium and large distinct white (10YR 8/2) lime mottles and coatings on pebbles; massive; soft, very friable, slightly sticky and nonplastic; many very fine roots and few fine roots; few fine tubular pores; 70 percent gravel; many medium and large soft masses of lime; many pebbles coated with lime; violently effervescent; moderately alkaline; abrupt smooth boundary.

C4cam—29 to 33 inches; very pale brown (10YR 8/3) lenticular discontinuous strongly cemented lime hardpan, pale brown (10YR 6/3) moist; massive; very hard, very firm, nonsticky and nonplastic; few medium and very fine roots matted on hardpan; violently effervescent; strongly alkaline; abrupt wavy boundary.

C5cam—33 to 38 inches; very pale brown (10YR 8/3) indurated lime hardpan, pale brown (10YR 6/3) moist; continuous laminar capping that is very pale brown (10YR 7/4) and dark yellowish brown (10YR 4/4) moist; extremely hard, extremely firm; few very fine roots matted between plates; violently effervescent; strongly alkaline.

The petrocalcic horizon is at a depth of 24 to 36 inches. The control section is very gravelly loam or very gravelly silt loam and is 60 to 75 percent gravel, mainly limestone fragments.

Coit series

The Coit series consists of very deep, poorly drained, moderately permeable soils on flood plains. These soils formed in mixed alluvium. Slopes are 0 to 1 percent.

Typical pedon of a Coit loam in Eureka County; about 900 feet west and 600 feet south of the northeast corner of sec. 11, T. 31 N., R. 49 E.

A11—0 to 2 inches; gray (10YR 5/1) loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine roots; many very fine interstitial pores, common very fine tubular pores, and few fine tubular pores; effervescent; mildly alkaline; abrupt smooth boundary.

A12—2 to 10 inches; grayish brown (l0YR 5/2) loam, very dark gray (10YR 3/1) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores and common very fine tubular pores; strongly effervescent; moderately alkaline; clear smooth boundary.

A13—10 to 18 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; violently effervescent; moderately alkaline; gradual smooth boundary.

A14—18 to 38 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; few medium faint very dark brown (10YR 2/2) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; few very fine tubular and interstitial pores; slightly effervescent; moderately alkaline; clear smooth boundary.

C—38 to 60 inches; gray (10YR 5/l) fine sandy loam, very dark grayish brown (10YR 3/2) moist; common faint very dark brown (10YR 2/2) mottles; massive; hard, friable, slightly sticky and plastic; few very fine, fine, and medium roots; few very fine interstitial pores; slightly effervescent; mildly alkaline.

The mollic epipedon ranges from 24 to 40 inches or more in thickness. The profile is stratified and commonly ranges from sandy loam to silty clay loam. Thin strata of coarser or finer textured material are in some pedons.

Cortez series

The Cortez series consists of moderately deep, well drained, slowly permeable soils on alluvial fans and terraces. These soils formed in thin deposits of loess over alluvium derived from interbedded pyroclastic material, sandstone, siltstone, conglomerate, andesite, and tuff. Slopes are 2 to 8 percent.

Typical pedon of a Cortez silt loam in Eureka County; about 1,200 feet south and 1,900 feet west of the northeast corner of sec. 7, T. 32 N., R. 50 E.

A11—0 to 2 inches; light brownish gray (10YR 6/2) silt loam, dark brown (10YR 3/3) moist; strong thick platy structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine roots; common very fine vesicular pores; neutral; abrupt smooth boundary.

A12—2 to 5 inches; light brownish gray (10YR 6/2) silt loam, brown (10YR 4/3) moist; moderate very thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine, fine, and medium roots; few very fine vesicular pores, few very fine and fine tubular pores, and many very fine interstitial pores; neutral; clear smooth boundary.

B1—5 to 10 inches; light gray (10YR 7/2) silt loam, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine tubular pores; few thin clay films in pores; neutral; abrupt smooth boundary.

B2t—10 to 15 inches; brown (10YR 5/3) clay, brown (10YR 4/3) moist; very dark grayish brown (10YR 3/2) and dark brown (10YR 3/3) coatings on peds; strong medium prismatic structure; hard, firm, very sticky and very plastic; few very fine roots; few very fine tubular pores; common moderately thick clay films in pores; few slickensides and many pressure faces; mildly alkaline; abrupt smooth boundary.

B3tca—15 to 22 inches; brown (10YR 5/3) gravelly clay, dark brown (10YR 3/3) and dark yellowish brown (10YR 4/4) moist; massive; hard, firm, very sticky and very plastic; few very fine roots; few very fine tubular pores; continuous moderately thick clay films in pores and many moderately thick clay bridges between sand grains; 15 percent gravel; strongly effervescent; many very fine white seams of lime; moderately alkaline; abrupt smooth boundary.

C1sicam—22 to 48 inches; very pale brown (10YR 7/3) indurated duripan, very pale brown (10YR 7/4) and light yellowish brown (10YR 6/4) moist; many moderately thick yellow (10YR 7/6) clay coatings in the upper 3 inches; massive; extremely hard, extremely firm; few very fine roots matted on surfaces of duripan; common very fine interstitial pores; strongly effervescent; strongly alkaline; abrupt smooth boundary.

IIC2—48 to 60 inches; pale brown (10YR 6/3) very gravelly coarse sandy loam, brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; many fine interstitial pores; 40 percent gravel; strongly alkaline.

Depth to the indurated duripan and thickness of the solum range from 22 to 36 inches. Below the pan the profile is very gravelly coarse sandy loam or very cobbly loamy coarse sand, is 35 to 50 percent rock fragments, and is moderately saline to strongly saline.

Creva series

The Creva series consists of very shallow and shallow, well drained, slowly permeable soils on uplands. These soils formed in material weathered from welded tuff and rhyolite. Slopes are 4 to 30 percent.

Typical pedon of a Creva gravelly loam in Eureka County; about 2,000 feet south and 400 feet east of the northwest corner of sec. 11, T. 30 N., R. 50 E.

A11—0 to 2 inches; light brownish gray (10YR 6/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; common very fine and fine interstitial pores and few fine vesicular pores; 20 percent gravel; about 30 percent of the surface is covered with gravel; neutral; abrupt smooth boundary.

A12—2 to 5 inches; light brownish gray (10YR 6/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; many very fine roots; common very fine tubular pores and many very fine and fine interstitial pores; 20 percent gravel; neutral; clear smooth boundary.

B1t—5 to 12 inches; light brownish gray (10YR 6/2) very cobbly clay loam, very dark grayish brown (10YR 3/2) moist; moderate coarse and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine roots; many very fine pores and few fine tubular pores; 30 percent gravel and 20 percent cobbles; few thin clay films on peds and common thin clay films in pores; neutral; clear broken boundary.

B2t—12 to 19 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, very sticky and very plastic; many very fine roots; common very fine and fine tubular pores; about 65 percent bedrock and 35 percent soil in crevices; common thin clay films on peds and few moderately thick clay films on peds; neutral; very abrupt broken boundary.

R—19 inches; welded tuff.

Thickness of the solum and depth to bedrock range from 4 to 20 inches. The A horizon is as much as 25 percent rock fragments. The discontinous argillic horizon averages 35 to 45 percent rock fragments. The B horizon is absent in about 10 to 40 percent of the pedon.

Crooked Creek series

The Crooked Creek series consists of very deep, poorly drained, slowly permeable soils on flood plains. These soils formed in mixed alluvium. Slopes are 0 to 2 percent.

Typical pedon of a Crooked Creek silt loam in Eureka County; about 1,400 feet south and 100 feet west of the northeast corner of sec. 17, T. 30 N., R. 52 E.

A1—0 to 8 inches; gray (10YR 5/1) silt loam, very dark grayish brown (2.5Y 3/2) moist; moderate fine subangular blocky structure; very hard, friable, very sticky and very plastic; many very fine and fine roots; many very fine tubular pores; common worm casts; slightly effervescent; moderately alkaline; abrupt smooth boundary.

C1—8 to 14 inches; gray (5Y 5/1) silty clay, very dark gray (5Y 3/1) moist; weak fine subangular blocky structure; very hard, firm, very sticky and very plastic; many very fine and fine roots; many very fine tubular pores; common worm casts; neutral; clear smooth boundary.

C2—14 to 20 inches; gray (N 5/0) silty clay, black (5Y 2/1) moist; common fine distinct mottles that are olive (5Y 5/6) and very dark gray (N 3/0) when moist; massive; very hard, firm, very sticky and very plastic; many very fine and fine roots; few very fine tubular pores; neutral; clear smooth boundary.

C3—20 to 38 inches; gray (N 5/0) silty clay, black (5Y 2/1) moist; massive; very hard, firm, very sticky and very plastic; many very fine roots; few very fine tubular pores; neutral; clear smooth boundary.

A1b—38 to 60 inches; gray (N 5/0) silty clay loam, black (5Y 2/1) moist; massive; hard, friable, very sticky and very plastic; many very fine roots; few very fine tubular pores; very high organic matter content; neutral.

The mollic epipedon is 24 to 60 inches thick. The control section is clay, silty clay, heavy silty clay loam, or heavy clay loam. Gravel is below a depth of about 40 inches in some pedons. It consists of thin lenses or pockets containing up to 40 percent pebbles.

Denay series

The Denay series consists of very deep, well drained, moderately slowly permeable soils on mountains. These soils formed in colluvium derived from limestone and shale. Slopes are 30 to 50 percent.

Typical pedon of a Denay gravelly loam in Eureka County; about 2,600 feet north and 700 feet east of the southwest corner of sec. 27, T. 35 N., R. 50 E.

A1—0 to 10 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots and few fine roots; many very fine interstitial pores; 20 percent gravel; effervescent; mildly alkaline; clear smooth boundary.

B2—10 to 18 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine roots and few fine roots; many very fine interstitial pores; 60 percent gravel; strongly effervescent; moderately alkaline; clear wavy boundary.

C1ca—18 to 24 inches; white (10YR 8/2) very gravelly loam that is weakly lime-cemented, light brownish gray (10YR 6/2) moist; massive; hard and very hard, firm, nonsticky and nonplastic; common very fine roots and few fine roots; many very fine interstitial pores; 70 percent gravel; violently effervescent; moderately alkaline; clear wavy boundary.

C2—24 to 50 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; many very fine interstitial pores; 70 percent gravel; violently effervescent; moderately alkaline.

Thickness of the solum and depth to the C1ca horizon range from 15 to 24 inches. The control section is loam or silt loam modified by gravel. The control section averages 65 to 75 percent coarse fragments.

Donna series

The Donna series consists of moderately deep, well drained, very slowly permeable soils on alluvial fans and terraces. These soils formed in mixed alluvium derived mainly from tuff, andesite, rhyolite, and some loess that is high in content of volcanic ash. Slopes are 2 to 8 percent.

Typical pedon of a Donna gravelly loam in Elko County; about 2,500 feet west and 525 feet north of the southeast corner of sec. 8, T. 37 N., R. 52 E.

A11—0 to 2 inches; light brownish gray (10YR 6/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine vesicular and tubular pores; 25 percent gravel; about 30 percent of the surface is covered by gravel pavement; neutral; abrupt smooth boundary.

A12—2 to 4 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; weak thick platy structure in place and moderate very fine granular when displaced; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine tubular and vesicular pores; 15 percent gravel; neutral; abrupt smooth boundary.

A13—4 to 8 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable, sticky and plastic; many very fine and few fine roots; many very fine tubular pores, few fine tubular pores, and common very fine interstitial pores; 15 percent gravel; neutral; abrupt smooth boundary.

A&B—8 to 13 inches; light brownish gray (10YR 6/2) gravelly clay loam with many uncoated sand grains, dark brown (10YR 3/3) moist; strong very fine granular structure; hard, friable, very sticky and very plastic; many very fine roots, common fine roots, and few medium roots; many very fine interstitial and tubular pores; 15 percent gravel; few thin clay films on peds; neutral; abrupt wavy boundary.

B2t—13 to 18 inches; brown (10YR 5/3) clay, yellowish brown (10YR 5/4) moist; strong medium and fine prismatic structure; very hard, very firm, very sticky and very plastic; many very fine roots and few fine roots in the upper 2 inches, few roots below; few very fine and fine tubular pores in upper 1 inch and very few very fine tubular pores below; continuous thin clay films in pores; many slickensides and pressure faces; neutral; clear wavy boundary.

B3t—18 to 22 inches; light yellowish brown (10YR 6/4) sandy clay, yellowish brown (10YR 5/4) moist; massive; hard, firm, sticky and very plastic; few fine and very fine roots; common very fine tubular pores; many moderately thick clay bridges between sand grains; common slickensides; neutral; abrupt wavy boundary.

C1sim—22 to 27 inches; light yellowish brown (10YR 6/4) indurated duripan, brown (10YR 4/3) moist, continuous white (10YR 8/1) silica laminae 2 to 5 millimeters thick; massive; extremely hard, extremely firm; common very fine roots matted on the laminar surface and along some fracture planes; common very fine tubular pores; mildly alkaline; abrupt wavy boundary.

C2sicam—27 to 38 inches; very pale brown (10YR 7/3) indurated duripan, grayish brown (10YR 5/2) moist; continuous and discontinuous, randomly oriented white (10YR 8/1) silica and lime laminae 1 to 2 millimeters thick; massive; extremely hard, extremely firm; few very fine tubular pores; strongly effervescent; strongly alkaline; clear wavy boundary.

IIB1tbca—38 to 51 inches; light gray (10YR 7/2) and very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine tubular pores; common moderately thick clay films in pores; 60 percent gravel and 15 percent cobbles; violently effervescent; moderately alkaline; clear wavy boundary.

IIB2tb—51 to 58 inches; light yellowish brown (10YR 6/4) very gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; massive; hard, firm, very sticky and very plastic; few very fine tubular pores and many very fine interstitial pores; few medium soft lime segregations; 40 percent gravel and 20 percent cobbles; moderately thick clay films in tubular pores and common moderately thick clay bridges between sand grains; noneffervescent in matrix but violently effervescent in spots; moderately alkaline; clear wavy boundary.

IIC3ca—58 to 68 inches; pale brown (10YR 6/3) very cobbly sandy clay loam, brown (10YR 5/3) moist; massive; slightly hard, friable, sticky and plastic; many very fine interstitial pores, common fine interstitial pores and few medium interstitial pores; 45 percent gravel and 30 percent cobbles; common medium soft seams of lime; very few thin clay bridges between sand grains; noneffervescent but violently effervescent in seams; mildly alkaline.

Thickness of the solum and depth to the duripan are 20 to 26 inches. The A horizon is 15 to 25 percent gravel. The B2t horizon is 60 to 70 percent clay and is as much as 15 percent fine gravel. The duripan is 10 to 20 inches thick. Below the duripan the texture is loam, sandy loam, or sandy clay loam modified by 50 to 75 percent rock fragments.

Dunphy series

The Dunphy series consists of very deep, somewhat poorly drained, moderately slowly permeable soils on flood plains and terraces. These soils formed in mixed alluvium. Slopes are 0 to 2 percent.

Typical pedon of Dunphy silt loam in Eureka County; about 1,440 feet east and 140 feet south of the northwest corner of sec. 1, T. 31 N., R. 48 E.

A1—0 to 1 inch; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine interstitial pores; violently effervescent; very strongly alkaline; abrupt smooth boundary.

C1—1 to 7 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; weak very thin and thin platy structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and medium horizontal roots and few fine horizontal roots; few very fine tubular pores; violently effervescent; very strongly alkaline; abrupt wavy boundary.

IIC2sica—7 to 22 inches; light gray (2.5Y 7/2) fine sandy loam, light olive brown (2.5Y 5/4) moist; common medium distinct iron mottles that are dark yellowish brown (10YR 4/4), dark brown (10YR 3/3), and very dark brown (10YR 2/2) when moist; massive; hard, friable, slightly sticky and slightly plastic; common very fine roots and few fine roots; few very fine and fine tubular pores; many very thin discontinuous silica-cemented lenses and bands that are olive brown (2.5Y 4/4) when moist and are very hard, firm, and brittle; violently effervescent; very strongly alkaline; clear wavy boundary.

IIC3—22 to 27 inches; very pale brown (10YR 7/3) fine sandy loam, light olive brown (2.5Y 5/4) moist; common fine distinct iron mottles that are dark yellowish brown (10YR 4/4 and 3/4) when moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine roots and few fine roots; few very fine tubular pores; strongly effervescent; very strongly alkaline; abrupt wavy boundary.

IIIC4sica—27 to 30 inches; light gray (5Y 7/2) weakly silica-cemented very fine sandy loam, olive (5Y 5/3) moist; common fine distinct iron mottles that are dark yellowish brown (10YR 4/4 and 3/4) when moist; massive; very hard, firm, nonsticky and nonplastic; very few very fine roots; few very fine tubular pores; violently effervescent; very strongly alkaline; clear wavy boundary.

IIIC5sica—30 to 35 inches; white (5Y 8/2) weakly silica-cemented silt loam, light olive gray (5Y 6/2) moist; common fine distinct iron mottles that are olive (5Y 4/4) when moist; massive; hard, firm, slightly sticky and slightly plastic; very few very fine roots; common very fine tubular pores; violently effervescent; very strongly alkaline; abrupt wavy boundary.

IVC6—35 to 45 inches; pale yellow (5Y 7/3) light loamy sand, olive (5Y 5/3) moist; common fine distinct iron mottles that are olive (5Y 5/4, 5/6, and 4/4) when moist; massive; soft, very friable, nonsticky and nonplastic; very few very fine roots; many very fine interstitial pores and few very fine and fine tubular pores; effervescent; strongly alkaline; abrupt wavy boundary.

VC7sica—45 to 61 inches; light gray (5Y 7/2) silt loam, olive (5Y 5/3) moist; common fine distinct lime mottles that are light gray (5Y 7/2) when moist, few fine distinct manganese mottles that are black (5Y 2/2) when moist, and few medium distinct iron mottles that are olive brown (2.5Y 4/4) when moist; massive; hard, friable, slightly sticky and slightly plastic; common very fine tubular pores and few fine tubular pores, many coated with lime; about 60 percent very hard, firm, and brittle durinodes and common moderately thick silica bridges; violently effervescent; strongly alkaline; abrupt wavy boundary.

VIC8—61 to 65 inches; light gray (5Y 7/2) gravelly sand, olive (5Y 5/3) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine interstitial pores; 20 percent gravel; effervescent; strongly alkaline.

Depth to the Csica horizon ranges from 7 to 17 inches. The profile ranges from gravelly sand to silty clay loam. It is erratically stratified, mainly with very fine sandy loam, silt loam, or fine sandy loam. Dunphy soils range from slightly saline-alkali to strongly saline-alkali.

Ferdelford series

The Ferdelford series consists of moderately deep, well drained, moderately slowly permeable soils on uplands. These soils formed in material weathered from interbedded tuffaceous sandstone, tuff, and shale. Slopes are 15 to 75 percent.

Typical pedon of Ferdelford gravelly clay loam in Elko County; about 600 feet west and 300 feet south of the northeast corner of sec. 17, T. 31 N., R. 52 E.

A1—0 to 3 inches; grayish brown (10YR 5/2) gravelly clay loam, dark grayish brown (10YR 4/2) moist;

strong very fine granular structure; hard, friable, sticky and plastic; common very fine and fine roots; many very fine interstitial pores; 25 percent gravel and 5 percent cobbles; strongly effervescent; moderately alkaline; abrupt smooth boundary.

B2—3 to 14 inches; pale brown (10YR 6/3) and very pale brown (10YR 7/3) sandy clay loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, sticky and plastic; common very fine to coarse horizontal roots; many very fine interstitial pores and common very fine tubular pores; 10 percent gravel; violently effervescent; strongly alkaline; gradual wavy boundary.

C1ca—14 to 38 inches; variegated brown (10YR 5/3), pale brown (10YR 6/3), and very pale brown (10YR 7/3) stratified gravelly clay loam, yellowish brown (10YR 5/4) and light yellowish brown (10YR 6/4) moist; massive; hard, friable, sticky and plastic; few very fine, fine, and medium horizontal roots; many very fine interstitial pores and common very fine tubular pores; 30 percent gravel; thin strata of coarser and finer textured material; many fine white (10YR 8/2) soft lime seams; violently effervescent; strongly alkaline.

Cr—38 inches; weathered tuffaceous sandstone and tuff.

The solum ranges from 11 to 20 inches in thickness. Depth to weathered bedrock is 24 to 40 inches. The profile commonly is calcareous and ranges from slightly effervescent to violently effervescent; in places the surface layer is noneffervescent. The B horizon is loam, sandy clay loam, or clay loam and is 10 to 15 percent rock fragments. The C horizon is 15 to 35 percent rock fragments.

Four Star series

The Four Star series consists of very deep, poorly drained, moderately permeable soils on flood plains and along narrow canyon bottoms. These soils formed in mixed alluvium. Slopes are 0 to 2 percent.

Typical pedon of a Four Star loam in Elko County; about 1,600 feet south and 700 feet east of northwest corner of sec. 16, T. 36 N., R. 52 E.

A1—0 to 5 inches; dark gray (10YR 4/l) loam, black (10YR 2/l) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many very fine, fine, and medium roots; many very fine tubular pores; slightly effervescent in spots; neutral; clear wavy boundary.

AC—5 to 8 inches; dark gray (10YR 4/1 and 5Y 4/1) silt loam, black (10YR 2/1) and dark olive gray (5Y 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many very fine, fine, and medium roots; many very fine tubular pores; neutral; abrupt irregular boundary.

A11b—8 to 18 inches; grayish brown (2.5Y 5/2) very fine sandy loam, very dark grayish brown (2.5Y 3/2) moist; many fine strata of silt loam and loamy very fine sand with common fine distinct mottles that are black (10YR 2/1) and dark yellowish brown (10YR 3/4) when moist; massive; slightly hard, very friable, nonsticky and slightly plastic; many very fine, fine, and medium roots; common very fine interstitial pores; neutral; abrupt wavy boundary.

IIA12b—18 to 25 inches; grayish brown (2.5Y 5/2) loamy sand, very dark grayish brown (2.5Y 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine roots and few fine and medium roots; many fine interstitial pores; neutral; abrupt smooth boundary.

IIIA13b—25 to 33 inches; grayish brown (2.5Y 5/2) very fine sandy loam, very dark grayish brown (2.5Y 3/2) moist; many fine distinct mottles that are very dark brown (l0YR 2/2) when moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; few very fine tubular pores; neutral; clear wavy boundary.

IIIC1g—33 to 41 inches; olive gray (5Y 5/2) silt loam, dark olive gray (5Y 3/2) moist; common fine distinct mottles that are very dark brown (10YR 2/2) and dark yellowish brown (l0YR 4/4) when moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; neutral; clear smooth boundary.

IIIC2g—41 to 49 inches; olive gray (5Y 5/2) silt loam, dark olive gray (5Y 3/2) moist; common fine distinct mottles that are black (l0YR 2/1) when moist; massive; hard, friable, sticky and plastic; few very fine tubular pores; neutral; clear smooth boundary.

IIIC3g—49 to 60 inches; olive gray (5Y 5/2) very fine sandy loam, dark olive gray (5Y 3/2) moist; common fine distinct mottles that are black (l0YR 2/1) and dark yellowish brown (10YR 3/4) when moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine tubular pores; neutral.

The mollic epipedon ranges from 24 to 48 inches in thickness. The profile is dominantly fine sandy loam or sandy loam, but it is stratified with loamy sand to silt loam. Pockets or lenses of sand or gravel are in some pedons.

Geysen series

The Geysen series consists of very deep, well drained, slowly permeable soils on alluvial terraces and toe slopes of alluvial fans. These soils formed in mixed alluvium. Slopes are 0 to 2 percent.

Typical pedon of a Geysen silt loam in Eureka County; about 1,400 feet east and 10 feet north of the southwest corner of sec. 14, T. 34 N., R. 49 E.

A11—0 to 3 inches; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; strong thick platy structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine and fine vesicular pores and common medium vesicular pores; effervescent; moderately alkaline; abrupt smooth boundary.

A12—3 to 7 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; many fine vesicular pores; effervescent; moderately alkaline; clear smooth boundary.

B2tca—7 to 14 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots; common very fine tubular pores; common moderately thick clay films in pores and few thin clay films on peds; noneffervescent in matrix but strongly effervescent in many medium distinct white (10YR 8/2) lime segregations; strongly alkaline; clear wavy boundary.

C1sica—14 to 27 inches; pale brown (10YR 6/3) loam that is weakly silica-cemented, brown (10YR 4/3) moist; massive; hard and very hard, firm, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; noncalcareous in matrix but strongly effervescent in many medium distinct white (10YR 8/2) lime segregations; strongly alkaline; clear smooth boundary.

C2si—27 to 37 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores and many very fine interstitial pores; 30 percent hard firm brittle durinodes that are 1/4 to 3/8 inch in diameter; effervescent in matrix but strongly effervescent in few medium distinct white (10YR 8/1) lime segregations; strongly alkaline; clear smooth boundary.

C3—37 to 60 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; very few very fine roots; many very fine interstitial pores and common very fine tubular pores; 5 percent hard firm brittle durinodes that are 1/4 to 3/8 inch in diameter; effervescent in matrix but strongly effervescent in common medium distinct white (10YR 8/1) lime segregations; strongly alkaline.

Thickness of the solum and depth to the weakly silica-cemented horizon range from 11 to 20 inches. The profile is weakly calcareous throughout. It ranges from slightly saline to strongly saline. In some pedons the matrix in the Csica horizon is noneffervescent, but lime segregations are strongly or violently effervescent. The B2t horizon is mainly clay loam, but it is silty clay loam or heavy loam in places. Exchangeable bases of the B2t horizon are 15 to 40 percent sodium. The C horizon ranges from loam or fine sandy loam to very fine sandy loam.

Glean series

The Glean series consists of deep, well drained, moderately rapidly permeable soils on uplands. These soils formed in colluvium derived from mixed rock. Slopes are 50 to 75 percent.

Typical pedon of a Glean extremely stony loam in Lander County; about 2,000 feet north and 200 feet east of the southwest corner of sec. 28, T. 32 N., R. 47 E.

A11—0 to 8 inches; brown (10YR 4/3) extremely stony loam, dark brown (10YR 3/3) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots, common fine roots, and few medium roots; many very fine and fine interstitial pores; 25 percent stones; neutral; clear wavy boundary.

A12—8 to l5 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; weak medium and coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots, common medium roots and few coarse roots; many very fine and fine interstitial pores and common fine tubular pores; 40 percent gravel; neutral; diffuse smooth boundary.

AC—15 to 30 inches; brown (10YR 4/3) very cobbly loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine roots, common fine roots, and few medium roots; many very fine and fine interstitial pores; 30 percent cobbles and 20 percent gravel; neutral.

C1—30 to 5l inches; brown (7.5YR 5/4) very cobbly loam, dark brown (7.5YR 3/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine roots, common fine roots, and few medium roots; many very fine and fine interstitial pores; 30 percent cobbles and 20 percent gravel; neutral.

R—51 inches; andesite.

Bedrock is at a depth of 40 to 60 inches. The control section is sandy loam or loam and is 40 to 70 percent rock fragments. The rock fragments are gravel, cobbles, stones, and boulders.

Griver series

The Griver series consists of very deep, poorly drained soils that are moderately rapidly permeable in the control section and very rapidly permeable to very slowly permeable in the substratum. These soils are on flood plains. They formed in mixed alluvium. Slopes are 0 to 1 percent.

Typical pedon of a Griver loam in Lander County; about 2,300 feet west and 1,900 feet south of the northeast corner of sec. 35, T. 33 N., R. 47 E.

A1—0 to 2 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine roots; many very fine interstitial pores and common very fine tubular pores; effervescent; moderately alkaline; abrupt smooth boundary.
C1—2 to 14 inches; light brownish gray (10YR 6/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine roots and few fine and medium roots; many very fine interstitial pores and few very fine tubular pores; effervescent; moderately alkaline; abrupt wavy boundary.
IIC2—14 to 25 inches; light brownish gray (10YR 6/2) loamy fine sand, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots and few fine and medium roots; many very fine interstitial pores and few very fine tubular pores; effervescent; moderately alkaline; abrupt smooth boundary.
IIIA1b—25 to 37 inches; light brownish gray (10YR 6/2) very fine sandy loam, very dark grayish brown (10YR 3/2) moist; common fine distinct brown (10YR 4/3) mottles; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; many very fine interstitial pores and few very fine tubular pores; effervescent; moderately alkaline; abrupt wavy boundary.
IVC3—37 to 60 inches; light brownish gray (10YR 6/2) very gravelly sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine and fine interstitial pores; 35 percent gravel; slightly effervescent; moderately alkaline.

The profile ranges from slightly effervescent to violently effervescent. It commonly is coarsely stratified with very fine sandy loam, fine sandy loam, sandy loam, and loamy fine sand. Some pedons have thin strata of gravelly sand to silty clay. Dense, nonconforming clay is below a depth of 40 inches in places. The profile is saline-alkali in some pedons.

Hapgood series

The Hapgood series consists of deep, well drained, moderately permeable soils on mountains. These soils formed in material weathered from mixed rock sources. Slopes are 30 to 50 percent.

Typical pedon of a Hapgood silt loam in Elko County; about 1,320 feet east and 1,580 feet south of the northwest corner of sec. 8, T. 37 N., R. 51 E.

A11—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium and fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine roots and few fine roots; common very fine and fine interstitial pores; 11 percent gravel; neutral; clear smooth boundary.
IIA12—7 to 13 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate very fine and medium granular structure; soft, very friable, nonsticky and slightly plastic; common very fine, fine, and medium roots and few coarse roots; common very fine and fine interstitial pores and few fine and medium tubular pores; 10 percent gravel; neutral; gradual smooth boundary.
IIA13—13 to 27 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots, common medium roots, and many coarse roots; common very fine and fine interstitial pores and few fine tubular pores; 35 percent gravel and cobbles; neutral; abrupt wavy boundary.
IIIC1—27 to 50 inches; light brownish gray (10YR 6/2) very gravelly sandy loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and common fine, medium, and coarse roots; common very fine and fine interstitial and tubular pores; 70 percent gravel and cobbles; neutral.
R—50 inches; hard bedrock.

Depth to bedrock ranges from 40 to 60 inches. Thickness of the mollic epipedon ranges from 20 to 48 inches. The control section is dominantly loam, but it is stratified with fine sandy loam or sandy loam in places. It averages 35 to 50 percent rock fragments.

Havingdon series

The Havingdon series consists of moderately deep, well drained, slowly permeable soils on mountain foothills. These soils formed in residuum derived from chert, shale, and some loess and volcanic ash. Slopes are 15 to 30 percent.

Typical pedon of a Havingdon gravelly silt loam in Lander County; about 2,400 feet north and 1,300 feet east of the southwest corner of sec. 18, T. 31 N., R. 47 E.

A11—0 to 3 inches; light brownish gray (10YR 6/3) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, very friable, nonsticky and slightly plastic; common very fine roots; many very fine and fine vesicular pores and few fine tubular pores; 20 percent angular chert gravel; neutral; abrupt smooth boundary.
A12—3 to 6 inches; pale brown (10YR 6/3) gravelly silt loam, brown (10YR 4/3) moist; moderate medium and thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine roots; many very fine tubular pores; 25 percent angular chert gravel; neutral; clear wavy boundary.

B1—6 to 10 inches; brown (10YR 5/3) very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak fine angular blocky structure; slightly hard, very friable, slightly sticky and plastic; common very fine and fine roots; few very fine and fine tubular pores; 55 percent angular chert gravel; neutral; abrupt wavy boundary.

B2t—10 to 21 inches; yellowish brown (10YR 5/4) very gravelly clay, yellowish brown (10YR 5/4) moist; weak fine and medium angular blocky structure; hard, very friable, very sticky and plastic; common very fine roots and few coarse roots; common very fine tubular pores; continuous thin clay films bridging sand grains, on peds, and in pores; 70 percent angular chert gravel; neutral; clear wavy boundary.

R—21 to 30 inches; fractured chert bedrock with few soft lime masses and common thin clay films along fracture planes; few fine roots in fractures; mildly alkaline.

Thickness of the solum and depth to bedrock range from 20 to 26 inches. The B2t horizon is clay or sandy clay and is 50 to 75 percent gravel.

Humboldt series

The Humboldt series consists of very deep, poorly drained, moderately slowly permeable soils on flood plains. These soils formed in mixed alluvium. Slopes are 0 to 2 percent.

Typical pedon of a Humboldt silty clay in Lander County; about 2,050 feet east and 300 feet south of the northwest corner of sec. 29, T. 33 N., R. 47 E.

A11—0 to 2 inches; dark gray (10YR 4/l) silty clay loam, very dark brown (10YR 2/2) moist; weak fine granular structure; slightly hard, friable, sticky and plastic; many fine and very fine roots; many very fine interstitial pores; slightly effervescent; moderately alkaline; abrupt smooth boundary.

A12—2 to 11 inches; dark gray (10YR 4/l) silty clay, black (10YR 2/1) moist; moderate fine angular blocky structure; hard, friable, very sticky and very plastic; many very fine roots and few fine roots; common very fine tubular pores and few fine tubular pores; strongly effervescent; strongly alkaline; clear smooth boundary.

AC—11 to 24 inches; gray (10YR 5/1) silty clay, black (10YR 2/1) moist; weak fine and medium subangular blocky structure; very hard, friable, very sticky and very plastic; many very fine roots and few fine roots; common very fine and fine tubular pores; strongly effervescent; strongly alkaline; clear wavy boundary.

C1—24 to 33 inches; light gray (10YR 7/1) heavy silty clay loam, gray (10YR 5/1) moist; massive; hard, friable, very sticky and plastic; common very fine roots and few fine roots; common very fine and fine tubular pores; violently effervescent; strongly alkaline; gradual wavy boundary.

C2—33 to 43 inches; light gray (10YR 7/l) silty clay loam, gray (10YR 5/l) moist; massive; hard, friable, sticky and plastic; few very fine roots; common very fine, fine, and medium tubular pores; violently effervescent; strongly alkaline; clear wavy boundary.

C3ca—43 to 50 inches; gray (10YR 6/l) silty clay, very dark gray (10YR 3/1) moist; massive; very hard, firm, very sticky and very plastic; few very fine roots; common very fine, fine, and medium tubular pores; many very hard irregularly shaped lime concretions; strongly effervescent; strongly alkaline.

The mollic epipedon is 11 to 24 inches thick. The profile commonly ranges from slightly effervescent to violently effervescent. Some strata below a depth of 20 inches are noneffervescent. The control section is stratified, mainly with silty clay loam, silty clay, or clay. Thin strata of silt loam and fine clay are in some pedons. The profile ranges from nonsaline-alkali to strongly saline-alkali.

Humdun series

The Humdun series consists of very deep, well drained, moderately permeable soils on uplands. These soils formed in loess that is moderate in content of volcanic ash and is underlain by alluvium and residuum derived from soft tuff. Slopes are 15 to 50 percent.

Typical pedon of Humdun silt loam in Lander County; about 2,000 feet north and 700 feet east of the southwest corner of sec. 18, T. 32 N., R. 47 E.

A11—0 to 8 inches; grayish brown (10YR 5/2) silt loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots, common fine roots, and few coarse roots; common very fine tubular pores and common very fine and fine interstitial pores; several fine and medium old root channels; neutral; clear smooth boundary.

B21—8 to 15 inches; light brownish gray (10YR 6/2) silt loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; many fine tubular and interstitial pores; several fine and medium old root channels; neutral; clear smooth boundary.

B22—15 to 24 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak coarse prismatic structure; hard, very friable, slightly sticky and slightly plastic; common very fine roots and few medium roots; many very fine tubular pores; several old root channels; neutral; clear wavy boundary.

B3—24 to 30 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few medium roots; common very fine tubular pores; moderately alkaline; clear wavy boundary.

C1sica—30 to 43 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; common medium distinct white (10YR 8/1) lime segregations; massive; soft, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; 30 percent very hard firm brittle durinodes 3/4 to 1 inch in diameter; effervescent in matrix, but strongly effervescent in seams; moderately alkaline; clear smooth boundary.

C2sica—43 to 60 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine roots; 70 percent very hard firm brittle durinodes 3/4 to 1 inch in diameter; strongly effervescent; strongly alkaline.

Thickness of the solum and depth to the Csica horizon range from 24 to 33 inches. The control section is dominantly loam, very fine sandy loam, or silt loam. The Csica horizon is 20 to 80 percent durinodes.

Hussa series

The Hussa series consists of very deep, poorly drained and very poorly drained, moderately slowly permeable soils on flood plains and alluvial fans. These soils formed in mixed alluvium. Slopes are 0 to 2 percent.

Typical pedon of a Hussa loam in Elko County; about 1,400 feet north and 700 feet east of the southwest corner of sec. 34, T. 33 N., R. 52 E.

A11—0 to 7 inches; gray (10YR 5/1) loam, very dark gray (10YR 3/1) moist; strong fine and medium subangular blocky structure; hard, very friable, slightly sticky and plastic; many very fine, fine, and medium roots; common very fine interstitial pores and common very fine tubular pores; effervescent; moderately alkaline; abrupt smooth boundary.

A12—7 to 14 inches; gray (10YR 5/1) loam, very dark gray (10YR 3/1) moist; strong fine and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine roots and common fine and medium roots; common very fine interstitial pores and common very fine tubular pores; effervescent; moderately alkaline; clear smooth boundary.

AC—14 to 22 inches; gray (5Y 5/1) loam, very dark gray (5Y 3/1) moist; massive; hard, friable, sticky and plastic; common very fine roots and few fine roots; common very fine tubular pores; strongly effervescent; moderately alkaline; gradual smooth boundary.

C1—22 to 30 inches; light gray (5Y 6/1) loam, dark gray (5Y 4/1) moist; common fine distinct mottles that are brown (10YR 4/3) when moist; massive; hard, friable, sticky and plastic; few very fine roots; few very fine tubular pores; few small freshwater clam shells; violently effervescent; moderately alkaline; clear wavy boundary.

IIC2—30 to 48 inches; light gray (5Y 6/1) fine sandy loam, olive gray (5Y 4/2) moist; common fine distinct mottles that are olive brown (2.5Y 4/4) and light olive brown (2.5Y 5/6) when moist; massive; hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; 10 percent gravel; slightly effervescent; moderately alkaline; abrupt wavy boundary.

IIC3—48 to 60 inches; light gray (5Y 6/1) gravelly loamy sand, olive gray (5Y 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine interstitial pores; 25 percent gravel; slightly effervescent; moderately alkaline.

The mollic epipedon is 12 to 24 inches thick. The control section is dominantly clay loam or loam, but it has strata of sandy clay loam, silty clay loam, fine sandy loam, or sandy loam in some pedons. The control section averages less than 15 percent gravel, and the thin strata are as much as 35 percent gravel. Some nonconforming gravelly sand or gravelly loamy sand is below a depth of 40 inches. The profile is noncalcareous below a depth of 20 to 30 inches in some pedons. It ranges from nonsaline-alkali to slightly saline-alkali.

Iron Blossom series

The Iron Blossom series consists of very deep, moderately well drained, slowly permeable soils on toe slopes of alluvial fans and on basin fill plains. These soils formed in mixed alluvium. Slopes are 0 to 2 percent.

Typical pedon of an Iron Blossom silt loam in Eureka County; about 1,700 feet south and 2,500 feet east of the northwest corner of sec. 21, T. 34 N., R. 49 E.

A1—0 to 3 inches; light gray (10YR 7/2) silt loam, light brownish gray (10YR 6/2) moist; massive; hard, friable, slightly sticky and slightly plastic; many fine and medium vesicular pores; violently effervescent; strongly salt-affected; strongly alkaline; abrupt smooth boundary.

C1—3 to 9 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate very fine angular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine interstitial pores and few fine tubular pores; violently effervescent; strongly salt-affected; strongly alkaline; clear smooth boundary.

C2—9 to 17 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine and fine interstitial pores and few fine tubular pores; violently effervescent; very strongly alkaline; clear smooth boundary.

IIC3—17 to 26 inches; very pale brown (10YR 7/3) silty clay, brown (10YR 5/3) moist; weak coarse prismatic structure; hard, friable, very sticky and very plastic; common fine, medium, and coarse roots; common fine tubular pores and many very fine tubular and interstitial pores; violently effervescent; very strongly alkaline; gradual smooth boundary.

IIIC4si—26 to 36 inches; very pale brown (10YR 7/3) clay loam, brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, friable, sticky and plastic; few fine roots; many very fine interstitial pores; violently effervescent; 20 percent hard firm brittle durinodes; very strongly alkaline; clear smooth boundary.

IIIC5si—36 to 50 inches; white (10YR 8/2) clay loam, pale brown (10YR 6/3) moist; massive; very hard, firm, brittle; weakly silica-cemented; few very fine roots; common very fine interstitial pores and few very fine tubular pores; violently effervescent; very strongly alkaline.

Depth to the weakly cemented Csi horizon is 20 to 40 inches. The control section is mainly clay loam but has strata of loam to silty clay. Thin strata of volcanic ash are in some pedons. Few to common gypsum crystals are in the lower horizons of some pedons. The profile ranges from slightly saline-alkali to strongly saline-alkali.

Jack Creek series

The Jack Creek series consists of deep, excessively drained, rapidly permeable soils on mountains. These soils formed in material weathered from chert and shale. Slopes are 50 to 75 percent.

Typical pedon of a Jack Creek very gravelly loamy coarse sand in Elko County; about 2,000 feet south and 2,000 feet west of the northeast corner of sec. 20, T. 36 N., R. 51 E.

A1—0 to 15 inches; dark gray (10YR 4/1) very gravelly loamy coarse sand, black (10YR 2/1) moist; single grain; loose, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 75 percent gravel that is mainly fine; slightly acid; gradual smooth boundary.

C1—15 to 44 inches; dark gray (10YR 4/1) very gravelly loamy coarse sand, black (10YR 2/1) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 75 percent gravel that is mainly fine; few thin clay films coating pebbles; slightly acid; diffuse smooth boundary.

C2—44 to 60 inches; dark gray (10YR 4/1) very gravelly loamy coarse sand, black (10YR 2/1) moist; single grain; loose, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 75 percent gravel that is mainly fine; slightly acid.

Depth to bedrock is 48 to 62 inches. The mollic epipedon is 10 to 18 inches thick. The profile is very gravelly loamy coarse sand to very gravelly loamy fine sand. The content of gravel is 65 to 75 percent. The gravel is mainly angular chert fragments.

Kawich series

The Kawich series consists of very deep, excessively drained, very rapidly permeable soils on dunes. These soils formed in sandy eolian material derived from mixed rock sources. Slopes are 2 to 30 percent.

Typical pedon of Kawich fine sand in Eureka County; about 1,300 feet east of the southwest corner of sec. 36, T. 35 N., R. 49 E.

A1—0 to 3 inches; light gray (10YR 7/2) fine sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; many very fine interstitial pores; violently effervescent; strongly alkaline; abrupt smooth boundary.

C1—3 to 60 inches; light gray (10YR 7/2) fine sand, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots and few fine and medium roots in the upper 10 inches, few very fine and fine roots below; many very fine interstitial pores; violently effervescent; strongly alkaline.

Depth to the nonconforming playa material ranges from 40 to 120 inches or more. Salt crystals are in some of the strata above the nonconforming material. The profile is strongly effervescent to violently effervescent.

Malpais series

The Malpais series consists of very deep, well drained, moderately permeable to moderately rapidly permeable soils on mountains. These soils formed in colluvium derived from volcanic rock. Slopes are 15 to 75 percent.

Typical pedon of a Malpais extremely stony loam in Eureka County; about 2,400 feet south and 1,300 feet west of the northeast corner of sec. 17, T. 31 N., R. 48 E.

A1—0 to 3 inches; light brownish gray (10YR 6/2) extremely stony loam, dark grayish brown (10YR 4/2) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots and few fine and medium roots; many very fine and fine interstitial pores, common very fine and fine tubular pores and few medium vesicular pores; 25 percent stones and 35 percent cobbles; neutral; abrupt smooth boundary.

B21—3 to 9 inches; (10YR 6/3) cobbly loam, brown (10YR 4/3) moist; weak coarse prismatic structure;

soft, very friable, slightly sticky and slightly plastic; many very fine roots and few fine and medium roots; many very fine and fine interstitial pores and few fine tubular pores; 15 percent cobbles and 10 percent gravel; neutral; clear smooth boundary.

B22—9 to 30 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine interstitial pores, common fine tubular pores, and few medium tubular pores; 20 percent cobbles and 50 percent gravel; slightly effervescent; mildly alkaline; gradual smooth boundary.

Cca—30 to 60 inches; very pale brown (10YR 7/3) very stony loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores, common medium interstitial pores, and few coarse interstitial pores; 20 percent stones, 15 percent cobbles, and 25 percent gravel; common very fine and medium distinct white (10YR 8/2) segregated lime coatings; violently effervescent; strongly alkaline.

Thickness of the solum ranges from 15 to 35 inches. Depth to carbonates ranges from 9 to 20 inches. The control section is loam, fine sandy loam, or sandy loam and is 50 to 70 percent rock fragments.

Mascamp series

The Mascamp series consists of shallow, well drained, moderately slowly permeable soils on mountains. These soils formed in material weathered from tuff. Slopes are 30 to 50 percent.

Typical pedon of a Mascamp very gravelly loam in Eureka County; about 2,640 feet north and 530 feet east of the southwest corner of sec. 25, T. 32 N., R. 52 E.

A1—0 to 6 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and very fine granular structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine and fine interstitial pores; 45 percent gravel; neutral; clear wavy boundary.

A3—6 to 13 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak medium and coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots and few fine roots; common very fine tubular pores and many very fine and fine interstitial pores; 50 percent gravel; neutral; abrupt wavy boundary.

B2t—13 to 19 inches; brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few fine roots and many very fine roots; many very fine and fine tubular pores; 60 percent gravel; common thin clay films on peds, few moderately thick clay films on peds, and continuous thin clay films in pores; neutral; abrupt irregular boundary.

R—19 to 27 inches; lime-coated fractured tuff.

Thickness of the solum and depth to bedrock range from 12 to 20 inches. The mollic epipedon ranges from 8 to 20 inches in thickness. In most pedons it encompasses all or part of the argillic horizon. The B2t horizon is sandy clay loam, clay loam, or heavy loam and is 50 to 75 percent rock fragments.

McConnel series

The McConnel series consists of very deep, somewhat excessively drained, moderately rapidly permeable soils on offshore lakebars and alluvial fans. These soils formed in alluvium and some loess derived from mixed rock sources and volcanic ash. They are underlain by lacustrine sand and gravel. Slopes are 0 to 8 percent.

Typical pedon of a McConnel gravelly fine sandy loam in Lander County; about 2,700 feet north of the southeast corner of sec. 36, T. 35 N., R. 38 E.

A11—0 to 2 inches; pale brown (10YR 6/3) gravelly fine sandy loam, dark grayish brown (10YR 4/2) moist; weak medium and thin platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many medium interstitial pores and common very fine and fine interstitial pores; 35 percent gravel; neutral; abrupt smooth boundary.

A12—2 to 5 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; many very fine roots and few fine roots; few very fine tubular pores, many very fine interstitial pores, and few fine interstitial pores; 25 percent gravel; neutral; abrupt smooth boundary.

B2—5 to 14 inches; very pale brown (10YR 7/3) gravelly fine sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine interstitial pores and few very fine tubular pores; 30 percent gravel; mildly alkaline; clear wavy boundary.

C1—14 to 20 inches; pale brown (10YR 6/3) gravelly fine sandy loam, brown (10YR 4/3) moist; massive; hard, very friable, nonsticky and nonplastic; few very fine to coarse roots; many very fine interstitial pores and few very fine tubular pores; 30 percent gravel and 5 percent cobbles; effervescent in matrix and strongly effervescent in soft seams; few slightly brittle durinodes; moderately alkaline; gradual wavy boundary.

IIC2ca—20 to 60 inches; variegated brown (10YR 5/3, dry and moist) and very dark gray (10YR 3/1, dry and moist) very gravelly coarse sand; single grain; loose, nonsticky and nonplastic; very few medium roots; 65 percent gravel and cobbles; strongly effervescent lime-coated gravel, cobbles, and sand grains; moderately alkaline.

Depth to the nonconforming very gravelly material ranges from 10 to 20 inches. Strata in the upper part of the control section are sandy loam or fine sandy loam. The lower part is stratified coarse sand to loamy sand and is 60 to 75 percent gravel.

Midas series

The Midas series consists of very deep, well drained, slowly permeable soils on toe slopes of alluvial fans. These soils formed in a thin mantle of loess over mixed alluvium. Slopes are 0 to 2 percent.

Typical pedon of a Midas silt loam in Eureka County; about 250 feet west and 250 feet south of the northeast corner of sec. 32, T. 35 N., R. 49 E.

A1—0 to 4 inches; pale brown (10YR 6/3) silt loam, dark grayish brown (10YR 4/2) moist; moderate thin and medium platy structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine roots; many fine and very fine vesicular pores and few medium vesicular pores; neutral; clear smooth boundary.

B21—4 to 11 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine tubular pores and few fine tubular pores; mildly alkaline; clear smooth boundary.

B22—11 to 21 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores and few fine interstitial pores; few thin clay films in pores; mildly alkaline; abrupt smooth boundary.

IIC1sica—21 to 30 inches; mixed pale brown (10YR 6/3) and white (10YR 8/2) very gravelly fine sandy loam, brown (10YR 4/3) and light gray (10YR 7/2) moist; massive; very hard, firm, nonsticky and nonplastic; weakly silica- and lime-cemented; few very fine roots; few very fine tubular pores; 45 percent gravel and 20 percent cobbles; strongly effervescent; strongly alkaline; gradual wavy boundary.

IIIC2—30 to 50 inches; variegated brown (10YR 5/3) to black (10YR 2/1) very gravelly coarse sand, dark grayish brown (10YR 4/2) and black (10YR 2/l) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine and fine interstitial pores; 65 percent gravel; mildly alkaline.

Depth to nonconforming very gravelly loamy material ranges from 16 to 24 inches. Depth to very gravelly sandy material ranges from 28 to 45 inches. The B2 horizon commonly is silt loam but ranges from loam or very fine sandy loam. The IIC horizon is sandy loam or fine sandy loam. It is 45 to 75 percent gravel and 15 to 25 percent cobbles. The IIIC horizon is 50 to 75 percent gravel.

Mosquet series

The Mosquet series consists of shallow and very shallow, well drained, slowly permeable soils on upland ridges. These soils formed in residuum derived from volcanic flow. Slopes are 4 to 30 percent.

Typical pedon of a Mosquet very gravelly sandy loam in Elko County; about 1,400 feet south and 1,300 feet west of the northeast corner of sec. 25, T. 36 N., R. 52 E.

A1—0 to 2 inches; grayish brown (10YR 5/2) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 50 percent gravel and cobbles; neutral; abrupt smooth boundary.

A3—2 to 6 inches; grayish brown (10YR 5/2) very gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 45 percent gravel and cobbles; few thin clay stains on sand grains; neutral; clear smooth boundary.

B1t—6 to 14 inches; grayish brown (10YR 5/2) cobbly sandy clay, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 30 percent cobbles and gravel; many thin clay films bridging sand grains and in pores; neutral; clear irregular boundary.

B2t—14 to 20 inches; dark yellowish brown (10YR 4/4) gravelly clay, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; hard, firm, very sticky and very plastic; common very fine roots; common very fine and fine interstitial pores; 30 percent gravel and cobbles; continuous thin clay films bridging and coating sand grains; neutral; abrupt irregular boundary.

R—20 inches; ignimbrite bedrock; clay in fracture planes.

Thickness of the solum and depth to bedrock range from 6 to 20 inches. The mollic epipedon ranges from 6 to 14 inches in thickness and it includes all or part of the argillic horizon. The B2t horizon is clay or sandy clay and is 15 to 35 percent rock fragments.

Ocala series

The Ocala series consists of very deep, somewhat poorly drained, slowly permeable soils on flood plains and low stream terraces. These soils formed in mixed alluvium. Slopes are 0 to 1 percent.

Typical pedon of an Ocala silt loam in Lander County; about 1,500 feet east and 700 feet north of the southwest corner of sec. 19, T. 33 N., R. 47 E.

A1—0 to 1 inch; very pale brown (10YR 8/3) heavy silt loam, brown (10YR 5/3) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine stolons; many very fine interstitial pores; very hard salt crust 1 to 5 millimeters thick on surface; strongly effervescent; very strongly alkaline; abrupt smooth boundary.

C1—1 to 15 inches; light gray (10YR 7/2) heavy silt loam, brown (10YR 5/3) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and plastic; many very fine roots and few fine and medium roots; few very fine tubular pores; few brittle durinodes 1 to 2 millimeters in diameter; strongly effervescent; very strongly alkaline; clear smooth boundary.

C2sica—15 to 19 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; common fine distinct iron mottles that are strong brown (7.5YR 5/6) when moist and many medium faint iron mottles that are dark brown (10YR 3/3) when moist; massive; hard, friable, slightly sticky and slightly plastic; common very fine roots; common fine and very fine tubular pores; 70 percent very hard, firm, and brittle durinodes 5 to 15 millimeters in diameter; strongly effervescent; strongly alkaline; gradual smooth boundary.

C3sica—19 to 23 inches; light gray (10YR 7/2) weakly silica-cemented silt loam, variegated pale brown (10YR 6/3) and brown (10YR 5/3) moist; common medium faint iron mottles that are brown (7.5YR 4/4) when moist; massive; hard, firm, brittle; few very fine roots; common very fine and fine tubular pores; strongly effervescent; strongly alkaline; clear wavy boundary.

C4sica—23 to 33 inches; light gray (10YR 7/2) silt loam, variegated light brownish gray (10YR 6/2), grayish brown (10YR 5/2), and dark grayish brown (10YR 4/2) moist; common medium faint iron mottles that are brown (7.5YR 4/4) when moist; weak medium and thick platy structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine and very fine tubular pores; 50 percent extremely hard, very firm, and brittle durinodes 1 to 5 millimeters in diameter; strongly effervescent; strongly alkaline; abrupt smooth boundary.

IIA1bsica—33 to 45 inches; light gray (10YR 7/1) silty clay loam, variegated dark grayish brown (10YR 4/2), dark gray (10YR 4/1), and very dark gray (10YR 3/1) moist; common fine distinct iron mottles that are brown (7.5YR 4/2) when moist; massive; hard, friable, sticky and plastic; fine and very fine tubular pores; 90 percent extremely hard, very firm, and brittle durinodes 5 to 30 millimeters in diameter; violently effervescent; strongly alkaline; gradual wavy boundary.

IIIC5sica—45 to 58 inches; white (10YR 8/1) gravelly very fine sandy loam, variegated light brownish gray (10YR 6/2), grayish brown (10YR 5/2), and very dark gray (10YR 3/1) moist; common fine distinct iron mottles that are dark brown (7.5YR 3/2) when moist; massive; hard, friable, nonsticky and nonplastic; few fine tubular pores; 20 percent very hard, very firm, and brittle durinodes 5 to 15 millimeters in diameter; 30 percent extremely hard lime nodules; violently effervescent; strongly alkaline.

Depth to the weakly cemented Csica horizon ranges from 13 to 27 inches. Some pedons have more than one Csica horizon. The control section is dominantly silty clay loam or silt loam. Thin strata of loam are in some pedons. The Csica horizons that are not weakly cemented are 20 to 90 percent durinodes and have a friable matrix. The profile generally is strongly salt- and alkali-affected to a depth of 10 inches. Some areas that have been irrigated by flooding are salt- and alkali-affected below this depth. Some pedons have lime concretions that commonly are below a depth of 35 inches. Strata or lenses of volcanic ash as much as 4 inches thick are in most pedons and are mainly below a depth of 30 inches.

Old Camp, calcareous variant

The Old Camp, calcareous variant, consists of shallow and very shallow, well drained, moderately slowly permeable soils on mountain foothills. These soils formed in material weathered from chert. Slopes are 30 to 50 percent.

Typical pedon of an Old Camp, calcareous variant, cobbly sandy loam (in map unit BN) in Lander County; about 1/4 mile east of the northwest corner of sec. 26, T. 32 N., R. 46 E.

A11—0 to 2 inches; light brownish gray (10YR 6/2) cobbly sandy loam, brown (10YR 4/3) moist; weak medium platy structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; common very fine and fine vesicular pores; 15 percent cobbles; slightly effervescent; moderately alkaline; clear smooth boundary.

A12—2 to 9 inches; pale brown (10YR 6/3) gravelly coarse sandy loam, brown (10YR 4/3) moist; weak thin and medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; many very fine interstitial pores and common fine and medium tubular pores; 25 percent gravel and cobbles; strongly effervescent; moderately alkaline; clear wavy boundary.

B2t—9 to 13 inches; pale brown (10YR 6/3) very gravelly light clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine angular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores and many very fine interstitial pores; 60 percent gravel; common thin clay films in pores and few thin clay bridges and coatings; strongly effervescent; moderately alkaline; abrupt irregular boundary.

R—13 to 23 inches; fractured chert, yellowish brown (10YR 5/6) sandy clay loam in crevices.

Thickness of the solum and depth to bedrock range from 8 to 15 inches. The B2t horizon is clay loam or sandy clay loam and is 60 to 70 percent rock fragments.

Orovada series

The Orovada series consists of very deep, well drained, moderately permeable soils on alluvial fans and terraces. These soils formed in alluvium derived from mixed rock sources and loess that is high in content of volcanic ash. Slopes are 0 to 15 percent.

Typical pedon of an Orovada silt loam in Eureka County; about 600 feet west and 400 feet north of the southeast corner of sec. 24, T. 30 N., R. 50 E.

A11—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, dark brown (10YR 3/3) moist; weak medium platy structure; slightly hard, friable, nonsticky and slightly plastic; many very fine roots; many fine vesicular pores; neutral; abrupt smooth boundary.

A12—3 to 9 inches; light brownish gray (10YR 6/2) silt loam, dark brown (10YR 3/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots and few fine roots; many very fine interstitial and tubular pores; neutral; clear smooth boundary.

B2—9 to 16 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots and few fine and medium roots; many very fine interstitial and tubular pores; mildly alkaline; clear wavy boundary.

C1si—16 to 30 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; hard, friable, nonsticky and slightly plastic; many very fine roots and few fine and medium roots; many very fine interstitial and tubular pores; about 20 percent very hard, firm, and brittle durinodes; moderately alkaline; clear wavy boundary.

C2si—30 to 34 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 4/3) moist; massive; hard, friable, nonsticky and slightly plastic; common very fine roots and few fine and medium roots; many very fine interstitial pores and common very fine tubular pores; about 20 percent very hard, firm, and brittle durinodes; very slightly effervescent in spots; moderately alkaline; abrupt irregular boundary.

C3si—34 to 38 inches; light gray (10YR 7/2) loamy fine sand, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine roots and few fine and medium roots; many very fine interstitial pores; about 5 percent hard, firm, and brittle durinodes; effervescent in spots; moderately alkaline; abrupt irregular boundary.

C4sica—38 to 47 inches; light brownish gray (10YR 6/2) very fine sandy loam, brown (10YR 4/3) moist; massive; hard, friable, nonsticky and nonplastic; few fine and medium roots; many very fine interstitial and tubular pores; about 40 percent very hard, firm, and brittle durinodes; strongly effervescent in many fine soft lime seams; strongly alkaline.

Thickness of the solum and depth to the Csi or Csica horizon are 10 to 28 inches. The B2 horizon is fine sandy loam or loam. The C horizon is mainly stratified fine sandy loam to silt loam, but in some pedons are thin strata that are loamy fine sand or are as much as 30 percent gravel. Some Csi horizon is 20 percent durinodes or more. Gypsum crystals are below a depth of 37 inches in some pedons. A weakly cemented or strongly cemented duripan is below a depth of 40 inches in some pedons. The lower part of the C horizon is slightly saline to moderately saline.

Packer series

The Packer series consists of deep, well drained, moderately permeable soils on mountain ridges. These soils formed in material weathered from chert and quartzite. Slopes are 15 to 50 percent.

Typical pedon of a Packer very cobbly loam in Elko County; about 2,500 feet east and 2,400 feet north of the southwest corner of sec. 7, T. 37 N., R. 51 E.

A11—0 to 5 inches; grayish brown (10YR 5/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots and few medium roots; few very fine tubular pores; 60 percent cobbles and gravel; neutral; clear wavy boundary.

A12—5 to 9 inches; grayish brown (10YR 5/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure and very fine granular; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots and very few medium roots; common very fine tubular pores and few fine tubular pores; 25 percent cobbles and 30 percent gravel; neutral; clear wavy boundary.

IIB2t—9 to 13 inches; brown (10YR 5/3) very cobbly clay loam, dark yellowish brown (10YR 4/4) moist;

moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; 35 percent cobbles and 45 percent gravel; few thin clay films on peds and coating and bridging sand grains and gravel; neutral; clear wavy boundary.

IIC1—13 to 32 inches; light yellowish brown (10YR 6/4) very cobbly sandy loam, yellowish brown (10YR 5/6) moist; massive; hard, friable, slightly sticky and nonplastic; few very fine roots; common very fine tubular pores and few fine tubular pores; 35 percent cobbles and 45 percent gravel; few thin clay films coating and bridging gravel; neutral; clear smooth boundary.

IIC2—32 to 50 inches; brown (10YR 5/3) very cobbly sandy loam, brown (10YR 4/3) moist; massive; very hard, friable, slightly sticky and nonplastic; very few very fine roots; 30 percent cobbles and 50 percent gravel; few thin clay films on gravel; neutral.

Depth to bedrock ranges from 40 to 60 inches. Thickness of the mollic epipedon ranges from 7 to 10 inches. The mollic epipedon includes the upper part of the argillic horizon in some places. The B2t horizon ranges from clay loam to sandy clay loam or loam and is 60 to 80 percent rock fragments. The C horizon is very gravelly or very cobbly sandy loam or loamy sand.

Pattani series

The Pattani series consists of moderately deep, well drained, very slowly permeable soils on upland hills. These soils formed in material weathered from tuff. Slopes are 4 to 15 percent.

Typical pedon of a Pattani clay in Elko County; about 1,300 feet north of the center of sec. 16, T. 35 N., R. 52 E.

A1—0 to 1 inch; grayish brown (10YR 5/2) clay, grayish brown (10YR 5/2) moist; strong fine granular structure; hard, friable, very sticky and very plastic; few fine roots; many fine interstitial pores; neutral; abrupt smooth boundary.

B1—1 inch to 10 inches; grayish brown (10YR 5/2) clay, grayish brown (10YR 5/2) moist; moderate medium granular structure and moderate thin platy to a depth of about 5 inches, massive below; hard, firm, very sticky and very plastic; common fine and very fine roots and few medium roots; many very fine and fine interstitial pores; mildly alkaline; gradual irregular boundary.

B21—10 to 15 inches; grayish brown (10YR 5/2) clay, grayish brown (10YR 5/2) moist; massive; very hard, very firm, very sticky and very plastic; few very fine and medium roots; common very fine cracks; common oblique slickensides; noneffervescent in the upper part and slightly effervescent below; moderately alkaline; gradual wavy boundary.

B22ca—15 to 20 inches; grayish brown (10YR 5/2) clay, grayish brown (10YR 5/2) moist; massive; very hard, very firm, very sticky and very plastic; few very fine and medium roots; common very fine cracks; 5 to 10 percent decomposing light yellowish brown (10YR 6/4) angular tuff fragments, pale brown (10YR 6/3) moist; common thin dark brown (10YR 3/3) clay films in cracks; strongly effervescent tuff fragments; strongly alkaline; clear wavy boundary.

Cr—20 to 23 inches; white (10YR 8/2, dry and moist) weathered tuff bedrock; massive; very hard and extremely hard, very firm and extremely firm; strongly alkaline.

Depth to weathered bedrock is 20 to 40 inches. Cracks in the profile close when the soil is moist and open when the soil is dry. The control section is clay, silty clay, or heavy clay loam.

Pie Creek series

The Pie Creek series consists of moderately deep, well drained, very slowly permeable soils on rolling upland hills. These soils formed in material weathered from tuff. Slopes are 15 to 30 percent.

Typical pedon of a Pie Creek loam in Elko County; about 2,500 feet west of the southeast corner of sec. 13, T. 35 N., R. 52 E.

A1—0 to 2 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, nonsticky and slightly plastic; few very fine roots; many very fine vesicular pores, common fine vesicular pores, and few medium vesicular pores; neutral; abrupt wavy boundary.

A21—2 to 4 inches; grayish brown (10YR 5/2) and light brownish gray (10YR 6/2) loam, very dark grayish brown (10YR 3/2) moist; many uncoated sand grains; weak medium prismatic structure; soft, very friable, slightly sticky and slightly plastic; many fine roots and few medium roots; few very fine tubular pores and many very fine and fine interstitial pores; neutral; clear smooth boundary.

A22—4 to 5 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 3/3) moist; many clean sand grains; weak medium prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots and few medium roots; many very fine and fine interstitial pores; few thin clay films on peds; neutral; abrupt wavy boundary.

B21t—5 to 11 inches; brown (10YR 5/3) fine clay, dark brown (10YR 3/3) moist; strong medium and coarse columnar structure; caps that are light brownish gray (10YR 6/2) when dry and dark brown (10YR 3/3) when moist; caps are 10 to 25 percent uncoated sand grains; extremely hard, very firm, very sticky and very plastic; common very fine roots and few fine and medium roots; common slickensides and pressure faces; neutral; clear smooth boundary.

B22t—11 to 21 inches; pale brown (10YR 6/3) fine clay, dark brown (10YR 3/3) moist; strong coarse prismatic structure; extremely hard, very firm, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; many slickensides and pressure faces; neutral; clear wavy boundary.

B31tca—21 to 27 inches; pale brown (10YR 6/3) light clay, brown (10YR 4/3) moist; massive; very hard, very firm, sticky and very plastic; few very fine roots; few fine tubular pores; common slickensides; thin clay bridges between sand grains; few fine soft lime masses; mildly alkaline; gradual wavy boundary.

B32tca—27 to 35 inches; pale brown (10YR 6/3) light clay, brown (10YR 4/3) moist; massive; slightly hard, friable, sticky and plastic; common very fine interstitial pores and few fine interstitial pores; common thin clay films bridging and coating sand grains; few slickensides; many medium and coarse soft masses of lime; slightly effervescent; moderately alkaline; abrupt wavy boundary.

R—35 inches; hard tuff.

Thickness of the solum and depth to bedrock range from 24 to 40 inches. Depth to lime ranges from 18 to 28 inches. The mollic epipedon is 8 to 15 inches thick. The A horizon is as much as 10 percent gravel. Some pedons are 25 to 40 percent cobbles. The B2t horizon is 60 to 70 percent clay. The B3 horizon is clay loam or clay.

Pocker series

The Pocker series consists of very deep, moderately well drained, slowly permeable soils on low-lying terraces or flood plains. These soils formed in alluvium derived from mixed rock. Slopes are 0 to 2 percent.

Typical pedon of Pocker silt loam, in Eureka County, about 1,200 feet east and 50 feet north of the southwest corner of sec. 35, T. 35 N., R. 49 E.

A1—0 to 4 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; strong thin and medium platy structure; hard, very friable, slightly sticky and slightly plastic; few very fine roots; many fine vesicular pores and common medium vesicular pores in upper 2 inches and many very fine interstitial pores in lower 2 inches; strongly effervescent; very strongly alkaline; abrupt smooth boundary.

IIC1—4 to 10 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; common fine interstitial pores and few fine tubular pores; violently effervescent; strongly alkaline; abrupt smooth boundary.

IIIC2—10 to 27 inches; light gray (10YR 7/2) clay, pale brown (10YR 6/3) moist; weak coarse prismatic structure; soft, very friable, very sticky and very plastic; many very fine interstitial pores; violently effervescent; strongly alkaline; clear smooth boundary.

IIIC3—27 to 46 inches; light gray (10YR 7/2) clay, pale brown (10YR 6/3) moist; massive; slightly hard, friable, very sticky and very plastic; few fine and medium roots; many very fine interstitial pores; violently effervescent; strongly alkaline; diffuse smooth boundary.

IIIC4ca—46 to 60 inches; white (10YR 8/2) clay, pale brown (10YR 6/3) moist; massive; hard, firm, very sticky and very plastic; few very fine tubular pores; many medium and large extremely hard and extremely firm irregularly shaped lime concretions; strongly effervescent; strongly alkaline.

Depth to the Cca horizon ranges from 32 to 50 inches. The control section is clay or silty clay and has strata of silty clay loam, silt loam, or loam in many pedons. The profile is strongly effervescent to violently effervescent and is moderately saline-alkali to strongly saline-alkali.

Primeaux series

The Primeaux series consists of moderately deep, well drained, moderately slowly permeable soils on uplands. These soils formed in residuum derived from chert, quartzite, shale, and some loess that contains volcanic ash. Slopes are 15 to 30 percent.

Typical pedon of a Primeaux gravelly loam in Elko County; about 2,000 feet north and 600 feet west of the southeast corner of sec. 6, T. 31 N., R. 51 E.

A11—0 to 5 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, friable, slightly sticky and slightly plastic; many fine and medium roots; many very fine and fine interstitial pores; 25 percent gravel; slightly acid; abrupt smooth boundary.

A12—5 to 11 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; few fine tubular pores; 10 percent gravel; slightly acid; abrupt smooth boundary.

B2t—11 to 20 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; few fine tubular pores; 10 percent gravel; slightly acid; abrupt broken boundary.

IIB3t—20 to 35 inches; brown (10YR 5/3) very gravelly loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; many very fine interstitial pores; 50 percent gravel; many thin clay films in pores; slightly acid.

R—35 to 37 inches; chert, continuous thin clay films along fracture planes.

Thickness of the solum and depth to bedrock range from 20 to 40 inches. Thickness of the mollic epipedon ranges from 9 to 15 inches. The mollic epidedon includes part of the argillic horizon in some places. About 30 to 40 percent of the surface is covered with gravel. The A11 horizon is 15 to 30 percent gravel. The B2t horizon is loam, clay loam, or sandy clay loam and is as much as 15 percent gravel. The IIB3t horizon is loam or sandy clay loam and is 35 to 55 percent gravel.

Puett series

The Puett series consists of shallow, well drained, moderately rapidly permeable soils on uplands. These soils formed in residuum derived from tuff and tuffaceous sandstone. Slopes are 15 to 50 percent.

Typical pedon of a Puett coarse sandy loam in Elko County; about 900 feet west and 50 feet south of the northeast corner of sec. 17, T. 31 N., R. 52 E.

A1—0 to 3 inches; light brownish gray (10YR 6/2) coarse sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine interstitial pores; strongly effervescent; moderately alkaline; clear smooth boundary.

C1—3 to 13 inches; light brownish gray (10YR 6/2) coarse sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; common medium and coarse roots and few very fine roots; many very fine interstitial pores; violently effervescent; strongly alkaline; abrupt wavy boundary.

C2r—13 inches; light brownish gray (10YR 6/2) weathered tuff bedrock, dark grayish brown (10YR 4/2) moist; many fine distinct dark yellowish brown (10YR 3/4), yellowish brown (10YR 5/4 and 5/8), and white (10YR 8/2) mottles; few fine, medium, and coarse roots along cracks; violently effervescent; strongly alkaline.

Depth to weathered bedrock ranges from 10 to 20 inches. The profile is strongly effervescent to violently effervescent. It is dominantly coarse sandy loam to fine sandy loam and is as much as 15 percent gravel.

Rad series

The Rad series consists of very deep, well drained, slowly permeable soils on alluvial fans and terraces. These soils formed in loess over mixed alluvium. Slopes are 0 to 8 percent.

Typical pedon of a Rad silt loam in Eureka County; in the northeast corner of sec. 34, T. 32 N., R. 49 E.

A1—0 to 6 inches; light brownish gray (10YR 6/2) silt loam, dark brown (10YR 3/3) moist; weak medium and thick platy structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many fine vesicular pores; neutral; abrupt smooth boundary.

B2—6 to 18 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 3/3) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and nonplastic; few fine roots and very few medium and coarse roots; few fine tubular pores; moderately alkaline; clear wavy boundary.

C1—18 to 25 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; massive; hard, firm, nonsticky and nonplastic; common fine and medium roots; common fine tubular pores; about 10 percent very hard, firm, and brittle durinodes that are large and oblong; slightly effervescent; strongly alkaline; abrupt wavy boundary.

C2sica—25 to 32 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; strong thick platy structure; hard, friable, nonsticky and nonplastic; many fine roots matted on plates; very few fine tubular pores and common very fine and fine interstitial pores; 25 percent very hard, firm, and brittle durinodes; strongly effervescent; strongly alkaline; abrupt smooth boundary.

C3sica—32 to 45 inches; very pale brown (10YR 7/3) continuous weakly silica-cemented very fine sandy loam, brown (10YR 5/3) moist; weak medium platy structure; very hard, firm, nonsticky and nonplastic; many fine roots matted on plates; common very fine interstitial pores; strongly effervescent; strongly alkaline; abrupt smooth boundary.

C4ca—45 to 55 inches; very pale brown (10YR 7/4) very fine sandy loam, yellowish brown (10YR 5/4) moist; weak medium platy structure; slightly hard, friable, nonsticky and nonplastic; many very fine roots matted on plates; many very fine interstitial pores; violently effervescent; moderately alkaline; clear smooth boundary.

C5ca—55 to 60 inches; light gray (10YR 7/2) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial pores; violently effervescent; moderately alkaline.

The solum is 12 to 20 inches thick. Depth to the weakly cemented Csica horizon is 30 to 38 inches. The control section is very fine sandy loam or silt loam. Thin strata of loam, clay loam, fine sandy loam, or sandy loam are in some pedons. The upper part of the profile is slightly alkali-affected in some pedons. The lower part is moderately saline to strongly saline.

Ramires series

The Ramires series consists of moderately deep, well drained, slowly permeable soils on uplands. These soils formed in residuum derived from tuff, rhyolite, and loess that is high in content of volcanic ash. Slopes are 15 to 50 percent.

Typical pedon of a Ramires gravelly clay loam in Eureka County; about 2,000 feet east and 40 feet north of the southwest corner of sec. 15, T. 31 N., R. 51 E.

A11—0 to 2 inches; grayish brown (10YR 5/2) gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, friable, sticky and plastic; many very fine and fine roots; many very fine interstitial pores and common very fine tubular pores; 20 percent gravel; neutral; abrupt smooth boundary.

A12—2 to 9 inches; grayish brown (10YR 5/2) gravelly light clay loam, dark brown (10YR 3/3) moist; moderate medium granular and angular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine roots and few medium roots; many fine interstitial pores and common medium and fine tubular pores; 20 percent gravel; neutral; clear smooth boundary.

B21t—9 to 14 inches; grayish brown (10YR 5/2) gravelly clay, dark brown (10YR 3/3) moist; strong medium and coarse subangular blocky structure; hard, firm, very sticky and very plastic; many very fine and fine roots and few medium roots; many very fine tubular pores; 15 percent gravel; many thin clay films on peds and in pores; neutral; clear wavy boundary.

B22t—14 to 22 inches; brown (10YR 5/3) gravelly clay, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine and fine roots; common very fine and few fine tubular pores; common thin clay films and few moderately thick clay films on peds, continuous thin clay films in pores; 25 percent gravel; neutral; clear smooth boundary.

B3ca—22 to 26 inches; pale brown (10YR 6/3) gravelly sandy clay, brown (10YR 4/3) moist; massive; hard, friable, sticky and plastic; few very fine and fine roots; many very fine tubular and interstitial pores; 30 percent gravel; noneffervescent in matrix but strongly effervescent in few medium and large soft masses of lime; mildly alkaline; gradual wavy boundary.

C1ca—26 to 34 inches; white (10YR 8/2) sandy loam, very pale brown (10YR 7/3) moist; many coarse distinct brown (10YR 5/3 and 4/3) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; slightly effervescent in matrix but strongly effervescent in medium soft seams of lime; moderately alkaline; gradual wavy boundary.

R—34 to 36 inches; partially weathered tuff; cracks lined with lime.

The solum is 20 to 32 inches thick. Depth to bedrock is 24 to 40 inches. The mollic epipedon ranges from 10 to 15 inches in thickness, and it commonly includes the upper part of the argillic horizon. The A1 horizon is 10 to 40 percent rock fragments. The B2t horizon is clay or heavy clay loam and is 5 to 25 percent rock fragments.

Rixie series

The Rixie series consists of very deep, somewhat poorly drained, slowly permeable soils on flood plains. These soils formed in alluvium derived from mixed rock sources. Slopes are 0 to 2 percent.

Typical pedon of a Rixie silty clay loam in Lander County; about 2,950 feet west and l,270 feet north of the southwest corner of sec. 10, T. 32 N., R. 46 E.

A11—0 to 2 inches; very dark grayish brown (10YR 3/2) silty clay loam, very dark brown (10YR 2/2) moist; strong fine granular structure; hard, very friable, sticky and plastic; many very fine and fine roots and common medium roots; many very fine interstitial pores; strongly effervescent; moderately alkaline; clear smooth boundary.

A12—2 to 6 inches; gray (10YR 5/1) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; few very fine and fine interstitial pores; strongly effervescent; moderately alkaline; clear smooth boundary.

A13—6 to 10 inches; gray (10YR 5/1) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure; slightly hard, friable, sticky and plastic; many very fine roots and common fine roots; common very fine tubular pores; violently effervescent; strongly alkaline; clear smooth boundary.

C1—10 to 12 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; massive; hard, friable, sticky and plastic; common fine roots; few very fine tubular pores, common fine tubular pores and few medium tubular pores; violently effervescent; strongly alkaline; clear smooth boundary.

C2—12 to 18 inches; light brownish gray (10YR 6/2) clay loam, dark brown (10YR 4/3) moist; few fine distinct dark olive (5Y 3/3, moist) mottles; massive; hard, friable, sticky and plastic; common fine roots; many very fine and fine tubular pores and few medium tubular pores; violently effervescent; strongly alkaline; clear smooth boundary.

C3—18 to 30 inches; light gray (10YR 6/1) silty clay loam, dark grayish brown (10YR 4/2) moist; massive; very hard, friable, sticky and plastic; common fine roots; many very fine and fine tubular pores; violently effervescent; strongly alkaline; clear wavy boundary.

C4sica—30 to 36 inches; light gray (10YR 6/1) weakly silica-cemented silty clay loam, very dark grayish brown (10YR 3/2) moist; massive; very hard, firm, brittle, sticky and slightly plastic; common fine roots and few medium roots; common fine tubular pores and few very fine tubular pores; violently effervescent; few fine irregularly shaped silica- and lime-cemented concretions; common rounded soft masses of secondary carbonates; strongly alkaline; clear wavy boundary.

IIC5sica—36 to 46 inches; light gray (10YR 7/2) weakly silica-cemented silty clay loam; massive; very hard, firm, brittle, sticky and slightly plastic; common fine roots and few medium roots; few very fine and fine tubular pores; violently effervescent; common fine irregularly shaped silica- and lime-cemented concretions; very strongly alkaline; clear wavy boundary.

IIC6sica—46 to 60 inches; light gray (10YR 7/2) silty clay, brown (10YR 4/3) moist; massive; very hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine and fine tubular pores; violently effervescent; many fine irregularly shaped silica- and lime-cemented concretions; strongly alkaline.

Depth to the weakly silica-cemented C horizon ranges from 24 to 38 inches. The mollic epipedon ranges from 10 to 16 inches in thickness. The control section is dominantly clay loam or silty clay loam that is stratified with silt loam to silty clay in a few places. Thin strata of volcanic ash are in some pedons. Many pedons have a buried A horizon that is as much as 6 inches thick. The profile is strongly effervescent to violently effervescent. It is nonsaline-nonalkali to strongly saline-alkali.

Rose Creek series

The Rose Creek series consists of very deep, poorly drained, moderately rapidly permeable soils on flood plains. These soils formed in alluvium derived from mixed rock sources. Slopes are 0 to 2 percent.

Typical pedon of a Rose Creek loam in Lander County; about 2,430 feet west and 1,160 feet south of the northeast corner of sec. 35, T. 33 N., R. 47 E.

A11—0 to 1 inch; dark gray (10YR 5/1) loam, very dark gray (10YR 3/1) moist; weak thick platy structure; soft, friable, slightly sticky and slightly plastic; common fine interstitial pores and few fine tubular pores; moderately alkaline; abrupt smooth boundary.

A12—1 inch to 5 inches; dark gray (10YR 5/1) loam, very dark gray (10YR 3/1) moist; weak coarse prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine interstitial pores and few fine tubular pores; moderately alkaline; clear wavy boundary.

A13—5 to 10 inches; dark gray (10YR 5/1) fine sandy loam, very dark gray (10YR 3/1) moist; weak coarse prismatic structure; soft, very friable, nonsticky and nonplastic; many very fine roots and few fine and medium roots; many very fine interstitial pores and common fine tubular pores; common fine distinct white (10YR 8/1) salt and gypsum crystals; slightly effervescent; strongly alkaline; abrupt wavy boundary.

C1—10 to 17 inches; light gray (10YR 6/1) fine sandy loam, dark gray (10YR 4/1) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine roots and few fine roots; many very fine interstitial pores and common fine tubular pores; slightly effervescent; moderately alkaline; abrupt wavy boundary.

C2—17 to 30 inches; light gray (10YR 6/1) sandy loam, dark gray (10YR 4/1) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine roots and few fine roots; many very fine interstitial pores and few fine tubular pores; slightly effervescent; moderately alkaline; abrupt smooth boundary.

IIC3—30 to 42 inches; light gray (10YR 6/1) silt loam, dark gray (10YR 4/1) moist; common fine distinct dark reddish brown (5YR 3/3, moist) mottles; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; slightly effervescent; moderately alkaline; abrupt wavy boundary.

IIIC4—42 to 50 inches; light gray (10YR 6/1) gravelly sand, dark gray (10YR 4/1) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many very fine and fine interstitial pores; 20 percent gravel; slightly effervescent; moderately alkaline; clear wavy boundary.

IIIC5—50 to 60 inches; light gray (10YR 6/1) gravelly loamy sand, dark gray (10YR 4/1) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine interstitial pores; 25 percent gravel; slightly effervescent; moderately alkaline.

The mollic epipedon is 10 to 18 inches thick. The control section is mainly sandy loam, fine sandy loam, or loam, but it is stratified with gravelly sand to silt loam.

Rosney series

The Rosney series consists of very deep, well drained, moderately slowly permeable soils on the toe slopes of alluvial fans and on low-lying alluvial terraces. These soils formed in a thin mantle of loess over lacustrine material derived from mixed rock sources. Slopes are 0 to 2 percent.

Typical pedon of a Rosney silt loam in Lander County; about 1,540 feet west and 80 feet south of the northeast corner of sec. 28, T. 32 N., R. 46 E.

A1—0 to 3 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; many very fine and fine vesicular pores; slightly effervescent; moderately alkaline; clear smooth boundary.

C1—3 to 10 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and common fine roots; many very fine interstitial pores and few very fine and fine tubular pores; common fine distinct white (10YR 8/1) salt and gypsum crystals; strongly effervescent; strongly alkaline; clear wavy boundary.

C2—10 to 28 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine interstitial pores and few very fine tubular pores; strongly effervescent; strongly alkaline; abrupt wavy boundary.

IIC3—28 to 39 inches; very pale brown (10YR 7/3) light silty clay loam, brown (10YR 4/3) moist; massive; hard, friable, sticky and plastic; few very fine roots; many very fine interstitial pores and few very fine and fine tubular pores; common fine distinct white (10YR 8/2) gypsum crystals; slightly effervescent; strongly alkaline; clear wavy boundary.

IIC4—39 to 60 inches; very pale brown (10YR 7/3) silty clay loam, brown (10YR 4/3) moist; massive; hard, firm, sticky and plastic; few very fine roots; many very fine interstitial pores; many medium distinct white (10YR 8/1) gypsum crystals; slightly effervescent; strongly alkaline.

Depth to the nonconforming alluvial sediment of the IIC horizon is 20 to 36 inches. The upper part of the control section is mainly silt loam, but some pedons have thin strata of very fine sandy loam or volcanic ash. The lower part is dominantly silty clay loam, but it ranges to silt loam. Some pedons have thin strata of silty clay. The profile is slightly effervescent to violently effervescent. It is moderately saline-alkali to strongly saline-alkali.

Short Creek series

The Short Creek series consists of deep, well drained, slowly permeable soils on the sides of terraces. These soils formed in mixed alluvium derived from sandstone, siltstone, conglomerate, and pyroclastic material interbedded with tuff. Slopes are 30 to 75 percent.

Typical pedon of a Short Creek gravelly clay loam in Elko County; about 2,650 feet east of the northwest corner of sec. 16, T. 37 N., R. 52 E.

A1—0 to 2 inches; light brownish gray (10YR 6/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; strong very fine granular structure; slightly hard, friable, sticky and plastic; common very fine roots and few fine roots; common very fine tubular pores; 20 percent gravel; neutral; abrupt smooth boundary.

B1t—2 to 8 inches; brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores; 40 percent gravel; common moderately thick clay films on peds and continuous moderately thick clay films in pores; neutral; abrupt wavy boundary.

B21t—8 to 15 inches; brown (10YR 5/3) gravelly clay, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure; hard, firm, very sticky and very plastic; common very fine roots; common very fine tubular pores; 25 percent gravel; continuous moderately thick clay films on peds and in pores; neutral; gradual smooth boundary.

B22t—15 to 23 inches; brown (10YR 5/3) very gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine roots; common very fine tubular pores; 45 percent gravel; continuous moderately thick clay films on peds and in pores; neutral; gradual wavy boundary.

B31t—23 to 50 inches; brown (10YR 5/3) very gravelly sandy clay, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, very sticky and plastic; few very fine roots; common very fine tubular pores; 70 percent gravel; continuous thin clay films bridging and coating sand grains and gravel; moderately alkaline; gradual irregular boundary.

B32tca—50 to 60 inches; pale brown (10YR 6/3) very gravelly sandy clay, dark yellowish brown (10YR 4/4) moist; few medium and coarse dark reddish brown (5YR 3/3), strong brown (7.5YR 5/8), dark brown (7.5YR 3/2), and black (10YR 2/1) mottles; massive; hard, friable, very sticky and plastic; few very fine roots; many fine interstitial pores and few fine tubular pores; 70 percent gravel; many thin clay films and few moderately thick clay films in pores, and common moderately thick clay films bridging sand grains and coating gravel; effervescent; moderately alkaline.

Thickness of the solum ranges from 30 to 60 inches. The A horizon is 15 to 35 percent gravel and is as much as 10 percent cobbles. The B2t horizon averages 35 to 50 percent rock fragments. Texture of the B3 and C horizons is sandy clay loam, clay loam, or sandy clay. These horizons are 60 to 75 percent rock fragments.

Simon series

The Simon series consists of very deep, well drained, moderately slowly permeable soils on alluvial fans and stream terraces. These soils formed in loess that is high in content of ash and in the underlying gravelly and cobbly mixed alluvium derived from sedimentary and volcanic rock. Slopes are 2 to 8 percent.

Typical pedon of a Simon loam in Elko County; about 1,300 feet north and 1,300 feet east of the southwest corner of sec. 25, T. 37 N., R. 51 E.

A11—0 to 3 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; weak thick platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; neutral; clear smooth boundary.

A12—3 to 8 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; moderate medium and fine granular structure; slightly hard, friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine tubular pores and many very fine and fine interstitial pores; neutral; clear smooth boundary.

B1t—8 to 12 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 and fine roots; many very fine tubular pores, common fine tubular pores, and many very fine and fine interstitial pores; common thin clay films in pores; neutral; clear smooth boundary.

B21t—12 to 28 inches; grayish brown (10YR 5/2) clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure; very hard, friable, sticky and plastic; common very fine and fine roots; few fine tubular pores and common very fine interstitial pores; many moderately thick clay films in pores, common thin clay films on peds; slightly acid; gradual smooth boundary.

IIB22t—28 to 41 inches; light yellowish brown (10YR 6/4) cobbly clay loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; very hard, friable, very sticky and very plastic; common very fine roots; few fine tubular pores and common very fine and fine interstitial pores; many moderately thick clay films on peds and in pores; 15 percent cobbles; stone line in upper part; slightly acid; gradual wavy boundary.

IIIB3t—41 to 53 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; massive; very hard, friable, sticky and plastic; few very fine roots; common very fine and fine interstitial pores; many moderately thick clay films and common thin clay films in pores; 50 percent gravel and 10 percent cobbles; slightly acid; diffuse smooth boundary.

IIIC—53 to 60 inches; brown (10YR 5/3) very gravelly sandy clay loam, brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; many very fine interstitial pores; 50 percent gravel and 15 percent cobbles; neutral.

The solum ranges from 40 to 60 inches in thickness. The mollic epipedon ranges from 10 to 17 inches in thickness, and it commonly includes part of the argillic horizon. The upper part of the argillic horizon is loam or clay loam that is 10 to 15 percent gravel and as much as 10 percent cobbles. The C horizon is sandy clay loam that is 50 to 75 percent gravel and 10 to 25 percent cobbles. Nonconforming clay or sand and gravel are below a depth of 40 inches in some pedons.

Singletree series

The Singletree series consists of deep, well drained, moderately slowly permeable soils on north-facing mountainsides. These soils formed in residuum and colluvium derived from volcanic rock. Slopes are 30 to 75 percent.

Typical pedon of a Singletree loam in Elko County; about 1,800 feet south and 1,000 feet west of the northeast corner of sec. 27, T. 36 N., R. 52 E.

A11—0 to 2 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; many very fine interstitial pores; neutral; abrupt wavy boundary.

A12—2 to 7 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; many very fine tubular pores; neutral; abrupt smooth boundary.

A3—7 to 17 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak coarse prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine roots; many very fine tubular pores; neutral; clear smooth boundary.

B21t—17 to 26 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; weak coarse prismatic structure; slightly hard, friable, sticky and slightly plastic; many very fine roots and few fine roots; few very fine tubular pores; common thin clay films in pores, few thin clay films bridging and coating sand grains; neutral; clear wavy boundary.

B22t—26 to 32 inches; brown (10YR 5/3) gravelly clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine roots and few fine roots; common very fine and fine tubular pores; 20 percent gravel; common clay films in pores and few thin clay bridges; neutral; clear smooth boundary.

C1—32 to 40 inches; light brownish gray (10YR 6/2) sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and slightly plastic; common very fine roots; common very fine tubular pores and few fine tubular pores; neutral; abrupt smooth boundary.

IIC2ca—40 to 49 inches; pale brown (10YR 6/3) sandy clay loam, dark brown (10YR 4/3) moist; massive; hard, friable, sticky and plastic; few very fine roots; few very fine tubular pores; strongly effervescent; many pinkish gray (5YR 7/2) soft seams and masses of lime; strongly alkaline; abrupt smooth boundary.

IIC3—49 to 54 inches; white (10YR 8/2) soft weathered tuff, light brownish gray (10YR 6/2) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; strongly effervescent; very strongly alkaline.

The solum ranges from 30 to 40 inches in thickness. Depth to weathered bedrock ranges from 40 to 60 inches. The mollic epipedon ranges from 15 to 20 inches in thickness. The B2t horizon is clay loam or heavy loam and averages 10 to 25 percent rock fragments. The C horizon is sandy clay loam or sandy loam and is 10 to 35 percent rock fragments.

Slaven series

The Slaven series consists of moderately deep, well drained, slowly permeable soils on uplands. These soils formed in residuum derived from chert, shale, and quartzite. Slopes are 15 to 50 percent.

Typical pedon of a Slaven very gravelly loam in Eureka County; about 2,500 feet north and 1,550 feet east of the southwest corner of sec. 27, T. 36 N., R. 50 E.

A11—0 to 1 1/2 inches; light brownish gray (10YR 6/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine roots; many fine vesicular pores; 80 percent gravel; slightly acid; abrupt smooth boundary.

A12—1 1/2 to 5 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak medium and moderate very fine and fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; common fine tubular and interstitial pores; 40 percent gravel; slightly acid; clear smooth boundary.

B1t—5 to 10 inches; brown (10YR 5/3) very gravelly light clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; common fine tubular and interstitial pores; few thin clay films in pores and on peds; 50 percent gravel; neutral; clear smooth boundary.

B2t—10 to 22 inches; pale brown (10YR 6/3) very gravelly clay, dark brown (10YR 4/3) moist; moderate medium angular blocky structure; hard, firm, very sticky and very plastic; few fine and medium roots; common fine tubular pores; many thin clay films on peds and in pores; 70 percent gravel; neutral; abrupt smooth boundary.

R—22 to 24 inches; chert.

Thickness of the solum and depth to bedrock range from 20 to 36 inches. The mollic epipedon ranges from 7 to 12 inches in thickness, and it commonly includes the upper part of the argillic horizon. The A11 and A12 horizons average 40 to 50 percent gravel. The B2t horizon is clay, sandy clay, or heavy clay loam. It is 60 to 75 percent gravel.

Stampede series

The Stampede series consists of moderately deep, well drained, very slowly permeable soils on alluvial fans and terraces. These soils formed in alluvium derived from tuff. Slopes are 0 to 15 percent.

Typical pedon of a Stampede gravelly loam in Elko County; about 1,580 feet north and 250 feet west of the southeast corner of sec. 21, T. 37 N., R. 52 E.

A11—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure and moderate fine subangular blocky; slightly hard, friable, slightly sticky and nonplastic; many fine roots; many fine vesicular pores; 25 percent gravel; neutral; clear smooth boundary.

A12—4 to 9 inches; dark grayish brown (10YR 4/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores and many very fine interstitial pores; 17 percent gravel; neutral; clear smooth boundary.

A3—9 to 12 inches; light brownish gray (10YR 6/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; strong medium and fine subangular blocky structure; hard, friable, very sticky and very plastic; many very fine and fine roots; many very fine interstitial pores, common very fine tubular pores, and few fine tubular pores; 22 percent gravel; few thin clay films on peds; many clean sand grains; neutral; abrupt wavy boundary.

B2t—12 to 23 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; strong and moderate medium prismatic structure; very hard, very firm, very sticky and very plastic; few fine and medium roots and common very fine roots; common very fine and fine tubular pores; many pressure faces and slickensides; neutral; clear wavy boundary.

B3t—23 to 28 inches; dark brown (10YR 5/3) clay, dark yellowish brown (10YR 4/4) moist; moderate medium and fine subangular blocky structure; very hard, firm, very sticky and very plastic; few very fine roots; few fine tubular pores; many moderately thick clay films in pores; common pressure faces; neutral; clear smooth boundary.

Csicam—28 to 33 inches; light gray (10YR 7/2) indurated duripan, yellowish brown (10YR 5/4) moist; massive; extremely hard, extremely firm; very few very fine tubular pores; few moderately thick clay films on fracture surfaces; thin laminar silica coatings on surface of duripan, along fractures, and in pores; noneffervescent in matrix but violently effervescent in soft lime coatings and filaments; mildly alkaline.

Thickness of the solum and depth to the duripan are 20 to 32 inches. The A horizon is 15 to 25 percent gravel.

Susie Creek series

The Susie Creek series consists of deep, well drained, slowly permeable soils on uplands. These soils formed in material weathered from tuff. Slopes are 4 to 15 percent.

Typical pedon of a Susie Creek loam in Elko County; about 500 feet north and 1,320 feet west of the southeast corner of sec. 4, T. 34 N., R. 52 E.

A11—0 to 2 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; strong fine granular structure; soft, very friable, sticky and plastic; many very fine roots; many very fine interstitial and tubular pores; neutral; clear smooth boundary.

A12—2 to 9 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; strong medium granular structure; slightly hard, very friable, sticky and plastic; many very fine roots and few medium roots; many very fine interstitial and tubular pores; neutral; abrupt smooth boundary.

A&B—9 to 12 inches; light brownish gray (10YR 6/2) clay loam, dark brown (10YR 3/3) moist; many uncoated sand grains on peds; strong medium subangular blocky structure; hard, friable, sticky and plastic; common very fine roots and few fine roots; many very fine tubular pores; many thin clay films in pores; neutral; abrupt smooth boundary.

B21t—12 to 19 inches; brown (10YR 5/3) clay, brown (10YR 4/3) moist; strong fine and medium prismatic structure; very hard, friable, very sticky and very plastic; few very fine roots and few medium roots; few very fine interstitial and tubular pores; many pressure faces; common moderately thick clay bridges; mildly alkaline; clear smooth boundary.

B22t—19 to 25 inches; brown (10YR 5/3) clay, brown (10YR 5/3) moist; moderate fine and medium subangular blocky structure; hard, friable, very sticky and very plastic; few very fine and medium roots; few very fine interstitial and tubular pores; many pressure faces; common moderately thick clay bridges; mildly alkaline; abrupt smooth boundary.

C1ca—25 to 29 inches; pale brown (10YR 6/3) loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few medium and very fine roots; common very fine tubular pores and few very fine interstitial pores; many medium and coarse distinct very pale brown (10YR 8/3) soft lime masses; slightly effervescent in fine irregular seams; moderately alkaline; clear smooth boundary.

IIC2sica—29 to 40 inches; pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/4) moist; massive; hard, firm, nonsticky and slightly plastic; weakly silica-cemented; few very fine roots; common fine interstitial pores and few very fine interstitial pores; many medium and coarse distinct very pale brown (10YR 8/3) soft lime masses; slightly effervescent in irregular seams; moderately alkaline; clear smooth boundary.

IIC3sica—40 to 57 inches; light gray (10YR 7/2) weakly silica-cemented coarse sandy loam, brown (10YR 5/3) moist; massive; hard, firm, nonsticky and nonplastic; few very fine roots; few fine tubular pores; slightly effervescent in matrix, but strongly effervescent in fine irregular seams; moderately alkaline; clear smooth boundary.

IIC4r—57 to 60 inches; white (10YR 8/2) weathered tuff, very pale brown (10YR 7/3) moist; massive; hard, firm, nonsticky and nonplastic; violently effervescent; moderately alkaline.

The solum is 20 to 30 inches thick. Depth to weathered bedrock is 40 to 60 inches. The B2t horizon is clay, sandy clay, or heavy clay loam. The C horizon is loam or sandy loam. In some parts it is weakly cemented with silica.

Taylor Creek series

The Taylor Creek series consists of very deep, well drained, very slowly permeable soils on uplands. These soils formed in residuum derived from mixed rock sources, volcanic ash, and loess. Slopes are 15 to 50 percent.

Typical pedon of a Taylor Creek loam in Elko County; about 1,000 feet north and 1,300 feet west of the southeast corner of sec. 1, T. 36 N., R. 52 E.

A11—0 to 3 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine and fine interstitial pores; slightly acid; clear smooth boundary.

A12—3 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium and fine granular structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots; many very fine and fine interstitial pores; slightly acid; clear smooth boundary.

A13—10 to 15 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; weak medium and fine granular structure; hard, friable, nonsticky and slightly plastic; many very fine roots; many very fine and fine interstitial pores; neutral; abrupt smooth boundary.

B21t—15 to 25 inches; pale brown (10YR 6/3) gravelly fine clay, dark grayish brown (10YR 4/2) moist; strong coarse prismatic structure; very hard, friable, very sticky and very plastic; common very fine roots; common very fine tubular pores and few fine tubular pores; many pressure faces; 15 percent gravel and 5 percent cobbles; neutral; gradual smooth boundary.

B22t—25 to 40 inches; pale brown (10YR 6/3) gravelly fine clay, dark grayish brown (10YR 4/2) moist; strong coarse prismatic structure; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine tubular pores; many pressure faces; 20 percent gravel and 5 percent cobbles; neutral; gradual smooth boundary.

B23t—40 to 60 inches; pale brown (10YR 6/3) gravelly clay, brown (10YR 5/3) moist; moderate medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine tubular pores; continuous thick clay films on peds and in pores; 20 percent gravel and 5 percent cobbles; noneffervescent but strongly effervescent in very few fine distinct white (10YR 8/1) lime segregations; moderately alkaline.

Thickness of the solum ranges from 36 to 60 inches or more. Depth to bedrock is 60 to 80 inches. Thickness of the mollic epipedon ranges from 12 to 18 inches. The B21t and B22t horizons are 60 to 65 percent clay and 15 to 25 percent rock fragments. The B23t horizon is clay or sandy clay and 15 to 25 percent rock fragments.

Tenabo series

The Tenabo series consists of shallow, well drained, moderately slowly permeable soils on alluvial fans. These soils formed in loess that is high in content of volcanic ash and in the underlying mixed alluvium derived from sandstone, siltstone, conglomerate, and pyroclastic material. Slopes are 0 to 15 percent.

Typical pedon of a Tenabo cobbly silt loam in Eureka County; about 6 miles southwest of Beowawe; about 700 feet north and 1,300 feet west of the southeast corner of sec. 13, T. 30 N., R. 49 E.

A11—0 to 3 inches; light gray (10YR 7/2) cobbly silt loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many very fine roots and few medium roots; many very fine and fine vesicular pores; 20 percent cobbles; moderately alkaline; abrupt smooth boundary.

A12—3 to 7 inches; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate thin and medium platy structure; slightly hard, very friable, nonsticky and nonplastic; many fine roots and few fine and coarse roots; few fine tubular pores and few medium vesicular pores; moderately alkaline; abrupt smooth boundary.

IIB1t—7 to 10 inches; light yellowish brown (10YR 6/4) clay loam, brown (10YR 4/3) moist; weak medium prismatic structure; very hard, friable, sticky and plastic; few medium and coarse roots; few medium and fine tubular and interstitial pores; common thin clay films in pores and bridging sand grains; moderately alkaline; clear wavy boundary.

IIB2t—10 to 13 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate fine prismatic structure; very hard, friable, sticky and very plastic; common fine roots and few medium and coarse roots; few medium and fine tubular and interstitial pores; many thin clay films on peds and in pores; moderately alkaline; clear wavy boundary.

IIC1sica—13 to 18 inches; pale brown (10YR 6/3) weakly silica-cemented fine sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; very hard, firm, brittle; few very fine, fine, and medium roots; few fine and medium tubular pores and few very fine interstitial pores; few thin silica bridges between sand grains, common thin silica films in pores; noneffervescent in matrix, but strongly effervescent in few fine distinct white (10YR 8/1) secondary carbonate masses; moderately alkaline; abrupt wavy boundary.

IIC2sicam—18 to 26 inches; light gray (10YR 7/2) indurated duripan, brown (10YR 5/3) moist; continuous horizontal pale brown (10YR 7/3) silica laminae less than 4 millimeters thick; massive; extremely hard, extremely firm; few fine roots matted on laminae; common very fine interstitial pores between laminae; violently effervescent; strongly alkaline; clear wavy boundary.

IIIC3ca—26 to 40 inches; light gray (10YR 7/2) very gravelly sandy loam, grayish brown (10YR 5/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; few fine and very fine tubular pores and few medium and fine interstitial pores; 40 percent gravel and 10 percent cobbles; secondary carbonates coating gravel and cobbles; violently effervescent; very strongly alkaline.

Thickness of the solum and depth to the duripan range from 9 to 20 inches. The A horizon is as much as 50 percent rock fragments. The B2t horizon is clay loam, silty clay loam, or sandy clay loam and is 0 to 15 percent rock fragments. The exchangeable bases in the argillic horizon are 15 to 30 percent sodium. The nonconforming material below the duripan ranges from very gravelly sand to very gravelly sandy loam.

Toeja series

The Toeja series consists of deep, well drained, moderately slowly permeable soils on uplands. These soils formed in loess that is high in content of volcanic ash and is underlain by residuum derived from tuff. Slopes are 4 to 30 percent.

Typical pedon of a Toeja loam in Eureka County; about 2,400 feet north and 2,300 feet west of the southeast corner of sec. 26, T. 35 N., R. 51 E.

A11—0 to 3 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots and few fine roots; many very fine interstitial pores and few very fine tubular pores; 20 percent gravel; neutral; abrupt smooth boundary.

A12—3 to 8 inches; brown (10YR 5/3) light clay loam, dark brown (10YR 3/3) moist; weak coarse subangular blocky structure; hard, very friable, slightly sticky and plastic; many very fine roots and few fine roots; many very fine tubular pores and few fine tubular pores; neutral; clear smooth boundary.

B1t—8 to 13 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate coarse subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; many very fine roots and few fine and medium roots; common very fine tubular pores and few fine tubular pores; very few thin clay films in pores; neutral; clear smooth boundary.

B2t—13 to 20 inches; brown (10YR 5/3) heavy clay loam, dark brown (10YR 4/3) moist; moderate coarse subangular blocky structure; very hard, friable, very sticky and very plastic; common very fine roots and few fine roots; many very fine interstitial pores, common very fine tubular pores, and few fine tubular pores; 5 percent fine gravel; common thin clay films in pores, few thin clay films on peds, and many thin clay films on interfaces of pebble and soil masses; neutral; clear wavy boundary.

B3t—20 to 31 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist; moderate coarse subangular blocky structure; very hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores and few fine tubular pores; 25 percent gravel; few thin clay films on peds and in pores; neutral; gradual wavy boundary.

C1—31 to 44 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine interstitial pores; 12 percent gravel; neutral; abrupt wavy boundary.

IIC2sica—44 to 48 inches; variegated pale brown (10YR 6/3) and dark grayish brown (10YR 4/2) weakly silica-cemented very gravelly coarse sandy loam, brown (10YR 4/3) moist; many fine distinct white (10YR 8/2 and 8/1) lime segregations; massive; very hard, firm, nonsticky and nonplastic; common very fine tubular pores; 55 percent gravel; strongly effervescent; strongly alkaline; abrupt wavy boundary.

IICr—48 inches; weathered bedrock.

The solum ranges from 25 to 40 inches in thickness. Depth to weathered bedrock ranges from 40 to 60 inches. Depth to the Csica horizon ranges from 38 to 5 inches. The mollic epipedon ranges from 10 to 15 inches in thickness, and it includes the upper part of the B horizon in many pedons. The B2t horizon is loam, clay loam, or sandy clay loam. The C horizon is loam or sandy loam and averages 15 to 30 percent gravel.

Tomera series

The Tomera series consists of very deep, well drained slowly permeable soils on dissected terraces and alluvial fans. These soils formed in alluvium derived from mixed sedimentary and pyroclastic material. Slopes are 2 to 8 percent.

Typical pedon of a Tomera silt loam in Eureka County about 4 miles south of Iron Blossom mine and 500 feet east of the west quarter corner of sec. 9, T. 30 N., R. 5 E.

A11—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; many fine vesicular pores; neutral; 5 percent gravel; clear smooth boundary.

A12—3 to 9 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; common fine vesicular pores; 5 percent gravel; neutral; clear smooth boundary.

B21t—9 to 20 inches; light brownish gray (10YR 6/2) gravelly light clay, brown (10YR 4/3) moist; weak medium prismatic structure; hard, firm, very sticky and very plastic; many fine roots; many very fine tubular pores; many thin clay films on peds and in pores; 15 percent gravel; mildly alkaline; gradual smooth boundary.

B22t—20 to 26 inches; brown (10YR 5/3) gravelly clay, brown (10YR 4/3) moist; weak medium prismatic structure; hard, firm, very sticky and very plastic; many very fine roots; many very fine tubular pores; many thin clay films on peds and in pores; 25 percent gravel; moderately alkaline; clear wavy boundary.

B31tca—26 to 34 inches; brown (10YR 5/3) clay, brown (10YR 5/3) moist; common fine pale brown (10YR 6/3) soft masses of lime; weak medium and fine subangular blocky structure; hard, friable, very sticky and very plastic; many very fine roots; many very fine tubular pores; 10 percent gravel; slightly effervescent in matrix, but strongly effervescent in soft lime masses; strongly alkaline; clear wavy boundary.

B32tca—34 to 39 inches; pale brown (10YR 6/3) gravelly sandy clay loam, brown (10YR 4/3) moist; common fine pale brown (10YR 6/3) soft masses of lime; weak fine subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; few very fine tubular pores; many thin clay films in pores and few thin clay bridges; 20 percent gravel; strongly effervescent; strongly alkaline; abrupt smooth boundary.

IIC1—39 to 60 inches; light gray (10YR 7/2) very gravelly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine interstitial pores; 70 percent gravel; strongly effervescent; strongly alkaline.

Thickness of the solum ranges from 30 to 42 inches. The B2t horizon is clay or gravelly clay and is 10 to 30 percent gravel. The B2t horizon is nonsaline or slightly saline. The exchangeable bases of the B2t horizon are 15 to 40 percent sodium. The C horizon is sandy loam or loamy sand and is 35 to 70 percent rock fragments.

Torro series

The Torro series consists of very deep, well drained, moderately permeable soils on south-facing mountainsides. These soils formed in residuum and colluvium derived from chert, shale, and some volcanic ash and loess. Slopes are 30 to 50 percent.

Typical pedon of a Torro very gravelly loam in Elko County; about 100 feet south and 2,600 feet east of the northwest corner of sec. 18, T. 37 N., R. 51 E.

A11—0 to 6 inches; grayish brown (10YR 5/2) very gravelly loam, very dark brown (10YR 2/2) moist; weak medium and coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; many very fine tubular pores and few fine tubular pores; 45 percent angular gravel; neutral; clear smooth boundary.

A12—6 to 13 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and few fine roots; common very fine and fine interstitial pores and few medium and fine tubular pores; 40 percent angular gravel; neutral; abrupt wavy boundary.

B2t—13 to 25 inches; light yellowish brown (10YR 6/4) very gravelly light clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; many very fine roots; many very fine and fine tubular pores and common medium tubular pores; 65 percent angular gravel; few thin clay films in pores and bridging and coating sand grains; neutral; clear smooth boundary.

B3—25 to 33 inches; pale brown (10YR 6/3) very gravelly coarse sandy loam, brown (10YR 4/3) moist; weak medium and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots and few fine roots; many fine interstitial pores and common medium interstitial pores; 60 percent angular gravel and 10 percent cobbles; neutral; gradual smooth boundary.

C1—33 to 50 inches; pale brown (10YR 6/3) very gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine interstitial pores and few medium interstitial pores; 65 percent angular gravel; neutral.

The solum ranges from 24 to 48 inches in thickness. The mollic epipedon ranges from 10 to 14 inches in thickness. The A horizon is 35 to 50 percent gravel. The B2t horizon is loam, clay loam, or sandy clay loam and is 60 to 75 percent gravel. The C horizon is coarse sandy loam or loamy coarse sand and is 60 to 75 percent rock fragments.

Triplen series

The Triplen series consists of very deep, well drained, moderately permeable soils on terraces. These soils formed in calcareous alluvium derived from tuff and some loess that is high in content of volcanic ash. Slopes are 4 to 15 percent.

Typical pedon of a Triplen silt loam in Eureka County; about 3 miles east of Rock Creek Mountain and 1,700 feet north and 900 feet east of the southwest corner of sec. 9, T. 35 N., R. 48 E.

A1—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; strong thick platy structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots and few medium roots; common fine vesicular pores; neutral; abrupt smooth boundary.

B2—3 to 8 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and nonplastic; few medium and fine roots; many very fine interstitial pores and few fine tubular pores; noneffervescent in matrix, but strongly effervescent randomly scattered tuff fragments; neutral; clear smooth boundary.

C1si—8 to 13 inches; light brownish gray (10YR 6/2) silt loam, brown (10YR 4/3) moist; massive; hard, very friable, nonsticky and nonplastic; very few fine roots; few very fine tubular pores; about 20 percent very hard, firm, and brittle durinodes; strongly effervescent; moderately alkaline; very abrupt wavy boundary.

C2sica—13 to 21 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine roots and few fine roots; many very fine interstitial pores and few very fine tubular pores; about 50 percent extremely hard, very firm, and brittle durinodes; violently effervescent; moderately alkaline; clear smooth boundary.

IIC3ca—21 to 60 inches; white (10YR 8/2) gravelly sandy loam, very pale brown (10YR 7/3) moist; massive; soft, friable, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; few randomly scattered silica laminae 1/64 inch thick; 30 percent gravel; violently effervescent; lime-coated gravel; moderately alkaline.

Depth to the C1si horizon is 7 to 12 inches. The control section is dominantly fine sandy loam or sandy loam and is stratified with loamy fine sand in some places. It averages 15 to 30 percent gravel. Any single horizon may be as much as 50 percent gravel. The C1si horizon is 20 to 70 percent durinodes.

Tusel series

The Tusel series consists of very deep, well drained, moderately slowly permeable soils on north-facing mountainsides. These soils formed in material derived from quartzite, chert, shale, and loess that is high in content of pyroclastic material. Slopes are 30 to 50 percent.

Typical pedon of a Tusel very gravelly loam in the Beaver Creek area of Elko County; about 100 feet south and 200 feet west of the northeast corner of sec. 15, T. 37 N., R. 50 E.

A11—0 to 9 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; strong very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots and common fine and medium roots; many very fine interstitial pores; 40 percent gravel; neutral; gradual wavy boundary.

A12—9 to 17 inches; dark grayish brown (10YR 4/2) very gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine interstitial pores and common fine tubular pores; 35 percent gravel; neutral; clear wavy boundary.

IIB1t—17 to 27 inches; brown (10YR 5/3) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine to medium roots; many very fine interstitial pores and few very fine and fine tubular pores; few thin clay films in pores and on peds; 55 percent gravel and 20 percent cobbles; neutral; clear wavy boundary.

IIB2t—27 to 50 inches; pale brown (10YR 6/3) very gravelly heavy sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; few very fine to medium roots; many very fine interstitial pores and few very fine and fine tubular pores; man moderately thick clay films in pores and on peds; 55 percent gravel and 20 percent cobbles; neutral.

The solum ranges from 36 to 50 inches or more in thickness. The mollic epipedon ranges from 16 to 20 inches in thickness. The A horizon is 35 to 45 percent rock fragments. The B2t horizon is clay loam or sandy clay loam and is 40 to 60 percent gravel and 10 to 35 percent cobbles.

Ucopia series

The Ucopia series consists of deep, well drained, moderately rapidly permeable soils on uplands. These soils formed in residuum derived from pumiceous tuff. Slopes are 15 to 50 percent.

Typical pedon of an Ucopia loamy fine sand in Elko County; about 1,050 feet south and 250 feet east of the northwest corner of sec. 29, T. 35 N., R. 52 E.

A11—0 to 5 inches; grayish brown (10YR 5/2) loamy fine sand, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine interstitial pores; neutral; clear smooth boundary.

B2—5 to 11 inches; light brownish gray (10YR 6/2) light sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine tubular and interstitial pores; neutral; clear smooth boundary.

C1—11 to 50 inches; light brownish gray (10YR 6/2) light sandy loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine roots and few fine roots; many very fine tubular pores; neutral.

Cr—50 inches; weathered pumiceous tuff.

Depth to bedrock ranges from 40 to 60 inches. The control section is fine sandy loam, sandy loam, or coarse sandy loam and is as much as 15 percent gravel in some places.

Urtah series

The Urtah series consists of moderately deep, well drained, moderately permeable soils on foothills and mountainsides. These soils formed in residuum and colluvium derived from limestone. Slopes are 30 to 50 percent.

Typical pedon of an Urtah gravelly loam in Elko County; about 500 feet north and 700 feet east of the southwest corner of sec. 26, T. 31 N., R. 52 E.

A1—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; many fine and medium interstitial pores; 25 percent gravel and 5 percent cobbles; strongly effervescent; moderately alkaline; clear smooth boundary.

C1—4 to 16 inches; light brownish gray (10YR 6/2) gravelly sandy loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure and moderate coarse granular; soft, very friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; many fine and medium interstitial pores; 35 percent rock fragments; strongly effervescent; moderately alkaline; gradual smooth boundary.

C2—16 to 26 inches; light brownish gray (10YR 6/2) very gravelly sandy clay loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure and moderate coarse granular; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots and few coarse roots; many fine and medium interstitial pores; 50 percent gravel and 15 percent cobbles; violently effervescent; moderately alkaline; gradual smooth boundary.

C3—26 to 36 inches; pale brown (10YR 6/3) very gravelly sandy clay loam, brown (10YR 4/3) moist; massive; soft, very friable, sticky and plastic; few fine, medium, and coarse roots; common fine and medium interstitial pores; 60 percent gravel and 10 percent cobbles; violently effervescent; moderately alkaline.

R—36 inches; hard bedrock.

Depth to bedrock is 20 to 40 inches. The control section averages 60 to 70 percent rock fragments. It ranges from strongly effervescent to violently effervescent.

Welch series

The Welch series consists of very deep, poorly drained, moderately slowly permeable soils on flood plains. These soils formed in alluvium derived from mixed rock. Slopes are 0 to 8 percent.

Typical pedon of Welch loam, in Eureka County, about 2,100 feet south and 1,900 feet west of the northeast corner of sec. 10, T. 35 N., R. 51 E.

A11—0 to 3 inches; dark gray (10YR 4/1) loam, black (10YR 2/1) moist; moderate very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial and tubular pores; slightly acid; abrupt smooth boundary.

A12—3 to 7 inches; dark gray (10YR 4/1) loam, black (10YR 2/1) moist; moderate thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine interstitial and tubular pores; neutral; abrupt smooth boundary.

A13—7 to 10 inches; dark gray (10YR 4/1) clay loam, black (10YR 2/1) moist; weak medium and coarse prismatic structure; hard, very friable, sticky and plastic; many very fine and fine roots, common medium roots, and few coarse roots; many very fine interstitial pores and few fine tubular pores; neutral; abrupt smooth boundary.

A14—10 to 28 inches; dark gray (10YR 4/1) gravelly clay loam, black (10YR 2/1) moist; weak coarse prismatic structure; hard, friable, sticky and plastic; common very fine roots and few medium and coarse roots; many very fine tubular pores, common fine and medium tubular pores, and few coarse tubular pores; 15 percent gravel; neutral; clear wavy boundary.

AC—28 to 39 inches; dark grayish brown (2.5Y 4/2) gravelly clay loam, very dark grayish brown (2.5Y 3/2) moist; few fine distinct mottles that are olive (5Y 5/3) when moist and many fine distinct mottles that are pale yellow (5Y 7/3) when moist; massive; hard, friable, sticky and plastic; many very fine roots and few fine, medium, and coarse roots; many very fine and fine tubular pores, common medium tubular pores, and few coarse tubular pores; 15 percent gravel; neutral; clear wavy boundary.

C—39 to 60 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; many fine and medium distinct mottles that are olive (5Y 5/3) when moist and few fine distinct mottles that are brown (7.5YR 4/4) when moist; massive; hard, friable, sticky and plastic; common very fine roots and few fine, medium, and coarse roots; many very fine, fine, and medium tubular pores and common coarse tubular pores; neutral; abrupt smooth boundary.

Thickness of the mollic epipedon ranges from 30 to 60 inches. The control section is dominantly sandy clay loam or clay loam and is stratified with silty clay loam, silt loam, heavy loam, or sandy loam in some places. Some strata are gravelly.

Whirlo series

The Whirlo series consists of very deep, well drained, moderately rapidly permeable soils on alluvial fans. These soils formed in alluvium derived from mixed rock sources. Slopes are 4 to 15 percent.

Typical pedon of a Whirlo very stony fine sandy loam in Lander County; about 500 feet north and 100 feet east of the southwest corner of sec. 35, T. 34 N., R. 47 E.

A11—0 to 3 inches; light brownish gray (10YR 6/2) very stony fine sandy loam, dark grayish brown (10YR 4/2) moist; weak thick platy structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots and common medium roots; many fine and very fine vesicular pores and few medium vesicular pores; mildly alkaline; abrupt smooth boundary.

A12—3 to 7 inches; light gray (10YR 7/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; moderate medium and thick platy structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots; common fine tubular pores and many fine vesicular pores; mildly alkaline; abrupt smooth boundary.

B2—7 to 13 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; many fine and very fine roots and common medium roots; many very fine and fine tubular pores and many very fine interstitial pores; few very thin pale brown (10YR 6/3) clay films bridging mineral grains; 10 percent fine and medium gravel; mildly alkaline; clear smooth boundary.

IIC1—13 to 19 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; massive; hard, very friable, nonsticky and nonplastic; many very fine roots and few fine roots; many very fine interstitial pores; 70 percent well-graded gravel; slightly effervescent; moderately alkaline; clear wavy boundary.

IIC2ca—19 to 37 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine interstitial pores; 50 percent gravel and 20 percent cobbles; strongly effervescent; strongly alkaline; clear smooth boundary.

IIC3—37 to 60 inches; pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine and fine interstitial pores; 70 percent gravel; slightly effervescent in matrix but strongly effervescent on pebbles; moderately alkaline.

Thickness of the solum and depth to nonconforming calcareous IIC horizons are 10 to 20 inches. The A horizon has as much as 20 percent stones and cobbles on the surface. The control section is sandy loam, fine sandy loam, or loam. It averages 40 to 70 percent rock fragments when mixed. The C horizon is nonsaline, slightly saline, or moderately saline.

Wholan series

Wholan series consists of very deep, well drained, moderately permeable soils on alluvial fans and flood plains. These soils formed in loess and alluvium derive from mixed rock sources. Slopes are 0 to 4 percent.

Typical pedon of a Wholan silt loam in Eureka Count about 2,200 feet north and 1,800 feet west of the southeast corner of sec. 28, T. 32 N., R. 49 E.

A11—0 to 1 inch; light brownish gray (10YR 6/2) silt loam, brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and few medium roots; many very fine and fine pores; moderately alkaline; abrupt smooth boundary.

A12—1 inch to 6 inches; light brownish gray (10YR 6/2 silt loam, brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and medium roots; common very fine and fine tubular pores; moderately alkaline; clear smooth boundary.

B21—6 to 10 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common very fine roots and few medium roots; common very fine and fine tubular pores; moderately alkaline; clear smooth boundary.

B22—10 to 22 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and slightly plastic; common very fine roots and few medium roots; many very fine and fine tubular pores; moderately alkaline; clear smooth boundary.

C1ca—22 to 30 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine tubular pores; strongly effervescent; common fine distinct white (10YR 8/1) spots of secondary carbonates; moderately alkaline; clear wavy boundary.

C2—30 to 43 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine tubular pores; slightly effervescent; strongly alkaline; clear smooth boundary.

C3—43 to 60 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine tubular pores; slightly effervescent; strongly alkaline.

Thickness of the solum and depth to the Cca horizon range from 12 to 24 inches. The control section is dominantly silt loam or very fine sandy loam. It has very thin strata of fine sandy loam or loam in some places. In some pedons the C horizon has thin strata that are as much as 5 percent durinodes. The lower part of the C horizon is sandy and is 40 to 55 percent rock fragments some pedons. The profile commonly is free of salt and odium or it is slightly salt- and sodium-affected to a epth of 30 inches or more and strongly salt- and odium-affected below this depth. Periods of flooding inge from rare to occasional.

ioil formation

Edmund A. Naphan, soil scientist, Soil Conservation Service, wrote iis section.

Soil is a natural body on the earth's surface in which lants grow. It is a mixture of varying proportions of ocks, minerals, organic matter, water, and air. The rocks nd minerals are fragmented and are partly or wholly veathered. Soils have distinctive layers, or horizons, that re the product of environmental forces acting upon naterial deposited or accumulated through geologic ictivity.

Soils differ one from the other in different localities ind within short distances. The differences are the result of the interaction of five soil-forming factors that are nown to affect soil formation. These factors are (1) limate, mainly the temperature and kind and amount of recipitation that have existed since accumulation of the parent material; (2) relief, mainly as it affects the internal ind external soil properties such as drainage, aeration, susceptibility to erosion, and exposure to sun and wind; (3) biological forces, mainly the plant cover and the organisms living in and on the soil; (4) parent material, ncluding texture and structure of the material as well as ts mineralogic and chemical composition; and (5) the ength of time that the soil-forming factors have been operating.

The overall landscape of the area, mainly the sequence of mountains and valleys, is the result of geologic stratigraphic and structural control. The present topography and landforms, however, are the result of events during Quaternary time. The kinds of soil that formed are indicative of the stability and age of the surfaces of the landforms on which they occur.

Climate

The climate of the survey area is characterized by warm, dry summers and cool, moist winters. The average annual precipitation ranges from about 7 inches at the lowest elevation to about 20 inches or more at the highest elevation. The average annual air temperature ranges from about 49 to 40 degrees F or less in some of the high mountains. Major climatic variations are the result of the effects of topography and relief. As a consequence, the soils in the survey area reflect a general zonation with increasing elevation.

At the lower elevations, 4,500 to 5,000 feet, the average annual precipitation is about 7 to 8 inches. Weathering of parent material is slow, leaching is incomplete, and eluviation and illuviation proceed at a very slow rate. The plant cover consists mostly of a sparse stand of drought- and salt-tolerant shrubs. Typically, the soils are low in content of organic matter and have a thin, light-colored A horizon. Soluble salts and calcium carbonate accumulate in the soil profile at a relatively shallow depth. Broyles, Pocker, and Rosney soils are typical of soils that reflect these properties.

With increasing elevation there is an accompanying increase in precipitation, which results in deeper leaching of salts and calcium carbonate, decreased reaction, changes in the kind and density of vegetation, and a thicker and darker A horizon. Havingdon, Carstump, Slaven, and Taylor Creek soils exemplify this elevational-climatic relationship.

At the highest elevations, where precipitation is 18 to 20 inches, leaching of salts and carbonates is more intensive, the soils are neutral or slightly acid, and the A horizon is thick and is high in content of organic matter. Hapgood, Primeaux, and Tusel soils are typical of these soils.

In winter, freezing and thawing generally occur throughout the survey area, except in those areas that generally are insulated by snow cover. The effects of frost action are discernible by the heaving of plants, development of miniature stone rings, and erosion of the surface soil resulting from solifluction.

Relief

Relief, through its effects on drainage, runoff, erosion, and exposure to the sun and wind, has had an important effect on soil formation in the survey area. The mountain ranges, valleys, and flood plains reflect the gross variations in relief within the area.

The mountain ranges are mainly characterized by steep relief. Runoff is rapid or very rapid, and the hazard of erosion is high. The removal of material by erosion inhibits or prevents soil development. Development of soils on mountain surfaces that are subject to a high rate of geologic erosion is primarily limited to accumulation of organic matter to form a dark-colored A horizon. A cambic or an argillic horizon has formed in the soils on more stable mountain surfaces, where the rate of geologic erosion has been slower. Chen, Mascamp, Slaven, and Torro soils are examples of soils that formed on the more stable mountain slopes and have an argillic horizon. Jack Creek soils are examples of soils on less stable mountain slopes where soil formation has been unable to act on parent material long enough for these horizons to have developed.

Soils on concave and north-facing mountain slopes, because of the greater effectiveness of temperature and moisture, support a dense stand of shrubs, grass, and, in some places, aspen trees. The soils in these areas have developed a thick, dark-colored A horizon with a high content of organic matter. Hapgood and Glean soils, which have neither a cambic nor an argillic horizon, and Tusel soils, which have an argillic horizon, are examples of these soils.

The valleys are essentially basins that receive drainage water from the surrounding mountain ranges. Within the survey area they are separated into two general types. One type, characterized by the Maggie and Susie Creek Valleys and Pine Valley, consists of a series of terraces cut in Tertiary-Quaternary valley-fill material. Stream erosion has deeply dissected the valley fill. Downcutting of the valleys has been interrupted several times, and these events are marked by the development of terraces. The other type, characterized by a nearly level basin-fill plain bordered by sloping alluvial fans or coalesced fan piedmonts, is represented by Boulder, Crescent, and Whirlwind Valleys. Small playas are located in the central parts of Crescent and Whirlwind Valleys.

The dissection patterns in Maggie and Susie Creek valleys and in Pine Valley have resulted in a sloping interfluvial surface, steep interfluvial side slopes, and narrow flood plains along drainageways. The interfluvial areas and side slopes have been relatively stable over a long period of time as a result of the bypassing of drainage water from uplands through dissecting channels. Donna, Stampede, and Simon soils are examples of soils on stable interfluves. Short Creek soils are examples of soils on steep side slopes, and Bosco and Welch soils are examples of soils in drainageways.

The nearly level basin-fill plains in Boulder, Crescent, and Whirlwind Valleys are in a sense extensions of the alluvial fan slopes. Runoff is slow, and drainage is somewhat restricted. The soils in these areas are light colored and contain soluble salts. Cluro, Dunphy, Midas, Ocala, and Rosney soils are examples of soils that formed in these areas.

The gently sloping to strongly sloping alluvial fans bordering basin-fill areas in Boulder, Crescent, and Whirlwind Valleys have a relatively smooth, undissected surface. The soils that formed on these surfaces are subject to medium runoff and are well drained. Orovada, Chiara, Tenabo, and Whirlo soils are examples of soils in these areas.

The nearly level flood plains and low terraces along the Humboldt River and Maggie, Susie, and Pine Creeks have a high water table. Runoff is very slow, and the soils are subject to flooding. The soils in these areas support dense stands of meadow vegetation that has contributed a large amount of organic matter to the soils, producing a dark-colored A horizon. Some of these soils have excess soluble salts in their upper horizons. Humboldt, Rixie, Welch, Four Star, and Bosco soils are examples of these soils.

Biological forces

Plants, animals, insects, and microflora are important biological forces that affect soil formation in the survey area. Although animals, such as badgers and ground squirrels, and insects, such as cicadas, have had some effect on soil development, plants appear to have had the major biological influence on the soils in this survey area.

The vegetation in the area has been a particularly important factor in reducing erosion. This factor has helped to maintain the stability of the land surfaces so that normal soil formation could take place.

Because of climatic differences, plants vary considerably in kinds and amounts as elevation increases. On basin-fill plains, terraces, and alluvial fans at low elevations, the main plants are drought- and salt-tolerant shrubs. Because of the scarcity of available moisture, plants cover only a small part of the surface. They add little organic matter to the soils and provide little protection from the wind and sun. Salt-tolerant shrubs also tend to recycle salts from the deeper layers to the surface soil.

On the flood plains where drainage is restricted, the dense growth of meadow vegetation has supplied the organic matter that gives Humboldt, Four Star, Rixie, Welch, and other soils a dark-colored A horizon.

Alluvial fans, terraces, and foothills at higher elevations support a plant cover of shrubs and grass that is transitional from desert shrubs to mountain shrubs and grasses. The density of plants in these areas is somewhat greater, soluble salts are deeper in the soil profile, and more organic matter has accumulated in the A horizon.

The mountainous areas support denser stands of shrubs, grasses, and, in some places, trees. Because of the more abundant vegetation, the A horizon of the soils in these areas is thick, is high in organic matter, and is dark in color.

Parent material

Parent material is the weathered rock or unconsolidated material from which soils form. The hardness, grain size, and porosity of the parent material and its mineralogic and chemical composition greatly influence soil formation. The main sources of parent material in the survey area are extrusive volcanic rock, sedimentary and metamorphic rock, colluvium, alluvium, and eolian material, including volcanic ash and sand.

The volcanic rock includes basalt, andesite, rhyolite, and silicic tuff. It has supplied the parent material for the soils in Sheep Creek, Shoshone, and Independence Ranges and in the southern part of the Tuscarora Mountains. The material weathered from these rocks also is a component of the colluvium, alluvium, and basin-fill material in adjacent valleys. Volcanic rock contains appreciable quantities of minerals that weather to clay. The more siliceous rock, particularly tuff, is also a source of silica for the cementation of soil horizons. Because of the ability of material derived from volcanic rock to produce clay upon weathering, most soils that formed in this material on stable mountain and foothill slopes have an argillic horizon. Chen, Mosquet, Pie Creek, Ramires, Taylor Creek, and Toeja soils are examples of these soils.

Hard sedimentary and metamorphic rock is the source of the parent material for the soils in the central and northern parts of the Tuscarora Mountains and in the Cortez and Pinyon Ranges. This rock outcrops on the flanks of the Sheep Creek, Shoshone, and Independence Ranges. It contains chert, quartzite, limestone, shale, conglomerate, and sandstone. Except for limestone, most of these rocks contain minerals that weather to clay. The content of these weatherable minerals in the chert is somewhat less than that in the other rocks. The limestone also contains few minerals that weather to clay. Tusel, Torro, and Packer are examples of soils, on mountain slopes, that have an argillic horizon and that formed in material derived from chert and quartzite. Urtah soils, which formed in material derived from limestone on mountain slopes, do not have an argillic horizon.

Colluvium is a soil parent material that has accumulated on steep mountain slopes as a result of gravitational forces. The colluvium generally is poorly sorted, contains many rock fragments, and includes minerals that weather to clay. Many of the colluvial landscapes have not been stable long enough for an argillic horizon to have formed in soils such as Hapgood and Jack Creek.

Tertiary sedimentary rock occurs extensively in the valleys of Maggie, Susie, and Pine Creeks. This bedrock consists of old alluvial and lakebed deposits containing interbedded volcanic ash, tuff, and some diatomaceous earth. The surficial material in which the major soils formed contains rock fragments and minerals capable of weathering to clay. The soils that formed on old stable surfaces over this sedimentary rock have an argillic horizon and a duripan. Donna and Stampede are examples of these soils.

Alluvium deposited as alluvial fans, basin-fill plains, and flood plains consists of sandy, loamy, or clayey material of generally mixed mineralogy that has been eroded from surrounding mountains. Alluvium deposited as alluvial fans is mostly loamy textured and contains variable amounts of pebbles, cobbles, and stones. Silty and clayey material was deposited below the alluvial fans as basin-fill plains and flood plains. This material contains varying amounts of soluble salts that were incorporated into the sediment during deposition.

Alluvium deposited as alluvial fans is porous and contains minerals that, when weathered, produce clay and soluble silica for the cementation of duripans. Tenabo soils are examples of soils with an argillic horizon and a duripan and that formed on alluvial fans.

Alluvial fan material derived from limestone contains only a small amount of minerals that produce clay upon weathering. Carbonates derived from the solution of calcareous parent material are leached and deposited within the soil profile. The carbonate accumulations in older soils cement the parent material and form a petrocalcic horizon. Bobs soils are examples of these soils.

Silty and clayey deposits on basin-fill plains and flood plains are not old enough to exhibit soil development. These materials, however, contain weatherable minerals and, given sufficient time, can be expected to form an argillic horizon.

Loess, an eolian material consisting mainly of silt, was deposited over the entire survey area during the Pleistocene and Holocene. This material, which contains a considerable amount of volcanic glass, originated in the desert basins west of the area. Loess has influenced soil formation in the area by contributing weatherable minerals and silica for cementation of subsurface horizons. Much of the loess deposited on mountain slopes has been washed into valleys, where it has been deposited with other material as silty alluvium of alluvial fans, basin-fill plains, and flood plains. Although much of the loess deposited in the mountains has been eroded, it is an important component of soil parent material and is evident in the upper horizons of some soils. Alley, Bucan, Havingdon, Humdun, Singletree, Taylor Creek, and Toeja are examples of soils that formed on mountains and foothills and have been influenced by surficial loess.

The influence of loess is apparent in the upper horizons of soils that formed on alluvial fans, terraces, and basin-fill plains that have been stable since the late Pleistocene and early Holocene. This influence is obvious in the Beowawe, Blackhawk, Cherry Spring, Chiara, Cluro, Cortez, Orovada, Simon, Rad, and Tenabo soils.

Volcanic ash, an eolian material presumed to be from ancient Mt. Mazama in Oregon, has probably been important as a source of soluble silica in the formation of durinodes and duripans in the soils in the area. The ash has been preserved in some of the soils on the Humboldt River flood plain and adjacent basin-fill plains as thin strata in the Dunphy, Humboldt, Ocala, and Rixie soils and as some deep pockets, along the west side of the area, that are included with the Dunphy soils.

Sandy eolian material is of limited extent in the survey area. It occurs mainly as dunes in Boulder Valley. The dunes consist of smooth, well-rounded fine sand that has the appearance of weakly cemented silt and clay. The source of the fine sand is the blown-out windward side of dunes. Kawich soils are the only soils in the area that formed in eolian sand.

Time

Time is required for the formation of soils. The amount of time required depends upon the other soil-forming factors. Thickness and other characteristics of A and B horizons and other horizons reflect the relative age of soils. The age or strength of expression of the soil horizons is a reflection of the amount of weathering of parent material resulting from the interaction of moisture, temperature, and biological activity as influenced by time.

The soils in this survey area range from a few years to possibly a few hundred thousand years or more in age.

This range in age is a major reason for the many kinds of soil in the area.

The interrelations between time and the other soil-forming factors are not well understood by soil scientists and geologists working in this field. Many soil scientists and some geologists feel that weathering of parent material and soil profile development have been essentially continuous, with little change in rate throughout Quaternary time (*11, 12, 14, 17*).

Recently, earth scientists concerned with differentiating Quaternary deposits have proposed that soil development has not proceeded continuously at the same rate, but has taken place intermittently at rapid rates (*8, 9, 10, 13*). Concepts of soil stratigraphy use weathering profiles as stratigraphic markers to differentiate and correlate Quaternary deposits. These concepts of soil development are based on the assumption that weathering profiles formed in response to infrequent combinations of climatic factors that induced minimal erosion and deposition and a greatly accelerated rate of chemical weathering.

Although disagreements exist in regard to the relative influences of time and other soil-forming factors, the concept of intermittency of soil formation has been supported by numerous studies and provides a practical technique to discuss the age of soils in the Tuscarora Mountains in relation to geologic and climatic factors in the Quaternary.

The kinds of diagnostic subsurface horizons and other subsurface diagnostic properties, together with their strength of expression, provide general clues to the age of the soils in the area. Important subsurface diagnostic horizons present in soils within the area include argillic, natric, cambic, calcic, and petrocalcic horizons, and horizons exhibiting silica cementation.

Prominent argillic horizons in this area occur generally only in soils that formed primarily during the Pleistocene. This concept has been established by studies in the Southwest (*4, 5*) and is further supported in Soil Taxonomy (*16*). With increasing age and constancy of other conditions, argillic horizons become finer in texture, become somewhat thicker, and tend to develop abrupt upper boundaries. Weakly expressed, thin argillic horizons may have formed during very late Pleistocene or early Holocene time.

Natric horizons are special kinds of argillic horizons that formed under the influence of high exchangeable sodium. The effect of sodium on the dispersion of clay may tend to accelerate the rate of formation of argillic horizons. This is not believed to be significant, however, except in weakly expressed natric horizons that formed on Holocene surfaces. Following the formation of argillic horizons, prominent natric horizons may have developed as a result of sodium supplied by surficial loess deposits. Transportation and deposition of sodium salts with loess are believed to be an important present-day process that affects the physical and chemical properties of soils in the area.

Cambic horizons in soils within the area formed for th most part in calcareous sediment. Original stratification absent, and carbonates have been removed and redeposited in underlying horizons. Investigations in southern New Mexico indicate that cambic horizons in that region are less than about 5,000 years old (*3*). Cambic horizons in the survey area and in other areas i northern Nevada have been generally thought to be les than 10,000 years old, and possibly less than 7,000 years. This age has been determined mostly as a result of soil mapping in areas located below the last high stage of Pleistocene Lake Lahontan (*7, 8, 9, 10*).

The calcic horizons in the area formed mainly in sediment containing a considerable amount of rock fragments. These calcic horizons generally exhibit the properties typical of the three older stages (II, III, IV) of morphogenetic sequences reported by investigators in southern New Mexico (*6*). Stage II includes continuous pebble coatings and some interpebble fillings on land surfaces more than 5,000 years old to the latest Pleistocene in age; stage III includes many interpebble fillings on land surfaces of late Pleistocene age; and stage IV includes a laminar horizon overlying a plugged petrocalcic horizon on late Pleistocene to mid-Pleistocene land surfaces.

The volcanic glass in sediment derived from pyroclastic material and in eolian deposits is a source of silica for the formation of duripans and durinodes in many of the soils in the survey area. Duripans are massive, platy horizons that are cemented with silica and, in most instances, with accessory calcium carbonate. Because of their association with prominent argillic horizons, massive duripans capped with silica- and lime-cemented laminar layers are probably the oldest kind of duripan in the area and are of late Pleistocene to mid-Pleistocene age. Platy or laminated forms of duripans with or without thin, discontinuous laminar layers are probably of late Pleistocene to early Holocene age. Platy laminar forms of duripans tend to develop in loamy material. Thin duripans lacking overlying laminar layers, weak discontinuous silica cementation, or durinodes may have developed on Holocene surfaces in loess or loamy alluvium deposited on gravelly material. These forms of silica cementation apparently are capable of forming during a relatively short period of time and may be less than 5,000 years old.

The degree of development of diagnostic subsurface horizons in the soils in the area indicates a sequence that ranges in age from the present to mid-Pleistocene or possibly older.

The youngest soils in the area are those that formed in recently aggraded material or in material recently exposed by erosion. Included among these soils are Griver, Pocker, and Rosney soils that formed in recent alluvium, Puett soils that formed in material weathered from volcanic tuff on upland slopes, and Kawich soils on sand dunes.

Somewhat older than the youngest soils are soils that formed in alluvium on wet flood plains and soils on relatively recently eroded uplands that have been stable long enough to have accumulated organic matter and formed a dark-colored A horizon. These soils do not have an argillic, natric, cambic, or calcic horizon, duripans, or durinodes. They are probably less than about 1,000 years old. Four Star, Welch, Humboldt, and Rose Creek are examples of soils that formed on wet flood plains. Jack Creek, Glean, and Hapgood are examples of those that formed on mountain slopes.

Soils that formed in alluvium and have developed subsurface horizons containing durinodes or exhibiting very weak silica cementation are also older than the youngest soils and possibly are slightly older than the soils that have developed a dark-colored A horizon as their only major diagnostic feature. These soils formed in saline and alkali, silty and fine-loamy parent material containing an appreciable amount of volcanic ash and are on basin-fill plains and low stream terraces. Volcanic ash as a source of soluble silica with alkaline reaction probably contributes to the relatively rapid formation of durinodes and incipient silica cementation. Dunphy, Ocala, Iron Blossom, and Rixie are examples of soils that have horizons with incipient silica cementation as a major diagnostic feature.

Stable Holocene land surfaces less than about 10,000 years and more than about 2,000 years old are extensive in the survey area. The soils that formed on these surfaces have a cambic horizon. For the most part, they appear to have formed in loess or alluvium containing a considerable amount of volcanic ash deposited over older material. Because the parent material includes so much volcanic ash, the cambic horizon in these soils in most places is underlain by horizons that exhibit weak silica cementation or by horizons containing durinodes. A few soils have a duripan underlying the cambic horizon.

Soils that have a cambic horizon underlain by horizons containing durinodes or exhibiting incipient silica cementation have formed in loess deposits on mountain slopes and in alluvial fan deposits containing a considerable amount of loess washed from the mountains. The land surfaces on which the soils formed are probably less than 7,000 years old. Humdun soils are examples of soils that formed in loess on mountain slopes. Examples of soils that formed in silty alluvial fan deposits are the Orovada and Rad soils.

Blackhawk soils have a thin duripan, underlying the cambic horizon, that does not have a laminar cemented surface. They formed in silty alluvial fan deposits and are believed to be similar in age to Humdun, Orovada, and Rad soils. Buried argillic horizons of late Pleistocene age are occasionally observed at a depth below 20 inches in the Blackhawk, Broyles, Orovada, and Rad soils, which supports the assignment of a Holocene age to these soils.

Soils that have a cambic horizon but do not have underlying layers with durinodes or silica cementation are believed to be less than 5,000 years old. These include Ferdelford, Ucopia, and Malpais soils that formed in colluvium and residuum on upland slopes, and McConnel, Whirlo, and Wholan soils that formed in deposits on terraces and alluvial fans; these deposits apparently do not contain an appreciable amount of volcanic ash or glass.

Bunky and Chiara soils have a cambic horizon underlain by a thick, massive duripan. In these soils, the duripan is believed to have formed in late Pleistocene or early Holocene time. The cambic horizon in these soils formed in subsequent Holocene time following deposition of loess and silty alluvium, primarily derived from loess, on older eroded alluvial land surfaces in which duripans were preserved as relicts.

Soils that have prominent relict subsurface horizons that date from late to mid-Pleistocene time are among the most extensive soils in the area. They occupy old, stable land surfaces where the original subsurface horizons have been neither stripped by erosion nor deeply buried by sediment. An obvious characteristic associated with many of these soils is the influence of loess deposits that have been modified by subsequent erosion and redeposition. This has resulted in surficial deposits of younger material that is so thin that the underlying relict argillic, natric, petrocalcic, and silica-cemented horizons must be considered in classification. Bobs, Coff, Cortez, Donna, and Stampede are examples of soils that have subsurface horizons that are probably of mid-Pleistocene age and are the oldest in the area.

Coff soils on foothills and Bobs soils on interfluves of dissected alluvial fans formed in gravelly material derived from limestone and dolomite. Coff soils have a petrocalcic horizon at depths between 24 and 36 inches. The overlying material is very gravelly material, probably of younger age, in which a calcic horizon has developed. Bobs soils have a petrocalcic horizon at depths between 10 and 20 inches. The A horizon consists of gravelly loamy material containing loess. The petrocalcic horizons associated with Coff and Bobs soils are believed to be relict horizons of mid-Pleistocene age.

Cortez soils have a thick, fine-textured natric horizon and a thick underlying duripan. The fine-textured B2t horizon is overlain by silty alluvium, derived primarily from loess, in which a weak B1t horizon has developed. The fine-textured natric horizon and associated duripan in Cortez soils are believed to be relict horizons of mid-Pleistocene age.

Donna and Stampede soils occur in close association on high interfluves of terracelike surfaces of dissected Tertiary valley-fill material. Both of these soils have a thick argillic horizon and a thick underlying duripan. The argillic horizon in Donna soils is very fine-textured, and in Stampede soils it is fine-textured. These soils have a silty A horizon with an abrupt lower boundary. The argillic horizon and duripan in Donna and Stampede soils are believed to be relict horizons that began forming in mid-Pleistocene time.

Relict argillic, natric, and silica-cemented horizons of late Pleistocene age occur extensively in soils on mountains, foothills, alluvial fans, and terraces. The fact that extensive areas of these kinds of soil exist today is evidence that major erosional and depositional events have not taken place or have been minor in extent since late-Pleistocene time.

Soils that have a relict argillic horizon that is believed to be of late Pleistocene age represent members of about 29 soil series, or about 38 percent of the soil series mapped in the survey area. About 20 of these soil series occupy mountains and foothills. Mascamp, Packer, Singletree, Taylor Creek, and Tusel soils are examples.

Mascamp soils formed in material derived from welded tuff and other volcanic rock on convex, gently sloping to strongly sloping ridges and crests of mountains and foothills. These soils contain a considerable amount of rock fragments, and they have a very cobbly, fine-loamy relict argillic horizon resting on bedrock at a depth of less than 20 inches.

Packer soils formed in loamy, very gravelly and cobbly colluvium and residuum, derived from chert and quartzite, that contain loess. They are on slightly convex, strongly sloping to steeply sloping mountainsides. These soils have a very gravelly, fine-loamy relict argillic horizon. The A horizon is loam and is believed to have been influenced by loess.

Singletree soils formed in silty colluvium and residuum derived from tuff and other volcanic rock. They are on slightly concave, steep and very steep, north-facing mountain slopes. These soils have a fine-loamy relict argillic horizon. They have a relatively thick, loamy A horizon that contains very few rock fragments, which reflects the influence of younger loess deposits.

Taylor Creek soils formed in residuum derived from tuff and other volcanic rock and from loess. These soils are on strongly sloping to steeply sloping mountain slopes. They have a thick, gravelly, very fine relict argillic horizon and a loamy A horizon that formed mostly in loess and contains very few if any rock fragments.

Tusel soils formed in very gravelly loamy colluvium derived from quartzite, chert, and shale. They are on steep, slightly concave, north-facing mountain slopes. These soils have a thick A horizon that rests on a fine-loamy relict argillic horizon. Both the A horizon and the argillic horizon contain a considerable amount of chert and quartzite pebbles.

Soils with a relict late Pleistocene argillic horizon that are on alluvial fans and terraces are not so extensive as those on upland surfaces. Examples of these kinds of soil are those of the Cherry Spring, Tenabo, Berning, and Short Creek series.

Cherry Spring soils formed in alluvium derived from mixed Tertiary sediment. They are on gently sloping to moderately sloping interfluves of terraces or alluvial fans. These soils have a fine-loamy relict argillic horizon and a nonindurated duripan. The A horizon appears to be composed mostly of younger loess 10 to 18 inches thick.

Tenabo soils are on nearly level to strongly sloping alluvial fans. These soils formed in material that includes loess, which has been deposited over Tertiary valley-fill material. They have a fine-loamy relict natric horizon and an indurated duripan. The A horizon is 1 inch to 13 inches thick and in most places appears to be a loess deposit.

Berning and Short Creek soils are on strongly sloping to very steep side slopes of interfluves of Tertiary valley-fill material. They formed in very gravelly and cobbly material derived from Tertiary sediment and have a very gravelly, fine-textured relict argillic horizon. These soils are closely associated with Cherry Spring, Donna, and Stampede soils on gently sloping to moderately sloping interfluves. Where these soils are associated with Cherry Spring soils, they reflect contemporaneous development of the argillic horizon in material exposed by erosion and depositional events in late Pleistocene time. Where these soils are associated with Donna and Stampede soils, they reflect cutting or erosion that took place during a later time period. Hence, a mid-Pleistocene age is suggested for the argillic horizon in Donna and Stampede soils, and a late Pleistocene age in Berning and Short Creek soils.

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Glossary

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

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

Alluvial fan. A body of alluvium, with or without debris flow deposits, whose surface forms a segment of a cone that radiates downslope from the point where the stream emerges from a narrow valley onto a plain.

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

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3.5
Low	3.5 to 5
Moderate	5 to 7.5
High	7.5

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

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

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

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

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

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse fragments. Mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter.

Coarse textured soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

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

Compressible (in tables). Excessive decrease in volum of soft soil under load.

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

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 and 40 inches.

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

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

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

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

Depth to rock. Bedrock is too near the surface for the specified use.

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

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods.

Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, a relatively high or intermittently high water table (usually below a depth of 60 inches), runoff from higher lying areas, or a combination of these.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these. These soils have a water table at a depth of 36 to 60 inches or have colors that resulted from a periodic high water table.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these. These soils have a high water table at a depth of 18 to 36 inches or have colors that resulted from a periodic high water table.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Durinodes. Weakly cemented to indurated nodules. The cement is presumably opal and microcrystalline forms of silica.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion or by action of the wind.

Escarpment. A nearly continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and produced by erosion or faulting. The term is most often applied to cliffs produced by differential erosion.

Excess alkali (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

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

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

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

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

Fine textured (heavy textured) soil. Sandy clay, silty clay, and clay.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Fragile (in tables). Soil material that is easily damaged by use or disturbance.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is more than 15 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Green manure (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

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.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:
O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.
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.
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. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.
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 A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Roman numeral II precedes the letter C.
R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

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

Impervious soil. A soil through which water, air, or root 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.

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 bu 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

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—
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.
Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.
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.
Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.
Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.
Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.
Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

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

Large stones (in tables). Rock fragments 3 inches (7.5 centimeters) or more across. Large stones adversely affect the specified use of the soil.

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

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

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

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

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

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Minimum tillage. Only the tillage essential to crop production.

Miscellaneous areas. Areas that have little or no natural soil, support little or no vegetation, or have some other highly unfavorable attribute.

Moderately coarse textured (moderately light textured) soil. Sandy loam and fine sandy loam.

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

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

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

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

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

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

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

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

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

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

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

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.20 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

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

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

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

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

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

Ponding. Standing water on soils in closed depressions. 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.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

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.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range 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.

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 degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly 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

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

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

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

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

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

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

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

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

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

Series, soil. A group of soils that have about the same profile, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

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

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

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

Silica. A combination of silicon and oxygen. The common mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

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.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

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

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

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Snow pockets. Concave areas where snow accumulates and remains for longer periods than in adjacent areas.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 mm in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millimeters
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 and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

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

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind 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).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

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 management.

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 it can soak into the soil or flow slowly to a prepared outlet without harm. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or " very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

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.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial melt water. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

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.

tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.1 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
Recorded in the period 1966-75 at Carlin, Nev.											
January----	34.2	18.7	26.5	54	-8	0	1.40	.79	1.88	4	10.1
February---	38.8	21.8	30.3	58	4	11	.98	.26	1.55	4	9.2
March------	43.7	24.6	34.2	67	7	61	1.44	.96	1.87	5	8.8
April------	49.1	28.6	38.9	72	14	101	1.48	.69	2.12	5	6.1
May--------	63.7	40.0	51.9	83	21	381	1.09	.28	1.73	2	.3
June-------	72.3	49.3	60.8	91	30	624	1.84	.77	2.79	4	.0
July-------	84.6	59.2	72.0	94	38	992	.66	.11	1.07	2	.0
August-----	82.5	57.2	69.8	93	42	924	.47	.00	.79	1	.0
September--	73.0	47.3	60.2	89	28	606	.51	.00	.86	1	.0
October----	57.4	35.3	46.4	78	12	224	1.31	.64	1.84	4	2.2
November---	42.7	27.4	35.6	65	9	46	1.45	.71	2.05	4	4.9
December---	33.2	18.2	25.7	52	-5	11	2.14	1.33	2.86	6	14.0
Year-----	56.4	35.6	46.0	94	-10	3,981	14.77	11.01	17.58	42	55.6
Recorded in the period 1958-75 at Tuscarora, Nev.											
January---	36.7	15.8	26.3	57	-17	0	1.21	.56	1.73	5	7.8
February--	39.5	19.8	29.7	57	-5	29	.92	.31	1.40	4	2.3
March-----	43.8	22.2	33.0	67	0	29	.99	.54	1.34	4	7.2
April-----	51.1	26.7	39.0	71	10	111	.77	.33	1.13	3	2.3
May-------	63.0	34.0	48.5	85	17	288	1.18	.50	1.73	4	1.2
June------	73.2	41.0	57.5	91	27	525	1.61	.53	2.48	5	.1
July------	85.1	49.5	67.3	95	34	846	.49	.07	.80	2	.0
August----	83.4	47.6	65.5	95	30	791	.59	.01	1.01	2	.0
September-	72.4	38.3	55.4	83	18	474	.56	.15	.88	2	.2
October---	62.3	31.7	47.0	80	12	254	.71	.21	1.10	2	.6
November--	45.7	24.1	34.9	68	4	23	1.26	.37	1.96	4	2.7
December--	37.9	17.9	27.9	58	-10	27	1.47	.60	2.16	5	14.0
Year-----	57.8	30.8	44.3	95	-21	3,397	14.12	9.89	11.76	42	38.4

See footnote at end of table.

TABLE 1.--TEMPERATURE AND PRECIPITATION--Continued

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[1]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.1 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
Recorded in period 1951-75 at Beowawe, Nev.											
January---	41.8	14.9	28.1	60	-16	39	.69	.32	.99	2	2.2
February--	47.1	20.7	34.0	66	-4	61	.58	.19	.88	2	2.0
March-----	53.1	23.8	38.4	75	5	78	.60	.14	.95	2	1.9
April-----	62.7	28.5	45.6	82	12	197	.73	.17	1.17	2	.0
May-------	73.2	36.9	55.1	93	18	474	.92	.11	1.55	2	.0
June------	82.2	44.1	63.3	100	28	699	1.04	.00	1.70	2	.0
July------	93.0	45.4	71.2	103	36	967	.32	.03	.53	1	.0
August----	90.3	46.8	68.6	102	30	887	.36	.00	.03	1	.0
September-	81.1	36.5	58.8	90	19	564	.34	.00	.62	1	.0
October---	69.0	28.4	48.7	86	10	281	.54	.00	.84	1	.0
November--	52.7	21.0	36.9	73	0	64	.71	.28	1.08	2	.7
December--	42.0	16.0	29.0	59	-13	23	.84	.36	1.23	3	3.2
Year-----	65.7	30.6	48.1	104	-16	4,334	7.67	5.58	9.74	21	10.0

[1]A growing degree day is an index of the amount 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° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Recorded in the period 1966-75 at Carlin, Nev.			
Last freezing temperature in spring:			
1 year in 10 later than--	May 15	May 31	June 18
2 years in 10 later than--	May 11	May 25	June 11
5 years in 10 later than--	May 2	May 13	May 29
First freezing temperature in fall:			
1 year in 10 earlier than--	October 1	September 24	August 11
2 years in 10 earlier than--	October 9	September 29	August 25
5 years in 10 earlier than--	October 25	October 9	September 21
Recorded in the period 1958-75 at Tuscarora, Nev.			
Last freezing temperature in spring:			
1 year in 10 later than--	May 27	June 16	July 5
2 years in 10 later than--	May 21	June 9	June 29
5 years in 10 later than--	May 11	May 26	June 19
First freezing temperature in fall:			
1 year in 10 earlier than--	September 15	August 27	July 28
2 years in 10 earlier than--	September 21	September 3	August 8
5 years in 10 earlier than--	October 2	September 17	August 28

TABLE 2.--FREEZE DATES IN SPRING AND FALL--Continued

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Recorded in the period 1951-75 at Beowawe, Nev.			
Last freezing temperature in spring:			
1 year in 10 later than--	May 22	June 10	June 20
2 years in 10 later than--	May 15	June 3	June 13
5 years in 10 later than--	May 3	May 20	May 31
First freezing temperature in fall:			
1 year in 10 earlier than--	September 9	August 24	August 6
2 years in 10 earlier than--	September 17	September 1	August 16
5 years in 10 earlier than--	October 1	September 16	September 2

TABLE 3.--GROWING SEASON

Probability	Daily minimum temperature		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
Recorded in the period 1966-75 at Carlin, Nev.			
9 years in 10	141	127	82
8 years in 10	153	134	93
5 years in 10	175	148	114
2 years in 10	198	163	135
1 year in 10	210	170	146
Recorded in the period 1958-75 at Tuscarora, Nev.			
9 years in 10	118	81	35
8 years in 10	127	92	47
5 years in 10	144	113	70
2 years in 10	161	134	93
1 year in 10	170	145	104
Recorded in the period 1951-75 at Beowawe, Nev.			
9 years in 10	116	79	58
8 years in 10	128	92	70
5 years in 10	150	118	94
2 years in 10	173	144	118
1 year in 10	185	157	130

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Elko County	Eureka County	Lander County	Total-- Area	Extent
		Acres	Acres	Acres	Acres	Pct
ALF	Alley cobbly fine sandy loam, 30 to 50 percent slopes	0	1,866	0	1,866	0.2
AN	Alley-Brock association	0	25	4,217	4,242	0.5
AR	Alley-Rock outcrop association	0	2,413	6,173	8,586	0.9
Au	Alluvial land	218	559	43	820	0.1
BaA	Beowawe silt loam, 0 to 2 percent slopes	0	5,151	652	5,803	0.6
BB	Beowawe-Broyles association	0	2,306	0	2,306	0.2
BC	Beowawe silty clay loam, heavy subsoil variant	209	12	545	766	0.1
BD	Berning-Short Creek association	6,045	965	0	7,010	0.8
BE	Berning-Toeja association	0	3,821	0	3,821	0.4
Bf	Bicondoa silty clay loam, drained, slightly saline	947	811	0	1,758	0.2
Bg	Bicondoa silty clay	60	225	0	285	*
BHD	Bobs cobbly loam, 4 to 15 percent slopes	855	0	0	855	0.1
Bk	Bosco very gravelly loam	140	627	0	767	0.1
BL	Bosco-Welch association	0	857	0	857	0.1
BM	Boulflat-Havingdon association	232	11,696	4,985	16,913	1.8
BN	Boulflat-Humdun association	1,138	0	0	1,138	0.1
BO	Brock-Boulflat association	1,451	0	0	1,451	0.2
BpA	Broyles silt loam, 0 to 2 percent slopes	0	4,206	610	4,816	0.5
BPB	Broyles silt loam, 2 to 8 percent slopes	0	0	178	178	*
BQE	Bucan loam, 15 to 30 percent slopes	0	2,033	0	2,033	0.2
BRF	Bucan very rocky loam, 15 to 50 percent slopes	1,200	1,725	6,804	9,729	1.1
BS	Bucan association	0	6,701	0	6,701	0.7
BT	Bucan stony association	0	7,862	10,119	17,981	1.9
BU	Bucan-Clurde association	6,590	65	0	6,655	0.7
BV	Bucan-Creva association	0	2,126	0	2,126	0.2
BW	Bucan-Glean association	0	4,040	0	4,040	0.4
BX	Bucan-Humdun association	0	12,685	4,562	17,247	1.9
BY	Bucan-Humdun-Brock association	0	1,220	2,353	3,573	0.4
BZ	Bucan-Humdun-Rock outcrop association	228	6,886	833	7,947	0.9
BZm	Bucan-Malpais association	0	3,567	0	3,567	0.4
BZs	Bucan-Singletree association	0	1,695	0	1,695	0.2
BZt	Bucan-Toeja association	0	2,095	0	2,095	0.2
BZu	Bunky-Clurde association	0	4,817	0	4,817	0.5
CAD	Carstump very gravelly loam, 4 to 30 percent slopes	2,365	0	0	2,365	0.3
CBE	Chen very rocky loam, 8 to 30 percent slopes	0	0	1,534	1,534	0.2
CC	Chen-Pie Creek-Ramires association	25,278	13,580	1,851	40,819	4.4
CD	Chen-Pie Creek-Taylor Creek association	10,585	1,789	0	12,374	1.3
CEE	Chen-Taylor Creek association, hilly	2,509	5,305	1,235	9,049	1.0
CEF	Chen-Taylor Creek association, steep	8,620	6,284	2,104	17,008	1.8
CF	Cherry Spring-Berning association	3,986	7,905	0	11,891	1.3
CG	Cherry Spring-Cortez-Chiara association	326	21,015	10,190	31,531	3.4
CH	Cherry Spring-Cortez-Tomera association	1,275	15,591	0	16,866	1.8
CK	Cherry Spring-Orovada association	5,986	5,227	0	11,213	1.2
CL	Chiara-Brock association	0	6,745	10,007	16,752	1.8
CM	Chiara-Cherry Spring association	0	7,450	1,693	9,143	1.0
CN	Cluro loam, strongly saline	0	375	0	375	*
Co	Cluro silt loam, drained	922	1,572	0	2,494	0.3
Cp	Cluro silt loam, drained, slightly saline	416	1,612	0	2,028	0.2
Cr	Cluro silt loam, slightly saline	108	3,772	1,102	4,982	0.5
CS	Coff-Denay association	0	5,334	0	5,334	0.6
Ct	Coit loam	0	793	602	1,395	0.2
Cu	Coit-Griver complex	0	891	96	987	0.1
CV	Creva-Chen association	570	619	0	1,189	0.1
CW2	Creva-Ramires association, eroded	0	7,059	0	7,059	0.8
Cx	Crooked Creek silt loam	634	389	0	1,023	0.1
CY	Crooked Creek clay loam, drained	473	0	0	473	0.1
DM	Donna-Simon association	0	2,443	0	2,443	0.3
DN	Donna-Stampede association	14,942	3,710	0	18,652	2.0
Do	Dunphy silt loam, drained, slightly saline	0	3,979	0	3,979	0.4
Dp	Dunphy silt loam, drained, strongly saline	0	5,635	0	5,635	0.6
Dr	Dunphy silt loam, slightly saline	0	722	0	722	0.1
Ds	Dunphy silt loam, strongly saline	0	567	849	1,416	0.2
FB	Ferdelford-Bucan association	0	2,308	0	2,308	0.2
FD	Ferdelford-Puett-Berning association	814	0	0	814	0.1
FE	Ferdelford-Puett-Susie Creek association	2,330	8,316	0	10,646	1.2
FF	Ferdelford-Ramires association	569	0	0	569	0.1
FH	Ferdelford-Susie Creek association	1,358	125	0	1,483	0.2
Fk	Four Star loam	193	526	0	719	0.1
Fm	Four Star loam, drained	178	924	0	1,102	0.1
Fn	Four Star-Bosco complex	77	195	0	272	*

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Elko County	Eureka County	Lander County	Total-- Area	Exter
		Acres	Acres	Acres	Acres	Pct
Fo	Four Star-Bosco complex, drained	22	168	0	190	*
Ge	Geysen silt loam	437	5,545	0	5,982	0.6
Gg	Geysen silt loam, strongly saline	398	0	0	398	*
GH	Glean-Rock outcrop association	0	2,236	3,303	5,539	0.6
Gk	Griver loam	0	1,223	716	1,939	0.2
Gm	Griver loam, drained	0	750	697	1,447	0.2
Gn	Griver silt loam, clay substratum	0	68	235	303	*
Go	Griver silt loam, wet	0	150	9	159	*
Gr	Griver complex	0	440	1,236	1,676	0.2
Gx	Griver-Alluvial land complex	0	79	301	380	*
HG	Hapgood-Packer association	5,157	0	0	5,157	0.6
Hh	Humboldt silty clay loam, slightly saline	0	1,100	2,982	4,082	0.4
Hk	Humboldt silty clay, slightly saline	0	60	4,526	4,586	0.5
Hm	Humboldt silty clay, strongly saline	0	57	3,885	3,942	0.4
Hn	Humboldt complex, saline	0	0	2,178	2,178	0.2
HO	Humdun-Bucan association	0	0	4,459	4,459	0.5
Hr	Hussa loam	473	124	0	597	0.1
Hs	Hussa loam, drained	505	240	0	745	0.1
Ht	Hussa loam, slightly saline	167	11	0	178	*
Ib	Iron Blossom silt loam	0	2,844	0	2,844	0.3
Is	Iron Blossom silt loam, strongly saline	37	2,973	119	3,129	0.3
KAD	Kawich fine sand, 2 to 30 percent slopes	0	621	0	621	0.1
MA	Malpais-Rock outcrop association	275	2,735	610	3,620	0.4
Mc	Marsh-Crooked Creek complex	0	215	0	215	*
ME	Mascamp-Carstump association	3,041	0	0	3,041	0.3
Mf	McConnel gravelly fine sandy loam	0	4,420	0	4,420	0.5
Mh	McConnel-Blackhawk complex	0	2,840	0	2,840	0.3
Mo	McConnel-Ocala complex	0	451	0	451	*
Mr	Midas silt loam	0	2,763	0	2,763	0.3
Ms	Midas complex	0	4,410	0	4,410	0.5
Oc	Ocala fine sandy loam	0	48	796	844	0.1
Od	Ocala silt loam, drained, slightly saline	64	604	193	861	0.1
Og	Ocala silt loam, strongly saline	41	8,020	5,008	13,069	1.4
Oh	Ocala silty clay loam, drained, strongly saline	0	276	1,111	1,387	0.2
Ok	Ocala silty clay loam, slightly saline	0	2,756	3,030	5,786	0.6
Om	Ocala complex, saline	0	630	951	1,581	0.2
OP	Ocala-Playa association	0	10,059	733	10,792	1.2
ORC	Orovada fine sandy loam, 4 to 15 percent slopes	0	2,985	748	3,733	0.4
OSB	Orovada gravelly fine sandy loam, 2 to 4 percent slopes	357	7,207	0	7,564	0.8
OtA	Orovada silt loam, 0 to 2 percent slopes	722	4,808	0	5,530	0.6
OU	Orovada-Humdun association	10,694	1,827	0	12,521	1.4
OV	Orovada-Puett association	2,711	4,715	0	7,426	0.8
OW	Orovada-Puett-Ferdelford association	0	1,133	0	1,133	0.1
PC	Pie Creek-Susie Creek association	7,891	2,306	0	10,197	1.1
Pk	Pocker silt loam	0	1,856	0	1,856	0.2
PM	Primeaux-Packer association	3,139	0	0	3,139	0.3
PS	Puett-Orovada association	0	845	0	845	0.1
RaA	Rad silt loam, 0 to 2 percent slopes	11	3,678	0	3,689	0.4
RaB	Rad silt loam, 2 to 4 percent slopes	0	1,942	0	1,942	0.2
RAC	Rad silt loam, 2 to 8 percent slopes	0	1,330	0	1,330	0.1
RbB	Rad silt loam, slightly alkali, 0 to 4 percent slopes	90	1,910	0	2,000	0.2
RC	Rad association	0	3,635	0	3,635	0.4
Rd	Rad-Blackhawk complex	0	1,355	170	1,525	0.2
RE	Rad-Brock association	490	13,317	3,088	16,895	1.8
RF	Ramires-Chen-Bobs association	0	2,210	0	2,210	0.2
RG	Ramires-Chen-Pie Creek association	3,812	11,283	2,825	17,920	1.9
RH	Ramires-Creva association	0	6,505	0	6,505	0.7
RH2	Ramires-Creva association, eroded	1,710	3,984	3,109	8,803	1.0
RK	Ramires-Creva association, stony	0	6,486	66	6,552	0.7
RL	Ramires-Singletree association	1,751	2,924	0	4,675	0.5
RM	Ramires-Taylor Creek association	0	2,931	0	2,931	0.3
Rn	Rixie silty clay loam, drained, slightly saline	0	440	1,481	1,921	0.2
Ro	Rixie silty clay loam, strongly saline	0	707	1,390	2,097	0.2
Rr	Rixie silty clay, slightly saline	0	697	1,597	2,294	0.2
Rs	Rose Creek loam	0	464	57	521	0.1
Rt	Rose Creek loam, drained	0	642	0	642	0.1
Ru	Rosney silt loam	0	6,707	2,534	9,241	1.0
SA	Short Creek association	839	4,798	0	5,637	0.6
SBB	Simon loam, 2 to 8 percent slopes	6,312	6,275	0	12,587	1.4

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Elko County	Eureka County	Lander County	Total-- Area	Extent
		Acres	Acres	Acres	Acres	Pct
SC	Simon-Bosco association	356	1,083	0	1,439	0.2
SD	Slaven-Mascamp association	0	15,559	0	15,559	1.7
SE	Slaven-Primeaux association	3,267	2,405	0	5,672	0.6
SF	Slaven-Ramires association	2,409	430	1,055	3,894	0.4
SG	Slaven-Toeja association	0	2,528	0	2,528	0.3
SH	Slaven-Torro association	2,309	4,800	0	7,109	0.8
SR	Stampede-Donna association	5,460	9,590	0	15,050	1.6
SS	Stampede-Donna-Short Creek association	6,306	20	0	6,326	0.7
ST	Stampede-Short Creek association	6,789	9,903	0	16,692	1.8
SU	Susie Creek-Pattani association	6,281	1,133	0	7,414	0.8
SV	Susie Creek-Pie Creek association	218	1,984	0	2,202	0.2
SW	Susie Creek-Short Creek association	7,599	12,707	1,152	21,458	2.3
TA	Taylor Creek-Chen association	0	3,380	0	3,380	0.4
TC	Taylor Creek-Singletree association	5,252	0	0	5,252	0.6
TDA	Tenabo silt loam, 0 to 2 percent slopes	0	1,287	0	1,287	0.1
TEC	Tenabo cobbly silt loam, 2 to 15 percent slopes	0	12,988	3,981	16,969	1.8
TF	Tenabo association	0	2,754	475	3,229	0.3
TG	Tenabo-Brock association	0	1,068	366	1,434	0.2
TH	Tenabo-Rubble land association	0	2,706	919	3,625	0.4
TL	Toeja-Puett association	0	4,537	0	4,537	0.5
TM	Toeja-Ucopia association	1,690	0	0	1,690	0.2
TN	Tomera-Cherry Spring association	137	18,661	0	18,798	2.0
TO	Torro-Jack Creek association	11,518	3,382	0	14,900	1.6
TR	Torro-Tusel association	6,494	386	0	6,880	0.7
TS	Torro-Tusel-Badland association	0	1,647	0	1,647	0.2
TT	Torro-Tusel-Packer association	560	7,025	0	7,585	0.8
TU	Triplen-Tenabo association	0	2,698	903	3,601	0.4
TV	Tusel-Hapgood association	6,584	1,401	0	7,985	0.9
UHE	Ucopia-Humdun association, hilly	788	0	0	788	0.1
UHF	Ucopia-Humdun association, steep	401	873	0	1,274	0.1
UKF	Urtah gravelly loam, 30 to 50 percent slopes	1,575	0	0	1,575	0.2
Wc	Welch loam	568	962	0	1,530	0.2
Wd	Welch loam, drained	575	1,032	0	1,607	0.2
WE	Welch-Bosco association	851	1,017	0	1,868	0.2
WGB	Whirlo gravelly silt loam, 2 to 8 percent slopes	0	825	0	825	0.1
WH	Whirlo-Tenabo association	0	820	9,809	10,629	1.1
WlA	Wholan silt loam, 0 to 2 percent slopes	0	1,025	244	1,269	0.1
WlB	Wholan silt loam, 2 to 4 percent slopes	0	210	0	210	*
WmA	Wholan silt loam, overflow, 0 to 2 percent slopes	0	0	818	818	0.1
WnA	Wholan silt loam, slightly alkali	23	2,763	0	2,786	0.3
	Water	411	848	720	1,979	0.2
	Total	230,953	544,482	149,060	924,495	100.0

* Less than 0.1 percent.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that th soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Grass hay	Alfalfa hay	Grass-legume hay	Pasture	Wheat	Barley
	Ton	Ton	Ton	AUM*	Bu	Bu
BaA------------------------ Beowawe	---	---	4.0	18	---	50
Bf------------------------ Bicondoa	1.25	4.5	---	13	---	60
BL**:						
Welch---------------------	1.0	---	---	---	---	---
BpA------------------------ Broyles	---	6.0	5.4	22	50	55
BPB------------------------ Broyles	---	3.1	2.9	12	---	---
CG**:						
Chiara--------------------	---	3.5	4.0	15	40	50
CY------------------------ Crooked Creek	1.5	---	---	3.0	---	---
Dr------------------------ Dunphy	1.0	3.5	---	---	---	---
Fm------------------------ Four Star	1.25	4.5	3.0	---	---	---
Fo------------------------ Four Star-Bosco	1.25	4.5	3.0	---	---	---
Gk, Gm, Gn---------------- Griver	1.0	---	---	---	---	---
Hh, Hk-------------------- Humboldt	1.5	---	---	12	---	---
Hn------------------------ Humboldt	1.5	---	---	12	---	---
Hr------------------------ Hussa	1.5	---	---	3.0	---	---
Hs------------------------ Hussa	2.5	5.5	---	3.0	---	---
Mc------------------------ Marsh-Crooked Creek	1.5	---	---	3.0	---	---
Mf------------------------ McConnel	4	5.0	---	18	50	60
Mh------------------------ McConnel	4	5.0	---	18	50	60
Mo------------------------ McConnel	4	5.0	---	18	50	60
OSB----------------------- Orovada	---	5.5	5.5	20	50	55
OtA----------------------- Orovada	---	6.0	6.0	22	60	65

See footnotes at end of table.

TABLE 5.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Grass hay	Alfalfa hay	Grass-legume hay	Pasture	Wheat	Barley
	Ton	Ton	Ton	AUM*	Bu	Bu
Rn Rixie	2.0	---	2.5	8	---	---
Rr Rixie	2.0	---	2.8	8	---	---
Rs Rose Creek	3.0	---	---	---	---	---
Rt Rose Creek	---	5	---	---	---	69
Ru Rosney	---	3.5	3.0	9	---	35
TDA Tenabo	---	3.0	2.5	12	30	35
TEC Tenabo	---	3.0	2.5	12	---	---
Wc Welch	1.0	---	---	---	---	---
Wd Welch	1.5	3.0	---	12	---	---
We**:						
Welch	1.5	3.0	---	12	---	---
WlA Wholan	---	6.2	5.6	12	50	55
WmA Wholan	---	6.2	5.6	12	50	55

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

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[All soils are assigned to nonirrigated capability subclasses. Only potentially irrigable soils are assigne to irrigated subclasses. Miscellaneous areas are excluded. Dashes indicate no acreage]

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem (s)	Climate (c)
		Acres	Acres	Acres	Acres
II (Irrigated):					
Elko County	2,802	470	677	---	1,655
Eureka County	46,613	16,867	5,258	7,469	20,998
Lander County	3,717	---	1,295	610	1,812
III (Irrigated):					
Elko County	19,335	16,049	2,849	437	---
Eureka County	108,973	75,777	14,191	19,005	---
Lander County	30,676	8,092	20,050	2,534	---
IV (Irrigated):					
Elko County	18,998	16,904	1,583	511	---
Eureka County	69,337	38,829	1,962	28,546	---
Lander County	13,951	7,049	57	6,845	---
V (Nonirrigated):					
Elko County	---	---	---	---	---
Eureka County	728	---	728	---	---
Lander County	387	---	387	---	---
VI (Nonirrigated):					
Elko County	96,097	22,615	3,894	40,137	29,451
Eureka County	235,054	62,117	16,267	64,902	91,768
Lander County	49,900	16,306	18,762	6,152	8,680
VII (Nonirrigated):					
Elko County	134,840	61,495	149	72,161	1,035
Eureka County	284,629	79,457	22,458	166,372	25,956
Lander County	90,614	11,430	16,314	60,368	2,502

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES

[Only the soils that support rangeland vegetation suitable for grazing are listed]

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
ALF: Alley	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	20
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	450	Thurber needlegrass	10
				Basin wildrye	10
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Indian ricegrass	5
				Douglas rabbitbrush	5
AN*:					
Alley	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	20
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	450	Thurber needlegrass	10
				Basin wildrye	10
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Indian ricegrass	5
				Douglas rabbitbrush	5
Brock	Upland Loam, (24) 8- to 10-inch precipitation zone	Favorable	750	Thurber needlegrass	20
		Normal	550	Big sagebrush	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Sandberg bluegrass	10
				Spiny hopsage	10
				Bluebunch wheatgrass	5
				Downy rabbitbrush	5
AR*:					
Alley	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	20
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	450	Thurber needlegrass	10
				Basin wildrye	10
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Indian ricegrass	5
				Douglas rabbitbrush	5
Rock outcrop.					
Rubble land.					
BaA: Beowawe	Desert Loamy	Favorable	600	Shadscale	50
		Normal	425	Bud sagebrush	20
		Unfavorable	300	Bottlebrush squirreltail	10
				Indian ricegrass	5
BB*:					
Beowawe	Desert Loamy	Favorable	600	Shadscale	50
		Normal	425	Bud sagebrush	20
		Unfavorable	300	Bottlebrush squirreltail	10
				Indian ricegrass	5
Broyles	Desert Loamy	Favorable	600	Shadscale	55
		Normal	400	Bud sagebrush	20
		Unfavorable	300	Indian ricegrass	5
				Bottlebrush squirreltail	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo sitio
			Lb/acre		Pct
BC: Beowawe variant	Desert Loamy	Favorable	600	Shadscale	50
		Normal	450	Bud sagebrush	30
		Unfavorable	300	Indian ricegrass	5
				Bottlebrush squirreltail	5
BD*: Berning	South Slopes	Favorable	1,000	Bluebunch wheatgrass	45
		Normal	750	Thurber needlegrass	10
		Unfavorable	500	Big sagebrush	10
				Nevada bluegrass	5
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
				Antelope bitterbrush	5
Short Creek	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	30
		Normal	900	Idaho fescue	15
		Unfavorable	600	Big sagebrush	10
				Thurber needlegrass	5
				Basin wildrye	5
				Douglas rabbitbrush	5
BE*: Berning	South Slopes	Favorable	1,000	Bluebunch wheatgrass	45
		Normal	750	Thurber needlegrass	10
		Unfavorable	500	Big sagebrush	10
				Nevada bluegrass	5
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
				Antelope bitterbrush	5
Toeja	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,100	Bluebunch wheatgrass	30
		Normal	850	Thurber needlegrass	15
		Unfavorable	650	Big sagebrush	10
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Antelope bitterbrush	5
Bf: Bicondoa	Loamy Bottoms	Favorable	2,400	Basin wildrye	50
		Normal	1,800	Big sagebrush	15
		Unfavorable	1,200	Nevada bluegrass	10
				Western wheatgrass	5
				Lupine	5
Bg: Bicondoa	Wet Meadow	Favorable	2,500	Tufted hairgrass	30
		Normal	2,000	Big bluegrass	15
		Unfavorable	1,500	Carex	15
				Rush	5
				Cinquefoil	5
BHD: Bobs	Upland Loam, 10- to 12-inch precipitation zone	Favorable	900	Bluebunch wheatgrass	25
		Normal	750	Thurber needlegrass	25
		Unfavorable	600	Big sagebrush	10
				Basin wildrye	5
				Sandberg bluegrass	5
				Arrowleaf balsamroot	5
				Lupine	5
				Antelope bitterbrush	5
				Douglas rabbitbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
Bk-------- Bosco	Loamy Bottoms--------	Favorable	2,500	Basin wildrye--------	50
		Normal	1,800	Big sagebrush--------	10
		Unfavorable	1,200	Nevada bluegrass--------	5
				Lupine--------	5
				Rubber rabbitbrush--------	5
BL*:					
Bosco--------	Loamy Bottoms--------	Favorable	2,500	Basin wildrye--------	50
		Normal	1,800	Big sagebrush--------	10
		Unfavorable	1,200	Nevada bluegrass--------	5
				Lupine--------	5
				Rubber rabbitbrush--------	5
Welch--------	Loamy Bottoms--------	Favorable	2,500	Basin wildrye--------	60
		Normal	1,800	Big sagebrush--------	10
		Unfavorable	1,200	Western wheatgrass--------	5
				Lupine--------	5
				Rubber rabbitbrush--------	5
BM*:					
Boulflat--------	Upland Loam, (25) 8- to 10-inch precipitation zone--------	Favorable	800	Big sagebrush--------	20
		Normal	600	Bluebunch wheatgrass--------	15
		Unfavorable	400	Thurber needlegrass--------	15
				Basin wildrye--------	5
				Sandberg bluegrass--------	5
				Bottlebrush squirreltail--------	5
				Eriogonum--------	5
				Downy rabbitbrush--------	5
Havingdon--------	Shallow Gravelly Loam--------	Favorable	500	Bluebunch wheatgrass--------	20
		Normal	350	Thurber needlegrass--------	20
		Unfavorable	250	Big sagebrush--------	10
				Sandberg bluegrass--------	5
				Bottlebrush squirreltail--------	5
				Arrowleaf balsamroot--------	5
				Lupine--------	5
				Phlox--------	5
				Tapertip hawksbeard--------	5
				Douglas rabbitbrush--------	5
Brock--------	Upland Loam, (24) 8- to 10-inch precipitation zone--------	Favorable	750	Thurber needlegrass--------	20
		Normal	550	Big sagebrush--------	20
		Unfavorable	400	Bottlebrush squirreltail--------	10
				Sandberg bluegrass--------	10
				Spiny hopsage--------	10
				Bluebunch wheatgrass--------	5
				Downy rabbitbrush--------	5
BN*:					
Old Camp variant--	Upland Loam, (25) 8- to 10-inch precipitation zone--------	Favorable	800	Thurber needlegrass--------	15
		Normal	600	Big sagebrush--------	15
		Unfavorable	400	Bluebunch wheatgrass--------	10
				Sandberg bluegrass--------	10
				Bottlebrush squirreltail--------	5
				Phlox--------	5
				Eriogonum--------	5
				Douglas rabbitbrush--------	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
BN*:					
Boulflat	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Big sagebrush	20
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Thurber needlegrass	15
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Eriogonum	5
				Downy rabbitbrush	5
Humdun	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
BO*:					
Brock	Upland Loam, (24) 8- to 10-inch precipitation zone	Favorable	750	Thurber needlegrass	20
		Normal	550	Big sagebrush	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Sandberg bluegrass	10
				Spiny hopsage	10
				Bluebunch wheatgrass	5
				Downy rabbitbrush	5
Boulflat	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Big sagebrush	20
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Thurber needlegrass	15
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Eriogonum	5
				Downy rabbitbrush	5
Rad	Upland Loam, (24) 8- to 10-inch precipitation zone	Favorable	700	Big sagebrush	35
		Normal	500	Indian ricegrass	10
		Unfavorable	350	Sandberg bluegrass	10
				Spiny hopsage	10
				Bottlebrush squirreltail	7
				Thurber needlegrass	5
BpA, BPB Broyles	Desert Loamy	Favorable	600	Shadscale	55
		Normal	400	Bud sagebrush	20
		Unfavorable	300	Indian ricegrass	5
				Bottlebrush squirreltail	5
BQE, BRF Bucan	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
BS*, BT*:					
Bucan Loam, stony loam	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
BS*, BT*:					
Bucan. Gravelly loam, extremely stony loam	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
BU*:					
Bucan	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Clurde	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Big sagebrush	20
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Thurber needlegrass	15
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Downy rabbitbrush	5
Orovada	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	25
		Normal	575	Thurber needlegrass	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Bluebunch wheatgrass	8
				Indian ricegrass	6
				Downy rabbitbrush	5
BV*:					
Bucan	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Creva	Shallow Gravelly Loam	Favorable	500	Bluebunch wheatgrass	25
		Normal	375	Thurber needlegrass	15
		Unfavorable	250	Big sagebrush	10
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Arrowleaf balsamroot	5
				Phlox	5
				Tapertip hawksbeard	5
				Lupine	5
				Douglas rabbitbrush	5
Brock	Upland Loam, (24) 8- to 10-inch precipitation zone	Favorable	750	Thurber needlegrass	20
		Normal	550	Big sagebrush	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Sandberg bluegrass	10
				Spiny hopsage	10
				Bluebunch wheatgrass	5
				Downy rabbitbrush	5
BW*:					
Bucan	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo- sitio
			Lb/acre		Pct
BW*:					
Glean	Steep North Slopes	Favorable	1,400	Idaho fescue	25
		Normal	1,050	Big sagebrush	15
		Unfavorable	700	Bluebunch wheatgrass	8
				Antelope bitterbrush	8
				Basin wildrye	5
				Sandberg bluegrass	5
				Columbia needlegrass	5
				Snowberry	5
				Serviceberry	5
Rock outcrop.					
BX*:					
Bucan Stony	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Bucan Extremely stony	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Humdun	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
BY*:					
Bucan	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Humdun	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Brock	Upland Loam, (24) 8- to 10-inch precipitation zone	Favorable	750	Thurber needlegrass	20
		Normal	550	Big sagebrush	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Sandberg bluegrass	10
				Spiny hopsage	10
				Bluebunch wheatgrass	5
				Downy rabbitbrush	5
BZ*:					
Bucan	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
BZ*:					
Humdun	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Rock outcrop.					
BZm*:					
Bucan	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Malpais	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Thurber needlegrass	20
		Normal	600	Indian ricegrass	15
		Unfavorable	400	Basin wildrye	15
				Bluebunch wheatgrass	10
				Big sagebrush	5
BZs*:					
Bucan	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Singletree	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Idaho fescue	15
		Unfavorable	600	Big sagebrush	10
				Antelope bitterbrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Thurber needlegrass	5
				Tapertip hawksbeard	5
				Arrowleaf balsamroot	5
BZt*:					
Bucan Stony	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Bucan Extremely stony	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Toeja	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,100	Bluebunch wheatgrass	30
		Normal	850	Thurber needlegrass	15
		Unfavorable	650	Big sagebrush	10
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Antelope bitterbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo-sition
			Lb/acre		Pct
BZu*:					
Bunky	Upland Loam, 10- to 12-inch precipitation zone	Favorable	800	Big sagebrush	20
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Thurber needlegrass	15
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Eriogonum	5
				Downy rabbitbrush	5
Clurde	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Big sagebrush	20
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Thurber needlegrass	15
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Downy rabbitbrush	5
Short Creek	South Slopes	Favorable	1,000	Bluebunch wheatgrass	40
		Normal	750	Thurber needlegrass	10
		Unfavorable	500	Big sagebrush	10
				Basin wildrye	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
CAD Carstump	Shallow Gravelly Loam	Favorable	500	Bluebunch wheatgrass	20
		Normal	350	Thurber needlegrass	20
		Unfavorable	250	Big sagebrush	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Lupine	5
				Phlox	5
				Arrowleaf balsamroot	5
				Downy rabbitbrush	5
CBE Chen	Cobbly Upland	Favorable	500	Low sagebrush	25
		Normal	375	Bluebunch wheatgrass	15
		Unfavorable	250	Thurber needlegrass	15
				Webber ricegrass	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Cutleaf balsamroot	5
				Eriogonum	5
CC*:					
Chen	Cobbly Upland	Favorable	500	Low sagebrush	25
		Normal	375	Bluebunch wheatgrass	15
		Unfavorable	250	Thurber needlegrass	15
				Webber ricegrass	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Cutleaf balsamroot	5
				Eriogonum	5
Pie Creek	Claypan	Favorable	800	Low sagebrush	25
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Sandberg bluegrass	15
				Thurber needlegrass	10
				Bottlebrush squirreltail	10
				Hooker balsamroot	5
				Phlox	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
CC*:					
Ramires	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
CD*:					
Chen	Cobbly Upland	Favorable	500	Low sagebrush	25
		Normal	375	Bluebunch wheatgrass	15
		Unfavorable	250	Thurber needlegrass	15
				Webber ricegrass	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Cutleaf balsamroot	5
				Eriogonum	5
Pie Creek	Claypan	Favorable	800	Low sagebrush	25
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Sandberg bluegrass	15
				Thurber needlegrass	10
				Bottlebrush squirreltail	10
				Hooker balsamroot	5
				Phlox	5
Taylor Creek	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	30
		Normal	900	Idaho fescue	17
		Unfavorable	600	Sandberg bluegrass	10
				Big sagebrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Antelope bitterbrush	5
				Arrowleaf balsamroot	5
CEE*, CEF*:					
Chen	Cobbly Upland	Favorable	500	Low sagebrush	25
		Normal	375	Bluebunch wheatgrass	15
		Unfavorable	250	Thurber needlegrass	15
				Webber ricegrass	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Cutleaf balsamroot	5
				Eriogonum	5
Taylor Creek	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	30
		Normal	900	Idaho fescue	17
		Unfavorable	600	Sandberg bluegrass	10
				Big sagebrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Antelope bitterbrush	5
				Arrowleaf balsamroot	5
Mosquet	Mountain Ridges	Favorable	350	Low sagebrush	25
		Normal	250	Idaho fescue	10
		Unfavorable	150	Bottlebrush squirreltail	10
				Sandberg bluegrass	8
				Cusick bluegrass	7
				Webber ricegrass	5
				Big sagebrush	5
				Phlox	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo-sitio
			Lb/acre		Pct
CF*:					
Cherry Spring-----	Upland Loam, (25) 8- to 10-inch precipitation zone------	Favorable	800	Thurber needlegrass-----------	20
		Normal	600	Big sagebrush-----------------	20
		Unfavorable	400	Bluebunch wheatgrass----------	10
				Webber ricegrass--------------	10
				Sandberg bluegrass------------	5
				Bottlebrush squirreltail------	5
				Eriogonum---------------------	5
				Downy rabbitbrush-------------	5
Berning-----------	South Slopes------------------	Favorable	1,000	Bluebunch wheatgrass----------	45
		Normal	750	Thurber needlegrass-----------	10
		Unfavorable	500	Big sagebrush-----------------	10
				Nevada bluegrass--------------	5
				Arrowleaf balsamroot----------	5
				Tapertip hawksbeard-----------	5
				Antelope bitterbrush----------	5
CG*:					
Cherry Spring-----	Upland Loam, (25) 8- to 10-inch precipitation zone------	Favorable	800	Thurber needlegrass-----------	20
		Normal	600	Big sagebrush-----------------	20
		Unfavorable	400	Bluebunch wheatgrass----------	10
				Webber ricegrass--------------	10
				Sandberg bluegrass------------	5
				Bottlebrush squirreltail------	5
				Eriogonum---------------------	5
				Downy rabbitbrush-------------	5
Cortez------------	Upland Loam, (25) 8- to 10-inch precipitation zone------	Favorable	800	Bluebunch wheatgrass----------	20
		Normal	600	Thurber needlegrass-----------	20
		Unfavorable	400	Big sagebrush-----------------	20
				Bottlebrush squirreltail------	5
				Sandberg bluegrass------------	5
				Arrowleaf balsamroot----------	5
				Phlox-------------------------	5
Chiara------------	Upland Loam, (25) 8- to 10-inch precipitation zone------	Favorable	800	Big sagebrush-----------------	25
		Normal	600	Bluebunch wheatgrass----------	20
		Unfavorable	400	Thurber needlegrass-----------	20
				Sandberg bluegrass------------	5
				Bottlebrush squirreltail------	5
				Douglas rabbitbrush-----------	5
CH*:					
Cherry Spring-----	Upland Loam, (25) 8- to 10-inch precipitation zone------	Favorable	800	Thurber needlegrass-----------	20
		Normal	600	Big sagebrush-----------------	20
		Unfavorable	400	Bluebunch wheatgrass----------	10
				Webber ricegrass--------------	10
				Sandberg bluegrass------------	5
				Bottlebrush squirreltail------	5
				Eriogonum---------------------	5
				Downy rabbitbrush-------------	5
Cortez------------	Upland Loam, (25) 8- to 10-inch precipitation zone------	Favorable	800	Bluebunch wheatgrass----------	20
		Normal	600	Thurber needlegrass-----------	20
		Unfavorable	400	Big sagebrush-----------------	20
				Bottlebrush squirreltail------	5
				Sandberg bluegrass------------	5
				Arrowleaf balsamroot----------	5
				Phlox-------------------------	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
CH*:					
Tomera	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Thurber needlegrass	25
		Normal	600	Big sagebrush	25
		Unfavorable	400	Bluebunch wheatgrass	15
				Bottlebrush squirreltail	10
				Sandberg bluegrass	5
				Douglas rabbitbrush	5
CK*:					
Cherry Spring	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Thurber needlegrass	20
		Normal	600	Big sagebrush	20
		Unfavorable	400	Bluebunch wheatgrass	10
				Webber ricegrass	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Eriogonum	5
				Downy rabbitbrush	5
Orovada	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	25
		Normal	575	Thurber needlegrass	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Bluebunch wheatgrass	5
				Indian ricegrass	5
				Downy rabbitbrush	5
CL*:					
Chiara Very stony	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	25
		Normal	600	Bluebunch wheatgrass	20
		Unfavorable	400	Thurber needlegrass	15
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Douglas rabbitbrush	5
Chiara Extremely stony	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	25
		Normal	600	Bluebunch wheatgrass	20
		Unfavorable	400	Thurber needlegrass	15
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Douglas rabbitbrush	5
Brock	Upland Loam, (24) 8- to 10-inch precipitation zone	Favorable	750	Thurber needlegrass	20
		Normal	550	Big sagebrush	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Sandberg bluegrass	10
				Spiny hopsage	10
				Bluebunch wheatgrass	5
				Downy rabbitbrush	5
CM*:					
Chiara	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Big sagebrush	25
		Normal	600	Bluebunch wheatgrass	20
		Unfavorable	400	Thurber needlegrass	20
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Douglas rabbitbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo-siti
			Lb/acre		Pct
CM*:					
Cherry Spring	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Thurber needlegrass	20
		Normal	600	Big sagebrush	20
		Unfavorable	400	Bluebunch wheatgrass	10
				Webber ricegrass	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Eriogonum	5
				Downy rabbitbrush	5
Cortez	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	20
		Normal	600	Thurber needlegrass	20
		Unfavorable	400	Big sagebrush	20
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Arrowleaf balsamroot	5
				Phlox	5
CN Cluro	Sodic Flat	Favorable	800	Black greasewood	60
		Normal	600	Basin wildrye	15
		Unfavorable	400	Inland saltgrass	5
				Rubber rabbitbrush	5
Co, Cp Cluro	Dry Flood Plain	Favorable	1,500	Basin wildrye	55
		Normal	1,000	Big sagebrush	15
		Unfavorable	600	Bottlebrush squirreltail	5
				Streambank wheatgrass	5
				Black greasewood	5
Cr Cluro	Saline Bottom	Favorable	1,400	Basin wildrye	40
		Normal	1,000	Alkali sacaton	20
		Unfavorable	600	Inland saltgrass	10
				Black greasewood	10
				Rubber rabbitbrush	5
CS*:					
Coff	Shallow Steep Mountain	Favorable	600	Black sagebrush	25
		Normal	450	Bluebunch wheatgrass	15
		Unfavorable	300	Thurber needlegrass	10
				Nevada bluegrass	10
				Sandberg bluegrass	5
				Indian ricegrass	5
				Tapertip hawksbeard	5
				Downy rabbitbrush	5
Denay	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	30
		Normal	900	Idaho fescue	15
		Unfavorable	600	Thurber needlegrass	10
				Big sagebrush	10
				Lupine	5
				Douglas rabbitbrush	5
Ct Coit	Moist Flood Plain	Favorable	3,000	Creeping wildrye	35
		Normal	2,400	Basin wildrye	15
		Unfavorable	1,800	Sedge	10
				Coyote willow	10
				Baltic rush	5
Cu*:					
Coit	Moist Flood Plain	Favorable	3,000	Creeping wildrye	35
		Normal	2,400	Basin wildrye	15
		Unfavorable	1,800	Sedge	10
				Coyote willow	10
				Baltic rush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
u*:					
Griver	Moist Flood Plain	Favorable	3,000	Basin wildrye	30
		Normal	2,400	Creeping wildrye	30
		Unfavorable	1,800	Sedge	5
				Coyote willow	5
				Woods wildrose	5
V*:					
Creva	Shallow Gravelly Loam	Favorable	500	Bluebunch wheatgrass	25
		Normal	375	Thurber needlegrass	15
		Unfavorable	250	Big sagebrush	10
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Arrowleaf balsamroot	5
				Phlox	5
				Tapertip hawksbeard	5
				Lupine	5
				Douglas rabbitbrush	5
Chen	Cobbly Upland	Favorable	500	Low sagebrush	25
		Normal	375	Bluebunch wheatgrass	15
		Unfavorable	250	Thurber needlegrass	15
				Webber ricegrass	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Cutleaf balsamroot	5
				Eriogonum	5
W2*:					
Creva	Shallow Gravelly Loam	Favorable	500	Bluebunch wheatgrass	25
		Normal	375	Thurber needlegrass	15
		Unfavorable	250	Big sagebrush	10
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Arrowleaf balsamroot	5
				Phlox	5
				Tapertip hawksbeard	5
				Lupine	5
				Douglas rabbitbrush	5
Ramires	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Cx Crooked Creek	Wet Meadow	Favorable	3,500	Tufted hairgrass	30
		Normal	2,000	Sedge	15
		Unfavorable	1,500	Nebraska sedge	10
				Rush	10
				Baltic rush	10
CY Crooked Creek	Loamy Bottoms	Favorable	2,500	Basin wildrye	50
		Normal	1,850	Big sagebrush	15
		Unfavorable	1,200	Nevada bluegrass	5
				Western wheatgrass	5
				Lupin	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo-sition
			Lb/acre		Pct
DM*:					
Donna	Claypan	Favorable	800	Thurber needlegrass	20
		Normal	600	Low sagebrush	20
		Unfavorable	400	Bluebunch wheatgrass	10
				Webber ricegrass	10
				Sandberg bluegrass	10
				Bottlebrush squirreltail	5
				Hooker balsamroot	5
				Phlox	5
Simon	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,100	Bluebunch wheatgrass	30
		Normal	850	Thurber needlegrass	15
		Unfavorable	650	Big sagebrush	10
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Antelope bitterbrush	5
DN*:					
Donna	Claypan	Favorable	800	Thurber needlegrass	20
		Normal	600	Low sagebrush	20
		Unfavorable	400	Bluebunch wheatgrass	10
				Webber ricegrass	10
				Sandberg bluegrass	10
				Bottlebrush squirreltail	5
				Hooker balsamroot	5
				Phlox	5
Stampede	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	5
				Basin wildrye	5
				Bottlebrush squirreltail	5
Short Creek	South Slopes	Favorable	1,000	Bluebunch wheatgrass	40
		Normal	750	Thurber needlegrass	10
		Unfavorable	500	Big sagebrush	10
				Basin wildrye	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Do Dunphy	Saline Bottom	Favorable	1,700	Basin wildrye	40
		Normal	1,100	Alkali sacaton	20
		Unfavorable	600	Inland saltgrass	10
				Black greasewood	10
				Rubber rabbitbrush	5
Dp Dunphy	Desert Sodic Terrace	Favorable	650	Shadscale	35
		Normal	450	Black greasewood	30
		Unfavorable	325	Bud sagebrush	10
				Bottlebrush squirreltail	7
Dr Dunphy	Saline Bottom	Favorable	1,400	Basin wildrye	40
		Normal	1,000	Alkali sacaton	20
		Unfavorable	600	Inland saltgrass	10
				Black greasewood	10
				Rubber rabbitbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
Ds: Dunphy	Sodic Flat	Favorable	800	Black greasewood	60
		Normal	600	Basin wildrye	15
		Unfavorable	400	Inland saltgrass	5
				Rubber rabbitbrush	5
FB*:					
Ferdelford 15 to 30 percent slopes	Juniper Savannah	Favorable	1,000	Utah juniper	20
		Normal	750	Indian ricegrass	10
		Unfavorable	500	Bluebunch wheatgrass	10
				Thurber needlegrass	10
				Big sagebrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Phlox	5
				Tapertip hawksbeard	5
Ferdelford 30 to 50 percent slopes	Juniper Savannah	Favorable	1,000	Utah juniper	20
		Normal	750	Indian ricegrass	10
		Unfavorable	500	Bluebunch wheatgrass	10
				Thurber needlegrass	10
				Big sagebrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Phlox	5
				Tapertip hawksbeard	5
Bucan	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
FD*:					
Ferdelford	Juniper Savannah	Favorable	1,000	Utah juniper	20
		Normal	750	Indian ricegrass	10
		Unfavorable	500	Bluebunch wheatgrass	10
				Thurber needlegrass	10
				Big sagebrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Phlox	5
				Tapertip hawksbeard	5
Puett	Chalky Knolls	Favorable	200	Indian ricegrass	20
		Normal	150	Big sagebrush	20
		Unfavorable	100	Black sagebrush	15
				Basin wildrye	10
				Bottlebrush squirreltail	5
				Downy rabbitbrush	5
Berning	South Slopes	Favorable	1,000	Bluebunch wheatgrass	45
		Normal	750	Thurber needlegrass	10
		Unfavorable	500	Big sagebrush	10
				Nevada bluegrass	5
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
				Antelope bitterbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo-sitio
			Lb/acre		Pct
FE*:					
Ferdelford	Juniper Savannah	Favorable	1,000	Utah juniper	20
		Normal	750	Indian ricegrass	10
		Unfavorable	500	Bluebunch wheatgrass	10
				Thurber needlegrass	10
				Big sagebrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Phlox	5
				Tapertip hawksbeard	5
Puett	Juniper Savannah	Favorable	1,000	Utah juniper	30
		Normal	750	Bluebunch wheatgrass	10
		Unfavorable	500	Big sagebrush	10
				Thurber needlegrass	5
				Indian ricegrass	5
				Phlox	5
Susie Creek	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
FF*:					
Ferdelford	Juniper Savannah	Favorable	1,000	Utah juniper	20
		Normal	750	Indian ricegrass	10
		Unfavorable	500	Bluebunch wheatgrass	10
				Thurber needlegrass	10
				Big sagebrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Phlox	5
				Tapertip hawksbeard	5
Ramires	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
FH*:					
Ferdelford	Juniper Savannah	Favorable	1,000	Utah juniper	20
		Normal	750	Indian ricegrass	10
		Unfavorable	500	Bluebunch wheatgrass	10
				Thurber needlegrass	10
				Big sagebrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Phlox	5
				Tapertip hawksbeard	5
Susie Creek	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
FH*:					
Toeja	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,100	Bluebunch wheatgrass	30
		Normal	850	Thurber needlegrass	15
		Unfavorable	650	Big sagebrush	10
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Antelope bitterbrush	5
Fk Four Star	Wet Meadow	Favorable	2,500	Tufted hairgrass	35
		Normal	2,000	Carex	15
		Unfavorable	1,500	Rush	5
				Meadow barley	5
				Big bluegrass	5
Fm Four Star	Loamy Bottoms	Favorable	2,400	Basin wildrye	50
		Normal	1,800	Big sagebrush	15
		Unfavorable	1,200	Nevada bluegrass	10
				Western wheatgrass	5
				Lupine	5
Fn*:					
Four Star	Wet Meadow	Favorable	2,500	Tufted hairgrass	35
		Normal	2,000	Sedge	15
		Unfavorable	1,500	Rush	5
				Meadow barley	5
				Big bluegrass	5
Bosco	Loamy Bottoms	Favorable	2,500	Basin wildrye	50
		Normal	1,800	Big sagebrush	10
		Unfavorable	1,200	Nevada bluegrass	5
				Lupine	5
				Rubber rabbitbrush	5
Fo*:					
Four Star	Loamy Bottoms	Favorable	2,400	Basin wildrye	50
		Normal	1,800	Big sagebrush	15
		Unfavorable	1,200	Nevada bluegrass	10
				Western wheatgrass	5
				Lupine	5
Bosco	Loamy Bottoms	Favorable	2,500	Basin wildrye	50
		Normal	1,800	Big sagebrush	10
		Unfavorable	1,200	Nevada bluegrass	5
				Lupine	5
				Rubber rabbitbrush	5
Ge Geysen	Dry Flood Plain	Favorable	1,500	Basin wildrye	50
		Normal	1,000	Big sagebrush	15
		Unfavorable	600	Streambank wheatgrass	10
				Bottlebrush squirreltail	5
				Rubber rabbitbrush	5
Gg Geysen	Desert Sodic Terrace	Favorable	600	Shadscale	35
		Normal	450	Black greasewood	30
		Unfavorable	300	Bottlebrush squirreltail	5
				Bud sagebrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo-sition
			Lb/acre		Pct
GH*:					
Glean	Steep North Slopes	Favorable	1,400	Idaho fescue	25
		Normal	1,050	Big sagebrush	15
		Unfavorable	700	Bluebunch wheatgrass	8
				Antelope bitterbrush	8
				Basin wildrye	5
				Sandberg bluegrass	5
				Columbia needlegrass	5
				Snowberry	5
				Serviceberry	5
Rock outcrop.					
Rubble land.					
Gk: Griver	Moist Flood Plain	Favorable	3,000	Basin wildrye	30
		Normal	2,400	Creeping wildrye	30
		Unfavorable	1,800	Sedge	5
				Coyote willow	5
				Woods wildrose	5
Gm: Griver	Loamy Bottoms	Favorable	2,500	Basin wildrye	50
		Normal	1,800	Big sagebrush	10
		Unfavorable	1,200	Nevada bluegrass	5
				Western wheatgrass	5
				Mat muhly	5
				Lupine	5
				Rubber rabbitbrush	5
Gn: Griver	Moist Flood Plain	Favorable	3,000	Basin wildrye	30
		Normal	2,400	Creeping wildrye	30
		Unfavorable	1,800	Sedge	5
				Baltic rush	5
				Coyote willow	5
				Woods wildrose	5
Go: Griver	Wet Meadow	Favorable	2,000	Tufted hairgrass	40
		Normal	1,500	Big bluegrass	10
		Unfavorable	1,000	Sedge	10
				Meadow barley	5
				Cinquefoil	5
Gr*:					
Griver	Moist Flood Plain	Favorable	3,000	Basin wildrye	30
		Normal	2,400	Creeping wildrye	30
		Unfavorable	1,800	Sedge	5
				Coyote willow	5
				Woods wildrose	5
Griver Wet	Wet Meadow	Favorable	2,000	Tufted hairgrass	40
		Normal	1,500	Big bluegrass	10
		Unfavorable	1,000	Sedge	10
				Meadow barley	5
				Cinquefoil	5
Gx*:					
Griver	Moist Flood Plain	Favorable	3,000	Basin wildrye	30
		Normal	2,400	Creeping wildrye	30
		Unfavorable	1,800	Sedge	5
				Coyote willow	5
				Woods wildrose	5
Alluvial land.					

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
HG*:					
Hapgood Very gravelly loam	High Mountain Loam	Favorable	2,800	Mountain brome	15
		Normal	2,100	Slender wheatgrass	10
		Unfavorable	1,400	Idaho fescue	10
				Quaking aspen	10
				Melic	5
				Letterman needlegrass	5
				Geranium	5
				Butterweed	5
				Snowberry	5
				Common chokecherry	5
Hapgood silt loam.					
Packer	Mountain Ridges	Favorable	350	Low sagebrush	25
		Normal	250	Idaho fescue	15
		Unfavorable	150	Sandberg bluegrass	10
				Bottlebrush squirreltail	10
				Webber ricegrass	5
				Phlox	5
				Sandwort	5
Hh, Hk Humboldt	Moist Flood Plain	Favorable	3,500	Creeping wildrye	50
		Normal	2,200	Basin wildrye	20
		Unfavorable	1,500	Inland saltgrass	15
				Willow	5
Hm Humboldt	Saline Bottom	Favorable	2,500	Inland saltgrass	50
		Normal	1,800	Alkali sacaton	30
		Unfavorable	1,300	Basin wildrye	10
				Black greasewood	5
Hn*:					
Humboldt Slightly saline	Moist Flood Plain	Favorable	3,500	Creeping wildrye	50
		Normal	2,200	Basin wildrye	20
		Unfavorable	1,500	Inland saltgrass	15
				Willow	5
Humboldt Strongly saline	Saline Bottom	Favorable	2,500	Inland saltgrass	50
		Normal	1,800	Alkali sacaton	30
		Unfavorable	1,300	Basin wildrye	10
				Black greasewood	5
HO*:					
Humdun	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Bucan	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Havingdon	Shallow Gravelly Loam	Favorable	500	Bluebunch wheatgrass	20
		Normal	350	Thurber needlegrass	20
		Unfavorable	250	Big sagebrush	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Lupine	5
				Phlox	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo-sition
			Lb/acre		Pct
Hr----- Hussa	Wet Meadow-----	Favorable	2,500	Tufted hairgrass-----	40
		Normal	2,000	Nevada bluegrass-----	15
		Unfavorable	1,500	Sedge-----	10
				Cinquefoil-----	5
Hs----- Hussa	Loamy Bottoms-----	Favorable	2,500	Basin wildrye-----	50
		Normal	1,800	Big sagebrush-----	10
		Unfavorable	1,200	Nevada bluegrass-----	5
				Western wheatgrass-----	5
				Mat muhly-----	5
				Lupine-----	5
				Rubber rabbitbrush-----	5
Ht----- Hussa	Saline Bottom-----	Favorable	1,700	Basin wildrye-----	25
		Normal	1,300	Alkali sacaton-----	20
		Unfavorable	900	Inland saltgrass-----	20
				Black greasewood-----	10
				Alkali bluegrass-----	5
				Rubber rabbitbrush-----	5
Ib----- Iron Blossom	Dry Flood Plain-----	Favorable	1,500	Basin wildrye-----	50
		Normal	1,000	Big sagebrush-----	15
		Unfavorable	600	Black greasewood-----	10
				Bottlebrush squirreltail-----	5
				Streambank wheatgrass-----	5
				Rubber rabbitbrush-----	5
Is----- Iron Blossom	Desert Sodic Terrace-----	Favorable	600	Black greasewood-----	40
		Normal	450	Shadscale-----	30
		Unfavorable	300	Bottlebrush squirreltail-----	5
				Rubber rabbitbrush-----	5
				Bud sagebrush-----	5
KAD----- Kawich	Desert Sodic Terrace-----	Favorable	650	Shadscale-----	40
		Normal	425	Black greasewood-----	30
		Unfavorable	325	Bud sagebrush-----	10
				Bottlebrush squirreltail-----	8
MA*:					
Malpais-----	Upland Loam, (25) 8- to 10-inch precipitation zone-----	Favorable	800	Bluebunch wheatgrass-----	15
		Normal	600	Thurber needlegrass-----	15
		Unfavorable	400	Basin wildrye-----	10
				Big sagebrush-----	10
				Indian ricegrass-----	5
Rock outcrop.					
Rubble land.					
Mc*: Marsh.					
Crooked Creek-----	Wet Meadow-----	Favorable	3,500	Tufted hairgrass-----	30
		Normal	2,000	Sedge-----	15
		Unfavorable	1,500	Nebraska sedge-----	10
				Rush-----	10
				Baltic rush-----	10
ME*:					
Mascamp-----	Shallow Gravelly Loam-----	Favorable	500	Bluebunch wheatgrass-----	20
		Normal	375	Thurber needlegrass-----	20
		Unfavorable	250	Phlox-----	10
				Big sagebrush-----	10
				Sandberg bluegrass-----	5
				Bottlebrush squirreltail-----	5
				Lupine-----	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
ME*:					
Carstump	Shallow Gravelly Loam	Favorable	500	Bluebunch wheatgrass	20
		Normal	350	Thurber needlegrass	20
		Unfavorable	250	Big sagebrush	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Lupine	5
				Phlox	5
				Arrowleaf balsamroot	5
				Downy rabbitbrush	5
Mf McConnel	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	20
		Normal	550	Thurber needlegrass	20
		Unfavorable	400	Bluebunch wheatgrass	10
				Bottlebrush squirreltail	10
				Indian ricegrass	5
				Douglas rabbitbrush	5
Mh*:					
McConnel	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	20
		Normal	550	Thurber needlegrass	20
		Unfavorable	400	Bluebunch wheatgrass	10
				Bottlebrush squirreltail	10
				Indian ricegrass	5
				Douglas rabbitbrush	5
Blackhawk	Desert Loamy	Favorable	550	Shadscale	50
		Normal	375	Bud sagebrush	30
		Unfavorable	250	Bottlebrush squirreltail	5
				Indian ricegrass	5
Mo*:					
McConnel	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	20
		Normal	550	Thurber needlegrass	20
		Unfavorable	400	Bluebunch wheatgrass	10
				Bottlebrush squirreltail	10
				Indian ricegrass	5
				Douglas rabbitbrush	5
Ocala	Sodic Flat	Favorable	800	Black greasewood	55
		Normal	550	Basin wildrye	15
		Unfavorable	300	Inland saltgrass	5
Mr Midas	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Thurber needlegrass	20
		Normal	600	Big sagebrush	15
		Unfavorable	400	Bluebunch wheatgrass	10
				Sandberg bluegrass	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Phlox	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Ms*:					
Midas Deep	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Thurber needlegrass	20
		Normal	600	Big sagebrush	15
		Unfavorable	400	Bluebunch wheatgrass	10
				Sandberg bluegrass	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Phlox	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo-sitio
			Lb/acre		Pct
Ms*:					
Midas	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Thurber needlegrass	20
		Normal	600	Big sagebrush	15
		Unfavorable	400	Bluebunch wheatgrass	10
				Sandberg bluegrass	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Phlox	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Oc, Od: Ocala	Saline Bottom	Favorable	1,700	Basin wildrye	40
		Normal	1,150	Alkali sacaton	20
		Unfavorable	600	Inland saltgrass	15
				Black greasewood	10
				Rubber rabbitbrush	5
Og: Ocala	Sodic Flat	Favorable	800	Black greasewood	55
		Normal	550	Basin wildrye	15
		Unfavorable	300	Inland saltgrass	5
Oh: Ocala	Desert Sodic Terrace	Favorable	500	Shadscale	40
		Normal	375	Black greasewood	25
		Unfavorable	250	Bottlebrush squirreltail	7
				Nuttall saltbush	5
Ok: Ocala	Saline Bottom	Favorable	1,700	Basin wildrye	40
		Normal	1,150	Alkali sacaton	20
		Unfavorable	600	Inland saltgrass	15
				Black greasewood	10
				Rubber rabbitbrush	5
Om*:					
Ocala, Slightly saline	Saline Bottom	Favorable	1,700	Basin wildrye	40
		Normal	1,150	Alkali sacaton	20
		Unfavorable	600	Inland saltgrass	15
				Black greasewood	10
				Rubber rabbitbrush	5
Ocala, Strongly saline	Sodic Flat	Favorable	800	Black greasewood	55
		Normal	550	Basin wildrye	15
		Unfavorable	300	Inland saltgrass	5
OP*:					
Ocala	Sodic Flat	Favorable	800	Black greasewood	55
		Normal	550	Basin wildrye	15
		Unfavorable	300	Inland saltgrass	5
Ocala, Drained	Desert Sodic Terrace	Favorable	500	Shadscale	40
		Normal	375	Black greasewood	25
		Unfavorable	250	Bottlebrush squirreltail	7
				Nuttall saltbush	5
Playa.					
ORC, OSB, OtA: Orovada	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	25
		Normal	575	Thurber needlegrass	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Bluebunch wheatgrass	8
				Indian ricegrass	6
				Downy rabbitbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production		Characteristic vegetation	Compo-sition
		Kind of year	Dry weight		
			Lb/acre		Pct
DU*:					
Orovada	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	25
		Normal	575	Thurber needlegrass	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Bluebunch wheatgrass	8
				Indian ricegrass	6
				Downy rabbitbrush	5
Humdun	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Puett	Chalky Knolls	Favorable	200	Indian ricegrass	20
		Normal	150	Big sagebrush	20
		Unfavorable	100	Black sagebrush	15
				Basin wildrye	10
				Bottlebrush squirreltail	5
				Downy rabbitbrush	5
DV*:					
Orovada	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	25
		Normal	575	Thurber needlegrass	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Bluebunch wheatgrass	8
				Indian ricegrass	6
				Downy rabbitbrush	5
Puett	Chalky Knolls	Favorable	200	Indian ricegrass	20
		Normal	150	Big sagebrush	20
		Unfavorable	100	Black sagebrush	15
				Basin wildrye	10
				Bottlebrush squirreltail	5
				Downy rabbitbrush	5
DW*:					
Orovada	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	25
		Normal	575	Thurber needlegrass	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Bluebunch wheatgrass	8
				Indian ricegrass	6
				Downy rabbitbrush	5
Puett	Chalky Knolls	Favorable	200	Indian ricegrass	20
		Normal	150	Big sagebrush	20
		Unfavorable	100	Black sagebrush	15
				Basin wildrye	10
				Bottlebrush squirreltail	5
				Downy rabbitbrush	5
Ferdelford	Juniper Savannah	Favorable	1,000	Utah juniper	20
		Normal	750	Indian ricegrass	10
		Unfavorable	500	Bluebunch wheatgrass	10
				Thurber needlegrass	10
				Big sagebrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Phlox	5
				Tapertip hawksbeard	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo-siti
			Lb/acre		Pct
PC*:					
Pie Creek	Claypan	Favorable	800	Low sagebrush	25
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Sandberg bluegrass	15
				Thurber needlegrass	10
				Bottlebrush squirreltail	10
				Hooker balsamroot	5
				Phlox	5
Susie Creek	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Toeja	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,100	Bluebunch wheatgrass	30
		Normal	850	Thurber needlegrass	15
		Unfavorable	650	Big sagebrush	10
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Antelope bitterbrush	5
Pk Pocker	Dry Flood Plain	Favorable	1,400	Basin wildrye	50
		Normal	1,000	Big sagebrush	20
		Unfavorable	600	Black greasewood	7
				Streambank wheatgrass	5
				Rubber rabbitbrush	5
PM*:					
Primeaux	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Idaho fescue	20
		Unfavorable	600	Big sagebrush	10
				Thurber needlegrass	5
				Basin wildrye	5
				Sandberg bluegrass	5
				Douglas rabbitbrush	5
Packer	Mountain Ridges	Favorable	350	Low sagebrush	25
		Normal	250	Idaho fescue	15
		Unfavorable	150	Sandberg bluegrass	10
				Bottlebrush squirreltail	10
				Webber ricegrass	5
				Phlox	5
				Sandwort	5
Tusel	Steep North Slopes	Favorable	1,400	Idaho fescue	30
		Normal	1,000	Big sagebrush	15
		Unfavorable	700	Bluebunch wheatgrass	5
				Basin wildrye	5
				Sandberg bluegrass	5
				Snowberry	5
				Antelope bitterbrush	5
PS*:					
Puett	Chalky Knolls	Favorable	200	Indian ricegrass	20
		Normal	150	Big sagebrush	20
		Unfavorable	100	Black sagebrush	15
				Basin wildrye	10
				Bottlebrush squirreltail	5
				Downy rabbitbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
PS*:					
Orovada	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	750	Big sagebrush	25
		Normal	575	Thurber needlegrass	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Bluebunch wheatgrass	8
				Indian ricegrass	6
				Downy rabbitbrush	5
RaA, RaB, RAC: Rad	Upland Loam, (24) 8- to 10-inch precipitation zone	Favorable	700	Big sagebrush	35
		Normal	500	Indian ricegrass	10
		Unfavorable	350	Sandberg bluegrass	10
				Spiny hopsage	10
				Bottlebrush squirreltail	7
				Thurber needlegrass	5
RbB: Rad	Desert Loamy	Favorable	600	Shadscale	50
		Normal	400	Bud sagebrush	25
		Unfavorable	300	Bottlebrush squirreltail	5
				Spiny hopsage	5
RC*:					
Rad, Slightly alkali	Desert Loamy	Favorable	600	Shadscale	50
		Normal	400	Bud sagebrush	25
		Unfavorable	300	Bottlebrush squirreltail	5
				Spiny hopsage	5
Rad	Upland Loam, (24) 8- to 10-inch precipitation zone	Favorable	700	Big sagebrush	35
		Normal	500	Indian ricegrass	10
		Unfavorable	350	Sandberg bluegrass	10
				Spiny hopsage	10
				Bottlebrush squirreltail	7
				Thurber needlegrass	5
Rd*:					
Rad	Upland Loam, (24) 8- to 10-inch precipitation zone	Favorable	700	Big sagebrush	35
		Normal	500	Indian ricegrass	10
		Unfavorable	350	Sandberg bluegrass	10
				Spiny hopsage	10
				Bottlebrush squirreltail	7
				Thurber needlegrass	5
Blackhawk	Desert Loamy	Favorable	550	Shadscale	50
		Normal	375	Bud sagebrush	30
		Unfavorable	250	Bottlebrush squirreltail	5
				Indian ricegrass	5
RE*:					
Rad	Upland Loam, (24) 8- to 10-inch precipitation zone	Favorable	700	Big sagebrush	35
		Normal	500	Indian ricegrass	10
		Unfavorable	350	Sandberg bluegrass	10
				Spiny hopsage	10
				Bottlebrush squirreltail	7
				Thurber needlegrass	5
Brock	Upland Loam, (24) 8- to 10-inch precipitation zone	Favorable	750	Thurber needlegrass	20
		Normal	550	Big sagebrush	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Sandberg bluegrass	10
				Spiny hopsage	10
				Bluebunch wheatgrass	5
				Downy rabbitbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
RF*:					
Ramires	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Chen	Cobbly Upland	Favorable	500	Low sagebrush	25
		Normal	375	Bluebunch wheatgrass	15
		Unfavorable	250	Thurber needlegrass	15
				Webber ricegrass	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Cutleaf balsamroot	5
				Eriogonum	5
Bobs	Upland Loam, 10- to 12-inch precipitation zone	Favorable	900	Bluebunch wheatgrass	25
		Normal	750	Thurber needlegrass	25
		Unfavorable	600	Big sagebrush	10
				Basin wildrye	5
				Sandberg bluegrass	5
				Arrowleaf balsamroot	5
				Lupine	5
				Antelope bitterbrush	5
				Douglas rabbitbrush	5
Rg*:					
Ramires	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Chen	Cobbly Upland	Favorable	500	Low sagebrush	25
		Normal	375	Bluebunch wheatgrass	15
		Unfavorable	250	Thurber needlegrass	15
				Webber ricegrass	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Cutleaf balsamroot	5
				Eriogonum	5
Pie Creek	Claypan	Favorable	800	Low sagebrush	25
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Sandberg bluegrass	15
				Thurber needlegrass	10
				Bottlebrush squirreltail	10
				Hooker balsamroot	5
				Phlox	5
RH*, RH2*, RK*:					
Ramires	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
RH*, RH2*, RK*:					
Creva	Shallow Gravelly Loam	Favorable	500	Bluebunch wheatgrass	25
		Normal	375	Thurber needlegrass	15
		Unfavorable	250	Big sagebrush	10
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Arrowleaf balsamroot	5
				Phlox	5
				Tapertip hawksbeard	5
				Lupine	5
				Douglas rabbitbrush	5
RL*:					
Ramires	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Singletree	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Idaho fescue	15
		Unfavorable	600	Big sagebrush	10
				Antelope bitterbrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Thurber needlegrass	5
				Tapertip hawksbeard	5
				Arrowleaf balsamroot	5
RM*:					
Ramires	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Taylor Creek	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	30
		Normal	900	Idaho fescue	17
		Unfavorable	600	Sandberg bluegrass	10
				Big sagebrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Antelope bitterbrush	5
				Arrowleaf balsamroot	5
Rn, Ro Rixie	Saline Bottom	Favorable	1,700	Basin wildrye	40
		Normal	1,150	Alkali sacaton	20
		Unfavorable	600	Inland saltgrass	15
				Black greasewood	10
				Rubber rabbitbrush	5
Rr Rixie	Moist Flood Plain	Favorable	3,500	Basin wildrye	40
		Normal	2,200	Creeping wildrye	30
		Unfavorable	1,500	Willow	5
Rs Rose Creek	Moist Flood Plain	Favorable	3,500	Creeping wildrye	30
		Normal	2,500	Basin wildrye	25
		Unfavorable	1,500	Willow	15
				Sedge	5
				Woods wildrose	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
Rt: Rose Creek	Loamy Bottoms	Favorable	2,500	Basin wildrye	55
		Normal	1,800	Big sagebrush	10
		Unfavorable	1,200	Western wheatgrass	5
				Lupine	5
				Rubber rabbitbrush	5
Ru: Rosney	Desert Saline Terrace	Favorable	650	Nuttall saltbush	70
		Normal	425	Shadscale	15
		Unfavorable	200	Black greasewood	10
SA*:					
Short Creek, 30 to 50 percent slopes	South Slopes	Favorable	1,000	Bluebunch wheatgrass	40
		Normal	750	Thurber needlegrass	10
		Unfavorable	500	Big sagebrush	10
				Basin wildrye	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Short Creek, 50 to 75 percent slopes	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	30
		Normal	900	Idaho fescue	15
		Unfavorable	600	Big sagebrush	10
				Thurber needlegrass	5
				Basin wildrye	5
				Douglas rabbitbrush	5
SBB: Simon	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,100	Bluebunch wheatgrass	30
		Normal	850	Thurber needlegrass	15
		Unfavorable	650	Big sagebrush	10
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Antelope bitterbrush	5
SC*:					
Simon	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,100	Bluebunch wheatgrass	30
		Normal	850	Thurber needlegrass	15
		Unfavorable	650	Big sagebrush	10
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Antelope bitterbrush	5
Bosco	Loamy Bottoms	Favorable	2,500	Basin wildrye	50
		Normal	1,800	Big sagebrush	10
		Unfavorable	1,200	Nevada bluegrass	5
				Lupine	5
				Rubber rabbitbrush	5
SD*:					
Slaven, 15 to 30 percent slopes	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	20
		Normal	600	Big sagebrush	20
		Unfavorable	400	Thurber needlegrass	15
				Sandberg bluegrass	10
				Basin wildrye	5
				Phlox	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
SD*:					
Slaven, 30 to 50 percent slopes	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	15
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Basin wildrye	5
				Antelope bitterbrush	5
Mascamp	Shallow Gravelly Loam	Favorable	500	Bluebunch wheatgrass	20
		Normal	375	Thurber needlegrass	20
		Unfavorable	250	Phlox	10
				Big sagebrush	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Lupine	5
SE*:					
Slaven	Upland Loam, (25) 1- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	20
		Normal	600	Big sagebrush	20
		Unfavorable	400	Thurber needlegrass	15
				Sandberg bluegrass	10
				Basin wildrye	5
				Phlox	5
Primeaux	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Idaho fescue	20
		Unfavorable	600	Big sagebrush	10
				Thurber needlegrass	5
				Basin wildrye	5
				Sandberg bluegrass	5
				Douglas rabbitbrush	5
SF*:					
Slaven	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	20
		Normal	600	Big sagebrush	20
		Unfavorable	400	Thurber needlegrass	15
				Sandberg bluegrass	10
				Basin wildrye	5
				Phlox	5
Ramires	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
SG*:					
Slaven	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	20
		Normal	600	Big sagebrush	20
		Unfavorable	400	Thurber needlegrass	15
				Sandberg bluegrass	10
				Basin wildrye	5
				Phlox	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo sitio
			Lb/acre		Pct
SG*:					
Toeja	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,100	Bluebunch wheatgrass	30
		Normal	850	Thurber needlegrass	15
		Unfavorable	650	Big sagebrush	10
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Antelope bitterbrush	5
SH*:					
Slaven	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	15
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Basin wildrye	5
				Antelope bitterbrush	5
Torro	Mountain South Slopes	Favorable	1,500	Bluebunch wheatgrass	40
		Normal	1,100	Basin wildrye	10
		Unfavorable	750	Big sagebrush	10
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Lupine	5
				Antelope bitterbrush	5
Tusel	Steep North Slopes	Favorable	1,400	Idaho fescue	30
		Normal	1,000	Big sagebrush	15
		Unfavorable	700	Bluebunch wheatgrass	5
				Basin wildrye	5
				Sandberg bluegrass	5
				Snowberry	5
				Antelope bitterbrush	5
SR*:					
Stampede	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	5
				Basin wildrye	5
				Bottlebrush squirreltail	5
Donna	Claypan	Favorable	800	Thurber needlegrass	20
		Normal	600	Low sagebrush	20
		Unfavorable	400	Bluebunch wheatgrass	10
				Webber ricegrass	10
				Sandberg bluegrass	10
				Bottlebrush squirreltail	5
				Hooker balsamroot	5
				Phlox	5
SS*:					
Stampede	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	5
				Basin wildrye	5
				Bottlebrush squirreltail	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
SS*:					
Donna	Claypan	Favorable	800	Thurber needlegrass	20
		Normal	600	Low sagebrush	20
		Unfavorable	400	Bluebunch wheatgrass	10
				Webber ricegrass	10
				Sandberg bluegrass	10
				Bottlebrush squirreltail	5
				Hooker balsamroot	5
				Phlox	5
Short Creek	South Slopes	Favorable	1,000	Bluebunch wheatgrass	40
		Normal	750	Thurber needlegrass	10
		Unfavorable	500	Big sagebrush	10
				Basin wildrye	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
ST*:					
Stampede	Upland Loam, 10 to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	5
				Basin wildrye	5
				Bottlebrush squirreltail	5
Short Creek	South Slopes	Favorable	1,000	Bluebunch wheatgrass	40
		Normal	750	Thurber needlegrass	10
		Unfavorable	500	Big sagebrush	10
				Basin wildrye	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
SU*:					
Susie Creek	Upland Loam, 10- to 12-inch precipitation zone	Favorable	,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Pattani	Churning Clay	Favorable	1,000	Basin wildrye	40
		Normal	750	Big sagebrush	10
		Unfavorable	500	Bluebunch wheatgrass	5
				Thurber needlegrass	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Lupine	5
				Rubber rabbitbrush	5
SV*:					
Susie Creek	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Pie Creek	Claypan	Favorable	800	Low sagebrush	25
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Sandberg bluegrass	15
				Thurber needlegrass	10
				Bottlebrush squirreltail	10
				Hooker balsamroot	5
				Phlox	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
SV*:					
Pattani	Churning Clay	Favorable	1,000	Basin wildrye	40
		Normal	750	Big sagebrush	10
		Unfavorable	500	Bluebunch wheatgrass	5
				Thurber needlegrass	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Lupine	5
				Rubber rabbitbrush	5
SW*:					
Susie Creek	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Short Creek	South Slopes	Favorable	1,000	Bluebunch wheatgrass	40
		Normal	750	Thurber needlegrass	10
		Unfavorable	500	Big sagebrush	10
				Basin wildrye	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Toeja	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,100	Bluebunch wheatgrass	30
		Normal	850	Thurber needlegrass	15
		Unfavorable	650	Big sagebrush	10
				Basin wildrye	5
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Antelope bitterbrush	5
TA*:					
Taylor Creek	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	30
		Normal	900	Idaho fescue	17
		Unfavorable	600	Sandberg bluegrass	10
				Big sagebrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Antelope bitterbrush	5
				Arrowleaf balsamroot	5
Chen	Cobbly Upland	Favorable	500	Low sagebrush	25
		Normal	375	Bluebunch wheatgrass	15
		Unfavorable	250	Thurber needlegrass	15
				Webber ricegrass	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Cutleaf balsamroot	5
				Eriogonum	5
Ramires	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	30
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	15
				Sandberg bluegrass	10
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
TC*:					
Taylor Creek	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	30
		Normal	900	Idaho fescue	17
		Unfavorable	600	Sandberg bluegrass	10
				Big sagebrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Antelope bitterbrush	5
				Arrowleaf balsamroot	5
Singletree	Loamy Slopes	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Idaho fescue	15
		Unfavorable	600	Big sagebrush	10
				Antelope bitterbrush	10
				Basin wildrye	5
				Bottlebrush squirreltail	5
				Thurber needlegrass	5
				Tapertip hawksbeard	5
				Arrowleaf balsamroot	5
Torro	Mountain South Slopes	Favorable	1,500	Bluebunch wheatgrass	40
		Normal	1,100	Basin wildrye	10
		Unfavorable	750	Big sagebrush	10
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Lupine	5
				Antelope bitterbrush	5
TDA, TEC Tenabo	Desert Loamy	Favorable	650	Shadscale	60
		Normal	425	Bud sagebrush	15
		Unfavorable	300	Bottlebrush squirreltail	10
TF*:					
Tenabo Extremely stony loam	Desert Loamy	Favorable	650	Shadscale	60
		Normal	425	Bud sagebrush	15
		Unfavorable	300	Bottlebrush squirreltail	10
Tenabo Cobbly silt loam	Desert Loamy	Favorable	650	Shadscale	60
		Normal	425	Bud sagebrush	15
		Unfavorable	300	Bottlebrush squirreltail	10
TG*:					
Tenabo	Desert Loamy	Favorable	650	Shadscale	60
		Normal	425	Bud sagebrush	15
		Unfavorable	300	Bottlebrush squirreltail	10
Brock	Upland Loam, (24) 8- to 10-inch precipitation zone	Favorable	750	Thurber needlegrass	20
		Normal	550	Big sagebrush	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Sandberg bluegrass	10
				Spiny hopsage	10
				Bluebunch wheatgrass	5
				Downy rabbitbrush	5
Whirlo	Desert Loamy	Favorable	600	Shadscale	60
		Normal	425	Bud sagebrush	15
		Unfavorable	300	Bottlebrush squirreltail	10
TH*:					
Tenabo	Desert Loamy	Favorable	650	Shadscale	60
		Normal	425	Bud sagebrush	15
		Unfavorable	300	Bottlebrush squirreltail	10
Rubble land.					

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compositic
			Lb/acre		Pct
TL*:					
Toeja--- 15 to 30 percent slopes	Upland Loam, 10- to 12-inch precipitation zone---	Favorable	1,100	Bluebunch wheatgrass---	30
		Normal	850	Thurber needlegrass---	15
		Unfavorable	650	Big sagebrush---	10
				Basin wildrye---	5
				Sandberg bluegrass---	5
				Bottlebrush squirreltail---	5
				Tapertip hawksbeard---	5
				Douglas rabbitbrush---	5
				Antelope bitterbrush---	5
Toeja--- 4 to 15 percent slopes	Upland Loam, 10- to 12-inch precipitation zone---	Favorable	1,100	Bluebunch wheatgrass---	30
		Normal	850	Thurber needlegrass---	15
		Unfavorable	650	Big sagebrush---	10
				Basin wildrye---	5
				Sandberg bluegrass---	5
				Bottlebrush squirreltail---	5
				Tapertip hawksbeard---	5
				Douglas rabbitbrush---	5
				Antelope bitterbrush---	5
Puett---	Chalky Knolls---	Favorable	200	Indian ricegrass---	20
		Normal	150	Big sagebrush---	20
		Unfavorable	100	Black sagebrush---	15
				Basin wildrye---	10
				Bottlebrush squirreltail---	5
				Downy rabbitbrush---	5
TM*:					
Toeja---	Upland Loam, 10- to 12-inch precipitation zone---	Favorable	1,100	Bluebunch wheatgrass---	30
		Normal	850	Thurber needlegrass---	15
		Unfavorable	650	Big sagebrush---	10
				Basin wildrye---	5
				Sandberg bluegrass---	5
				Bottlebrush squirreltail---	5
				Tapertip hawksbeard---	5
				Douglas rabbitbrush---	5
				Antelope bitterbrush---	5
Ucopia---	Upland Loam, 10- to 12-inch precipitation zone---	Favorable	1,000	Bluebunch wheatgrass---	25
		Normal	800	Thurber needlegrass---	20
		Unfavorable	600	Big sagebrush---	10
				Sandberg bluegrass---	5
				Indian ricegrass---	5
				Arrowleaf balsamroot---	5
				Douglas rabbitbrush---	5
				Antelope bitterbrush---	5
Ucopia--- Eroded	Upland Loam, 10- to 12-inch precipitation zone---	Favorable	1,000	Bluebunch wheatgrass---	25
		Normal	800	Thurber needlegrass---	20
		Unfavorable	600	Big sagebrush---	10
				Sandberg bluegrass---	5
				Indian ricegrass---	5
				Arrowleaf balsamroot---	5
				Douglas rabbitbrush---	5
				Antelope bitterbrush---	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
TN*:					
Tomera	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Thurber needlegrass	25
		Normal	600	Big sagebrush	25
		Unfavorable	400	Bluebunch wheatgrass	15
				Bottlebrush squirreltail	10
				Sandberg bluegrass	5
				Douglas rabbitbrush	5
Cherry Spring	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Thurber needlegrass	20
		Normal	600	Big sagebrush	20
		Unfavorable	400	Bluebunch wheatgrass	10
				Webber ricegrass	10
				Sandberg bluegrass	5
				Bottlebrush squirreltail	5
				Eriogonum	5
				Downy rabbitbrush	5
TO*:					
Torro	Mountain South Slopes	Favorable	1,500	Bluebunch wheatgrass	40
		Normal	1,100	Basin wildrye	10
		Unfavorable	750	Big sagebrush	10
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Lupine	5
				Antelope bitterbrush	5
Jack Creek	Mountain South Slopes	Favorable	1,500	Bluebunch wheatgrass	40
		Normal	1,100	Basin wildrye	10
		Unfavorable	750	Big sagebrush	10
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Lupine	5
				Antelope bitterbrush	5
TR*:					
Torro	Mountain South Slopes	Favorable	1,500	Bluebunch wheatgrass	40
		Normal	1,100	Basin wildrye	10
		Unfavorable	750	Big sagebrush	10
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Lupine	5
				Antelope bitterbrush	5
Tusel	Steep North Slopes	Favorable	1,400	Idaho fescue	30
		Normal	1,000	Big sagebrush	15
		Unfavorable	700	Bluebunch wheatgrass	5
				Basin wildrye	5
				Sandberg bluegrass	5
				Snowberry	5
				Antelope bitterbrush	5
TS*:					
Torro	Mountain South Slopes	Favorable	1,500	Bluebunch wheatgrass	40
		Normal	1,100	Basin wildrye	10
		Unfavorable	750	Big sagebrush	10
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Lupine	5
				Antelope bitterbrush	5
Tusel	Steep North Slopes	Favorable	1,400	Idaho fescue	30
		Normal	1,000	Big sagebrush	15
		Unfavorable	700	Bluebunch wheatgrass	5
				Basin wildrye	5
				Sandberg bluegrass	5
				Snowberry	5
				Antelope bitterbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Compo-sition
			Lb/acre		Pct
TS*:					
Badland.					
TT*:					
Torro	Mountain South Slopes	Favorable	1,500	Bluebunch wheatgrass	40
		Normal	1,100	Basin wildrye	10
		Unfavorable	750	Big sagebrush	10
				Bottlebrush squirreltail	5
				Arrowleaf balsamroot	5
				Lupine	5
				Antelope bitterbrush	5
Tusel	Steep North Slopes	Favorable	1,400	Idaho fescue	30
		Normal	1,000	Big sagebrush	15
		Unfavorable	700	Bluebunch wheatgrass	5
				Basin wildrye	5
				Sandberg bluegrass	5
				Snowberry	5
				Antelope bitterbrush	5
Packer	Mountain Ridges	Favorable	350	Low sagebrush	25
		Normal	250	Idaho fescue	15
		Unfavorable	150	Sandberg bluegrass	10
				Bottlebrush squirreltail	10
				Webber ricegrass	5
				Phlox	5
				Sandwort	5
TU*:					
Triplen	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Thurber needlegrass	20
		Normal	600	Big sagebrush	20
		Unfavorable	400	Bluebunch wheatgrass	15
				Sandberg bluegrass	10
				Bottlebrush squirreltail	5
				Douglas rabbitbrush	5
Tenabo	Desert Loamy	Favorable	650	Shadscale	60
		Normal	425	Bud sagebrush	15
		Unfavorable	300	Bottlebrush squirreltail	10
TV*:					
Tusel	Steep North Slopes	Favorable	1,400	Idaho fescue	30
		Normal	1,000	Big sagebrush	15
		Unfavorable	700	Bluebunch wheatgrass	5
				Basin wildrye	5
				Sandberg bluegrass	5
				Snowberry	5
				Antelope bitterbrush	5
Hapgood.					
Packer	Mountain Ridges	Favorable	350	Low sagebrush	25
		Normal	250	Idaho fescue	15
		Unfavorable	150	Sandberg bluegrass	10
				Bottlebrush squirreltail	10
				Webber ricegrass	5
				Phlox	5
				Sandwort	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production: Kind of year	Total production: Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
UHE*, UHF*:					
Ucopia 15 to 30 percent slopes	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	10
				Sandberg bluegrass	5
				Indian ricegrass	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
				Antelope bitterbrush	5
Ucopia 30 to 50 percent slopes	Upland Loam, 10- to 12-inch precipitation zone	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Thurber needlegrass	20
		Unfavorable	600	Big sagebrush	10
				Sandberg bluegrass	5
				Indian ricegrass	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
				Antelope bitterbrush	5
Humdun	Upland Loam, (25) 8- to 10-inch precipitation zone	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Thurber needlegrass	15
		Unfavorable	400	Basin wildrye	10
				Big sagebrush	10
				Indian ricegrass	5
Wc Welch	Wet Meadow	Favorable	2,000	Tufted hairgrass	50
		Normal	1,500	Big bluegrass	10
		Unfavorable	1,000	Sedge	10
				Clover	5
				Cinquefoil	5
Wd Welch	Loamy Bottoms	Favorable	2,500	Basin wildrye	60
		Normal	1,800	Big sagebrush	10
		Unfavorable	1,200	Western wheatgrass	5
				Lupine	5
				Rubber rabbitbrush	5
WE*:					
Welch	Loamy Bottoms	Favorable	2,500	Basin wildrye	60
		Normal	1,800	Big sagebrush	10
		Unfavorable	1,200	Western wheatgrass	5
				Lupine	5
				Rubber rabbitbrush	5
Bosco	Loamy Bottoms	Favorable	2,500	Basin wildrye	50
		Normal	1,800	Big sagebrush	10
		Unfavorable	1,200	Nevada bluegrass	5
				Lupine	5
				Rubber rabbitbrush	5
WGB Whirlo	Desert Loamy	Favorable	600	Shadscale	60
		Normal	425	Bud sagebrush	15
		Unfavorable	300	Bottlebrush squirreltail	10
WH*:					
Whirlo	Desert Loamy	Favorable	600	Shadscale	60
		Normal	425	Bud sagebrush	15
		Unfavorable	300	Bottlebrush squirreltail	10
Tenabo	Desert Loamy	Favorable	650	Shadscale	60
		Normal	425	Bud sagebrush	15
		Unfavorable	300	Bottlebrush squirreltail	10

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site name	Total production		Characteristic vegetation	Compo sitio
		Kind of year	Dry weight		
			Lb/acre		Pct
WlA, WlB----------- Wholan	Dry Flood Plain----------------	Favorable Normal Unfavorable	500 350 200	Winterfat--------------------- Bud sagebrush----------------- Indian ricegrass-------------- Shadscale----------------------	75 10 5 5
WmA, WnA----------- Wholan	Dry Flood Plain----------------	Favorable Normal Unfavorable	500 350 200	Winterfat--------------------- Bud sagebrush----------------- Indian ricegrass-------------- Shadscale----------------------	75 10 5 5

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
ALF: Alley	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: large stones, slope.
AN*:				
Alley	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: large stones, slope.
Brock	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones, cemented pan.	Severe: large stones.
AR*:				
Alley	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: large stones, slope.
Rock outcrop.				
Rubble land.				
Au*. Alluvial land				
BaA: Beowawe	Moderate: dusty.	Moderate: dusty, excess salt.	Moderate: dusty, excess salt.	Moderate: dusty.
BB*:				
Beowawe	Moderate: dusty.	Moderate: dusty, excess salt.	Moderate: slope, dusty, excess salt.	Moderate: dusty.
Broyles	Moderate: dusty.	Moderate: dusty.	Moderate: dusty, slope.	Moderate: dusty.
BC: Beowawe variant	Moderate: percs slowly, too clayey, excess salt.	Moderate: too clayey, percs slowly, excess salt.	Moderate: percs slowly, too clayey, excess salt.	Moderate: too clayey.
BD*:				
Berning	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Short Creek	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
BE*:				
Berning	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
Toeja	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Bf-------------------- Bicondoa	Severe: floods.	Moderate: too clayey.	Moderate: percs slowly, too clayey.	Moderate: too clayey.
Bg-------------------- Bicondoa	Severe: floods, wetness, percs slowly.	Severe: too clayey, wetness.	Severe: too clayey, wetness, floods.	Severe: too clayey, wetness.
BHD------------------- Bobs	Severe: small stones.	Moderate: slope, dusty, small stones.	Severe: slope, cemented pan, small stones.	Severe: small stones.
Bk-------------------- Bosco	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.
BL*:				
Bosco----------------	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.
Welch----------------	Severe: floods.	Moderate: floods.	Severe: floods.	Moderate: floods.
BM*:				
Boulflat-------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Havingdon------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Brock----------------	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones, cemented pan.	Severe: large stones.
BN*:				
Old Camp variant-----	Severe: slope, depth to rock, large stones.	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: slope, large stones.
Boulflat-------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Humdun---------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BO*:				
Brock----------------	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones, cemented pan.	Severe: large stones.
Boulflat-------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Rad------------------	Moderate: dusty.	Moderate: dusty.	Moderate: slope.	Moderate: dusty.
BpA------------------- Broyles	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
BPB------------------- Broyles	Moderate: dusty.	Moderate: dusty.	Moderate: dusty, slope.	Moderate: dusty.
BQE------------------- Bucan	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
BRF------------------- Bucan	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.	Severe: slope, large stones.
BS*:				
Bucan----------------- Loam	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Bucan----------------- Gravelly loam	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
BT*:				
Bucan----------------- Stony loam	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Bucan----------------- Extremely stony loam	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.	Severe: slope, large stones.
BU*:				
Bucan-----------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Clurde----------------	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Orovada---------------	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
BV*:				
Bucan-----------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Creva-----------------	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.
Brock-----------------	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones, cemented pan.	Severe: large stones.
BW*:				
Bucan-----------------	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.	Severe: large stones.
Glean-----------------	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.	Severe: large stones, slope.
Rock outcrop.				

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
BX*:				
Bucan Stony	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Bucan Extremely stony	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.	Severe: slopé, large stones.
Humdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BY*:				
Bucan	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Humdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Brock	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones, cemented pan.	Severe: large stones.
BZ*:				
Bucan	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Humdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.				
BZm*:				
Bucan	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Malpais	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
BZs*:				
Bucan	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Singletree	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BZt*:				
Bucan Stony	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Bucan Extremely stony	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.	Severe: slope, large stones.
Toeja	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Zu*:				
Bunky	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
Clurde	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Short Creek	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
AD Carstump	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
BE Chen	Severe: slope, large stones.	Severe: slope, small stones.	Severe: slope, depth to rock, large stones.	Severe: large stones.
C*:				
Chen	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, depth to rock, small stones.	Severe: small stones.
Pie Creek	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones.
Ramires	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones.
D*:				
Chen	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, depth to rock, small stones.	Severe: small stones.
Pie Creek	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones.
Taylor Creek	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
EE*:				
Chen	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, depth to rock, small stones.	Severe: small stones.
Taylor Creek	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Mosquet	Severe: small stones, depth to rock.	Severe: small stones.	Severe: slope, small stones, depth to rock.	Severe: small stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
CEF*:				
Chen	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, depth to rock, small stones.	Severe: small stones.
Taylor Creek	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Mosquet	Severe: small stones, depth to rock.	Severe: small stones.	Severe: slope, small stones, depth to rock.	Severe: small stones.
CF*:				
Cherry Spring	Moderate: dusty.	Moderate: dusty.	Moderate: slope, cemented pan, dusty.	Moderate: dusty.
Berning	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
CG*:				
Cherry Spring	Moderate: dusty.	Moderate: dusty.	Moderate: slope, cemented pan, dusty.	Moderate: dusty.
Cortez	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Chiara	Moderate: dusty.	Moderate: dusty.	Severe: cemented pan.	Moderate: dusty.
CH*:				
Cherry Spring	Moderate: dusty.	Moderate: dusty.	Moderate: slope, cemented pan, dusty.	Moderate: dusty.
Cortez	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Tomera	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
CK*:				
Cherry Spring	Moderate: dusty.	Moderate: dusty.	Moderate: slope, cemented pan, dusty.	Moderate: dusty.
Orovada	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
CL*:				
Chiara Very stony	Moderate: slope, large stones, dusty.	Moderate: slope, dusty.	Severe: slope, cemented pan.	Moderate: large stones, dusty.
Chiara Extremely stony	Severe: large stones.	Moderate: slope, large stones, dusty.	Severe: slope, cemented pan, large stones.	Severe: large stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
CL*:				
Brock	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones, cemented pan.	Severe: large stones.
CM*:				
Chiara	Moderate: dusty.	Moderate: dusty.	Severe: cemented pan.	Moderate: dusty.
Cherry Spring	Moderate: dusty.	Moderate: dusty.	Moderate: slope, cemented pan, dusty.	Moderate: dusty.
Cortez	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
CN, Co, Cp, Cr Cluro	Moderate: dusty, excess salt.	Moderate: dusty, excess salt.	Moderate: dusty, excess salt.	Moderate: dusty.
CS*:				
Coff	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Denay	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Ct Coit	Severe: floods.	Moderate: wetness.	Moderate: wetness, floods.	Moderate: wetness.
Cu*:				
Coit	Severe: floods.	Moderate: wetness.	Moderate: wetness, floods.	Moderate: wetness.
Griver	Severe: floods.	Moderate: floods, wetness.	Severe: floods.	Moderate: floods, wetness.
CV*:				
Creva	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.
Chen	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, depth to rock, small stones.	Severe: small stones.
CW2*:				
Creva	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.
Ramires	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Cx Crooked Creek	Severe: floods, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
CY------------------- Crooked Creek	Severe: floods.	Moderate: too clayey.	Moderate: too clayey, floods, percs slowly.	Moderate: too clayey.
DM*:				
Donna----------------	Moderate: small stones, percs slowly.	Moderate: small stones, percs slowly.	Severe: small stones.	Moderate: small stones.
Simon----------------	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty, small stones.	Moderate: dusty.
DN*:				
Donna----------------	Moderate: small stones, percs slowly.	Moderate: small stones, percs slowly.	Severe: small stones.	Moderate: small stones.
Stampede-------------	Moderate: slope, percs slowly, small stones.	Moderate: slope, percs slowly, small stones.	Severe: slope, small stones.	Moderate: dusty.
Short Creek----------	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Do, Dp--------------- Dunphy	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Moderate: dusty.
Dr, Ds--------------- Dunphy	Severe: floods, excess salt, excess sodium.	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Moderate: wetness.
FB*:				
Ferdelford----------- 15 to 30 percent slopes	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Ferdelford----------- 30 to 50 percent slopes	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Bucan----------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
FD*:				
Ferdelford-----------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Puett----------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
Berning--------------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
FE*:				
Ferdelford-----------	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
FE*:				
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Susie Creek	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
FF*:				
Ferdelford	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Ramires	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones.
FH*:				
Ferdelford	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Susie Creek	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Toeja	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
Fk Four Star	Severe: floods.	Moderate: wetness.	Moderate: wetness, floods.	Slight.
Fm Four Star	Severe: floods.	Slight	Moderate: floods.	Slight.
Fn*:				
Four Star	Severe: floods.	Moderate: wetness.	Moderate: wetness, floods.	Slight.
Bosco	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.
Fo*:				
Four Star	Severe: floods.	Slight	Moderate: floods.	Slight.
Bosco	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.
Ge Geysen	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Gg Geysen	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Moderate: dusty.
GH*:				
Glean	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope.	Severe: large stones, slope.
Rock outcrop.				
Rubble land.				

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Gk: Griver	Severe: floods.	Moderate: floods, wetness.	Severe: floods.	Moderate: floods, wetness.
Gm: Griver	Severe: floods.	Moderate: floods.	Severe: floods.	Moderate: floods.
Gn: Griver	Severe: floods.	Moderate: floods, wetness.	Severe: floods.	Moderate: floods, wetness.
Go: Griver	Severe: floods, wetness.	Moderate: floods, wetness.	Severe: wetness, floods.	Severe: wetness.
Gr*:				
Griver	Severe: floods.	Moderate: floods, wetness.	Severe: floods.	Moderate: floods, wetness.
Griver Wet	Severe: floods, wetness.	Moderate: floods, wetness.	Severe: wetness, floods.	Severe: wetness.
Gx*:				
Griver	Severe: floods.	Moderate: floods, wetness.	Severe: floods.	Moderate: floods, wetness.
Alluvial land.				
HG*:				
Hapgood Very gravelly loam	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Hapgood Silt loam	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Packer	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.
Hh, Hk: Humboldt	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness.
Hm: Humboldt	Severe: floods, wetness, excess salt.	Severe: floods, wetness, excess salt.	Severe: floods, wetness, excess salt.	Severe: wetness.
Hn*:				
Humboldt Slightly saline	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness.
Humboldt Strongly saline	Severe: floods, wetness, excess salt.	Severe: floods, wetness, excess salt.	Severe: floods, wetness, excess salt.	Severe: wetness.
HO*:				
Humdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
HO*:				
Bucan	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Havingdon	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.
Hr Hussa	Severe: floods, wetness.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.
Hs Hussa	Severe: floods.	Slight	Moderate: floods.	Slight.
Ht Hussa	Severe: floods, wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.
Ib Iron Blossom	Moderate: excess salt, dusty.	Moderate: excess salt, dusty.	Moderate: dusty, excess salt.	Moderate: dusty.
Is Iron Blossom	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Severe: excess sale, excess sodium.	Moderate: dusty.
KAD Kawich	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: slope, too sandy.	Severe: too sandy.
MA*:				
Malpais	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope.	Severe: slope, small stones.
Rock outcrop.				
Rubble land.				
Mc*:				
Marsh.				
Crooked Creek	Severe: floods, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.
ME*:				
Mascamp	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.
Carstump	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
Mf McConnel	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: small stones, dusty.
Mh*:				
McConnel	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: small stones, dusty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Mh*:				
Blackhawk	Severe: cemented pan, excess salt.	Severe: cemented pan, excess salt.	Severe: cemented pan, excess salt, small stones.	Moderate: small stones.
Mo*:				
McConnel	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: small stones, dusty.
Ocala	Severe: floods, excess salt, excess sodium.	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Slight.
Mr Midas	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.
Ms*:				
Midas Deep	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.
Midas	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.
Oc Ocala	Severe: floods.	Moderate: wetness, excess salt, excess sodium.	Moderate: floods, percs slowly, excess salt.	Slight.
Od Ocala	Severe: floods.	Moderate: excess salt.	Moderate: excess salt.	Slight.
Og Ocala	Severe: floods, excess salt, excess sodium.	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Slight.
Oh Ocala	Severe: floods.	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Moderate: too clayey.
Ok Ocala	Severe: floods.	Moderate: wetness, excess salt, excess sodium.	Moderate: floods, percs slowly, excess salt.	Moderate: too clayey.
Om*:				
Ocala Slightly saline	Severe: floods.	Moderate: wetness, excess salt, excess sodium.	Moderate: floods, percs slowly, excess salt.	Moderate: too clayey.
Ocala Strongly saline	Severe: floods, excess salt, excess sodium.	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Slight.
OP*:				
Ocala	Severe: floods, excess salt, excess sodium.	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Slight.
Ocala Drained	Severe: floods.	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Moderate: too clayey.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
OP*: Playa.				
ORC: Orovada	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
OSB: Orovada	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.
OtA: Orovada	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.
OU*:				
Orovada	Moderate: slopes, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Humdun	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
OV*:				
Orovada	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
OW*:				
Orovada	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
Ferdelford	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
PC*:				
Pie Creek	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Susie Creek	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Toeja	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
Pk: Pocker	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Moderate: dusty.
PM*:				
Primeaux	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
PM*:				
Packer	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones.
Tusel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
PS*:				
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
Orovada	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
RaA Rad	Moderate: dusty.	Moderate: dusty.	Slight	Moderate: dusty.
RaB, RAC Rad	Moderate: dusty.	Moderate: dusty.	Moderate: slope.	Moderate: dusty.
RbB Rad	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
RC*:				
Rad Slightly alkaline	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Rad	Moderate: dusty.	Moderate: dusty.	Moderate: slope.	Moderate: dusty.
Rd*:				
Rad	Moderate: dusty.	Moderate: dusty.	Slight	Moderate: dusty.
Blackhawk	Severe: cemented pan, excess salt.	Severe: cemented pan, excess salt.	Severe: cemented pan, excess salt, small stones.	Moderate: small stones.
RE*:				
Rad	Moderate: dusty.	Moderate: dusty.	Moderate: slope.	Moderate: dusty.
Brock	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones, cemented pan.	Severe: large stones.
RF*:				
Ramires	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Chen	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, depth to rock, small stones.	Severe: small stones.
Bobs	Moderate: slope, dusty, small stones.	Moderate: slope, dusty, small stones.	Severe: slope, cemented pan, small stones.	Moderate: dusty, small stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
RG*:				
Ramires	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones.
Chen	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, depth to rock, small stones.	Severe: small stones.
Pie Creek	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones.
RH*:				
Ramires	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
Creva	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.
RH2*:				
Ramires	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Creva	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.
RK*:				
Ramires	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones.
Creva	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.
RL*:				
Ramires	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Singletree	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
RM*:				
Ramires	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Taylor Creek	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rn: Rixie	Severe: floods.	Moderate: excess salt.	Moderate: too clayey, excess salt.	Slight.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Ro: Rixie	Severe: floods, excess salt, excess sodium.	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Moderate: wetness, too clayey.
Rr: Rixie	Severe: floods.	Moderate: wetness, excess salt, too clayey.	Moderate: excess salt, too clayey.	Moderate: too clayey, wetness.
Rs: Rose Creek	Severe: floods.	Moderate: floods, wetness.	Severe: floods.	Moderate: floods, wetness.
Rt: Rose Creek	Severe: floods.	Slight	Moderate: small stones.	Slight.
Ru: Rosney	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Severe: excess salt, excess sodium.	Moderate: dusty.
SA*:				
Short Creek 30 to 50 percent slopes	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Short Creek 50 to 75 percent slopes	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
SBB: Simon	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty, small stones.	Moderate: dusty.
SC*:				
Simon	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty, small stones.	Moderate: dusty.
Bosco	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.
SD*:				
Slaven 15 to 30 percent slopes	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
Slaven 30 to 50 percent slopes	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.
Mascamp	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.
SE*:				
Slaven	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
Primeaux	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, small stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
SF*:				
Slaven	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
Ramires	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
SG*:				
Slaven	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones.
Toeja	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
SH*:				
Slaven	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.
Torro	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Tusel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
SR*:				
Stampede	Moderate: slope, percs slowly, small stones.	Moderate: slope, percs slowly, small stones.	Severe: slope, small stones.	Moderate: dusty.
Donna	Moderate: small stones, percs slowly.	Moderate: small stones, percs slowly.	Severe: small stones.	Moderate: small stones.
SS*:				
Stampede	Moderate: slope, percs slowly, small stones.	Moderate: slope, percs slowly, small stones.	Severe: slope, small stones.	Moderate: dusty.
Donna	Moderate: small stones, percs slowly.	Moderate: small stones, percs slowly.	Severe: small stones.	Moderate: small stones.
Short Creek	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
ST*:				
Stampede	Moderate: slope, percs slowly, small stones.	Moderate: slope, percs slowly, small stones.	Severe: slope, small stones.	Moderate: dusty.
Short Creek	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
SU*:				
Susie Creek	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Pattani	Moderate: slope, percs slowly, too clayey.	Moderate: slope, too clayey, percs slowly.	Severe: slope, too clayey.	Moderate: too clayey.
SV*:				
Susie Creek	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Pie Creek	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Pattani	Moderate: slope, percs slowly, too clayey.	Moderate: slope, too clayey, percs slowly.	Severe: slope, too clayey.	Moderate: too clayey.
SW*:				
Susie Creek	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Short Creek	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Toeja	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
TA*:				
Taylor Creek	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Chen	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, depth to rock, small stones.	Severe: small stones.
Ramires	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
TC*:				
Taylor Creek	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Singletree	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Torro	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
TDA Tenabo	Severe: cemented pan, excess sodium.	Severe: excess sodium, cemented pan.	Severe: cemented pan, excess sodium.	Moderate: dusty.
TEC Tenabo	Severe: cemented pan, excess sodium.	Severe: excess sodium, cemented pan.	Severe: slope, large stones, cemented pan.	Moderate: large stones, dusty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
TF*:				
Tenabo Extremely stony loam	Severe: slope, large stones, cemented pan.	Severe: slope, large stones, cemented pan.	Severe: slope, large stones, cemented pan.	Severe: large stones.
Tenabo Cobbly silt loam	Severe: cemented pan, excess sodium.	Severe: excess sodium, cemented pan.	Severe: slope, large stones, cemented pan.	Moderate: large stones, dusty.
TG*:				
Tenabo	Severe: cemented pan, excess sodium.	Severe: excess sodium, cemented pan.	Severe: slope, large stones, cemented pan.	Moderate: large stones, dusty.
Brock	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones, cemented pan.	Severe: large stones.
Whirlo	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: small stones, dusty.
TH*:				
Tenabo	Severe: slope, large stones, cemented pan.	Severe: slope, large stones, cemented pan.	Severe: slope, large stones, cemented pan.	Severe: large stones.
Rubble land.				
TL*:				
Toeja 15 to 30 percent slopes	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
Toeja 4 to 15 percent slopes	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
TM*:				
Toeja	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
Ucopia	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy.
Ucopia Eroded	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
TN*:				
Tomera	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Cherry Spring	Moderate: dusty.	Moderate: dusty.	Moderate: slope, cemented pan, dusty.	Moderate: dusty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
TO*:				
Torro	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Jack Creek	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
TR*:				
Torro	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Tusel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
TS*:				
Torro	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Tusel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Badland.				
TT*:				
Torro	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Tusel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Packer	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.
TU*:				
Triplen	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Tenabo	Severe: cemented pan, excess sodium.	Severe: excess sodium, cemented pan.	Severe: cemented pan, excess sodium.	Moderate: dusty.
TV*:				
Tusel	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Hapgood	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Packer	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.
UHE*:				
Ucopia 15 to 30 percent slopes	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
JHE*:				
Ucopia----------------- 30 to 50 percent slopes	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Humdun-----------------	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
JHF*:				
Ucopia----------------- 15 to 30 percent slopes	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy.
Ucopia----------------- 30 to 50 percent slopes	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Humdun-----------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
UKF-------------------- Urtah	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
Wc--------------------- Welch	Severe: floods, wetness.	Severe: wetness.	Severe: wetness, floods.	Severe: wetness.
Wd--------------------- Welch	Severe: floods.	Moderate: floods.	Severe: floods.	Moderate: floods.
WE*:				
Welch------------------	Severe: floods.	Moderate: floods.	Severe: floods.	Moderate: floods.
Bosco------------------	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.
WGB-------------------- Whirlo	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: small stones, dusty.
WH*:				
Whirlo-----------------	Severe: large stones.	Moderate: slope, large stones.	Severe: slope, small stones.	Severe: large stones.
Tenabo-----------------	Severe: cemented pan, excess sodium.	Severe: excess sodium, cemented pan.	Severe: slope, large stones, cemented pan.	Moderate: large stones, dusty.
WlA, WlB, WmA---------- Wholan	Severe: floods.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.
WnA-------------------- Wholan	Severe: floods.	Moderate: excess fines.	Moderate: dusty.	Moderate: dusty.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that th soil was not rated]

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangela wildli
ALF----------------- Alley	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
AN*:									
Alley--------------	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Brock--------------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
AR*:									
Alley--------------	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Rock outcrop.									
Rubble land.									
Au*. Alluvial land									
BaA----------------- Beowawe	Very poor	Very poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor.
BB*:									
Beowawe------------	Very poor	Very poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor.
Broyles------------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
BC------------------ Beowawe variant	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Very poor	Poor	Very poo
BD*:									
Berning------------	Very poor	Very poor	Poor	Fair	Very poor	Very poor	Very poor	Very poor	Poor.
Short Creek--------	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
BE*:									
Berning------------	Poor	Fair	Poor	Fair	Very poor	Very poor	Poor	Very poor	Poor.
Toeja--------------	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Bf------------------ Bicondoa	Poor	Poor	Poor	Poor	Fair	Fair	Poor	Fair	Poor.
Bg------------------ Bicondoa	Poor	Fair	Poor	Poor	Good	Good	Poor	Good	Poor.
BHD----------------- Bobs	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Bk------------------ Bosco	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
BL*:									
Bosco--------------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Welch--------------	Poor	Poor	Fair	Fair	Poor	Poor	Poor	Poor	Fair.
BM*:									
Boulflat-----------	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
Havingdon----------	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor	Very poor
Brock--------------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangeland wildlife
N*:									
Old Camp variant	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Boulflat	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
Humdun	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
O*:									
Brock	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Boulflat	Poor	Fair	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
Rad	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
pA, BPB Broyles	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
QE Bucan	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
RF Bucan	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
S*, BT*:									
Bucan Loam and stony loam	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Bucan Gravelly loam and extremely stony loam	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
BU*:									
Bucan	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Clurde	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Orovada	Poor	Poor	Fair	Fair	Poor	Poor	Poor	---	Fair.
BV*:									
Bucan	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Creva	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Brock	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
BW*:									
Bucan.									
Glean	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Rock outcrop.									
BX*:									
Bucan Stony	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Bucan Extremely stony	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Humdun	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
BY*:									
Bucan	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangeland wildlife
BY*:									
Humdun	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Brock	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
BZ*:									
Bucan	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Humdun	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Rock outcrop.									
BZm*:									
Bucan	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Malpais	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
BZs*:									
Bucan	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Singletree	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
BZt*:									
Bucan Stony	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Bucan Extremely stony	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Toeja	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
BZu*:									
Bunky	Poor	Poor	Poor	Poor	Poor	Very poor	Poor	Very poor	Poor.
Clurde	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Short Creek	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
CAD Carstump	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
CBE Chen	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
CC*:									
Chen	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Pie Creek	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Ramires	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
CD*:									
Chen	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Pie Creek	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Taylor Creek	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
CEE*, CEF*:									
Chen	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Taylor Creek	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Mosquet	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangeland wildlife
CF*:									
Cherry Spring-----	Poor	Poor	Poor	Poor	Poor	Very poor	Poor	Very poor	Poor.
Berning-----------	Poor	Fair	Poor	Fair	Very poor	Very poor	Poor	Very poor	Poor.
CG*:									
Cherry Spring-----	Poor	Poor	Poor	Poor	Poor	Very poor	Poor	Very poor	Poor.
Cortez------------	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Chiara------------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
CH*:									
Cherry Spring-----	Poor	Poor	Poor	Poor	Poor	Very poor	Poor	Very poor	Poor.
Cortez------------	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Tomera------------	Poor	Poor	Fair	Fair	Poor	Very poor	Poor	Very poor	Fair.
CK*:									
Cherry Spring-----	Poor	Poor	Poor	Poor	Poor	Very poor	Poor	Very poor	Poor.
Orovada-----------	Poor	Poor	Fair	Fair	Poor	Poor	Poor	---	Fair.
CL*:									
Chiara------------ Very stony	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Chiara------------ Extremely stony	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Brock-------------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
CM*:									
Chiara------------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Cherry Spring-----	Poor	Poor	Poor	Poor	Poor	Very poor	Poor	Very poor	Poor.
Cortez------------	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
CN---------------- Cluro	Very poor	Very poor	Poor	Poor	Fair	Fair	Very poor	Fair	Poor.
Co, Cp------------ Cluro	Very poor	Very poor	Poor	Poor	Poor	Fair	Very poor	Poor	Poor.
Cr---------------- Cluro	Very poor	Very poor	Poor	Poor	Fair	Fair	Very poor	Fair	Poor.
CS*:									
Coff--------------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Denay-------------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Ct---------------- Coit	Poor	Poor	Fair	Fair	Fair	Fair	Poor	Fair	Fair.
Cu*:									
Coit--------------	Poor	Poor	Fair	Fair	Fair	Fair	Poor	Fair	Fair.
Griver------------	Poor	Poor	Poor	Poor	Good	Good	Poor	Good	Poor.
CV*:									
Creva-------------	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Chen--------------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangeland wildlife
CW2*:									
Creva	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Ramires	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Cx Crooked Creek	Poor	Fair	Fair	Fair	Good	Good	Fair	Good	Fair.
CY Crooked Creek	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair.
DM*:									
Donna	Very poor	Very poor	Fair	Fair	Poor	Very poor	Poor	Very poor	Fair.
Simon	Poor	Poor	Fair	Fair	Poor	Very poor	Poor	Very poor	Fair.
DN*:									
Donna	Very poor	Very poor	Fair	Fair	Poor	Very poor	Poor	Very poor	Fair.
Stampede	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
Short Creek	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Do, Dp Dunphy	Very poor	Very poor	Very poor	Very poor	Very poor	Fair	Very poor	Poor	Very poor.
Dr Dunphy	Poor	Poor	Poor	Poor	Fair	Fair	Poor	Fair	Poor.
Ds Dunphy	Very poor	Very poor	Very poor	Very poor	Poor	Fair	Very poor	Poor	Very poor.
FB*:									
Ferdelford 15 to 30 percent slopes	Poor	Fair	Fair	Fair	Very poor	Very poor	Fair	Very poor	Fair.
Ferdelford 30 to 50 percent slopes	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Bucan	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
FD*:									
Ferdelford	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Puett	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Berning	Poor	Fair	Poor	Fair	Very poor	Very poor	Poor	Very poor	Poor.
FE*:									
Ferdelford	Poor	Fair	Fair	Fair	Very poor	Very poor	Fair	Very poor	Fair.
Puett	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Susie Creek	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
FF*:									
Ferdelford	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Ramires	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
FH*:									
Ferdelford	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangeland wildlife
FH*:									
Susie Creek	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Toeja	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Fk: Four Star	Poor	Fair	Poor	Poor	Good	Good	Poor	Good	Poor.
Fm: Four Star	Fair	Fair	Good	Good	Poor	Fair	Fair	Poor	Good.
Fn*:									
Four Star	Poor	Fair	Poor	Poor	Good	Good	Poor	Good	Poor.
Bosco	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Fo*:									
Four Star	Fair	Fair	Good	Good	Poor	Fair	Fair	Poor	Good.
Bosco	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Ge, Gg: Geysen	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Very poor	Poor	Very poor.
GH*:									
Glean	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Rock outcrop.									
Rubble land.									
Gk: Griver	Poor	Poor	Poor	Poor	Good	Good	Poor	Good	Poor.
Gm: Griver	Poor	Poor	Poor	Poor	Fair	Fair	Poor	Fair	Poor.
Gn: Griver	Poor	Poor	Poor	Poor	Good	Good	Poor	Good	Poor.
Go: Griver	Very poor	Poor	Poor	Poor	Good	Good	Poor	Good	Poor.
Gr*:									
Griver	Poor	Poor	Poor	Poor	Good	Good	Poor	Good	Poor.
Griver Wet	Very poor	Poor	Poor	Poor	Good	Good	Poor	Good	Poor.
Gx*:									
Griver	Poor	Poor	Poor	Poor	Good	Good	Poor	Good	Poor.
Alluvial land.									
HG*:									
Hapgood Very gravelly loam	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Hapgood Silt loam	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Packer	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Wetland wildlife	Rangeland wildlife
Hh, Hk-------------- Humboldt	---	---	Poor	Very poor	Good	Good	---	Good	Very poo
Hm------------------ Humboldt	---	---	Very poor	Very poor	Good	Good	---	Good	Very poo
Hn*:									
Humboldt---------- Slightly saline	---	---	Poor	Very poor	Good	Good	---	Good	Very poo
Humboldt---------- Strongly saline	---	---	Very poor	Very poor	Good	Good	---	Good	Very poo
HO*:									
Humdun------------	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Bucan-------------	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Havingdon---------	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Poor	Very poor	Very poo
Hr------------------ Hussa	Poor	Fair	Poor	Poor	Good	Good	Poor	Good	Poor.
Hs------------------ Hussa	Poor	Poor	Fair	Fair	Fair	Fair	Poor	Fair	Fair.
Ht------------------ Hussa	Poor	Poor	Poor	Poor	Poor	Good	Poor	Fair	Poor.
Ib, Is-------------- Iron Blossom	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Very poor	Poor	Poor.
KAD----------------- Kawich	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
MA*:									
Malpais-----------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Rock outcrop.									
Rubble land.									
Mc*:									
Marsh.									
Crooked Creek-----	Poor	Fair	Fair	Fair	Good	Good	Fair	Good	Fair.
ME*:									
Mascamp-----------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Carstump----------	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
Mf------------------ McConnel	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Mh*:									
McConnel----------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Blackhawk---------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Mo*:									
McConnel----------	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Ocala-------------	Very poor	Very poor	Very poor	Very poor	Poor	Good	Very poor	Fair	Very poor.
Mr------------------ Midas	Very poor	Very poor	Poor	Poor	Very poor	Good	Very poor	Poor	Poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangeland wildlife
Is*:									
Midas-- Deep	Very poor	Very poor	Poor	Poor	Very poor	Good	Very poor	Poor	Poor.
Midas--	Very poor	Very poor	Poor	Poor	Very poor	Good	Very poor	Poor	Poor.
Oc, Od, Og, Oh, Ok-- Ocala	Very poor	Very poor	Very poor	Very poor	Poor	Good	Very poor	Fair	Very poor.
Om*:									
Ocala-- Slightly saline	Very poor	Very poor	Very poor	Very poor	Poor	Good	Very poor	Fair	Very poor.
Ocala-- Strongly saline	Very poor	Very poor	Very poor	Very poor	Poor	Good	Very poor	Fair	Very poor.
OP*:									
Ocala--	Very poor	Very poor	Very poor	Very poor	Poor	Good	Very poor	Fair	Very poor.
Ocala-- Drained	Very poor	Very poor	Very poor	Very poor	Poor	Good	Very poor	Fair	Very poor.
Playa.									
ORC-- Orovada	Poor	Poor	Fair	Fair	Poor	Poor	Poor	---	Fair.
OSB-- Orovada	Poor	Poor	Fair	Fair	Poor	Poor	Poor	---	Fair.
OtA-- Orovada	Poor	Poor	Fair	Fair	Poor	Poor	Poor	---	Fair.
OU*:									
Orovada--	Poor	Poor	Fair	Fair	Poor	Poor	Poor	---	Fair.
Humdun--	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Puett--	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
OV*:									
Orovada--	Poor	Poor	Fair	Fair	Poor	Poor	Poor	---	Fair.
Puett--	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
OW*:									
Orovada--	Poor	Poor	Fair	Fair	Poor	Poor	Poor	---	Fair.
Puett--	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Ferdelford--	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
PC*:									
Pie Creek--	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Susie Creek--	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Toeja--	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Pk-- Pocker	Very poor	Very poor	Very poor	Very poor	Very poor	Good	Very poor	Poor	Very poor.
PM*:									
Primeaux--	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangelan wildlif
PM*:									
Packer	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poo.
Tusel	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
PS*:									
Puett	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poo
Orovada	Poor	Poor	Fair	Fair	Poor	Poor	Poor	---	Fair.
RaA, RaB, RAC Rad	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
RbB Rad	Poor	Poor	Very poor	Very poor	Very poor	Poor	Poor	Very poor	Very poor
RC*:									
Rad Slightly alkali	Poor	Poor	Very poor	Very poor	Very poor	Poor	Poor	Very poor	Very poor
Rad	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Rd*:									
Rad	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Blackhawk	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
RE*:									
Rad	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Brock	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
RF*:									
Ramires	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Chen	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Bobs	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
RG*:									
Ramires	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Chen	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Pie Creek	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
RH*:									
Ramires	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Creva	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
RH2*:									
Ramires	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Creva	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
RK*:									
Ramires	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Creva	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
RL*:									
Ramires	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Singletree	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangeland wildlife
RM*:									
Ramires	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Taylor Creek	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Rn: Rixie	Poor	Poor	Fair	Fair	Poor	Good	Poor	Fair	Fair.
Ro, Rr: Rixie	Poor	Poor	Fair	Fair	Good	Good	Poor	Good	Fair.
Rs: Rose Creek	Very poor	Poor	Fair	Fair	Good	Good	Poor	Good	Fair.
Rt: Rose Creek	Poor	Poor	Fair	Fair	Fair	Fair	Poor	Fair	Fair.
Ru: Rosney	Very poor	Very poor	Very poor	Very poor	Poor	Very poor	Very poor	Very poor	Very poor.
SA*:									
Short Creek, 30 to 50 percent slopes	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Short Creek, 50 to 75 percent slopes	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
SBB: Simon	Poor	Poor	Fair	Fair	Poor	Very poor	Poor	Very poor	Fair.
SC*:									
Simon	Poor	Poor	Fair	Fair	Poor	Very poor	Poor	Very poor	Fair.
Bosco	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
SD*:									
Slaven, 15 to 30 percent slopes	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Slaven, 30 to 50 percent slopes	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Mascamp	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
SE*:									
Slaven	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Primeaux	Poor	Fair	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
SF*:									
Slaven	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Ramires	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
SG*:									
Slaven	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Toeja	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangelan wildlif
SH*:									
Slaven	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Torro	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Tusel	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
SR*:									
Stampede	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
Donna	Very poor	Very poor	Fair	Fair	Poor	Very poor	Poor	Very poor	Fair.
SS*:									
Stampede	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
Donna	Very poor	Very poor	Fair	Fair	Poor	Very poor	Poor	Very poor	Fair.
Short Creek	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
ST*:									
Stampede	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
Short Creek	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
SU*:									
Susie Creek	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Pattani	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
SV*:									
Susie Creek	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Pie Creek	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Pattani	Poor	Poor	Poor	Poor	Very poor	Very poor	Poor	Very poor	Poor.
SW*:									
Susie Creek	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Short Creek	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Toeja	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
TA*:									
Taylor Creek	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Chen	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Ramires	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
TC*:									
Taylor Creek	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Singletree	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Torro	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
TDA, TEC Tenabo	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
TF*:									
Tenabo Extremely stony loam	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor
Tenabo Cobbly silt loam	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangeland wildlife
TG*:									
Tenabo	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Brock	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Whirlo	Very poor	Very poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor.
TH*:									
Tenabo	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
Rubble land.									
TL*:									
Toeja 15 to 30 percent slopes	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Toeja 4 to 15 percent slopes	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Puett	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
TM*:									
Toeja	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Ucopia	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Ucopia Eroded	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
TN*:									
Tomera	Poor	Poor	Fair	Fair	Poor	Very poor	Poor	Very poor	Fair.
Cherry Spring	Poor	Poor	Poor	Poor	Poor	Very poor	Poor	Very poor	Poor.
TO*:									
Torro	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Jack Creek	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
TR*:									
Torro	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Tusel	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
TS*:									
Torro	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Tusel	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Badland.									
TT*:									
Torro	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Tusel	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Packer	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.
TU*:									
Triplen	Poor	Poor	Fair	Fair	Poor	Poor	Poor	Poor	Fair.
Tenabo	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements						Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Wetland wildlife	Rangelar wildlif
TV*:									
Tusel	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Very poor	Very poor	Fair.
Hapgood	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Packer	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poc
UHE*:									
Ucopia, 15 to 30 percent slopes	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Ucopia, 30 to 50 percent slopes	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Humdun	Poor	Poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
UHF*:									
Ucopia, 15 to 30 percent slopes	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Ucopia, 30 to 50 percent slopes	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Humdun	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
UKF: Urtah	Very poor	Very poor	Fair	Fair	Very poor	Very poor	Poor	Very poor	Fair.
Wc: Welch	Very poor	Poor	Good	Fair	Good	Good	Poor	Good	Fair.
Wd: Welch	Poor	Poor	Fair	Fair	Poor	Poor	Poor	Poor	Fair.
WE*:									
Welch	Poor	Poor	Fair	Fair	Poor	Poor	Poor	Poor	Fair.
Bosco	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
WGB: Whirlo	Very poor	Very poor	Poor	Poor	Poor	Very poor	Very poor	Very poor	Poor.
WH*:									
Whirlo	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.
Tenabo	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poor	Very poo
WlA, WlB, WmA, WnA: Wholan	Very poor	Very poor	Poor	Poor	Very poor	Very poor	Very poor	Very poor	Poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
ALF-----Alley	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
AN*:					
Alley-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Brock-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
AR*:					
Alley-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.					
Rubble land.					
Au*. Alluvial land					
BaA-----Beowawe	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: low strength, frost action.
BB*:					
Beowawe-----	Slight-----	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength, frost action.
Broyles-----	Slight-----	Slight-----	Slight-----	Moderate: slope.	Moderate: low strength, frost action.
BC-----Beowawe variant	Moderate: too clayey.	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength.	Severe: low strength, shrink-swell.
BD*:					
Berning-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Short Creek-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BE*:					
Berning-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Toeja-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Bf-----Bicondoa	Severe: floods.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.	Severe: low strength, floods, frost action.
Bg-----Bicondoa	Severe: wetness, floods.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: low strength, wetness, floods.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
BHD-------------- Bobs	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.
Bk--------------- Bosco	Severe: cutbanks cave.	Slight----------	Slight----------	Slight-----------	Moderate: frost action.
BL*:					
Bosco------------	Severe: cutbanks cave.	Slight----------	Slight----------	Slight-----------	Moderate: frost action.
Welch------------	Moderate: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods, frost action.
BM*:					
Boulflat---------	Severe: slope, depth to rock, small stones.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.
Havingdon--------	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.
Brock------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BN*:					
Old Camp variant-	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.
Boulflat---------	Severe: slope, depth to rock, small stones.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.
Humdun-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BO*:					
Brock------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Boulflat---------	Severe: slope, depth to rock, small stones.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.
Rad--------------	Slight----------	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength.
BpA-------------- Broyles	Slight----------	Slight----------	Slight----------	Slight-----------	Moderate: low strength, frost action.
BPB-------------- Broyles	Slight----------	Slight----------	Slight----------	Moderate: slope.	Moderate: low strength, frost action.
BQE, BRF--------- Bucan	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
BS*, BT*:					
Bucan------------ Loam and stony loam	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Bucan------------ Gravelly loam and extremely stony loam	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
BU*:					
Bucan------------	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Clurde-----------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength, frost action.
Orovada----------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.
BV*:					
Bucan------------	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Creva------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Brock------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BW*:					
Bucan------------	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Glean------------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, large stones.
Rock outcrop.					
BX*:					
Bucan------------ Stony	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Bucan------------ Extremely stony	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Humdun-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
BY*:					
Bucan	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Humdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Brock	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BZ*:					
Bucan	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Humdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.					
BZm*:					
Bucan	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Malpais	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BZs*:					
Bucan	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Singletree	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BZt*:					
Bucan Stony	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Bucan Extremely stony	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Toeja	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BZu*:					
Bunky	Moderate: cemented pan.	Slight	Moderate: cemented pan.	Moderate: slope.	Moderate: frost action.
Clurde	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength, frost action.
Short Creek	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
CAD---------------- Carstump	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.
CBE---------------- Chen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock.
CC*:					
Chen--------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Pie Creek---------	Severe: depth to rock, slope.	Severe: shrink-swell, low strength, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Ramires-----------	Severe: slope, depth to rock.	Severe: slope, shrink-swell, low strength.	Severe: slope, depth to rock, shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: slope, shrink-swell, low strength.
CD*:					
Chen--------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Pie Creek---------	Severe: depth to rock, slope.	Severe: shrink-swell, low strength, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Taylor Creek------	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell, low strength.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
CEE*, CEF*:					
Chen--------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Taylor Creek------	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell, low strength.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Mosquet-----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.
CF*:					
Cherry Spring-----	Moderate: cemented pan.	Slight-----------	Slight-----------	Moderate: slope.	Moderate: low strength, frost action.
Berning-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
CG*:					
Cherry Spring-----	Moderate: cemented pan.	Slight-----------	Slight-----------	Moderate: slope.	Moderate: low strength, frost action.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
CG*:					
Cortez	Severe: cemented pan.	Severe: shrink-swell.	Severe: cemented pan, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.
Chiara	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.
CH*:					
Cherry Spring	Moderate: cemented pan.	Slight	Slight	Moderate: slope.	Moderate: low strength, frost action.
Cortez	Severe: cemented pan.	Severe: shrink-swell.	Severe: cemented pan, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.
Tomera	Moderate: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.
CK*:					
Cherry Spring	Moderate: cemented pan.	Slight	Slight	Moderate: slope.	Moderate: low strength, frost action.
Orovada	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength, frost action.
CL*:					
Chiara Very stony	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.
Chiara Extremely stony	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.
Brock	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
CM*:					
Chiara	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.
Cherry Spring	Moderate: cemented pan.	Slight	Slight	Moderate: slope.	Moderate: low strength, frost action.
Cortez	Severe: cemented pan.	Severe: shrink-swell.	Severe: cemented pan, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.
CN Cluro	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Severe: frost action.
Co, Cp Cluro	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength, frost action.
Cr Cluro	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Severe: frost action.
CS*:					
Coff	Severe: slope, cemented pan.	Severe: slope.	Severe: slope, cemented pan.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
CS*:					
Denay	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ct Coit	Severe: wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: floods, frost action.
Cu*:					
Coit	Severe: wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: floods, frost action.
Griver	Severe: wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: floods, frost action.
CV*:					
Creva	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Chen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
CW2*:					
Creva	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Ramires	Severe: slope, depth to rock.	Severe: slope, shrink-swell, low strength.	Severe: slope, depth to rock, shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: slope, shrink-swell, low strength.
Cx Crooked Creek	Severe: wetness.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: low strength, wetness, floods.
CY Crooked Creek	Moderate: too clayey, floods, wetness.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.	Severe: low strength, floods, frost action.
DM*:					
Donna	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan, shrink-swell.	Moderate: cemented pan, slope.	Severe: shrink-swell, low strength.
Simon	Slight	Moderate: shrink-swell, low strength.	Moderate: shrink-swell.	Moderate: slope, shrink-swell, low strength.	Moderate: low strength, frost action, shrink-swell.
DN*:					
Donna	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan, shrink-swell.	Moderate: cemented pan, slope.	Severe: shrink-swell, low strength.
Stampede	Severe: cemented pan.	Severe: shrink-swell, low strength.	Severe: cemented pan, shrink-swell, low strength.	Severe: slope, low strength, shrink-swell.	Severe: low strength, shrink-swell.
Short Creek	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Do, Dp------------ Dunphy	Slight-----------	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
Dr, Ds------------ Dunphy	Severe: wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: frost action.
FB*:					
Ferdelford------- 15 to 30 percent slopes	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ferdelford------- 30 to 50 percent slopes	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Bucan------------	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
FD*:					
Ferdelford-------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Puett------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Berning----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
FE*:					
Ferdelford-------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Puett------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Susie Creek------	Moderate: slope.	Severe: shrink-swell, low strength.	Severe: shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: low strength, shrink-swell.
FF*:					
Ferdelford-------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ramires----------	Severe: slope, depth to rock.	Severe: slope, shrink-swell, low strength.	Severe: slope, depth to rock, shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: slope, shrink-swell, low strength.
FH*:					
Ferdelford-------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Susie Creek------	Moderate: slope.	Severe: shrink-swell, low strength.	Severe: shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: low strength, shrink-swell.
Toeja------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Fk---------------- Four Star	Severe: wetness, floods.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, frost action.
Fm---------------- Four Star	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Fn*:					
Four Star	Severe: wetness, floods.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, frost action.
Bosco	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.
Fo*:					
Four Star	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Bosco	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.
Ge, Gg Geysen	Slight	Slight	Slight	Slight	Moderate: frost action.
GH*:					
Glean	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, large stones.
Rock outcrop.					
Rubble land.					
Gk Griver	Severe: wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: floods, frost action.
Gm Griver	Moderate: wetness, floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods, frost action.
Gn Griver	Severe: wetness.	Severe: floods.	Severe: floods, wetness, shrink-swell.	Severe: floods.	Severe: floods, frost action.
Go Griver	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, floods, frost action.
Gr*:					
Griver	Severe: wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: floods, frost action.
Griver Wet	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: wetness, floods, frost action.
Gx*:					
Griver	Severe: wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: floods, frost action.
Alluvial land.					
HG*:					
Hapgood Very gravelly loam	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
HG*:					
Hapgood Silt loam	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Packer	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hh, Hk, Hm Humboldt	Severe: wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.	Severe: floods, frost action, wetness.
Hn*:					
Humboldt Slightly saline	Severe: wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.	Severe: floods, frost action, wetness.
Humboldt Strongly saline	Severe: wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.	Severe: floods, low strength, wetness.	Severe: floods, frost action, wetness.
HO*:					
Humdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Bucan	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Havingdon	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.
Hr Hussa	Severe: cutbanks cave, wetness, floods.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness, frost action.
Hs Hussa	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods, frost action.
Ht Hussa	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness, frost action.
Ib, Is Iron Blossom	Slight	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength.	Moderate: low strength, shrink-swell.
KAD Kawich	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MA*:					
Malpais	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.					
Rubble land.					

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Mc*: Marsh.					
Crooked Creek	Severe: wetness.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: low strength, wetness, floods.
ME*: Mascamp	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.
Carstump	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.
Mf McConnel	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Mh*: McConnel	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Blackhawk	Severe: cutbanks cave, cemented pan.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan.
Mo*: McConnel	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Ocala	Severe: wetness.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods, frost action.
Mr Midas	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Ms*: Midas Deep	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Midas	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
Oc Ocala	Severe: wetness.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods, frost action.
Od Ocala	Moderate: wetness, floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, frost action.
Og Ocala	Severe: wetness.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods, frost action.
Oh Ocala	Moderate: wetness, floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, frost action.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Ok: Ocala	Severe: wetness.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods, frost action.
Om*:					
Ocala: Slightly saline	Severe: wetness.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods, frost action.
Ocala: Strongly saline	Severe: wetness.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods, frost action.
OP*:					
Ocala	Severe: wetness.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods, frost action.
Ocala: Drained	Moderate: wetness, floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, frost action.
Playa.					
ORC: Orovada	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.
OSB, OtA: Orovada	Slight	Slight	Slight	Slight	Moderate: low strength.
OU*:					
Orovada	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.
Humdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Puett	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
OV*:					
Orovada	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.
Puett	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
OW*:					
Orovada	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.
Puett	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ferdelford	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
PC*:					
Pie Creek	Severe: depth to rock, slope.	Severe: shrink-swell, low strength, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Susie Creek	Moderate: slope.	Severe: shrink-swell, low strength.	Severe: shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: low strength, shrink-swell.
Toeja	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Pk Pocker	Moderate: too clayey, wetness.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: low strength, shrink-swell.
PM*:					
Primeaux	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Packer	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Tusel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
PS*:					
Puett	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Orovada	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.
RaA, RaB Rad	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
RAC Rad	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength.
RbB Rad	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
RC*:					
Rad Slightly alkali	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
Rad	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength.
Rd*:					
Rad	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
Blackhawk	Severe: cutbanks cave, cemented pan.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan.
RE*:					
Rad	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
RE*:					
Brock	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
RF*:					
Ramires	Severe: slope, depth to rock.	Severe: slope, shrink-swell, low strength.	Severe: slope, depth to rock, shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: slope, shrink-swell, low strength.
Chen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Bobs	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.
RG*:					
Ramires	Severe: slope, depth to rock.	Severe: slope, shrink-swell, low strength.	Severe: slope, depth to rock, shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: slope, shrink-swell, low strength.
Chen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Pie Creek	Severe: depth to rock, slope.	Severe: shrink-swell, low strength, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
RH*, RH2*, RK*:					
Ramires	Severe: slope, depth to rock.	Severe: slope, shrink-swell, low strength.	Severe: slope, depth to rock, shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: slope, shrink-swell, low strength.
Creva	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
RL*:					
Ramires	Severe: slope, depth to rock.	Severe: slope, shrink-swell, low strength.	Severe: slope, depth to rock, shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: slope, shrink-swell, low strength.
Singletree	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
RM*:					
Ramires	Severe: slope, depth to rock.	Severe: slope, shrink-swell, low strength.	Severe: slope, depth to rock, shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: slope, shrink-swell, low strength.
Taylor Creek	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell, low strength.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Rn Rixie	Moderate: wetness.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, frost action.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Ro, Rr------------ Rixie	Severe: wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: floods, frost action, low strength.
Rs---------------- Rose Creek	Severe: wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Severe: floods, frost action.
Rt---------------- Rose Creek	Moderate: wetness.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: frost action.
Ru---------------- Rosney	Slight-----------	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength.	Severe: low strength.
SA*:					
Short Creek------ 30 to 50 percent slopes	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Short Creek------ 50 to 75 percent slopes	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SBB--------------- Simon	Slight-----------	Moderate: shrink-swell, low strength.	Moderate: shrink-swell.	Moderate: slope, shrink-swell, low strength.	Moderate: low strength, frost action, shrink-swell.
SC*:					
Simon------------	Slight-----------	Moderate: shrink-swell, low strength.	Moderate: shrink-swell.	Moderate: slope, shrink-swell, low strength.	Moderate: low strength, frost action, shrink-swell.
Bosco------------	Severe: cutbanks cave.	Slight-----------	Slight-----------	Slight-----------	Moderate: frost action.
SD*:					
Slaven----------- 15 to 30 percent slopes	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Slaven----------- 30 to 50 percent slopes	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Mascamp----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.
SE*:					
Slaven-----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Primeaux---------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
SF*:					
Slaven-----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
SF*:					
Ramires	Severe: slope, depth to rock.	Severe: slope, shrink-swell, low strength.	Severe: slope, depth to rock, shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: slope, shrink-swell, low strength.
SG*:					
Slaven	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
SG*:					
Toeja	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SH*:					
Slaven	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Torro	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Tusel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SR*:					
Stampede	Severe: cemented pan.	Severe: shrink-swell, low strength.	Severe: cemented pan, shrink-swell, low strength.	Severe: slope, low strength, shrink-swell.	Severe: low strength, shrink-swell.
Donna	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan, shrink-swell.	Moderate: cemented pan, slope.	Severe: shrink-swell, low strength.
SS*:					
Stampede	Severe: cemented pan.	Severe: shrink-swell, low strength.	Severe: cemented pan, shrink-swell, low strength.	Severe: slope, low strength, shrink-swell.	Severe: low strength, shrink-swell.
Donna	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan, shrink-swell.	Moderate: cemented pan, slope.	Severe: shrink-swell, low strength.
Short Creek	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
ST*:					
Stampede	Severe: cemented pan.	Severe: shrink-swell, low strength.	Severe: cemented pan, shrink-swell, low strength.	Severe: slope, low strength, shrink-swell.	Severe: low strength, shrink-swell.
Short Creek	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SU*:					
Susie Creek	Moderate: slope.	Severe: shrink-swell, low strength.	Severe: shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: low strength, shrink-swell.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
SU*:					
Pattani	Moderate: slope, depth to rock, too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, slope, low strength.	Severe: low strength, shrink-swell.
SV*:					
Susie Creek	Moderate: slope.	Severe: shrink-swell, low strength.	Severe: shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: low strength, shrink-swell.
Pie Creek	Severe: depth to rock, slope.	Severe: shrink-swell, low strength, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Pattani	Moderate: slope, depth to rock, too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, slope, low strength.	Severe: low strength, shrink-swell.
SW*:					
Susie Creek	Moderate: slope.	Severe: shrink-swell, low strength.	Severe: shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: low strength, shrink-swell.
Short Creek	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Toeja	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
TA*:					
Taylor Creek	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell, low strength.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Chen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.
Ramires	Severe: slope, depth to rock.	Severe: slope, shrink-swell, low strength.	Severe: slope, depth to rock, shrink-swell.	Severe: slope, shrink-swell, low strength.	Severe: slope, shrink-swell, low strength.
TC*:					
Taylor Creek	Severe: slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, shrink-swell, low strength.	Severe: shrink-swell, slope, low strength.	Severe: low strength, slope, shrink-swell.
Singletree	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Torro	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
TDA Tenabo	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan, frost action.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
TEC: Tenabo	Severe: slope, cemented pan.	Moderate: slope, cemented pan.	Severe: cemented pan.	Severe: slope.	Moderate: slope, cemented pan, frost action.
TF*:					
Tenabo Extremely stony loam	Severe: slope, cemented pan.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Tenabo Cobbly silt loam	Severe: slope, cemented pan.	Moderate: slope, cemented pan.	Severe: cemented pan.	Severe: slope.	Moderate: slope, cemented pan, frost action.
TG*:					
Tenabo	Severe: slope, cemented pan.	Moderate: slope, cemented pan.	Severe: cemented pan.	Severe: slope.	Moderate: slope, cemented pan, frost action.
Brock	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Whirlo	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.
TH*:					
Tenabo	Severe: slope, cemented pan.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rubble land.					
TL*:					
Toeja 15 to 30 percent slopes	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Toeja 4 to 15 percent slopes	Moderate: slope.	Moderate: slope, shrink-swell.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: slope, low strength, shrink-swell.
Puett	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
TM*:					
Toeja	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ucopia	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ucopia Eroded	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
TN*:					
Tomera	Moderate: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.
Cherry Spring	Moderate: cemented pan.	Slight	Slight	Moderate: slope.	Moderate: low strength, frost action.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
TO*:					
Torro	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Jack Creek	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
TR*:					
Torro	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Tusel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
TS*:					
Torro	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Tusel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Badland.					
TT*:					
Torro	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Tusel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Packer	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
TU*:					
Triplen	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.
Tenabo	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: cemented pan.	Moderate: cemented pan, frost action.
TV*:					
Tusel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hapgood	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Packer	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
UHE*, UHF*:					
Ucopia 15 to 30 percent slopes	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ucopia 30 to 50 percent slopes	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
UHE*, UHF*:					
Humdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
UKF Urtah	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Wc Welch	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: low strength, floods, frost action.
Wd Welch	Moderate: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods, frost action.
WE*:					
Welch	Moderate: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods, frost action.
Bosco	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.
WGB Whirlo	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.
WH*:					
Whirlo	Moderate: large stones, slope.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, frost action, large stones.
Tenabo	Severe: slope, cemented pan.	Moderate: slope, cemented pan.	Severe: cemented pan.	Severe: slope.	Moderate: slope, cemented pan, frost action.
WlA, WlB Wholan	Slight	Severe: floods.	Severe: floods.	Slight	Moderate: low strength, frost action.
WmA Wholan	Slight	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: frost action, low strength.
WnA Wholan	Slight	Severe: floods.	Severe: floods.	Slight	Moderate: low strength, frost action.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
ALF------------------ Alley	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: large stones, slope.
AN*:					
Alley--------------	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: large stones, slope.
Brock--------------	Severe: cemented pan, slope.	Severe: slope, cemented pan.	Moderate: cemented pan, slope, large stones.	Severe: slope.	Poor: thin layer, small stones, slope.
AR*:					
Alley--------------	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: large stones, slope.
Rock outcrop.					
Rubble land.					
Au*. Alluvial land					
BaA---------------- Beowawe	Severe: percs slowly.	Moderate: seepage.	Slight----------	Slight----------	Good.
BB*:					
Beowawe------------	Severe: percs slowly.	Moderate: slope, seepage.	Slight----------	Slight----------	Good.
Broyles------------	Slight----------	Severe: seepage.	Slight----------	Slight----------	Fair: small stones.
BC----------------- Beowawe variant	Severe: percs slowly.	Slight----------	Severe: too clayey.	Slight----------	Poor: too clayey.
BD*:					
Berning------------	Severe: slope.	Severe: slope, seepage.	Severe: slope.	Severe: slope.	Poor: slope, small stones.
Short Creek--------	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
BE*:					
Berning------------	Severe: slope.	Severe: slope, seepage.	Moderate: slope.	Severe: slope.	Poor: slope, small stones.
Toeja--------------	Severe: slope, percs slowly, depth to rock.	Severe: slope, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope.
Bf----------------- Bicondoa	Severe: floods, wetness, percs slowly.	Severe: floods.	Severe: floods, wetness, too clayey.	Severe: floods.	Poor: too clayey.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Bg----- Bicondoa	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, wetness.
BHD----- Bobs	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.	Moderate: slope.	Poor: thin layer, area reclaim.
Bk----- Bosco	Slight-----	Severe: seepage, small stones.	Severe: small stones.	Slight-----	Poor: small stones.
BL*:					
Bosco-----	Slight-----	Severe: seepage, small stones.	Severe: small stones.	Slight-----	Poor: small stones.
Welch-----	Severe: floods, percs slowly.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Fair: too clayey.
BM*:					
Boulflat-----	Severe: slope, cemented pan, depth to rock.	Severe: slope, seepage, depth to rock.	Severe: cemented pan, depth to rock.	Severe: slope.	Poor: slope, small stones.
Havingdon-----	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer.
Brock-----	Severe: cemented pan, slope.	Severe: slope, cemented pan.	Moderate: cemented pan, slope, large stones.	Severe: slope.	Poor: thin layer, small stones, slope.
BN*:					
Old Camp variant---	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: small stones, thin layer.
Boulflat-----	Severe: slope, cemented pan, depth to rock.	Severe: slope, seepage, depth to rock.	Severe: cemented pan, depth to rock.	Severe: slope.	Poor: slope, small stones.
Humdun-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
BO*:					
Brock-----	Severe: cemented pan, slope.	Severe: slope, cemented pan.	Moderate: cemented pan, slope, large stones.	Severe: slope.	Poor: thin layer, small stones, slope.
Boulflat-----	Severe: slope, cemented pan, depth to rock.	Severe: slope, seepage, depth to rock.	Severe: cemented pan, depth to rock.	Severe: slope.	Poor: slope, small stones.
Rad-----	Severe: percs slowly.	Moderate: seepage, slope.	Slight-----	Slight-----	Good.
BpA, BPB----- Broyles	Slight-----	Severe: seepage.	Slight-----	Slight-----	Fair: small stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BQE------------------ Bucan	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope.
BRF------------------ Bucan	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, slope.
BS*, BT*:					
Bucan--------------- Loam and stony loam	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope.
Bucan--------------- Gravelly loam and extremely stony loam	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, slope.
BU*:					
Bucan---------------	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, slope.
Clurde--------------	Severe: percs slowly.	Severe: slope, seepage.	Slight-----------	Moderate: slope.	Fair: slope.
Orovada-------------	Moderate: slope, percs slowly.	Severe: slope.	Slight-----------	Slight-----------	Fair: slope.
BV*:					
Bucan---------------	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope.
Creva---------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer, small stones.
Brock---------------	Severe: cemented pan, slope.	Severe: slope, cemented pan.	Moderate: cemented pan, slope, large stones.	Severe: slope.	Poor: thin layer, small stones, slope.
BW*:					
Bucan---------------	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope.
Glean---------------	Severe: depth to rock, slope, large stones.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: large stones, slope.
Rock outcrop.					

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BX*:					
Bucan-------------- Stony	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope.
Bucan-------------- Extremely stony	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, slope.
Humdun-------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
BY*:					
Bucan--------------	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope.
Humdun-------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Brock--------------	Severe: cemented pan, slope.	Severe: slope, cemented pan.	Moderate: cemented pan, slope, large stones.	Severe: slope.	Poor: thin layer, small stones, slope.
BZ*:					
Bucan--------------	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope.
Humdun-------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Rock outcrop.					
BZm*:					
Bucan--------------	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope.
Malpais------------	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
BZs*:					
Bucan--------------	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, slope.
Singletree---------	Severe: slope, depth to rock, percs slowly.	Severe: slope, seepage.	Severe: slope, seepage, depth to rock.	Severe: slope, seepage.	Poor: slope.
BZt*:					
Bucan-------------- Stony	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BZT*:					
Bucan-------------- Extremely stony	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, slope.
Toeja--------------	Severe: slope, percs slowly, depth to rock.	Severe: slope, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope.
BZu*:					
Bunky--------------	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Slight-----------	Poor: thin layer.
Clurde-------------	Severe: percs slowly.	Severe: slope, seepage.	Slight-----------	Moderate: slope.	Fair: slope.
Short Creek--------	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
CAD---------------- Carstump	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: slope, small stones, thin layer.
CBE---------------- Chen	Severe: slope, depth to rock, large stones.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope, large stones, thin layer.
CC*:					
Chen---------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: slope, small stones, thin layer.
Pie Creek----------	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope, thin layer.
Ramires------------	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer, large stones.
CD*:					
Chen---------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: slope, small stones, thin layer.
Pie Creek----------	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope, thin layer.
Taylor Creek-------	Severe: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Severe: slope.	Poor: too clayey, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CEE*:					
Chen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: slope, small stones, thin layer.
Taylor Creek	Severe: percs slowly, slope.	Severe: slope.	Severe: too clayey.	Severe: slope.	Poor: too clayey, slope.
Mosquet	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: thin layer, area reclaim.
CEF*:					
Chen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: slope, small stones, thin layer.
Taylor Creek	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, slope.
Mosquet	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: thin layer, area reclaim.
CF*:					
Cherry Spring	Severe: cemented pan, percs slowly.	Severe: cemented pan.	Severe: cemented pan.	Slight	Fair: thin layer.
Berning	Severe: slope.	Severe: slope, seepage.	Moderate: slope.	Severe: slope.	Poor: slope, small stones.
CG*:					
Cherry Spring	Severe: cemented pan, percs slowly.	Severe: cemented pan.	Severe: cemented pan.	Slight	Fair: thin layer.
Cortez	Severe: cemented pan, percs slowly.	Severe: cemented pan, seepage.	Severe: cemented pan.	Slight	Poor: excess sodium.
Chiara	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Slight	Poor: thin layer.
CH*:					
Cherry Spring	Severe: cemented pan, percs slowly.	Severe: cemented pan.	Severe: cemented pan.	Slight	Fair: thin layer.
Cortez	Severe: cemented pan, percs slowly.	Severe: cemented pan, seepage.	Severe: cemented pan.	Slight	Poor: excess sodium.
Tomera	Severe: percs slowly.	Severe: seepage.	Severe: excess sodium.	Slight	Poor: excess sodium.
CK*:					
Cherry Spring	Severe: cemented pan, percs slowly.	Severe: cemented pan.	Severe: cemented pan.	Slight	Fair: thin layer.
Orovada	Moderate: slope, percs slowly.	Severe: slope.	Slight	Slight	Fair: slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CL*:					
Chiara, Very stony	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.	Moderate: slope.	Poor: thin layer.
Chiara, Extremely stony	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan, large stones.	Moderate: slope.	Poor: thin layer.
Brock	Severe: cemented pan, slope.	Severe: slope, cemented pan.	Moderate: cemented pan, slope, large stones.	Severe: slope.	Poor: thin layer, small stones, slope.
CM*:					
Chiara	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Slight	Poor: thin layer.
Cherry Spring	Severe: cemented pan, percs slowly.	Severe: cemented pan.	Severe: cemented pan.	Slight	Fair: thin layer.
Cortez	Severe: cemented pan, percs slowly.	Severe: cemented pan, seepage.	Severe: cemented pan.	Slight	Poor: excess sodium.
CN, Cluro	Severe: percs slowly.	Severe: seepage.	Severe: wetness.	Moderate: wetness.	Good.
Co, Cp, Cluro	Severe: percs slowly.	Severe: seepage.	Slight	Slight	Good.
Cr, Cluro	Severe: percs slowly.	Severe: seepage.	Severe: wetness.	Moderate: wetness.	Good.
CS*:					
Coff	Severe: slope, cemented pan.	Severe: slope, cemented pan.	Severe: slope, cemented pan.	Severe: slope.	Poor: slope, small stones, thin layer.
Denay	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope, small stones.
Ct, Coit	Severe: floods, wetness.	Severe: seepage, floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Fair: wetness.
Cu*:					
Coit	Severe: floods, wetness.	Severe: seepage, floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Fair: wetness.
Griver	Severe: floods, wetness.	Severe: seepage, floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Fair: wetness.
CV*:					
Creva	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer, small stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CV*:					
Chen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: slope, small stones, thin layer.
CW2*:					
Creva	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer, small stones.
Ramires	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer.
Cx Crooked Creek	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, wetness.
CY Crooked Creek	Severe: floods, wetness, percs slowly.	Severe: floods.	Severe: floods, wetness, too clayey.	Severe: floods.	Poor: too clayey.
DM*:					
Donna	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Slight	Poor: too clayey, thin layer.
Simon	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: small stones.
DN*:					
Donna	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Slight	Poor: too clayey, thin layer.
Stampede	Severe: cemented pan, percs slowly.	Severe: slope, cemented pan.	Severe: cemented pan, too clayey.	Moderate: slope.	Poor: too clayey, thin layer.
Short Creek	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Do, Dp Dunphy	Severe: percs slowly.	Slight	Severe: excess sodium, excess salt.	Slight	Poor: excess sodium, excess salt.
Dr, Ds Dunphy	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness, excess sodium.	Severe: seepage, wetness.	Poor: excess salt, excess sodium.
FB*:					
Ferdelford 15 to 30 percent slopes	Severe: depth to rock, percs slowly, slope.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer.
Ferdelford 30 to 50 percent slopes	Severe: depth to rock, percs slowly, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope, thin layer.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
FB*:					
Bucan	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, slope.
FD*:					
Ferdelford	Severe: depth to rock, percs slowly, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope, thin layer.
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer.
Berning	Severe: slope.	Severe: slope, seepage.	Moderate: slope.	Severe: slope.	Poor: slope, small stones.
FE*:					
Ferdelford	Severe: depth to rock, percs slowly, slope.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer.
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock.	Severe: slope.	Poor: slope, thin layer.
Susie Creek	Severe: depth to rock.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Fair: slope, thin layer.
FF*:					
Ferdelford	Severe: depth to rock, percs slowly, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope, thin layer.
Ramires	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer, large stones.
FH*:					
Ferdelford	Severe: depth to rock, percs slowly, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope, thin layer.
Susie Creek	Severe: depth to rock.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Fair: slope, thin layer.
Toeja	Severe: slope, percs slowly, depth to rock.	Severe: slope, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope.
Fk Four Star	Severe: floods, wetness.	Severe: seepage, floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Fair: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Fm: Four Star	Severe: floods.	Severe: seepage, floods.	Severe: floods, seepage, wetness.	Severe: floods, seepage.	Good.
Fn*:					
Four Star	Severe: floods, wetness.	Severe: seepage, floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Fair: wetness.
Bosco	Slight	Severe: seepage, small stones.	Severe: small stones.	Slight	Poor: small stones.
Fo*:					
Four Star	Severe: floods.	Severe: seepage, floods.	Severe: floods, seepage, wetness.	Severe: floods, seepage.	Good.
Bosco	Slight	Severe: seepage, small stones.	Severe: small stones.	Slight	Poor: small stones.
Ge: Geysen	Moderate: percs slowly.	Moderate: seepage.	Severe: excess sodium.	Slight	Poor: excess sodium.
Gg: Geysen	Moderate: percs slowly.	Moderate: seepage.	Severe: excess sodium, excess salt.	Slight	Poor:
GH*:					
Glean	Severe: depth to rock, slope, large stones.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: large stones, slope.
Rock outcrop.					
Rubble land.					
Gk: Griver	Severe: floods, wetness.	Severe: seepage, floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Fair: wetness.
Gm: Griver	Severe: floods.	Severe: seepage, floods.	Severe: floods, seepage, wetness.	Severe: floods, seepage.	Good.
Gn: Griver	Severe: floods, wetness, percs slowly.	Severe: seepage, floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Fair: wetness.
Go: Griver	Severe: floods, wetness.	Severe: seepage, floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Poor: wetness.
Gr*:					
Griver	Severe: floods, wetness.	Severe: seepage, floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Fair: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Gr*:					
Griver Wet	Severe: floods, wetness.	Severe: seepage, floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Poor: wetness.
Gx*:					
Griver	Severe: floods, wetness.	Severe: seepage, floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Fair: wetness.
Alluvial land.					
HG*:					
Hapgood Very gravelly loam	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: small stones, slope.
Hapgood Silt loam	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: small stones, slope.
Packer	Severe: depth to rock, slope.	Severe: seepage, slope.	Severe: slope, depth to rock, seepage.	Severe: seepage, slope.	Poor: seepage, large stones, slope.
Hh, Hk Humboldt	Severe: floods, percs slowly, wetness.	Severe: wetness, floods.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, wetness.
Hm Humboldt	Severe: floods, percs slowly, wetness.	Severe: wetness, floods.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, wetness, excess salt.
Hn*:					
Humboldt Slightly saline	Severe: floods, percs slowly, wetness.	Severe: wetness, floods.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, wetness.
Humboldt Strongly saline	Severe: floods, percs slowly, wetness.	Severe: wetness, floods.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, wetness, excess salt.
HO*:					
Humdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Bucan	Severe: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope.
Havingdon	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer.
Hr Hussa	Severe: floods, wetness, percs slowly.	Severe: seepage, floods, wetness.	Severe: floods, seepage, wetness.	Severe: floods, seepage, wetness.	Poor: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Hs Hussa	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Fair: too clayey.
Ht Hussa	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Ib Iron Blossom	Severe: percs slowly.	Moderate: seepage.	Slight	Slight	Slight.
Is Iron Blossom	Severe: percs slowly.	Moderate: seepage.	Severe: excess sodium, excess salt.	Slight	Poor: excess salt, excess sodium.
KAD Kawich	Severe: slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: slope.	Poor: too sandy, slope.
MA*:					
Malpais	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Rock outcrop.					
Rubble land.					
Mc*: Marsh.					
Crooked Creek	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, wetness.
ME*:					
Mascamp	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: thin layer, slope.
Carstump	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: slope, small stones, thin layer.
Mf McConnel	Slight	Severe: seepage.	Severe: too sandy.	Slight	Poor: small stones, too sandy.
Mh*:					
McConnel	Slight	Severe: seepage.	Severe: too sandy.	Slight	Poor: small stones, too sandy.
Blackhawk	Severe: cemented pan.	Severe: seepage, cemented pan.	Moderate: cemented pan.	Slight	Poor: small stones, thin layer.
Mo*:					
McConnel	Slight	Severe: seepage.	Severe: too sandy.	Slight	Poor: small stones, too sandy.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Mo*:					
Ocala	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: excess salt, excess sodium.
Mr Midas	Severe: percs slowly.	Severe: seepage.	Severe: too sandy.	Slight	Poor: small stones, too sandy.
Ms*:					
Midas Deep	Severe: percs slowly.	Severe: seepage.	Severe: too sandy.	Slight	Poor: small stones, too sandy.
Midas	Severe: percs slowly.	Severe: seepage.	Severe: too sandy.	Slight	Poor: small stones, too sandy.
Oc Ocala	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Fair: too clayey, wetness.
Od Ocala	Severe: wetness, percs slowly.	Severe: floods.	Severe: wetness.	Moderate: floods, wetness.	Fair: too clayey.
Og Ocala	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: excess salt, excess sodium.
Oh Ocala	Severe: wetness, percs slowly.	Severe: floods.	Severe: wetness.	Moderate: floods, wetness.	Fair: too clayey.
Ok Ocala	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Fair: too clayey, wetness.
Om*:					
Ocala Slightly saline	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Fair: too clayey, wetness.
Ocala Strongly saline	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: excess salt, excess sodium.
OP*:					
Ocala	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: excess salt, excess sodium.
Ocala Drained	Severe: wetness, percs slowly.	Severe: floods.	Severe: wetness.	Moderate: floods, wetness.	Fair: too clayey.
Playa.					

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
ORC: Orovada	Moderate: slope, percs slowly.	Severe: slope.	Slight	Slight	Fair: slope.
OSB	Moderate: percs slowly.	Moderate: slope, seepage.	Slight	Slight	Good.
OtA: Orovada	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Good.
Ou*:					
Orovada	Moderate: slope, percs slowly.	Severe: slope.	Slight	Slight	Fair: slope.
Humdun	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer.
OV*:					
Orovada	Moderate: slope, percs slowly.	Severe: slope.	Slight	Slight	Fair: slope.
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer.
OW*:					
Orovada	Moderate: slope, percs slowly.	Severe: slope.	Slight	Slight	Fair: slope.
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer.
Ferdelford	Severe: depth to rock, percs slowly, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope, thin layer.
PC*:					
Pie Creek	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope, thin layer.
Susie Creek	Severe: depth to rock.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Fair: slope, thin layer.
Toeja	Severe: slope, percs slowly, depth to rock.	Severe: slope, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope.
Pk: Pocker	Severe: percs slowly.	Slight	Severe: too clayey, wetness, excess sodium.	Slight	Poor: excess sodium, excess salt.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PM*:					
Primeaux	Severe: depth to rock, slope, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: slope.	Poor: small stones, slope, thin layer.
Packer	Severe: depth to rock, slope.	Severe: seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage, slope.	Poor: seepage, large stones, slope.
Tusel	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope, small stones.
PS*:					
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer.
Orovada	Moderate: slope, percs slowly.	Severe: slope.	Slight	Slight	Fair: slope.
RaA Rad	Severe: percs slowly.	Moderate: seepage.	Slight	Slight	Good.
RaB, RAC Rad	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
RbB Rad	Severe: percs slowly.	Moderate: seepage, slope.	Severe: excess sodium.	Slight	Poor: excess sodium.
RC*:					
Rad Slightly alkali	Severe: percs slowly.	Moderate: seepage, slope.	Severe: excess sodium.	Slight	Poor: excess sodium.
Rad	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Rd*:					
Rad	Severe: percs slowly.	Moderate: seepage.	Slight	Slight	Good.
Blackhawk	Severe: cemented pan.	Severe: seepage, cemented pan.	Moderate: cemented pan.	Slight	Poor: small stones, thin layer.
RE*:					
Rad	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Brock	Severe: cemented pan, slope.	Severe: slope, cemented pan.	Moderate: cemented pan, slope, large stones.	Severe: slope.	Poor: thin layer, small stones, slope.
RF*:					
Ramires	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
RF*:					
Chen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: slope, small stones, thin layer.
Bobs	Severe: cemented pan.	Severe: slope, cemented pan.	Severe: cemented pan.	Moderate: slope.	Poor: thin layer, area reclaim.
RG*:					
Ramires	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer, large stones.
Chen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: slope, small stones, thin layer.
Pie Creek	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope, thin layer.
RH*:					
Ramires	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer.
Creva	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer, small stones.
RH2*:					
Ramires	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer.
Creva	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer, small stones.
RK*:					
Ramires	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer, large stones.
Creva	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer, small stones.
RL*:					
Ramires	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
RL*:					
Singletree	Severe: slope, depth to rock, percs slowly.	Severe: slope, seepage.	Severe: slope, seepage, depth to rock.	Severe: slope, seepage.	Poor: slope.
RM*:					
Ramires	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer.
Taylor Creek	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, slope.
Rn Rixie	Severe: percs slowly.	Severe: floods.	Severe: wetness.	Moderate: wetness, floods.	Fair: too clayey.
Ro, Rr Rixie	Severe: wetness, floods, percs slowly.	Severe: wetness, floods.	Severe: wetness, floods, excess salt.	Severe: wetness, floods.	Poor: excess salt, excess sodium.
Rs Rose Creek	Severe: floods, wetness.	Severe: floods, wetness, seepage.	Severe: floods, wetness, seepage.	Severe: floods, wetness, seepage.	Fair: wetness.
Rt Rose Creek	Moderate: floods, wetness.	Severe: seepage, floods.	Severe: seepage, wetness.	Severe: seepage.	Good.
Ru Rosney	Severe: percs slowly.	Slight	Severe: excess salt, excess sodium.	Slight	Poor: excess salt, excess sodium.
SA*:					
Short Creek 30 to 50 percent slopes	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Short Creek 50 to 75 percent slopes	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
SBB Simon	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: small stones.
SC*:					
Simon	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: small stones.
Bosco	Slight	Severe: seepage, small stones.	Severe: small stones.	Slight	Poor: small stones.
SD*:					
Slaven 15 to 30 percent slopes	Severe: depth to rock, slope, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: thin layer, small stones, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
SD*:					
Slaven------------- 30 to 50 percent slopes	Severe: depth to rock, slope, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: thin layer, small stones, slope.
Mascamp------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: thin layer, slope.
SE*:					
Slaven-------------	Severe: depth to rock, slope, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: thin layer, small stones, slope.
Primeaux-----------	Severe: depth to rock, slope, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: slope.	Poor: small stones, slope, thin layer.
SF*:					
Slaven-------------	Severe: depth to rock, slope, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: thin layer, small stones, slope.
Ramires------------	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer.
SG*:					
Slaven-------------	Severe: depth to rock, slope, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: thin layer, small stones, slope.
Toeja--------------	Severe: slope, percs slowly, depth to rock.	Severe: slope, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope.
SH*:					
Slaven-------------	Severe: depth to rock, slope, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: thin layer, small stones, slope.
Torro--------------	Severe: slope.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope, small stones.
Tusel--------------	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope, small stones.
SR*:					
Stampede-----------	Severe: cemented pan, percs slowly.	Severe: slope, cemented pan.	Severe: cemented pan, too clayey.	Moderate: slope.	Poor: too clayey, thin layer.
Donna--------------	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Slight-----------	Poor: too clayey, thin layer.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
SS*:					
Stampede	Severe: cemented pan, percs slowly.	Severe: slope, cemented pan.	Severe: cemented pan, too clayey.	Moderate: slope.	Poor: too clayey, thin layer.
Donna	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.	Slight	Poor: too clayey, thin layer.
Short Creek	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
ST*:					
Stampede	Severe: cemented pan, percs slowly.	Severe: slope, cemented pan.	Severe: cemented pan, too clayey.	Moderate: slope.	Poor: too clayey, thin layer.
Short Creek	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
SU*:					
Susie Creek	Severe: depth to rock.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Fair: slope, thin layer.
Pattani	Severe: depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: depth to rock.	Moderate: slope.	Poor: thin layer.
SV*:					
Susie Creek	Severe: depth to rock.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Fair: slope, thin layer.
Pie Creek	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: too clayey, slope, thin layer.
Pattani	Severe: depth to rock, percs slowly.	Severe: slope, depth to rock.	Severe: depth to rock.	Moderate: slope.	Poor: thin layer.
SW*:					
Susie Creek	Severe: depth to rock.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Fair: slope, thin layer.
Short Creek	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Toeja	Severe: slope, percs slowly, depth to rock.	Severe: slope, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope.
TA*:					
Taylor Creek	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, slope.
Chen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, too clayey.	Severe: slope.	Poor: slope, small stones, thin layer.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
TA*:					
Ramires	Severe: slope, depth to rock, percs slowly.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer.
TC*:					
Taylor Creek	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, slope.
Singletree	Severe: slope, depth to rock, percs slowly.	Severe: slope, seepage.	Severe: slope, seepage, depth to rock.	Severe: slope, seepage.	Poor: slope.
Torro	Severe: slope.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope, small stones.
TDA Tenabo	Severe: cemented pan.	Severe: seepage, small stones.	Severe: cemented pan, excess sodium.	Slight	Poor: thin layer, excess sodium.
TEC Tenabo	Severe: cemented pan.	Severe: slope, seepage, small stones.	Severe: cemented pan, excess sodium.	Moderate: slope.	Poor: thin layer, excess sodium.
TF*:					
Tenabo Extremely stony loam	Severe: slope, cemented pan.	Severe: slope, seepage, cemented pan.	Severe: excess sodium.	Severe: slope.	Poor: slope, thin layer, excess sodium.
Tenabo Cobbly silt loam	Severe: cemented pan.	Severe: slope, seepage, small stones.	Severe: cemented pan, excess sodium.	Moderate: slope.	Poor: thin layer, excess sodium.
TG*:					
Tenabo	Severe: cemented pan.	Severe: slope, seepage, small stones.	Severe: cemented pan, excess sodium.	Moderate: slope.	Poor: thin layer, excess sodium.
Brock	Severe: cemented pan, slope.	Severe: slope, cemented pan.	Moderate: cemented pan, slope, large stones.	Severe: slope.	Poor: thin layer, small stones, slope.
Whirlo	Slight	Severe: seepage.	Slight	Slight	Poor: small stones.
TH*:					
Tenabo	Severe: slope, cemented pan.	Severe: slope, seepage, cemented pan.	Severe: excess sodium.	Severe: slope.	Poor: slope, thin layer, excess sodium.
Rubble land.					
TL*:					
Toeja 15 to 30 percent slopes	Severe: slope, percs slowly, depth to rock.	Severe: slope, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
TL*:					
Toeja---------------- 4 to 15 percent slopes	Severe: percs slowly, depth to rock.	Severe: slope, seepage.	Severe: depth to rock, seepage.	Severe: seepage.	Fair: slope, thin layer, too clayey.
Puett----------------	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: depth to rock.	Severe: slope.	Poor: slope, thin layer.
TM*:					
Toeja----------------	Severe: slope, percs slowly, depth to rock.	Severe: slope, seepage.	Severe: depth to rock, seepage.	Severe: slope, seepage.	Poor: slope.
Ucopia---------------	Severe: slope, depth to rock.	Severe: slope, seepage.	Severe: depth to rock.	Severe: slope.	Poor: slope.
Ucopia--------------- Eroded	Severe: slope, depth to rock.	Severe: slope, seepage.	Severe: slope, depth to rock.	Severe: slope.	Poor: slope.
TN*:					
Tomera---------------	Severe: percs slowly.	Severe: seepage.	Severe: excess sodium.	Slight-----------	Poor: excess sodium.
Cherry Spring--------	Severe: cemented pan, percs slowly.	Severe: cemented pan.	Severe: cemented pan.	Slight-----------	Fair: thin layer
TO*:					
Torro----------------	Severe: slope.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope, small stones.
Jack Creek-----------	Severe: slope, depth to rock.	Severe: slope, seepage.	Severe: slope, seepage, depth to rock.	Severe: slope, seepage.	Poor: slope, small stones, seepage.
TR*:					
Torro----------------	Severe: slope.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope, small stones.
Tusel----------------	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope, small stones.
TS*:					
Torro----------------	Severe: slope.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope, small stones.
Tusel----------------	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope, small stones.
Badland.					
TT*:					
Torro----------------	Severe: slope.	Severe: slope, seepage.	Severe: slope, seepage.	Severe: slope, seepage.	Poor: slope, small stones.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
TT*:					
Tusel	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope, small stones.
Packer	Severe: depth to rock, slope.	Severe: seepage, slope.	Severe: slope, depth to rock, seepage.	Severe: seepage, slope.	Poor: seepage, large stones, slope.
TU*:					
Triplen	Moderate: slope.	Severe: slope, seepage.	Slight	Moderate: slope.	Fair: slope, small stones.
Tenabo	Severe: cemented pan.	Severe: seepage, small stones.	Severe: cemented pan, excess sodium.	Slight	Poor: thin layer, excess sodium.
TV*:					
Tusel	Severe: slope, percs slowly.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope, small stones.
Hapgood	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: small stones, slope.
Packer	Severe: depth to rock, slope.	Severe: seepage, slope.	Severe: slope, depth to rock, seepage.	Severe: seepage, slope.	Poor: seepage, large stones, slope.
UHE*:					
Ucopia 15 t0 30 percent slopes	Severe: slope, depth to rock.	Severe: slope, seepage.	Severe: depth to rock.	Severe: slope.	Poor: slope.
Ucopia 30 to 50 percent slopes	Severe: slope, depth to rock.	Severe: slope, seepage.	Severe: slope, depth to rock.	Severe: slope.	Poor: slope.
Humdun	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Poor: slope.
UHF*:					
Ucopia 15 to 30 percent slopes	Severe: slope, depth to rock.	Severe: slope, seepage.	Severe: depth to rock.	Severe: slope.	Poor: slope.
Ucopia 30 to 50 percent slopes	Severe: slope, depth to rock.	Severe: slope, seepage.	Severe: slope, depth to rock.	Severe: slope.	Poor: slope.
Humdun	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
UKF Urtah	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope, thin layer.
Wc Welch	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Wd: Welch	Severe: floods, percs slowly.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Fair: too clayey.
WE*:					
Welch	Severe: floods, percs slowly.	Severe: floods.	Severe: floods, wetness.	Severe: floods.	Fair: too clayey.
Bosco	Slight	Severe: seepage, small stones.	Severe: small stones.	Slight	Poor: small stones.
WGB: Whirlo	Slight	Severe: seepage.	Slight	Slight	Poor: small stones.
WH*:					
Whirlo	Moderate: slope, large stones.	Severe: slope, seepage.	Moderate: large stones.	Moderate: slope.	Poor: small stones.
Tenabo	Severe: cemented pan.	Severe: slope, seepage, small stones.	Severe: cemented pan, excess sodium.	Moderate: slope.	Poor: thin layer, excess sodium.
W1A, W1B: Wholan	Moderate: floods.	Moderate: seepage.	Moderate: floods.	Moderate: floods.	Good.
WmA: Wholan	Moderate: floods.	Severe: floods.	Moderate: floods.	Moderate: floods.	Good.
WnA: Wholan	Moderate: floods.	Moderate: seepage.	Moderate: floods.	Moderate: floods.	Good.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
ALF-------------------- Alley	Poor: slope.	Poor: excess fines.	Poor: excess fines.	Poor: large stones, slope.
AN*:				
Alley-----------------	Poor: slope.	Poor: excess fines.	Poor: excess fines.	Poor: large stones, slope.
Brock-----------------	Fair: large stones, frost action, slope.	Unsuited: thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, large stones, small stones.
AR*:				
Alley-----------------	Poor: slope.	Poor: excess fines.	Poor: excess fines.	Poor: large stones, slope.
Rock outcrop.				
Rubble land.				
Au*. Alluvial land				
BaA-------------------- Beowawe	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: excess salt.
BB*:				
Beowawe---------------	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: excess salt.
Broyles---------------	Fair: low strength, frost action.	Poor: excess fines.	Unsuited: excess fines.	Fair: small stones.
BC--------------------- Beowawe variant	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess salt, too clayey, excess sodium.
BD*:				
Berning---------------	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, slope.
Short Creek-----------	Poor: slope.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, slope.
BE*:				
Berning---------------	Fair: slope, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, slope.
Toeja-----------------	Fair: slope, low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Bf-------------------- Bicondoa	Poor: low strength, shrink-swell, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
Bg-------------------- Bicondoa	Poor: low strength, wetness, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, wetness.
BHD------------------- Bobs	Poor: thin layer, area reclaim.	Poor: excess fines, thin layer.	Poor: excess fines, thin layer.	Poor: small stones, thin layer, area reclaim.
Bk-------------------- Bosco	Fair: frost action.	Unsuited: small stones.	Good-----------------	Poor: small stones.
BL*:				
Bosco-----------------	Fair: frost action.	Unsuited: small stones.	Good-----------------	Poor: small stones.
Welch-----------------	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, small stones.
BM*:				
Boulflat--------------	Poor: thin layer.	Unsuited: excess fines.	Poor: excess fines.	Poor: slope, small stones.
Havingdon-------------	Poor: thin layer.	Unsuited: small stones.	Unsuited: excess fines.	Poor: slope, small stones.
Brock-----------------	Fair: large stones, frost action, slope.	Unsuited: thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, large stones, small stones.
BN*:				
Old Camp variant------	Poor: thin layer, slope.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: small stones, thin layer, slope.
Boulflat--------------	Poor: thin layer.	Unsuited: excess fines.	Poor: excess fines.	Poor: slope, small stones.
Humdun----------------	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
BO*:				
Brock-----------------	Fair: large stones, frost action, slope.	Unsuited: thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, large stones, small stones.
Boulflat--------------	Poor: thin layer.	Unsuited: excess fines.	Poor: excess fines.	Poor: slope, small stones.
Rad-------------------	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: excess salt.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
BpA, BPB: Broyles	Fair: low strength, frost action.	Poor: excess fines.	Unsuited: excess fines.	Fair: small stones.
BQE: Bucan	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
BRF: Bucan	Poor: low strength, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, small stones.
BS*:				
Bucan Loam	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Bucan Gravelly loam	Poor: low strength, slope, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, slope.
BT*:				
Bucan Stony loam	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, small stones.
Bucan Extremely stony loam	Poor: low strength, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, small stones.
BU*:				
Bucan	Poor: low strength, slope, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, slope.
Clurde	Fair: low strength, frost action.	Poor: excess fines.	Unsuited: excess fines.	Fair: slope, small stones.
Orovada	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
BV*:				
Bucan	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, small stones.
Creva	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Brock	Fair: large stones, frost action, slope.	Unsuited: thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, large stones, small stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
BW*:				
Bucan	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, small stones.
Glean	Poor: slope.	Poor: excess fines, large stones.	Poor: excess fines.	Poor: large stones, small stones, slope.
Rock outcrop.				
BX*:				
Bucan Stony	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, small stones.
Bucan Extremely stony	Poor: low strength, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, small stones.
Humdun	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
BY*:				
Bucan	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, small stones.
Humdun	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Brock	Fair: large stones, frost action, slope.	Unsuited: thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, large stones, small stones.
BZ*:				
Bucan	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, small stones.
Humdun	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Rock outcrop.				
BZm*:				
Bucan	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Malpais	Poor: slope.	Unsuited: small stones.	Poor: excess fines.	Poor: large stones, slope.
BZs*:				
Bucan	Poor: low strength, slope, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
BZs*:				
Singletree	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
BZt*:				
Bucan Stony	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, small stones.
Bucan Extremely stony	Poor: low strength, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, small stones.
Toeja	Fair: slope, low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
BZu*:				
Bunky	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
Clurde	Fair: low strength, frost action.	Poor: excess fines.	Unsuited: excess fines.	Fair: slope, small stones.
Short Creek	Poor: slope.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, slope.
CAD Carstump	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
CBE Chen	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, large stones.
CC*:				
Chen	Poor: thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Pie Creek	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, large stones.
Ramires	Poor: low strength, shrink-swell, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones.
CD*:				
Chen	Poor: thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Pie Creek	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, large stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CD*:				
Taylor Creek	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, too clayey, small stones.
CEE*:				
Chen	Poor: thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Taylor Creek	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, too clayey, small stones.
Mosquet	Poor: thin layer, area reclaim.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, small stones.
CEF*:				
Chen	Poor: thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Taylor Creek	Poor: low strength, slope, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, too clayey, small stones.
Mosquet	Poor: thin layer, area reclaim.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, small stones.
CF*:				
Cherry Spring	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Berning	Fair: slope, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, slope.
CG*:				
Cherry Spring	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Cortez	Poor: thin layer.	Poor: large stones, excess fines.	Poor: large stones, excess fines.	Poor: excess sodium.
Chiara	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Fair: thin layer.
CH*:				
Cherry Spring	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Cortez	Poor: thin layer.	Poor: large stones, excess fines.	Poor: large stones, excess fines.	Poor: excess sodium.
Tomera	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Poor: excess fines.	Poor: too clayey, small stones, excess sodium.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CK*:				
Cherry Spring	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Orovada	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
CL*:				
Chiara Very stony	Poor: thin layer.	Unsuited: thin layer, excess fines.	Unsuited: thin layer, excess fines.	Poor: large stones.
Chiara Extremely stony	Poor: thin layer.	Unsuited: thin layer, excess fines.	Unsuited: thin layer, excess fines.	Poor: large stones.
Brock	Fair: large stones, frost action, slope.	Unsuited: thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, large stones, small stones.
CM*:				
Chiara	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Fair: thin layer.
Cherry Spring	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Cortez	Poor: thin layer.	Poor: large stones, excess fines.	Poor: large stones, excess fines.	Poor: excess sodium.
CN Cluro	Poor: frost action.	Unsuited: excess fines.	Fair: excess fines.	Poor: excess salt, excess sodium.
Co, Cp Cluro	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: excess salt.
Cr Cluro	Poor: frost action.	Unsuited: excess fines.	Fair: excess fines.	Poor: excess salt, excess sodium.
CS*:				
Coff	Poor: slope, thin layer.	Unsuited: small stones.	Poor: excess fines, thin layer.	Poor: slope, small stones.
Denay	Poor: slope.	Unsuited: small stones.	Poor: excess fines.	Poor: slope, small stones.
Ct Coit	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: wetness.
Cu*:				
Coit	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: wetness.
Griver	Poor: frost action.	Fair: small stones, excess fines.	Fair: excess fines.	Fair: excess salt.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CV*:				
Creva	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Chen	Poor: thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
CW2*:				
Creva	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Ramires	Poor: low strength, thin layer, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Cx, CY Crooked Creek	Poor: low strength, frost action, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
DM*:				
Donna	Poor: thin layer, shrink-swell, low strength.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, too clayey.
Simon	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: small stones.
DN*:				
Donna	Poor: thin layer, shrink-swell, low strength.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, too clayey.
Stampede	Poor: low strength, shrink-swell, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, too clayey.
Short Creek	Poor: slope.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, slope.
Do, Dp Dunphy	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess salt, excess sodium.
Dr, Ds Dunphy	Poor: frost action.	Poor: excess fines.	Poor: excess fines.	Poor: excess salt, excess sodium.
FB*:				
Ferdelford 15 to 30 percent slopes	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, excess sodium, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
FB*:				
Ferdelford 30 to 50 percent slopes	Poor: thin layer, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, excess sodium, slope.
Bucan	Poor: low strength, slope, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, slope.
FD*:				
Ferdelford	Poor: thin layer, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, excess sodium, slope.
Puett	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, thin layer.
Berning	Fair: slope, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, slope.
FE*:				
Ferdelford	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, excess sodium, slope.
Puett	Poor: slope, thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, thin layer.
Susie Creek	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, small stones.
FF*:				
Ferdelford	Poor: thin layer, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, excess sodium, slope.
Ramires	Poor: low strength, shrink-swell, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones.
FH*:				
Ferdelford	Poor: thin layer, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, excess sodium, slope.
Susie Creek	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, small stones.
Toeja	Fair: slope, low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Fk Four Star	Poor: frost action.	Poor: excess fines.	Unsuited: excess fines.	Fair: wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Fm: Four Star	Fair: low strength, frost action.	Poor: excess fines.	Unsuited: excess fines.	Good.
Fn*:				
Four Star	Poor: frost action.	Poor: excess fines.	Unsuited: excess fines.	Fair: wetness.
Bosco	Fair: frost action.	Unsuited: small stones.	Good	Poor: small stones.
Fo*:				
Four Star	Fair: low strength, frost action.	Poor: excess fines.	Unsuited: excess fines.	Good.
Bosco	Fair: frost action.	Unsuited: small stones.	Good	Poor: small stones.
Ge, Gg: Geysen	Fair: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess salt, excess sodium.
GH*:				
Glean	Poor: slope.	Poor: excess fines, large stones.	Poor: excess fines.	Poor: large stones, small stones, slope.
Rock outcrop.				
Rubble land.				
Gk: Griver	Poor: frost action.	Fair: small stones, excess fines.	Fair: excess fines.	Fair: excess salt.
Gm: Griver	Poor: frost action.	Poor: excess fines.	Unsuited: excess fines.	Fair: small stones, excess salt.
Gn: Griver	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: excess salt, wetness.
Go: Griver	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Gr*:				
Griver	Poor: frost action.	Fair: small stones, excess fines.	Fair: excess fines.	Fair: excess salt.
Griver Wet	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Gx*:				
Griver	Poor: frost action.	Fair: small stones, excess fines.	Fair: excess fines.	Fair: excess salt.
Alluvial land.				
HG*:				
Hapgood Very gravelly loam	Poor: slope.	Unsuited: excess fines.	Poor: excess fines, thin layer.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
HG*:				
Hapgood----- Silt loam	Poor: slope.	Unsuited: excess fines.	Poor: excess fines, thin layer.	Poor: small stones, slope.
Packer-----	Poor: slope.	Poor: excess fines.	Fair: excess fines.	Poor: slope, large stones.
Hh----- Humboldt	Poor: frost action, low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Hk----- Humboldt	Poor: frost action, low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, wetness.
Hm----- Humboldt	Poor: frost action, low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess salt, too clayey, wetness.
Hn*:				
Humboldt----- Slightly saline	Poor: frost action, low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, wetness.
Humboldt----- Strongly saline	Poor: frost action, low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess salt, too clayey, wetness.
HO*:				
Humdun-----	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Bucan-----	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, small stones.
Havingdon-----	Poor: thin layer.	Unsuited: small stones.	Unsuited: excess fines.	Poor: slope, small stones.
Hr----- Hussa	Poor: wetness, frost action.	Fair: excess fines.	Unsuited: excess fines.	Poor: wetness.
Hs----- Hussa	Poor: frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Ht----- Hussa	Poor: wetness, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, excess sodium.
Ib, Is----- Iron Blossom	Fair: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess salt, excess sodium.
KAD----- Kawich	Fair: slope.	Poor: excess fines.	Unsuited: excess fines.	Poor: too sandy, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
MA*: Malpais	Poor: slope.	Unsuited: small stones.	Poor: excess fines.	Poor: large stones, slope.
Rock outcrop.				
Rubble land.				
Mc*: Marsh.				
Crooked Creek	Poor: low strength, frost action, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
ME*: Mascamp	Poor: thin layer, slope, area reclaim.	Unsuited: small stones, thin layer.	Poor: excess fines, thin layer.	Poor: small stones, slope.
Carstump	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Mf McConnel	Good	Good	Good	Poor: small stones.
Mh*: McConnel	Good	Good	Good	Poor: small stones.
Blackhawk	Poor: thin layer.	Poor: excess fines.	Poor: excess fines.	Poor: small stones, thin layer.
Mo*: McConnel	Good	Good	Good	Poor: small stones.
Ocala	Poor: low strength, frost action.	Poor: excess fines.	Poor: excess fines.	Poor: excess salt, excess sodium.
Mr Midas	Good	Unsuited: small stones.	Fair: large stones.	Poor: small stones.
Ms*: Midas Deep	Good	Unsuited: small stones.	Fair: large stones.	Poor: small stones.
Midas	Good	Unsuited: small stones.	Fair: large stones.	Poor: small stones.
Oc Ocala	Poor: low strength, frost action.	Poor: excess fines.	Poor: excess fines.	Fair: excess salt, excess sodium.
Od Ocala	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess salt, excess sodium.
Og Ocala	Poor: low strength, frost action.	Poor: excess fines.	Poor: excess fines.	Poor: excess salt, excess sodium.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Oh: Ocala	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess salt, excess sodium.
Ok: Ocala	Poor: low strength, frost action.	Poor: excess fines.	Poor: excess fines.	Fair: excess salt, excess sodium.
Om*:				
Ocala, Slightly saline	Poor: low strength, frost action.	Poor: excess fines.	Poor: excess fines.	Fair: excess salt, excess sodium.
Ocala, Strongly saline	Poor: low strength, frost action.	Poor: excess fines.	Poor: excess fines.	Poor: excess salt, excess sodium.
OP*:				
Ocala	Poor: low strength, frost action.	Poor: excess fines.	Poor: excess fines.	Poor: excess salt, excess sodium.
Ocala, Drained	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess salt, excess sodium.
Playa.				
ORC: Orovada	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
OSB: Orovada	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones.
OtA: Orovada	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
OU*:				
Orovada	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
Humdun	Fair: low strength, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Puett	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, thin layer.
OV*:				
Orovada	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
Puett	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, thin layer.
OW*:				
Orovada	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
OW*:				
Puett	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, thin layer.
Ferdelford	Poor: thin layer, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, excess sodium, slope.
PC*:				
Pie Creek	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope.
Susie Creek	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, small stones.
Toeja	Fair: slope, low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Pk Pocker	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess salt, excess sodium.
Pm*:				
Primeaux	Poor: thin layer.	Unsuited: excess fines.	Poor: excess fines.	Poor: slope, small stones.
Packer	Fair: slope, thin layer, large stones.	Poor: excess fines.	Fair: excess fines.	Poor: slope, large stones.
Tusel	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Ps*:				
Puett	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, thin layer.
Orovada	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
RaA, RaB, RAC Rad	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: excess salt.
RbB Rad	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess sodium.
RC*:				
Rad Slightly alkali	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess sodium.
Rad	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: excess salt.
Rd*:				
Rad	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: excess salt.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Rd*:				
Blackhawk	Poor: thin layer.	Poor: excess fines.	Poor: excess fines.	Poor: small stones, thin layer.
RE*:				
Rad	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: excess salt.
Brock	Fair: large stones, frost action, slope.	Unsuited: thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, large stones, small stones.
RF*:				
Ramires	Poor: low strength, thin layer, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Chen	Poor: thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Bobs	Poor: thin layer, area reclaim.	Poor: excess fines, thin layer.	Poor: excess fines, thin layer.	Poor: small stones, thin layer, area reclaim.
RG*:				
Ramires	Poor: low strength, shrink-swell, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones.
Chen	Poor: thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Pie Creek	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope, large stones.
RH*:				
Ramires	Poor: low strength, shrink-swell, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Creva	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
RH2*:				
Ramires	Poor: low strength, thin layer, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Creva	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
RK*:				
Ramires	Poor: low strength, shrink-swell, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, large stones.
Creva	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
RL*:				
Ramires	Poor: low strength, thin layer, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Singletree	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
RM*:				
Ramires	Poor: low strength, thin layer, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Taylor Creek	Poor: low strength, slope, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, too clayey, small stones.
Rn Rixie	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, excess salt.
Ro Rixie	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess salt, excess sodium.
Rr Rixie	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
Rs Rose Creek	Poor: frost action.	Poor: excess fines.	Unsuited: excess fines.	Good.
Rt Rose Creek	Poor: frost action.	Poor: excess fines.	Unsuited: excess fines.	Fair: small stones.
Ru Rosney	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: excess salt, excess sodium.
SA*:				
Short Creek 30 to 50 percent slopes	Poor: slope.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, slope.
Short Creek 50 to 75 percent slopes	Poor: slope.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, slope.
SBB Simon	Poor: low strength.	Unsuited: excess fines.	Unsuited	Fair: small stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SC*:				
Simon	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: small stones.
Bosco	Fair: frost action.	Unsuited: small stones.	Good	Poor: small stones.
SD*:				
Slaven 15 to 30 percent slopes	Poor: thin layer, area reclaim.	Unsuited: small stones.	Poor: excess fines, thin layer.	Poor: small stones, too clayey, slope.
Slaven 30 to 50 percent slopes	Poor: thin layer, slope, area reclaim.	Unsuited: small stones.	Poor: excess fines, thin layer.	Poor: small stones, too clayey, slope.
Mascamp	Poor: thin layer, slope, area reclaim.	Unsuited: small stones, thin layer.	Poor: excess fines, thin layer.	Poor: small stones, slope.
SE*:				
Slaven	Poor: thin layer, area reclaim.	Unsuited: small stones.	Poor: excess fines, thin layer.	Poor: small stones, too clayey, slope.
Primeaux	Poor: thin layer.	Unsuited: excess fines.	Poor: excess fines.	Poor: slope, small stones.
SF*:				
Slaven	Poor: thin layer, area reclaim.	Unsuited: small stones.	Poor: excess fines, thin layer.	Poor: small stones, too clayey, slope.
Ramires	Poor: low strength, shrink-swell, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
SG*:				
Slaven	Poor: thin layer, area reclaim.	Unsuited: small stones.	Poor: excess fines, thin layer.	Poor: small stones, too clayey, slope.
Toeja	Fair: slope, low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
SH*:				
Slaven	Poor: thin layer, slope, area reclaim.	Unsuited: small stones.	Poor: excess fines, thin layer.	Poor: small stones, too clayey, slope.
Torro	Poor: slope.	Unsuited: small stones.	Fair: excess fines.	Poor: slope, small stones.
Tusel	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SR*:				
Stampede	Poor: low strength, shrink-swell, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, too clayey.
Donna	Poor: thin layer, shrink-swell, low strength.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, too clayey.
SS*:				
Stampede	Poor: low strength, shrink-swell, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, too clayey.
Donna	Poor: thin layer, shrink-swell, low strength.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, too clayey.
Short Creek	Poor: slope.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, slope.
ST*:				
Stampede	Poor: low strength, shrink-swell, thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: small stones, too clayey.
Short Creek	Poor: slope.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, slope.
SU*:				
Susie Creek	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, small stones.
Pattani	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
SV*:				
Susie Creek	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, small stones.
Pie Creek	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, slope.
Pattani	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
SW*:				
Susie Creek	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, small stones.
Short Creek	Poor: slope.	Unsuited: excess fines.	Poor: excess fines.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SW*:				
Toeja	Fair: slope, low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
TA*:				
Taylor Creek	Poor: low strength, slope, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, too clayey, small stones.
Chen	Poor: thin layer, area reclaim.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Ramires	Poor: low strength, thin layer, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
TC*:				
Taylor Creek	Poor: low strength, slope, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, too clayey, small stones.
Singletree	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Torro	Poor: slope.	Unsuited: small stones.	Fair: excess fines.	Poor: slope, small stones.
TDA, TEC Tenabo	Fair: frost action.	Poor: excess fines.	Fair: excess fines.	Poor: excess sodium, thin layer.
TF*:				
Tenabo Extremely stony loam	Fair: slope, large stones, frost action.	Poor: excess fines.	Poor: excess fines, large stones.	Poor: slope, large stones.
Tenabo Cobbly silt loam	Fair: frost action.	Poor: excess fines.	Fair: excess fines.	Poor: excess sodium, thin layer.
TG*:				
Tenabo	Fair: frost action.	Poor: excess fines.	Fair: excess fines.	Poor: excess sodium, thin layer.
Brock	Fair: large stones, frost action, slope.	Unsuited: thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, large stones, small stones.
Whirlo	Fair: frost action.	Unsuited: small stones.	Fair: excess fines.	Poor: small stones.
TH*:				
Tenabo	Fair: slope, large stones, frost action.	Poor: excess fines.	Poor: excess fines, large stones.	Poor: slope, large stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
TH*:				
Rubble land.				
TL*:				
Toeja 15 to 30 percent slopes	Fair: slope, low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Toeja 4 to 15 percent slopes	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, small stones.
Puett	Poor: thin layer.	Unsuited: excess fines, thin layer.	Unsuited: excess fines, thin layer.	Poor: slope, thin layer.
TM*:				
Toeja	Fair: slope, low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Ucopia	Fair: slope, frost action.	Poor: excess fines.	Unsuited: excess fines.	Poor: slope.
Ucopia Eroded	Poor: slope.	Poor: excess fines.	Unsuited: excess fines.	Poor: slope.
TN*:				
Tomera	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Poor: excess fines.	Poor: too clayey, small stones, excess sodium.
Cherry Spring	Poor: thin layer.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
TO*:				
Torro	Poor: slope.	Unsuited: small stones.	Fair: excess fines.	Poor: slope, small stones.
Jack Creek	Poor: slope.	Unsuited: small stones.	Good	Poor: slope, small stones.
TR*:				
Torro	Poor: slope.	Unsuited: small stones.	Fair: excess fines.	Poor: slope, small stones.
Tusel	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
TS*:				
Torro	Poor: slope.	Unsuited: small stones.	Fair: excess fines.	Poor: slope, small stones.
Tusel	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Badland.				

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
TT*:				
Torro	Poor: slope.	Unsuited: small stones.	Fair: excess fines.	Poor: slope, small stones.
Tusel	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Packer	Poor: slope.	Poor: excess fines.	Fair: excess fines.	Poor: slope, large stones.
TU*:				
Triplen	Moderate: frost action.	Poor: excess fines.	Unsuited: excess fines.	Poor: small stones.
Tenabo	Fair: frost action.	Poor: excess fines.	Fair: excess fines.	Poor: excess sodium, thin layer.
TV*:				
Tusel	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope, small stones.
Hapgood	Poor: slope.	Unsuited: excess fines.	Poor: excess fines, thin layer.	Poor: small stones, slope.
Packer	Poor: slope.	Poor: excess fines.	Fair: excess fines.	Poor: slope, large stones.
UHE*:				
Ucopia 15 to 30 percent slopes	Fair: slope, frost action.	Poor: excess fines.	Unsuited: excess fines.	Poor: slope.
Ucopia 30 to 50 percent slopes	Poor: slope.	Poor: excess fines.	Unsuited: excess fines.	Poor: slope.
Humdun	Fair: low strength, slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
UHF*:				
Ucopia 15 to 30 percent slopes	Fair: slope, frost action.	Poor: excess fines.	Unsuited: excess fines.	Poor: slope.
Ucopia 30 to 50 percent slopes	Poor: slope.	Poor: excess fines.	Unsuited: excess fines.	Poor: slope.
Humdun	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
UKF Urtah	Poor: slope, thin layer.	Poor: small stones.	Poor: excess fines.	Poor: small stones, slope.
Wc Welch	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Wd Welch	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, small stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
WE*:				
Welch	Poor: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, small stones.
Bosco	Fair: frost action.	Unsuited: small stones.	Good	Poor: small stones.
WGB Whirlo	Fair: frost action.	Unsuited: small stones.	Fair: excess fines.	Poor: small stones.
WH*:				
Whirlo	Fair: large stones, frost action.	Unsuited: small stones.	Poor: excess fines.	Poor: small stones.
Tenabo	Fair: frost action.	Poor: excess fines.	Fair: excess fines.	Poor: excess sodium, thin layer.
WlA, WlB Wholan	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
WmA Wholan	Fair: frost action, low strength.	Poor: excess fines.	Poor: excess fines.	Fair: excess salt.
WnA Wholan	Fair: low strength, frost action.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: excess salt.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. Absence of an entry indicat that the soil was not evaluated]

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
ALF----------------- Alley	Seepage----------	Seepage, large stones.			Large stones, slope.
AN*:					
Alley------------	Seepage----------	Seepage, large stones.			Large stones, slope.
Brock------------	Slope------------	Large stones, thin layer.			Slope, large stones, cemented pan.
AR*:					
Alley------------	Seepage----------	Seepage, large stones.			Large stones, slope.
Rock outcrop.					
Rubble land.					
Au*. Alluvial land					
BaA--------------- Beowawe	Favorable--------	Low strength, piping.	Excess salt-------	Excess salt, erodes easily.	Erodes easily.
BB*:					
Beowawe----------	Favorable--------	Low strength, piping.	Slope, excess salt.	Slope, excess salt, erodes easily.	Erodes easily.
Broyles----------	Seepage----------	Piping-----------	Slope-------------	Slope, droughty.	Erodes easily.
BC---------------- Beowawe variant	Favorable--------	Piping, excess salt.			Erodes easily.
BD*:					
Berning----------	Slope------------	Favorable--------			Slope, percs slowly, droughty.
Short Creek------	Slope------------	Favorable--------			Slope, percs slowly.
BE*:					
Berning----------	Slope------------	Favorable--------			Slope, percs slowly, droughty.
Toeja------------	Seepage----------	Thin layer-------			Slope.
Bf---------------- Bicondoa	Favorable--------	Hard to pack-----	Percs slowly, floods, frost action.	Percs slowly, floods, wetness.	Percs slowly.
Bg---------------- Bicondoa	Favorable--------	Hard to pack, wetness.	Percs slowly, floods, frost action.	Wetness, percs slowly, floods.	Percs slowly.
BHD--------------- Bobs	Cemented pan, slope.	Thin layer-------			Cemented pan, slope.
Bk---------------- Bosco	Seepage----------	Seepage----------	Favorable---------	Droughty, seepage.	Favorable.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
BL*:					
Bosco	Seepage	Seepage	Favorable	Droughty, seepage.	Favorable.
Welch	Favorable	Favorable	Floods, frost action, wetness.	Floods, wetness.	Favorable.
BM*:					
Boulflat	Slope, cemented pan, depth to rock.	Thin layer			Slope, depth to rock, small stones.
Havingdon	Slope, depth to rock.	Thin layer			Slope, depth to rock, percs slowly.
Brock	Slope	Large stones, thin layer.			Slope, large stones, cemented pan.
BN*:					
Old Camp variant	Depth to rock, slope.	Thin layer			Slope, depth to rock.
Boulflat	Slope, cemented pan, depth to rock.	Thin layer			Slope, depth to rock, small stones.
Humdun	Slope	Piping			Slope, erodes easily.
BO*:					
Brock	Slope	Large stones, thin layer.			Slope, large stones, cemented pan.
Boulflat	Slope, cemented pan, depth to rock.	Thin layer			Slope, depth to rock, small stones.
Rad	Seepage	Piping	Percs slowly	Soil blowing, percs slowly.	Erodes easily, percs slowly.
BpA Broyles	Seepage	Piping	Favorable	Droughty	Erodes easily.
BPB Broyles	Seepage	Piping	Slope	Slope, droughty.	Erodes easily.
BQE Bucan	Depth to rock, slope.	Thin layer, hard to pack.			Slope, percs slowly.
BRF Bucan	Slope	Large stones, piping.			Large stones, slope.
BS*:					
Bucan Loam	Depth to rock, slope.	Thin layer, hard to pack.			Slope, percs slowly.
Bucan Gravelly loam	Depth to rock, slope.	Thin layer, hard to pack.			Slope, percs slowly.
BT*:					
Bucan Stony loam	Slope	Large stones, piping.			Large stones, slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
BT*:					
Bucan------------ Extremely stony loam	Slope------------	Large stones, piping.			Large stones, slope.
BU*:					
Bucan------------	Depth to rock, slope.	Thin layer, hard to pack.			Slope, percs slowly.
Clurde-----------	Slope, seepage.	Piping-----------	Not needed--------	Slope, erodes easily.	Slope, piping, erodes easily.
Orovada----------	Slope, seepage.	Piping-----------	Slope-------------	Slope, erodes easily.	Slope, erodes easily.
BV*:					
Bucan------------	Slope------------	Large stones, piping.			Large stones, slope.
Creva------------	Slope, depth to rock.	Thin layer-------			Depth to rock, slope.
Brock------------	Slope------------	Large stones, thin layer.			Slope, large stones, cemented pan.
BW*:					
Bucan------------	Slope------------	Large stones, piping.			Large stones, slope.
Glean------------	Seepage, slope.	Seepage, large stones.			Large stones, slope.
Rock outcrop.					
BX*:					
Bucan------------ Stony	Slope------------	Large stones, piping.			Large stones, slope.
Bucan------------ Extremely stony	Slope------------	Large stones, piping.			Large stones, slope.
Humdun-----------	Slope------------	Piping-----------			Slope, erodes easily.
BY*:					
Bucan------------	Slope------------	Large stones, piping.			Large stones, slope.
Humdun-----------	Slope------------	Piping-----------			Slope, erodes easily.
Brock------------	Slope------------	Large stones, thin layer.			Slope, large stones, cemented pan.
BZ*:					
Bucan------------	Slope------------	Large stones, piping.			Large stones, slope.
Humdun-----------	Slope------------	Piping-----------			Slope, erodes easily.
Rock outcrop.					
BZm*:					
Bucan------------	Depth to rock, slope.	Thin layer, hard to pack.			Slope, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
BZm*:					
Malpais	Slope, seepage.	Seepage, large stones.			Large stones, slope.
BZs*:					
Bucan	Depth to rock, slope.	Thin layer, hard to pack.			Slope, percs slowly.
Singletree	Slope, seepage.	Thin layer			Slope.
BZt*:					
Bucan Stony	Slope	Large stones, piping.			Large stones, slope.
Bucan Extremely stony	Slope	Large stones, piping.			Large stones, slope.
Toeja	Seepage	Thin layer			Slope.
BZu*:					
Bunky	Cemented pan, slope.	Thin layer	Not needed	Slope, rooting depth.	Cemented pan, slope.
Clurde	Slope, seepage.	Piping	Not needed	Slope, erodes easily.	Slope, piping, erodes easily.
Short Creek	Slope	Favorable			Slope, percs slowly.
CAD Carstump	Slope, depth to rock.	Thin layer			Depth to rock, slope, percs slowly.
CBE Chen	Slope, depth to rock.	Thin layer			Slope, depth to rock, large stones.
CC*:					
Chen	Slope, depth to rock.	Thin layer			Slope, depth to rock.
Pie Creek	Slope	Thin layer, hard to pack, large stones.			Slope, percs slowly, depth to rock.
Ramires	Slope, seepage.	Hard to pack, thin layer.			Slope, depth to rock, large stones.
CD*:					
Chen	Slope, depth to rock.	Thin layer			Slope, depth to rock.
Pie Creek	Slope	Thin layer, hard to pack, large stones.			Slope, percs slowly, depth to rock.
Taylor Creek	Slope	Hard to pack			Slope, percs slowly.
CEE*, CEF*:					
Chen	Slope, depth to rock.	Thin layer			Slope, depth to rock.
Taylor Creek	Slope	Hard to pack			Slope, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
CEE*, CEF*:					
Mosquet----------	Depth to rock, slope.	Thin layer-------			Large stones, small stones, slope.
CF*:					
Cherry Spring----	Cemented pan, slope.	Thin layer-------	Cemented pan, slope.	Slope, erodes easily, rooting depth.	Cemented pan, slope.
Berning----------	Slope------------	Favorable--------			Slope, percs slowly, droughty.
CG*:					
Cherry Spring----	Cemented pan, slope.	Thin layer-------	Cemented pan, slope.	Slope, erodes easily, rooting depth.	Cemented pan, slope.
Cortez-----------	Cemented pan, seepage.	Thin layer, excess sodium.	Percs slowly, cemented pan, slope.	Percs slowly, rooting depth, slope.	Cemented pan, percs slowly.
Chiara-----------	Slope, cemented pan.	Thin layer, piping.	Slope, cemented pan.	Slope, rooting depth.	Slope, cemented pan.
CH*:					
Cherry Spring----	Cemented pan, slope.	Thin layer-------	Cemented pan, slope.	Slope, erodes easily, rooting depth.	Cemented pan, slope.
Cortez-----------	Cemented pan, seepage.	Thin layer, excess sodium.	Percs slowly, cemented pan, slope.	Percs slowly, rooting depth, slope.	Cemented pan, percs slowly.
Tomera-----------	Seepage----------	Excess sodium----	Slope, percs slowly, excess sodium.	Slope, percs slowly, excess sodium.	Percs slowly.
CK*:					
Cherry Spring----	Cemented pan, slope.	Thin layer-------	Cemented pan, slope.	Slope, erodes easily, rooting depth.	Cemented pan, slope.
Orovada----------	Slope, seepage.	Piping-----------	Slope-------------	Slope, erodes easily.	Slope, erodes easily.
CL*:					
Chiara----------- Very stony	Slope, cemented pan.	Large stones, thin layer.			Slope, cemented pan.
Chiara----------- Extremely stony	Slope, cemented pan.	Large stones, thin layer.			Slope, cemented pan.
Brock------------	Slope------------	Large stones, thin layer.			Slope, large stones, cemented pan.
CM*:					
Chiara-----------	Slope, cemented pan.	Thin layer, piping.	Slope, cemented pan.	Slope, rooting depth.	Slope, cemented pan.
Cherry Spring----	Cemented pan, slope.	Thin layer-------	Cemented pan, slope.	Slope, erodes easily, rooting depth.	Cemented pan, slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
CM*:					
Cortez	Cemented pan, seepage.	Thin layer, excess sodium.	Percs slowly, cemented pan, slope.	Percs slowly, rooting depth, slope.	Cemented pan, percs slowly.
CN Cluro	Seepage	Piping, excess salt, excess sodium.	Excess sodium, excess salt, frost action.	Excess sodium, excess salt, wetness.	Erodes easily.
Co, Cp Cluro	Seepage	Piping	Excess salt	Excess salt	Erodes easily.
Cr Cluro	Seepage	Piping, excess salt, excess sodium.	Excess sodium, excess salt, frost action.	Excess sodium, excess salt, wetness.	Erodes easily.
CS*:					
Coff	Slope, cemented pan.	Thin layer, seepage.			Slope, cemented pan, small stones.
Denay	Slope	Seepage			Slope.
Ct Coit	Seepage	Wetness	Floods, frost action, wetness.	Wetness, floods.	Wetness.
Cu*:					
Coit	Seepage	Wetness	Floods, frost action, wetness.	Wetness, floods.	Wetness.
Griver	Seepage	Piping	Floods, frost action.	Wetness, floods.	Wetness.
CV*:					
Creva	Slope, depth to rock.	Thin layer			Depth to rock, slope.
Chen	Slope, depth to rock.	Thin layer			Slope, depth to rock.
CW2*:					
Creva	Slope, depth to rock.	Thin layer			Depth to rock, slope.
Ramires	Slope, seepage.	Hard to pack, thin layer.			Slope, depth to rock, percs slowly.
Cx Crooked Creek	Favorable	Wetness, hard to pack.	Percs slowly, floods, frost action.	Wetness, percs slowly, floods.	Not needed.
CY Crooked Creek	Favorable	Hard to pack	Wetness, percs slowly, frost action.	Percs slowly, floods.	Not needed.
DM*:					
Donna	Slope, cemented pan.	Thin layer, hard to pack.			Cemented pan, percs slowly.
Simon	Slope, seepage.	Favorable			Favorable.
DN*:					
Donna	Slope, cemented pan.	Thin layer, hard to pack.			Cemented pan, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
DN*:					
Stampede	Slope, cemented pan.	Hard to pack, thin layer.	Percs slowly, cemented pan, slope.	Percs slowly, rooting depth, slope.	Slope, percs slowly, cemented pan.
Short Creek	Slope	Favorable			Slope, percs slowly.
Do, Dp Dunphy	Favorable	Excess sodium, piping, excess salt.	Excess sodium, excess salt.	Excess sodium, excess salt, erodes easily.	Erodes easily.
Dr, Ds Dunphy	Seepage	Piping, excess salt, excess sodium.	Wetness, frost action, excess salt.	Wetness, excess sodium, excess salt.	Wetness, erodes easily.
FB*:					
Ferdelford 15 to 30 percent slopes	Depth to rock, slope.	Thin layer			Slope, depth to rock.
Ferdelford 30 to 50 percent slopes	Depth to rock, slope.	Thin layer			Slope, depth to rock.
Bucan	Depth to rock, slope.	Thin layer, hard to pack.			Slope, percs slowly.
FD*:					
Ferdelford	Depth to rock, slope.	Thin layer			Slope, depth to rock.
Puett	Slope, depth to rock, seepage.	Thin layer, seepage.			Slope, depth to rock, soil blowing.
Berning	Slope	Favorable			Slope, percs slowly, droughty.
FE*:					
Ferdelford	Depth to rock, slope.	Thin layer			Slope, depth to rock.
Puett	Slope, depth to rock, seepage.	Thin layer, seepage.			Slope, depth to rock, soil blowing.
Susie Creek	Slope, depth to rock, seepage.	Thin layer, piping.			Slope, percs slowly.
FF*:					
Ferdelford	Depth to rock, slope.	Thin layer			Slope, depth to rock.
Ramires	Slope, seepage.	Hard to pack, thin layer.			Slope, depth to rock, large stones.
FH*:					
Ferdelford	Depth to rock, slope.	Thin layer			Slope, depth to rock.
Susie Creek	Slope, depth to rock, seepage.	Thin layer, piping.			Slope, percs slowly.
Toeja	Seepage	Thin layer			Slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
Fk----------------- Four Star	Seepage----------	Seepage, piping, wetness.	Floods, frost action, wetness.	Wetness, floods.	Wetness.
Fm----------------- Four Star	Seepage----------	Seepage, piping.	Floods-----------	Floods-----------	Favorable.
Fn*: Four Star--------	Seepage----------	Seepage, piping, wetness.	Floods, frost action, wetness.	Wetness, floods.	Wetness.
Bosco------------	Seepage----------	Seepage----------	Favorable---------	Droughty, seepage.	Favorable.
Fo*: Four Star--------	Seepage----------	Seepage, piping.	Floods-----------	Floods-----------	Favorable.
Bosco------------	Seepage----------	Seepage----------	Favorable---------	Droughty, seepage.	Favorable.
Ge, Gg------------ Geysen	Seepage----------	Piping, excess salt, excess sodium.	Excess salt, excess sodium.	Percs slowly, excess sodium, excess salt.	Percs slowly.
GH*: Glean------------	Seepage, slope.	Seepage, large stones.			Large stones, slope.
Rock outcrop.					
Rubble land.					
Gk----------------- Griver	Seepage----------	Piping-----------	Floods, frost action.	Wetness, floods.	Wetness.
Gm----------------- Griver	Seepage----------	Piping-----------	Floods, wetness.	Floods, wetness, seepage.	Favorable.
Gn----------------- Griver	Seepage----------	Piping-----------	Floods, frost action, wetness.	Wetness, floods, excess salt.	Percs slowly, wetness.
Go----------------- Griver	Seepage----------	Piping-----------	Floods, frost action.	Wetness, floods.	Wetness.
Gr*: Griver-----------	Seepage----------	Piping-----------	Floods, frost action.	Wetness, floods.	Wetness.
Griver----------- Wet	Seepage----------	Piping-----------	Floods, frost action.	Wetness, floods.	Wetness.
Gx*: Griver-----------	Seepage----------	Piping-----------	Floods, frost action.	Wetness, floods.	Wetness.
Alluvial land.					
HG*: Hapgood---------- Very gravelly loam	Seepage, slope.	Thin layer, seepage.			Slope.
Hapgood---------- Silt loam	Seepage, slope.	Thin layer, seepage.			Slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
HG*:					
Packer	Seepage, slope.	Seepage			Large stones, slope.
Hh, Hk Humboldt	Favorable	Hard to pack	Floods, wetness, frost action.	Floods, excess salt, wetness.	Wetness.
Hm Humboldt	Favorable	Hard to pack, excess salt.	Floods, wetness, frost action.	Floods, excess salt, wetness.	Wetness.
Hn*:					
Humboldt Slightly saline	Favorable	Hard to pack	Floods, wetness, frost action.	Floods, excess salt, wetness.	Wetness.
Humboldt Strongly saline	Favorable	Hard to pack, excess salt.	Floods, wetness, frost action.	Floods, excess salt, wetness.	Wetness.
HO*:					
Humdun	Slope	Piping			Slope, erodes easily.
Bucan	Slope	Large stones, piping.			Large stones, slope.
Havingdon	Slope, depth to rock.	Thin layer			Slope, depth to rock, percs slowly.
Hr Hussa	Seepage	Wetness	Floods, frost action, wetness.	Wetness, floods.	Wetness.
Hs Hussa	Favorable	Piping	Floods	Erodes easily	Favorable.
Ht Hussa	Favorable	Wetness, piping.	Percs slowly, floods, frost action.	Wetness, percs slowly, excess sodium.	Wetness, percs slowly.
Ib, Is Iron Blossom	Seepage	Piping		Percs slowly, excess sodium, excess salt.	Percs slowly, erodes easily.
KAD Kawich	Seepage	Seepage, piping.	Cutbanks cave	Droughty, too sandy, soil blowing.	Too sandy, soil blowing, droughty.
MA*:					
Malpais	Slope, seepage.	Seepage, large stones.			Large stones, slope.
Rock outcrop.					
Rubble land.					
Mc*:					
Marsh.					
Crooked Creek	Favorable	Wetness, hard to pack.	Percs slowly, floods, frost action.	Wetness, percs slowly, floods.	Not needed.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
ME*:					
Mascamp	Depth to rock	Thin layer			Slope, depth to rock.
Carstump	Slope, depth to rock.	Thin layer			Depth to rock, slope, percs slowly.
Mf McConnel	Seepage	Seepage	Cutbanks cave	Droughty, erodes easily.	Droughty.
Mh*:					
McConnel	Seepage	Seepage	Cutbanks cave	Droughty, erodes easily.	Droughty.
Blackhawk	Seepage, cemented pan.	Piping, excess salt, thin layer.	Cemented pan, cutbanks cave, excess salt.	Rooting depth, erodes easily, excess salt.	Cemented pan, droughty.
Mo*:					
McConnel	Seepage	Seepage	Cutbanks cave	Droughty, erodes easily.	Droughty.
Ocala	Favorable	Piping, excess salt, excess sodium.	Percs slowly, floods, wetness.	Wetness, percs slowly, excess salt.	Wetness, percs slowly.
Mr Midas	Seepage	Seepage	Cutbanks cave, percs slowly.	Percs slowly, erodes easily.	Percs slowly, erodes easily, droughty.
Ms*:					
Midas Deep	Seepage	Seepage	Cutbanks cave, percs slowly.	Percs slowly, erodes easily.	Percs slowly, erodes easily, droughty.
Midas	Seepage	Seepage	Cutbanks cave, percs slowly.	Percs slowly, erodes easily.	Percs slowly, erodes easily, droughty.
Oc Ocala	Favorable	Piping	Percs slowly, floods, wetness.	Wetness, percs slowly, excess salt.	Wetness, percs slowly.
Od Ocala	Favorable	Piping, excess salt.	Percs slowly, frost action, wetness.	Percs slowly, excess sodium, excess salt.	Erodes easily.
Og Ocala	Favorable	Piping, excess salt, excess sodium.	Percs slowly, floods, wetness.	Wetness, percs slowly, excess salt.	Wetness, percs slowly.
Oh Ocala	Favorable	Piping, excess salt.	Percs slowly, frost action, wetness.	Percs slowly, excess sodium, excess salt.	Erodes easily.
Ok Ocala	Favorable	Piping	Percs slowly, floods, wetness.	Wetness, percs slowly, excess salt.	Wetness, percs slowly.
Om*:					
Ocala Slightly saline	Favorable	Piping	Percs slowly, floods, wetness.	Wetness, percs slowly, excess salt.	Wetness, percs slowly.
Ocala Strongly saline	Favorable	Piping, excess salt, excess sodium.	Percs slowly, floods, wetness.	Wetness, percs slowly, excess salt.	Wetness, percs slowly.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
OP*:					
Ocala	Favorable	Piping, excess salt, excess sodium.	Percs slowly, floods, wetness.	Wetness, percs slowly, excess salt.	Wetness, percs slowly.
Ocala Drained	Favorable	Piping, excess salt.	Percs slowly, frost action, wetness.	Percs slowly, excess sodium, excess salt.	Erodes easily.
Playa.					
ORC Orovada	Slope, seepage.	Piping	Slope	Slope, erodes easily.	Slope, erodes easily.
OSB Orovada	Seepage	Piping	Slope	Slope, erodes easily.	Erodes easily.
OtA Orovada	Seepage	Piping	Favorable	Favorable	Erodes easily.
OU*:					
Orovada	Slope, seepage.	Piping	Slope	Slope, erodes easily.	Slope, erodes easily.
Humdun	Slope	Piping			Slope, erodes easily.
Puett	Slope, depth to rock, seepage.	Thin layer, seepage.			Slope, depth to rock, soil blowing.
OV*:					
Orovada	Slope, seepage.	Piping	Slope	Slope, erodes easily.	Slope, erodes easily.
Puett	Slope, depth to rock, seepage.	Thin layer, seepage.			Slope, depth to rock, soil blowing.
OW*:					
Orovada	Slope, seepage.	Piping	Slope	Slope, erodes easily.	Slope, erodes easily.
Puett	Slope, depth to rock, seepage.	Thin layer, seepage.			Slope, depth to rock, soil blowing.
Ferdelford	Depth to rock, slope.	Thin layer			Slope, depth to rock.
PC*:					
Pie Creek	Slope	Thin layer, hard to pack.			Slope, percs slowly, depth to rock.
Susie Creek	Slope, depth to rock, seepage.	Thin layer, piping.			Slope, percs slowly.
Toeja	Seepage	Thin layer			Slope.
PK Pocker	Favorable	Piping, excess salt, excess sodium.	Percs slowly, wetness, excess sodium.	Wetness, percs slowly, excess sodium.	Percs slowly.
PM*:					
Primeaux	Slope	Thin layer			Slope, depth to rock.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
PM*:					
Packer	Seepage, slope.	Seepage			Large stones, slope.
Tusel	Slope	Favorable			Slope.
PS*:					
Puett	Slope, depth to rock, seepage.	Thin layer, seepage.			Slope, depth to rock, soil blowing.
Orovada	Slope, seepage.	Piping	Slope	Slope, erodes easily.	Slope, erodes easily.
RaA, RaB, RAC Rad	Seepage	Piping	Percs slowly	Soil blowing, percs slowly.	Erodes easily, percs slowly.
RbB Rad	Seepage	Piping, excess sodium.	Percs slowly, excess sodium.	Percs slowly, erodes easily, excess sodium.	Erodes easily, percs slowly.
RC*:					
Rad Slightly alkali	Seepage	Piping, excess sodium.	Percs slowly, excess sodium.	Percs slowly, erodes easily, excess sodium.	Erodes easily, percs slowly.
Rad	Seepage	Piping	Percs slowly	Soil blowing, percs slowly.	Erodes easily, percs slowly.
Rd*:					
Rad	Seepage	Piping	Percs slowly	Soil blowing, percs slowly.	Erodes easily, percs slowly.
Blackhawk	Seepage, cemented pan.	Piping, excess salt, thin layer.	Cemented pan, cutbanks cave, excess salt.	Rooting depth, erodes easily, excess salt.	Cemented pan, droughty.
RE*:					
Rad	Seepage	Piping	Percs slowly	Soil blowing, percs slowly.	Erodes easily, percs slowly.
Brock	Slope	Large stones, thin layer.			Slope, large stones, cemented pan.
RF*:					
Ramires	Slope, seepage.	Hard to pack, thin layer.			Slope, depth to rock, percs slowly.
Chen	Slope, depth to rock.	Thin layer			Slope, depth to rock.
Bobs	Cemented pan, slope.	Thin layer			Cemented pan, slope.
RG*:					
Ramires	Slope, seepage.	Hard to pack, thin layer.			Slope, depth to rock, large stones.
Chen	Slope, depth to rock.	Thin layer			Slope, depth to rock.
Pie Creek	Slope	Thin layer, hard to pack, large stones.			Slope, percs slowly, depth to rock.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
RH*, RH2*:					
Ramires	Slope, seepage.	Hard to pack, thin layer.			Slope, depth to rock, percs slowly.
Creva	Slope, depth to rock.	Thin layer			Depth to rock, slope.
RK*:					
Ramires	Slope, seepage.	Hard to pack, thin layer.			Slope, depth to rock, large stones.
Creva	Slope, depth to rock.	Thin layer			Depth to rock, slope.
RL*:					
Ramires	Slope, seepage.	Hard to pack, thin layer.			Slope, depth to rock, percs slowly.
Singletree	Slope, seepage.	Thin layer			Slope.
RM*:					
Ramires	Slope, seepage.	Hard to pack, thin layer.			Slope, depth to rock, percs slowly.
Taylor Creek	Slope	Hard to pack			Slope, percs slowly.
Rn Rixie	Favorable	Piping	Wetness, percs slowly.	Wetness, percs slowly, excess salt.	Percs slowly.
Ro Rixie	Favorable	Piping, excess sodium, excess salt.	Wetness, excess salt, floods.	Wetness, percs slowly, excess salt.	Percs slowly, wetness.
Rr Rixie	Favorable	Piping	Wetness	Wetness, percs slowly, excess salt.	Percs slowly, wetness.
Rs Rose Creek	Seepage	Piping	Floods, frost action, wetness.	Wetness, floods.	Wetness.
Rt Rose Creek	Seepage	Piping	Frost action, wetness.	Wetness	Favorable.
Ru Rosney	Favorable	Piping	Excess salt, excess sodium.	Excess salt, excess sodium.	Erodes easily.
SA*:					
Short Creek 30 to 50 percent slopes	Slope	Favorable			Slope, percs slowly.
Short Creek 50 to 75 percent slopes	Slope	Favorable			Slope, percs slowly.
SBB Simon	Slope, seepage.	Favorable			Favorable.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
SC*:					
Simon	Slope, seepage.	Favorable			Favorable.
Bosco	Seepage	Seepage	Favorable	Droughty, seepage.	Favorable.
SD*:					
Slaven 15 to 30 percent slopes	Depth to rock	Thin layer			Slope, depth to rock, percs slowly.
Slaven 30 to 50 percent slopes	Depth to rock	Thin layer			Slope, depth to rock, percs slowly.
Mascamp	Depth to rock	Thin layer			Slope, depth to rock.
SE*:					
Slaven	Depth to rock	Thin layer			Slope, depth to rock, percs slowly.
Primeaux	Slope	Thin layer			Slope, depth to rock.
SF*:					
Slaven	Depth to rock	Thin layer			Slope, depth to rock, percs slowly.
Ramires	Slope, seepage.	Hard to pack, thin layer.			Slope, depth to rock, percs slowly.
SG*:					
Slaven	Depth to rock	Thin layer			Slope, depth to rock, percs slowly.
Toeja	Seepage	Thin layer			Slope.
SH*:					
Slaven	Depth to rock	Thin layer			Slope, depth to rock, percs slowly.
Torro	Slope, seepage.	Seepage			Slope.
Tusel	Slope	Favorable			Slope.
SR*:					
Stampede	Slope, cemented pan.	Hard to pack, thin layer.	Percs slowly, cemented pan, slope.	Percs slowly, rooting depth, slope.	Slope, percs slowly, cemented pan.
Donna	Slope, cemented pan.	Thin layer, hard to pack.			Cemented pan, percs slowly.
SS*:					
Stampede	Slope, cemented pan.	Hard to pack, thin layer.	Percs slowly, cemented pan, slope.	Percs slowly, rooting depth, slope.	Slope, percs slowly, cemented pan.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
SS*:					
Donna	Slope, cemented pan.	Thin layer, hard to pack.			Cemented pan, percs slowly.
Short Creek	Slope	Favorable			Slope, percs slowly.
ST*:					
Stampede	Slope, cemented pan.	Hard to pack, thin layer.	Percs slowly, cemented pan, slope.	Percs slowly, rooting depth, slope.	Slope, percs slowly, cemented pan.
Short Creek	Slope	Favorable			Slope, percs slowly.
SU*:					
Susie Creek	Slope, depth to rock, seepage.	Thin layer, piping.			Slope, percs slowly.
Pattani	Slope	Thin layer, hard to pack.			Slope, depth to rock, percs slowly.
SV*:					
Susie Creek	Slope, depth to rock, seepage.	Thin layer, piping.			Slope, percs slowly.
Pie Creek	Slope	Thin layer, hard to pack.			Slope, percs slowly, depth to rock.
Pattani	Slope	Thin layer, hard to pack.			Slope, depth to rock, percs slowly.
SW*:					
Susie Creek	Slope, depth to rock, seepage.	Thin layer, piping.			Slope, percs slowly.
Short Creek	Slope	Favorable			Slope, percs slowly.
Toeja	Seepage	Thin layer			Slope.
TA*:					
Taylor Creek	Slope	Hard to pack			Slope, percs slowly.
Chen	Slope, depth to rock.	Thin layer			Slope, depth to rock.
Ramires	Slope, seepage.	Hard to pack, thin layer.			Slope, depth to rock, percs slowly.
TC*:					
Taylor Creek	Slope	Hard to pack			Slope, percs slowly.
Singletree	Slope, seepage.	Thin layer			Slope.
Torro	Slope, seepage.	Seepage			Slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
TDA: Tenabo	Cemented pan, seepage.	Thin layer, excess sodium.	Cemented pan, excess sodium.	Rooting depth, excess sodium.	Cemented pan.
TEC: Tenabo	Slope, cemented pan, seepage.	Thin layer, excess sodium.	Slope, cemented pan, excess sodium.	Slope, rooting depth, excess sodium.	Slope, cemented pan.
TF*:					
Tenabo, Extremely stony loam	Slope, cemented pan, seepage.	Large stones, thin layer, excess sodium.			Slope, large stones, cemented pan.
Tenabo, Cobbly silt loam	Slope, cemented pan, seepage.	Thin layer, excess sodium.	Slope, cemented pan, excess sodium.	Slope, rooting depth, excess sodium.	Slope, cemented pan.
TG*:					
Tenabo	Slope, cemented pan, seepage.	Thin layer, excess sodium.	Slope, cemented pan, excess sodium.	Slope, rooting depth, excess sodium.	Slope, cemented pan.
Brock	Slope	Large stones, thin layer.			Slope, large stones, cemented pan.
Whirlo	Seepage	Seepage	Favorable	Slope, droughty, erodes easily.	Favorable.
TH*:					
Tenabo	Slope, cemented pan, seepage.	Large stones, thin layer, excess sodium.			Slope, large stones, cemented pan.
Rubble land.					
TL*:					
Toeja, 15 to 30 percent slopes	Seepage	Thin layer			Slope.
Toeja, 4 to 15 percent slopes	Seepage	Thin layer			Slope.
Puett	Slope, depth to rock, seepage.	Thin layer, seepage.			Slope, depth to rock, soil blowing.
TM*:					
Toeja	Seepage	Thin layer			Slope.
Ucopia	Slope, seepage.	Seepage			Slope, soil blowing.
Ucopia, Eroded	Slope, seepage.	Seepage			Slope.
TN*:					
Tomera	Seepage	Excess sodium	Slope, percs slowly, excess sodium.	Slope, percs slowly, excess sodium.	Percs slowly.
Cherry Spring	Cemented pan, slope.	Thin layer	Cemented pan, slope.	Slope, erodes easily, rooting depth.	Cemented pan, slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
TO*:					
Torro	Slope, seepage.	Seepage			Slope.
Jack Creek	Slope, seepage.	Seepage			Slope, too sandy, droughty.
TR*:					
Torro	Slope, seepage.	Seepage			Slope.
Tusel	Slope	Favorable			Slope.
TS*:					
Torro	Slope, seepage.	Seepage			Slope.
Tusel	Slope	Favorable			Slope.
Badland.					
TT*:					
Torro	Slope, seepage.	Seepage			Slope.
Tusel	Slope	Favorable			Slope.
Packer	Seepage, slope.	Seepage			Large stones, slope.
TU*:					
Triplen	Slope, seepage.	Piping	Slope	Slope, droughty, erodes easily.	Slope.
Tenabo	Cemented pan, seepage.	Thin layer, excess sodium.	Cemented pan, excess sodium.	Rooting depth, excess sodium.	Cemented pan.
TV*:					
Tusel	Slope	Favorable			Slope.
Hapgood	Seepage, slope.	Thin layer, seepage.			Slope.
Packer	Seepage, slope.	Seepage			Large stones, slope.
UHE*, UHF*:					
Ucopia 15 to 30 percent slopes	Slope, seepage.	Seepage			Slope, soil blowing.
Ucopia 30 to 50 percent slopes	Slope, seepage.	Seepage			Slope.
Humdun	Slope	Piping			Slope, erodes easily.
UKF Urtah	Slope, seepage.	Seepage			Slope, depth to rock.
Wc Welch	Favorable	Wetness	Floods, frost action, wetness.	Wetness, floods.	Wetness.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
Wd: Welch	Favorable	Favorable	Floods, frost action, wetness.	Floods, wetness.	Favorable.
WE*:					
Welch	Favorable	Favorable	Floods, frost action, wetness.	Floods, wetness.	Favorable.
Bosco	Seepage	Seepage	Favorable	Droughty, seepage.	Favorable.
WGB: Whirlo	Seepage	Seepage	Favorable	Slope, droughty, erodes easily.	Favorable.
WH*:					
Whirlo	Slope, seepage.	Large stones, seepage.			Large stones, slope.
Tenabo	Slope, cemented pan, seepage.	Thin layer, excess sodium.	Slope, cemented pan, excess sodium.	Slope, rooting depth, excess sodium.	Slope, cemented pan.
WlA: Wholan	Seepage	Piping	Favorable	Floods	Erodes easily.
WlB: Wholan	Seepage	Piping	Slope	Slope, erodes easily, floods.	Erodes easily.
WmA: Wholan	Seepage	Piping	Favorable		Erodes easily.
WnA: Wholan	Seepage	Piping	Slope	Slope, erodes easily, floods.	Erodes easily.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
ALF----------------- Alley	0-7	Cobbly fine sandy loam.	SM	A-4	25-30	85-95	80-90	55-65	35-50	25-30	NP-5
	7-18	Gravelly clay loam, gravelly sandy clay loam, gravelly loam.	SC, GC	A-6	0-10	65-80	55-75	50-65	35-50	30-35	15-20
	18-34	Gravelly fine sandy loam.	SM, GM	A-2	0-10	60-70	50-60	35-45	25-35	25-30	NP-5
	34-50	Very cobbly fine sandy loam.	SM	A-2	30-45	70-75	60-70	45-55	25-35	25-30	NP-5
AN*: Alley---------------	0-7	Cobbly fine sandy loam.	SM	A-4	25-30	85-95	80-90	55-65	35-50	25-30	NP-5
	7-18	Gravelly clay loam, gravelly sandy clay loam, gravelly loam.	SC, GC	A-6	0-10	65-80	55-75	50-65	35-50	30-35	15-20
	18-34	Gravelly fine sandy loam.	SM, GM	A-2	0-10	60-70	50-60	35-45	25-35	25-30	NP-5
	34-50	Very cobbly fine sandy loam.	SM	A-2	30-45	70-75	60-70	45-55	25-35	25-30	NP-5
Brock--------------	0-5	Extremely stony loam.	GM	A-4	25-50	65-75	55-65	45-55	35-50	20-25	NP-5
	5-14	Very cobbly sandy loam, very gravelly sandy clay loam, very gravelly clay loam.	GM-GC, GC	A-1, A-2	20-45	35-45	30-40	25-35	15-25	25-30	5-10
	14	Indurated-------	---	---	---	---	---	---	---	---	---
AR*: Alley--------------	0-5	Extremely stony fine sandy loam.	SM	A-4	20-25	80-90	75-85	50-60	35-45	25-30	NP-5
	5-15	Gravelly clay loam, gravelly sandy clay loam, gravelly loam.	SC, GC	A-6	0-10	65-80	55-75	50-65	35-50	30-35	15-20
	15-27	Gravelly fine sandy loam.	SM, GM	A-2	0-10	60-70	50-60	35-45	25-35	25-30	NP-5
	27-50	Very cobbly fine sandy loam.	SM	A-2	30-45	70-75	60-70	45-55	25-35	25-30	NP-5
Rock outcrop.											
Rubble land.											
AU*. Alluvial land											
BaA----------------- Beowawe	0-9	Silt loam-------	ML	A-4	0	100	95-100	85-95	65-85	20-30	NP-5
	9-16	Loam, silt loam	CL-ML, ML	A-4	0	70-100	55-100	65-95	60-85	25-35	5-10
	16-50	Coarse sandy loam, loam.	SM, ML	A-2, A-4	0	70-100	65-95	45-80	30-60	15-25	NP-5

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
3B*:											
Beowawe	0-9	Silt loam	ML	A-4	0	100	95-100	85-95	65-85	20-30	NP-5
	9-16	Loam, silt loam	CL-ML, ML	A-4	0	70-100	65-100	65-95	60-85	25-35	5-10
	16-50	Coarse sandy loam, loam.	SM, ML	A-2, A-4	0	70-100	65-95	45-80	30-60	15-25	NP-5
Broyles	0-13	Silt loam	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	13-60	Stratified loam to loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
BC: Beowawe variant	0-1	Silty clay loam	CL	A-7	0	100	100	95-100	95-100	40-45	20-25
	1-15	Silty clay loam, silty clay, clay.	CL, CH	A-7	0	100	100	95-100	95-100	45-60	25-40
	15-60	Stratified silt loam to silty clay.	CL	A-6, A-7	0	100	100	95-100	95-100	35-45	15-25
BD*:											
Berning	0-8	Gravelly loam	SM, GM	A-4	0	65-80	50-75	45-65	35-50	20-30	NP-5
	8-24	Very gravelly clay loam, very gravelly sandy clay, very gravelly clay.	GC	A-2	10-30	30-45	25-40	25-35	15-30	40-50	15-25
	24-60	Very gravelly sandy loam, very gravelly sandy clay loam.	GM-GC, GC	A-2, A-1	20-40	30-50	20-40	15-30	10-20	25-30	5-10
Short Creek	0-8	Gravelly clay loam.	GC, SC	A-6	0-15	60-80	50-75	45-65	35-50	35-40	20-25
	8-23	Very gravelly clay.	GC	A-2, A-7	0-10	45-55	35-50	35-45	30-40	50-55	35-40
	23-60	Very gravelly sandy clay, very gravelly clay loam, very gravelly sandy clay loam.	GW-GC, GC	A-2	0-15	30-35	15-25	15-20	5-15	35-45	20-30
BE*:											
Berning	0-8	Gravelly loam	SM, GM	A-4	0	65-80	50-75	45-65	35-50	20-30	NP-5
	8-24	Very gravelly clay loam, very gravelly sandy clay, very gravelly clay.	GC	A-2	10-30	30-45	25-40	25-35	15-30	40-50	15-25
	24-60	Very gravelly sandy loam, very gravelly sandy clay loam.	GM-GC, GC	A-2, A-1	20-40	30-50	20-40	15-30	10-20	25-30	5-10
Toeja	0-13	Loam	CL-ML	A-4	0	85-95	80-95	75-90	60-70	25-30	5-10
	13-31	Loam, clay loam, sandy clay loam.	CL	A-6	0	90-100	85-100	75-90	50-70	30-40	10-15
	31-48	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC	A-2, A-4	0	60-80	55-75	40-60	25-50	25-30	5-10
	48	Weathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
Bf------------------ Bicondoa	0-11	Silty clay loam	CH, MH	A-7	0	100	100	90-100	85-95	50-60	20-30
	11-60	Stratified clay loam to clay.	CL, CH	A-7	0	100	100	90-100	75-95	45-55	25-35
Bg------------------ Bicondoa	0-10	Silty clay------	CH, MH	A-7	0	100	100	95-100	90-100	55-60	25-30
	10-40	Stratified clay loam to silty clay.	CL, CH	A-7	0	100	100	90-100	75-95	40-55	20-30
	40-60	Gravelly loam, gravelly clay loam.	SC	A-6	0	65-75	55-70	50-60	35-50	30-35	10-15
BHD----------------- Bobs	0-6	Cobbly loam-----	SM, ML, GM	A-4	15-30	70-80	65-75	55-70	40-55	20-25	NP-5
	6-18	Gravelly loam, gravelly very fine sandy loam, gravelly silt loam.	GM, SM	A-4	0-24	60-80	50-75	45-70	35-50	20-25	NP-5
	18	Indurated-------	---	---	---	---	---	---	---	---	---
Bk------------------ Bosco	0-15	Very gravelly loam.	GM	A-1	0	30-45	25-35	20-30	15-25	---	NP
	15-46	Stratified very gravelly loam to very gravelly sandy loam.	GW-GM, GM	A-1	0	20-45	15-35	10-30	5-20	---	NP
	46-70	Very gravelly sand.	GW, GP	A-1	0	15-25	10-20	5-15	0-5	---	NP
BL*: Bosco--------------	0-15	Very gravelly loam.	GM	A-1	0	30-45	25-35	20-30	15-25	---	NP
	15-46	Stratified very gravelly loam to very gravelly sandy loam.	GW-GM, GM	A-1	0	20-45	15-35	10-30	5-20	---	NP
	46-70	Very gravelly sand.	GW, GP	A-1	0	15-25	10-20	5-15	0-5	---	NP
Welch---------------	0-7	Silt loam-------	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	7-60	Stratified very fine sandy loam to gravelly clay loam.	CL	A-6	0	85-95	75-90	70-80	50-60	30-40	10-20
BM*: Boulflat-----------	0-4	Gravelly loam---	GM	A-4	0	60-75	50-75	45-65	35-50	20-25	NP-5
	4-13	Gravelly loam, gravelly clay loam, gravelly sandy clay loam.	GC	A-2, A-6	0	60-75	50-75	45-65	25-50	30-35	10-15
	13-23	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0	40-50	35-50	25-45	15-35	15-25	NP-5
	23-34	Cemented--------	---	---	---	---	---	---	---	---	---
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
BM*:											
Havingdon----------	0-6	Gravelly silt loam.	GM	A-4	0	60-70	50-65	50-60	40-50	30-40	5-10
	6-21	Very gravelly clay, very gravelly sandy clay.	GC	A-2	0	30-40	15-35	15-30	10-25	40-50	15-25
	21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Brock--------------	0-5	Cobbly loam------	SM, GM	A-4	20-25	65-85	60-75	45-65	35-50	20-25	NP-5
	5-14	Very cobbly sandy loam, very gravelly sandy clay loam very gravelly clay loam.	GM-GC, GC	A-1, A-2	20-45	35-45	30-40	25-35	15-25	25-30	5-10
	14	Indurated--------	---	---	---	---	---	---	---	---	---
BN*:											
Old Camp variant--	0-9	Cobbly sandy loam.	SM	A-1, A-2	25-30	75-85	70-75	40-50	20-30	25-30	NP-5
	9-13	Very gravelly clay loam, very gravelly sandy clay loam.	GC	A-2	0-10	30-40	20-30	20-25	10-20	30-35	15-20
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Boulflat-----------	0-4	Gravelly loam----	GM	A-4	0	60-75	50-75	45-65	35-50	20-25	NP-5
	4-13	Gravelly loam, gravelly clay loam, gravelly sandy clay loam.	GC	A-2, A-6	0	60-75	50-75	45-65	25-50	30-35	10-15
	13-23	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0	40-50	35-50	25-45	15-35	15-25	NP-5
	23-34	Cemented---------	---	---	---	---	---	---	---	---	---
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Humdun-------------	0-8	Silt loam--------	ML	A-4	0	100	100	90-100	70-90	30-40	NP-10
	8-30	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
	30-60	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
BO*:											
Brock--------------	0-5	Cobbly loam------	SM, GM	A-4	20-25	65-85	60-75	45-65	35-50	20-25	NP-5
	5-14	Very cobbly sandy loam, very gravelly sandy clay loam very gravelly clay loam.	GM-GC, GC	A-1, A-2	20-45	35-45	30-40	25-35	15-25	25-30	5-10
	14	Indurated--------	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
BO*:											
Boulflat----------	0-4	Gravelly loam---	GM	A-4	0	60-75	50-75	45-65	35-50	20-25	NP-5
	4-13	Gravelly loam, gravelly clay loam, gravelly sandy clay loam.	GC	A-2, A-6	0	60-75	50-75	45-65	25-50	30-35	10-15
	13-23	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2	0	40-50	35-50	25-45	15-35	15-25	NP-5
	23-34	Cemented--------	---	---	---	---	---	---	---	---	---
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rad---------------	0-6	Silt loam-------	ML	A-4	0	100	100	90-100	80-90	30-35	5-10
	6-18	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	95-100	80-95	65-85	30-35	NP-5
	18-45	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	75-85	25-30	NP-5
	45-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	95-100	80-90	65-75	25-30	NP-5
BpA, BPB----------- Broyles	0-13	Silt loam-------	ML	A-4	0	100	95-100	85-95	60-75	---	NP
	13-60	Stratified loam to loamy sand.	SM	A-2	0	70-100	60-95	30-40	25-35	---	NP
BQE---------------- Bucan	0-7	Loam------------	CL	A-6	0	90-95	85-95	75-85	55-65	30-35	10-15
	7-25	Clay------------	CH	A-7	0-5	90-95	85-95	75-85	65-75	50-60	35-45
	25-50	Gravelly clay, gravelly clay loam.	CL	A-7	0-10	70-85	60-80	55-75	50-60	40-50	25-35
BRF---------------- Bucan	0-7	Extremely stony loam.	CL	A-6	20-25	75-85	70-80	65-75	50-60	30-35	10-15
	7-25	Clay------------	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	25-50	Cobbly clay, gravelly clay loam.	CL	A-7	25-35	70-80	60-75	60-70	50-60	40-50	25-35
BS*:											
Bucan------------- Loam	0-7	Loam------------	CL	A-6	0	90-95	85-95	75-85	55-65	30-35	10-15
	7-25	Clay------------	CH	A-7	0-5	90-95	85-95	75-85	65-75	50-60	35-45
	25-50	Gravelly clay, gravelly clay loam.	CL	A-7	0-10	70-85	60-80	55-75	50-60	40-50	25-35
Bucan------------- Gravelly loam	0-4	Gravelly loam---	GC, SC	A-6	0	65-80	60-75	55-65	35-50	30-35	10-15
	4-25	Clay------------	CH	A-7	0-5	90-95	85-95	75-85	65-75	50-60	35-45
	25-40	Gravelly clay, gravelly clay loam.	CL	A-7	0-10	70-85	60-80	55-75	50-60	40-50	25-35
BT*:											
Bucan------------- Stony loam	0-7	Stony loam------	CL	A-6	5-15	75-85	70-80	65-75	50-60	30-35	10-15
	7-25	Clay------------	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	25-50	Cobbly clay, gravelly clay loam.	CL	A-7	25-35	70-80	60-75	60-70	50-60	40-50	25-35

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
T*:											
Bucan------------- Extremely stony loam	0-7	Extremely stony loam.	CL	A-6	20-25	75-85	70-80	65-75	50-60	30-35	10-15
	7-25	Clay-------------	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	25-50	Cobbly clay, gravelly clay loam.	CL	A-7	25-35	70-80	60-75	60-70	50-60	40-50	25-35
U*:											
Bucan-------------	0-4	Gravelly loam---	GC, SC	A-6	0	65-80	60-75	55-65	35-50	30-35	10-15
	4-25	Clay-------------	CH	A-7	0-5	90-95	85-95	75-85	65-75	50-60	35-45
	25-40	Gravelly clay, gravelly clay loam.	CL	A-7	0-10	70-85	60-80	55-75	50-60	40-50	25-35
Clurde------------	0-5	Silt loam-------	ML	A-4	0	80-95	75-95	70-85	55-65	20-25	NP-5
	5-29	Loam, silt loam, clay loam.	CL-ML, CL	A-4, A-6	0	80-95	75-95	70-85	55-65	25-35	5-15
	29-50	Gravelly sandy loam, gravelly sandy clay loam, gravelly loam.	SM	A-2, A-4	0	70-80	55-75	45-60	25-45	20-30	NP-5
Orovada-----------	0-5	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	5-18	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	18-61	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
BV*:											
Bucan-------------	0-7	Stony loam------	CL	A-6	5-15	75-85	70-80	65-75	50-60	30-35	10-15
	7-25	Clay-------------	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	25-50	Cobbly clay, gravelly clay loam.	CL	A-7	25-35	70-80	60-75	60-70	50-60	40-50	25-35
Creva-------------	0-5	Gravelly loam---	SM	A-4	10-30	75-85	65-75	60-70	40-50	20-30	NP-5
	5-19	Gravelly clay loam.	GC	A-6	5-25	55-60	45-55	40-50	35-45	30-40	15-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Brock-------------	0-5	Cobbly loam-----	SM, GM	A-4	20-25	65-85	60-75	45-65	35-50	20-25	NP-5
	5-14	Very cobbly loam, very gravelly sandy clay loam, very gravelly clay loam.	GM-GC, GC	A-1, A-2	20-45	35-45	30-40	25-35	15-25	25-30	5-10
	14	Indurated-------	---	---	---	---	---	---	---	---	---
BW*:											
Bucan-------------	0-7	Extremely stony loam.	CL	A-6	20-25	75-85	70-80	65-75	50-60	30-35	10-15
	7-25	Clay-------------	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	25-50	Cobbly clay, gravelly clay loam.	CL	A-7	25-35	70-80	60-75	60-70	50-60	40-50	25-35

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
BW*:											
Glean	0-8	Extremely stony loam.	SM	A-2, A-4	35-50	65-75	60-70	40-60	25-40	25-30	NP-5
	8-15	Very gravelly loam, very gravelly sandy loam.	GM	A-1, A-2	25-35	45-55	40-50	25-40	15-30	25-30	NP-5
	15-51	Very cobbly loam, very cobbly sandy loam.	SM	A-2, A-4	30-45	65-75	55-65	40-60	25-40	25-30	NP-5
	51	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
BX*:											
Bucan Stony	0-7	Stony loam	CL	A-6	5-15	75-85	70-80	65-75	50-60	30-35	10-15
	7-25	Clay	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	25-50	Cobbly clay, gravelly clay loam.	CL	A-7	25-35	70-80	60-75	60-70	50-60	40-50	25-35
Bucan Extremely stony	0-7	Extremely stony loam.	CL	A-6	20-25	75-85	70-80	65-75	50-60	30-35	10-15
	7-25	Clay	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	25-50	Cobbly clay, gravelly clay loam.	CL	A-7	25-35	70-80	60-75	60-70	50-60	40-50	25-35
Humdun	0-8	Silt loam	ML	A-4	0	100	100	90-100	70-90	30-40	NP-10
	8-30	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
	30-60	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
BY*:											
Bucan	0-7	Stony loam	CL	A-6	5-15	75-85	70-80	65-75	50-60	30-35	10-15
	7-25	Clay	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	25-50	Cobbly clay, gravelly clay loam.	CL	A-7	25-35	70-80	60-75	60-70	50-60	40-50	25-35
Humdun	0-8	Silt loam	ML	A-4	0	100	100	90-100	70-90	30-40	NP-10
	8-30	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
	30-60	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
Brock	0-5	Cobbly loam	SM, GM	A-4	20-25	65-85	60-75	45-65	35-50	20-25	NP-5
	5-14	Very cobbly loam, very gravelly sandy clay loam, very gravelly clay loam.	GM-GC, GC	A-1, A-2	20-45	35-45	30-40	25-35	15-25	25-30	5-10
	14	Indurated	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Z*:											
Bucan	0-7	Stony loam	CL	A-6	5-15	75-85	70-80	65-75	50-60	30-35	10-15
	7-25	Clay	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	25-50	Cobbly clay, gravelly clay loam.	CL	A-7	25-35	70-80	60-75	60-70	50-60	40-50	25-35
Humdun	0-8	Silt loam	ML	A-4	0	100	100	90-100	70-90	30-40	NP-10
	8-30	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
	30-60	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
Rock outcrop.											
3Zm*:											
Bucan	0-7	Loam	CL	A-6	0	90-95	85-95	75-85	55-65	30-35	10-15
	7-25	Clay	CH	A-7	0-5	90-95	85-95	75-85	65-75	50-60	35-45
	25-50	Gravelly clay, gravelly clay loam.	CL	A-7	0-10	70-85	60-80	55-75	50-60	40-50	25-35
Malpais	0-3	Very flaggy loam	GM	A-2	40-50	45-55	35-50	35-45	25-35	20-30	NP-5
	3-30	Very gravelly loam, very cobbly fine sandy loam, very stony sandy loam.	GM	A-1	40-50	30-40	25-35	20-30	10-20	20-30	NP-5
	30-60	Very stony loam, very cobbly fine sandy loam, very gravelly sandy loam.	GM	A-1, A-2	40-50	45-55	35-50	25-45	20-30	20-30	NP-5
BZs*:											
Bucan	0-4	Gravelly loam	GC, SC	A-6	0	65-80	60-75	55-65	35-50	30-35	10-15
	4-25	Clay	CH	A-7	0-5	90-95	85-95	75-85	65-75	50-60	35-45
	25-40	Gravelly clay, gravelly clay loam.	CL	A-7	0-10	70-85	60-80	55-75	50-60	40-50	25-35
Singletree	0-17	Loam	ML	A-4	0	85-90	80-90	70-85	50-65	25-35	NP-5
	17-32	Loam, gravelly loam, clay loam.	SC, GC, CL	A-6	0-15	70-80	60-80	50-70	40-60	30-40	10-15
	32-49	Sandy loam, sandy clay loam, gravelly sandy loam.	SM-SC	A-2	0-15	60-80	50-80	30-60	20-30	25-30	5-10
	49	Weathered bedrock.	---	---	---	---	---	---	---	---	---
BZt*:											
Bucan Stony	0-7	Stony loam	CL	A-6	5-15	75-85	70-80	65-75	50-60	30-35	10-15
	7-25	Clay	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	25-50	Cobbly clay, gravelly clay loam.	CL	A-7	25-35	70-80	60-75	60-70	50-60	40-50	25-35

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
BZt*:											
Bucan-------------- Extremely stony	0-7	Extremely stony loam.	CL	A-6	20-25	75-85	70-80	65-75	50-60	30-35	10-15
	7-25	Clay------------	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	25-50	Cobbly clay, gravelly clay loam.	CL	A-7	25-35	70-80	60-75	60-70	50-60	40-50	25-35
Toeja-------------	0-13	Loam------------	CL-ML	A-4	0	85-95	80-95	75-90	60-70	25-30	5-10
	13-31	Loam, clay loam, sandy clay loam.	CL	A-6	0	90-100	85-100	75-90	50-70	30-40	10-15
	31-48	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC	A-2, A-4	0	60-80	55-75	40-60	25-50	25-30	5-10
	48	Weathered bedrock.	---	---	---	---	---	---	---	---	---
BZu*:											
Bunky-------------	0-16	Loam------------	CL-ML	A-4	0	85-95	75-90	65-80	50-60	25-30	5-10
	16-22	Very gravelly loam.	SM-SC	A-4	0	70-80	60-80	55-70	35-50	25-30	5-10
	22	Cemented--------	---	---	---	---	---	---	---	---	---
Clurde------------	0-5	Silt loam-------	ML	A-4	0	80-95	75-95	70-85	55-65	20-25	NP-5
	5-29	Loam, silt loam, clay loam.	CL-ML, CL	A-4, A-6	0	80-95	75-95	70-85	55-65	25-35	5-15
	29-50	Gravelly sandy loam, gravelly sandy clay loam, gravelly loam.	SM	A-2, A-4	0	70-80	55-75	45-60	25-45	20-30	NP-5
Short Creek-------	0-8	Gravelly clay loam.	GC, SC	A-6	0-15	60-80	50-75	45-65	35-50	35-40	20-25
	8-23	Very gravelly clay.	GC	A-2, A-7	0-10	45-55	35-50	35-45	30-40	50-55	35-40
	23-60	Very gravelly sandy clay, very gravelly clay loam, very gravelly sandy clay loam.	GW-GC, GC	A-2	0-15	30-35	15-25	15-20	5-15	35-45	20-30
CAD---------------- Carstump	0-4	Very gravelly loam.	SM	A-2	0	65-75	35-50	35-45	25-35	20-30	NP-5
	4-15	Gravelly loam---	SM-SC	A-4	0	75-90	50-75	40-50	35-45	25-35	5-10
	15-29	Very gravelly clay.	SC	A-2, A-6, A-7	0	65-75	35-50	35-45	30-40	35-55	15-30
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CBE---------------- Chen	0-6	Extremely stony loam.	SM, SM-SC	A-4	35-45	80-90	60-80	55-70	40-50	25-35	5-10
	6-14	Very gravelly clay.	GC, SC	A-2, A-7	5-15	60-75	35-50	30-50	30-45	40-55	15-30
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CC*:											
Chen--------------	0-8	Cobbly loam-----	SM-SC	A-4	20-25	80-90	60-80	55-70	40-50	25-35	5-10
	8-17	Very gravelly clay.	GC, SC	A-2, A-7	5-15	60-75	35-50	30-50	30-45	40-55	15-30
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
C*:											
Pie Creek---------	0-5	Very cobbly loam	ML	A-4	40-50	85-95	80-90	70-80	50-60	25-30	NP-5
	5-21	Clay------------	CH	A-7	0	95-100	90-100	85-95	80-90	65-70	35-40
	21-30	Clay loam, clay	CL	A-7	0	95-100	90-100	80-90	70-80	45-50	20-25
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ramires-----------	0-9	Very stony loam	ML	A-4	20-40	80-85	70-80	65-75	50-60	30-40	5-10
	9-26	Clay, gravelly clay, gravelly sandy clay.	CL, CH	A-7	0-10	75-85	65-85	60-80	50-65	40-55	25-40
	26-34	Sandy loam, sandy clay loam.	SC	A-2	0-10	85-90	75-85	50-65	25-35	25-30	10-15
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CD*:											
Chen--------------	0-8	Cobbly loam-----	SM-SC	A-4	20-25	80-90	60-80	55-70	40-50	25-35	5-10
	8-17	Very gravelly clay.	GC, SC	A-2, A-7	5-15	60-75	35-50	30-50	30-45	40-55	15-30
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Pie Creek---------	0-5	Very cobbly loam	ML	A-4	40-50	85-95	80-90	70-80	50-60	25-30	NP-5
	5-21	Clay------------	CH	A-7	0	95-100	90-100	85-95	80-90	65-70	35-40
	21-30	Clay loam, clay	CL	A-7	0	95-100	90-100	80-90	70-80	45-50	20-25
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Taylor Creek------	0-15	Loam------------	CL-ML, CL	A-4, A-6	0	90-100	85-95	75-85	55-70	25-35	5-15
	15-40	Gravelly clay---	CH	A-7	0	70-80	65-75	60-70	55-65	60-70	35-45
	40-60	Gravelly clay, gravelly sandy clay.	SC, CH, GC	A-7	0-5	70-80	65-75	60-70	40-55	50-60	25-35
CEE*, CEF*:											
Chen--------------	0-8	Cobbly loam-----	SM-SC	A-4	20-25	80-90	60-80	55-70	40-50	25-35	5-10
	8-17	Very gravelly clay.	GC, SC	A-2, A-7	5-15	60-75	35-50	30-50	30-45	40-55	15-30
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Taylor Creek------	0-15	Loam------------	CL-ML, CL	A-4, A-6	0	90-100	85-95	75-85	55-70	25-35	5-15
	15-40	Gravelly clay---	CH	A-7	0	70-80	65-75	60-70	55-65	60-70	35-45
	40-60	Gravelly clay, gravelly sandy clay.	SC, CH, GC	A-7	0-5	70-80	65-75	60-70	40-55	50-60	25-35
Mosquet-----------	0-6	Very gravelly sandy loam.	GM-GC	A-2	15-25	50-60	40-50	25-35	15-20	15-25	5-10
	6-20	Cobbly sandy clay, gravelly clay.	GC, SC	A-7	5-20	65-75	60-70	55-65	35-50	40-50	25-35
	20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CF*:											
Cherry Spring-----	0-15	Silt loam-------	ML	A-4	0	95-100	95-100	90-95	75-85	20-25	NP-5
	15-36	Loam, silt loam, clay loam.	CL-ML, CL	A-4, A-6	0	90-100	85-95	80-90	65-75	25-35	5-15
	36-54	Cemented--------	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
CF*:											
Berning	0-8	Gravelly loam	SM, GM	A-4	0	65-80	50-75	45-65	35-50	20-30	NP-5
	8-24	Very gravelly clay loam, very gravelly sandy clay, very gravelly clay.	GC	A-2	10-30	30-45	25-40	25-35	15-30	40-50	15-25
	24-60	Very gravelly sandy loam, very gravelly sandy clay loam.	GM-GC, GC	A-2, A-1	20-40	30-50	20-40	15-30	10-20	25-30	5-10
CG*:											
Cherry Spring	0-15	Silt loam	ML	A-4	0	95-100	95-100	90-95	75-85	20-25	NP-5
	15-36	Loam, silt loam, clay loam.	CL-ML, CL	A-4, A-6	0	90-100	85-95	80-90	65-75	25-35	5-15
	36-54	Cemented	---	---	---	---	---	---	---	---	---
Cortez	0-10	Silt loam	ML	A-4	0	95-100	85-95	80-90	70-80	30-35	NP-5
	10-22	Clay	CH	A-7	0	80-95	75-85	70-80	65-75	50-60	35-45
	22-48	Indurated	---	---	---	---	---	---	---	---	---
	48-60	Very gravelly coarse sandy loam, very cobbly loamy coarse sand.	GP-GM	A-1	30-50	45-55	25-35	15-20	5-10	---	NP
Chiara	0-4	Silt loam	ML	A-4	0	95-100	90-100	85-95	70-80	25-35	NP-5
	4-13	Very fine sandy loam, loam, silt loam.	ML	A-4	0	95-100	90-100	80-95	50-75	25-35	NP-5
	13	Indurated	---	---	---	---	---	---	---	---	---
CH*:											
Cherry Spring	0-15	Silt loam	ML	A-4	0	95-100	95-100	90-95	75-85	20-25	NP-5
	15-36	Loam, silt loam, clay loam.	CL-ML, CL	A-4, A-6	0	90-100	85-95	80-90	65-75	25-35	5-15
	36-54	Cemented	---	---	---	---	---	---	---	---	---
Cortez	0-10	Silt loam	ML	A-4	0	95-100	85-95	80-90	70-80	30-35	NP-5
	10-22	Clay	CH	A-7	0	80-95	75-85	70-80	65-75	50-60	35-45
	22-48	Indurated	---	---	---	---	---	---	---	---	---
	48-60	Very gravelly coarse sandy loam, very cobbly loamy coarse sand.	GP-GM	A-1	30-50	45-55	25-35	15-20	5-10	---	NP
Tomera	0-9	Silt loam	ML	A-4	0	90-100	80-95	75-90	70-80	30-40	NP-5
	9-39	Gravelly clay, clay.	CH	A-7	0	70-85	55-80	50-75	50-60	50-60	25-35
	39-60	Very gravelly sandy loam, very gravelly loamy sand.	GM	A-1	10-40	40-50	30-45	20-35	10-15	---	NP
CK*:											
Cherry Spring	0-15	Silt loam	ML	A-4	0	95-100	95-100	90-95	75-85	20-25	NP-5
	15-36	Loam, silt loam, clay loam.	CL-ML, CL	A-4, A-6	0	90-100	85-95	80-90	65-75	25-35	5-15
	36-54	Cemented	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
CK*:											
Orovada	0-5	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	5-18	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	18-61	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
CL*:											
Chiara Very stony	0-4	Very stony silt loam.	ML	A-4	20-35	90-100	85-95	75-90	55-70	25-35	NP-5
	4-14	Silt loam, very fine sandy loam, loam.	ML	A-4	0-5	90-100	85-95	75-90	55-70	25-35	NP-5
	14	Indurated	---	---	---	---	---	---	---	---	---
Chiara Extremely stony	0-4	Extremely stony loam.	ML	A-4	35-60	90-100	85-95	75-90	55-70	25-35	NP-5
	4-14	Silt loam, very fine sandy loam, loam.	ML	A-4	0-5	90-100	85-95	75-90	55-70	25-35	NP-5
	14	Indurated	---	---	---	---	---	---	---	---	---
Brock	0-5	Cobbly loam	SM, GM	A-4	20-25	65-85	60-75	45-65	35-50	20-25	NP-5
	5-14	Very cobbly sandy loam, very gravelly sandy clay loam very gravelly clay loam.	GM-GC, GC	A-1, A-2	20-45	35-45	30-40	25-35	15-25	25-30	5-10
	14	Indurated	---	---	---	---	---	---	---	---	---
CM*:											
Chiara	0-4	Silt loam	ML	A-4	0	95-100	90-100	85-95	70-80	25-35	NP-5
	4-13	Very fine sandy loam, loam, silt loam.	ML	A-4	0	95-100	90-100	80-95	50-75	25-35	NP-5
	13	Indurated	---	---	---	---	---	---	---	---	---
Cherry Spring	0-15	Silt loam	ML	A-4	0	95-100	95-100	90-95	75-85	20-25	NP-5
	15-36	Loam, silt loam, clay loam.	CL-ML, CL	A-4, A-6	0	90-100	85-95	80-90	65-75	25-35	5-15
	36-54	Cemented	---	---	---	---	---	---	---	---	---
Cortez	0-10	Silt loam	ML	A-4	0	95-100	85-95	80-90	70-80	30-35	NP-5
	10-22	Clay	CH	A-7	0	80-95	75-85	70-80	65-75	50-60	35-45
	22-48	Indurated	---	---	---	---	---	---	---	---	---
	48-60	Very gravelly coarse sandy loam, very cobbly loamy coarse sand.	GP-GM	A-1	30-50	45-55	25-35	15-20	5-10	---	NP
CN	0-7	Loam	ML	A-4	0	95-100	95-100	80-90	60-70	30-35	NP-5
Cluro	7-13	Silt loam	ML	A-4	0	95-100	95-100	85-95	70-80	30-35	NP-5
	13-45	Stratified very fine sandy loam to silty clay loam.	CL-ML, CL	A-4, A-6	0	95-100	95-100	80-90	55-70	25-35	5-15
	45-60	Very gravelly coarse sandy loam, very gravelly sandy loam.	GP-GM, GW-GM	A-1	0	30-50	15-40	10-25	5-10	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Co, Cp------------- Cluro	0-5	Silt loam-------	ML	A-4	0	95-100	95-100	85-95	80-90	30-35	NP-5
	5-12	Loam, silt loam	ML	A-4	0	95-100	95-100	85-95	80-90	30-35	NP-5
	12-38	Stratified very fine sandy loam to silty clay loam.	CL-ML, CL	A-4, A-6	0	95-100	95-100	85-95	70-80	25-35	5-15
	38-60	Very fine sandy loam, fine sandy loam.	ML	A-4	0	95-100	95-100	80-90	50-60	---	NP
Cr----------------- Cluro	0-7	Silt loam-------	ML	A-4	0	95-100	95-100	80-90	60-70	30-35	NP-5
	7-13	Silt loam-------	ML	A-4	0	95-100	95-100	85-95	70-80	30-35	NP-5
	13-45	Stratified very fine sandy loam to silty clay loam.	CL-ML, CL	A-4, A-6	0	95-100	95-100	80-90	55-70	25-35	5-15
	45-60	Very gravelly coarse sandy loam, very gravelly sandy loam.	GP-GM, GW-GM	A-1	0	30-50	15-40	10-25	5-10	---	NP
CS*:											
Coff---------------	0-5	Very gravelly silt loam.	GM	A-1, A-2	0	35-45	25-35	20-35	20-30	20-30	NP-5
	5-29	Very gravelly loam, very gravelly silt loam.	GM	A-1	0	30-45	20-35	20-30	15-25	15-25	NP-5
	29	Indurated-------	---	---	---	---	---	---	---	---	---
Denay--------------	0-10	Gravelly loam---	GM, SM	A-4	0-5	65-80	50-70	45-65	35-50	---	NP
	10-50	Very gravelly loam, very gravelly silt loam.	GM	A-1	0-5	25-35	15-25	15-25	10-20	---	NP
Ct----------------- Coit	0-10	Loam------------	ML	A-4	0	95-100	95-100	80-90	60-70	30-35	5-10
	10-38	Stratified sandy loam to silty clay loam.	CL-ML, CL	A-4, A-6	0	95-100	95-100	85-95	60-70	25-35	5-15
	38-60	Stratified fine sandy loam to loamy sand.	SM-SC, SC	A-4	0	95-100	95-100	60-70	35-50	20-25	5-10
Cu*:											
Coit---------------	0-10	Loam------------	ML	A-4	0	95-100	95-100	80-90	60-70	30-35	5-10
	10-38	Stratified sandy loam to silty clay loam.	CL-ML, CL	A-4, A-6	0	95-100	95-100	85-95	60-70	25-35	5-15
	38-60	Stratified fine sandy loam to loamy sand.	SM-SC, SC	A-4	0	95-100	95-100	60-70	35-50	20-25	5-10
Griver-------------	0-14	Loam------------	ML	A-4	0	95-100	95-100	80-90	60-70	25-30	NP-5
	14-37	Stratified loamy sand to silt loam.	SM	A-4	0	95-100	95-100	70-85	40-50	---	NP
	37-60	Stratified loamy fine sand to gravel.	GP-GM, GW-GM, SP-SM	A-1	0	45-60	35-55	20-30	5-10	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
V*:											
Creva	0-5	Gravelly loam	SM	A-4	10-30	75-85	65-75	60-70	40-50	20-30	NP-5
	5-19	Gravelly clay loam.	GC	A-6	5-25	55-60	45-55	40-50	35-45	30-40	15-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Chen	0-8	Cobbly loam	SM-SC	A-4	20-25	80-90	60-80	55-70	40-50	25-35	5-10
	8-17	Very gravelly clay.	GC, SC	A-2, A-7	5-15	60-75	35-50	30-50	30-45	40-55	15-30
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CW2*:											
Creva	0-5	Gravelly loam	SM	A-4	10-30	75-85	65-75	60-70	40-50	20-30	NP-5
	5-19	Gravelly clay loam.	GC	A-6	5-25	55-60	45-55	40-50	35-45	30-40	15-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ramires	0-6	Gravelly loam	GM	A-6, A-4	0-15	60-65	50-60	45-55	35-45	30-40	5-15
	6-24	Gravelly clay, gravelly sandy clay, clay.	CL, CH	A-7	0-10	75-85	65-85	60-80	50-65	40-55	25-40
	24-30	Sandy loam, sandy clay loam.	SC, SM-SC	A-2	0-10	85-90	75-85	50-65	25-35	20-30	5-15
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cx Crooked Creek	0-8	Silt loam	CL	A-6	0	95-100	95-100	90-100	80-90	30-35	10-15
	8-38	Clay, silty clay	CH	A-7	0	95-100	95-100	90-100	75-95	50-65	25-35
	38-60	Silty clay loam, clay loam.	CL	A-6, A-7	0	85-100	80-100	75-95	60-85	35-50	15-25
CY Crooked Creek	0-8	Clay loam	CL	A-7	0	95-100	95-100	90-100	75-85	40-50	15-25
	8-60	Silty clay, silty clay loam.	CL, CH	A-7	0	85-100	80-100	75-95	70-90	45-55	20-30
DM*:											
Donna	0-8	Gravelly loam	ML	A-4	0	65-75	60-75	55-70	50-60	30-40	5-10
	8-22	Clay	CH	A-7	0	80-90	75-85	75-80	70-80	60-70	30-40
	22-38	Indurated	---	---	---	---	---	---	---	---	---
	38-68	Stratified very gravelly loam to very gravelly sandy loam.	GM	A-1, A-2	10-35	40-50	30-40	20-30	10-20	25-35	5-10
Simon	0-12	Loam	ML	A-4	0	80-90	75-90	65-80	50-65	20-30	NP-5
	12-41	Loam, clay loam, cobbly clay loam.	CL	A-6	0-20	80-90	75-85	70-80	50-65	30-40	10-20
	41-60	Very gravelly clay loam, very gravelly sandy clay loam.	GM-GC, GC	A-2	20-40	35-50	25-35	20-30	15-25	25-35	5-15

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
DN*:											
Donna-------------	0-8	Gravelly loam---	ML	A-4	0	65-75	60-75	55-70	50-60	30-40	5-10
	8-22	Clay------------	CH	A-7	0	80-90	75-85	75-80	70-80	60-70	30-40
	22-38	Indurated-------	---	---	---	---	---	---	---	---	---
	38-68	Stratified very gravelly loam to very gravelly sandy loam.	GM	A-1, A-2	10-35	40-50	30-40	20-30	10-20	25-35	5-10
Stampede----------	0-12	Gravelly loam---	CL, ML	A-4, A-6	0	70-80	65-75	60-70	50-65	30-40	5-15
	12-28	Clay------------	CH	A-7	0	90-100	85-95	80-90	70-85	50-60	30-40
	28	Indurated-------	---	---	---	---	---	---	---	---	---
Short Creek-------	0-8	Gravelly clay loam.	GC, SC	A-6	0-15	60-80	50-75	45-65	35-50	35-40	20-25
	8-23	Very gravelly clay.	GC	A-2, A-7	0-10	45-55	35-50	35-45	30-40	50-55	35-40
	23-60	Very gravelly sandy clay, very gravelly clay loam, very gravelly sandy clay loam.	GW-GC, GC	A-2	0-15	30-35	15-25	15-20	5-15	35-45	20-30
Do, Dp------------- Dunphy	0-3	Silt loam-------	ML	A-4	0	100	95-100	85-95	80-90	30-35	NP-5
	3-11	Fine sandy loam, very fine sandy loam.	ML	A-4	0	100	95-100	70-80	50-65	25-30	NP-5
	11-60	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	95-100	75-85	50-70	25-30	NP-5
Dr, Ds------------- Dunphy	0-7	Silt loam-------	ML	A-4	0	95-100	95-100	85-95	80-90	30-35	NP-5
	7-35	Stratified sandy loam to silty clay loam.	ML	A-4	0	95-100	95-100	80-90	50-60	25-30	NP-5
	35-61	Stratified gravelly sand to silt loam.	SM	A-2, A-4	0	85-95	75-90	50-60	30-40	---	NP
	61-65	Gravelly sand, very gravelly sand.	GP, GW, SP, SW	A-1	0	40-60	30-55	20-30	0-5	---	NP
FB*:											
Ferdelford-------- 15 to 30 percent slopes	0-3	Gravelly clay loam.	SC	A-6	0-5	65-75	55-70	50-65	40-50	35-40	20-25
	3-14	Loam, sandy clay loam, clay loam.	SC, CL	A-6	0-5	80-90	75-85	65-75	40-60	30-40	15-25
	14-38	Gravelly sandy clay loam.	SC, GC	A-2, A-6	0-5	60-80	50-75	45-60	30-40	30-35	15-20
	38	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Ferdelford-------- 30 to 50 percent slopes	0-3	Gravelly clay loam.	SC	A-6	0-5	65-75	55-70	50-65	40-50	35-40	20-25
	3-14	Loam, sandy clay loam, clay loam.	SC, CL	A-6	0-5	80-90	75-85	65-75	40-60	30-40	15-25
	14-38	Gravelly sandy clay loam.	SC, GC	A-2, A-6	0-5	60-80	50-75	45-60	30-40	30-35	15-20
	38	Weathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
FB*:											
Bucan	0-4	Gravelly loam	GC, SC	A-6	0	65-80	60-75	55-65	35-50	30-35	10-15
	4-25	Clay	CH	A-7	0-5	90-95	85-95	75-85	65-75	50-60	35-45
	25-40	Gravelly clay, gravelly clay loam.	CL	A-7	0-10	70-85	60-80	55-75	50-60	40-50	25-35
FD*:											
Ferdelford	0-3	Gravelly clay loam.	SC	A-6	0-5	65-75	55-70	50-65	40-50	35-40	20-25
	3-14	Loam, sandy clay loam, clay loam.	SC, CL	A-6	0-5	80-90	75-85	65-75	40-60	30-40	15-25
	14-38	Gravelly sandy clay loam.	SC, GC	A-2, A-6	0-5	60-80	50-75	45-60	30-40	30-35	15-20
	38	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Puett	0-18	Fine sandy loam	SM	A-4	0	90-100	85-95	60-80	35-50	---	NP
	18	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Berning	0-8	Gravelly loam	SM, GM	A-4	0	65-80	50-75	45-65	35-50	20-30	NP-5
	8-24	Very gravelly clay loam, very gravelly sandy clay, very gravelly clay.	GC	A-2	10-30	30-45	25-40	25-35	15-30	40-50	15-25
	24-60	Very gravelly sandy loam, very gravelly sandy clay loam.	GM-GC, GC	A-2, A-1	20-40	30-50	20-40	15-30	10-20	25-30	5-10
FE*:											
Ferdelford	0-3	Gravelly clay loam.	SC	A-6	0-5	65-75	55-70	50-65	40-50	35-40	20-25
	3-14	Loam, sandy clay loam, clay loam.	SC, CL	A-6	0-5	80-90	75-85	65-75	40-60	30-40	15-25
	14-38	Gravelly sandy clay loam.	SC, GC	A-2, A-6	0-5	60-80	50-75	45-60	30-40	30-35	15-20
	38	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Puett	0-13	Coarse sandy loam.	SM	A-1, A-2	0	90-100	85-95	40-50	20-30	---	NP
	13	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Susie Creek	0-12	Loam	CL-ML	A-4	0	90-100	85-95	75-85	60-70	25-30	5-10
	12-25	Clay loam, sandy clay, clay.	CH, CL	A-7	0	90-100	85-95	80-90	55-75	45-55	25-35
	25-57	Sandy loam, loam	SM, ML	A-4	0	85-100	75-95	60-80	45-65	20-25	NP-5
	57	Weathered bedrock.	---	---	---	---	---	---	---	---	---
FF*:											
Ferdelford	0-3	Very gravelly clay loam.	GC	A-2	0-5	35-55	25-50	25-45	20-35	35-40	20-25
	3-14	Loam, sandy clay loam, clay loam.	SC, CL	A-6	0-5	80-90	75-85	65-75	40-60	30-40	15-25
	14-26	Gravelly sandy clay loam.	SC, GC	A-2, A-6	0-5	60-80	50-75	45-60	30-40	30-35	15-20
	26	Weathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
FF*:											
Ramires	0-9	Very stony loam	ML	A-4	20-40	80-85	70-80	65-75	50-60	30-40	5-10
	9-26	Clay, gravelly clay, gravelly clay loam.	CL, CH	A-7	0-10	75-85	65-85	60-80	50-65	40-55	25-40
	26-34	Sandy loam, sandy clay loam.	SC	A-2	0-10	85-90	75-85	50-65	25-35	25-30	10-15
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
FH*:											
Ferdelford	0-3	Gravelly clay loam.	SC	A-6	0-5	65-75	55-70	50-65	40-50	35-40	20-25
	3-14	Loam, sandy clay loam, clay loam.	SC, CL	A-6	0-5	80-90	75-85	65-75	40-60	30-40	15-25
	14-38	Gravelly sandy clay loam.	SC, GC	A-2, A-6	0-5	60-80	50-75	45-60	30-40	30-35	15-20
	38	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Susie Creek	0-12	Loam	CL-ML	A-4	0	90-100	85-95	75-85	60-70	25-30	5-10
	12-25	Clay loam, sandy clay, clay.	CH, CL	A-7	0	90-100	85-95	80-90	55-75	45-55	25-35
	25-57	Sandy loam, loam	SM, ML	A-4	0	85-100	75-95	60-80	45-65	20-25	NP-5
	57	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Toeja	0-13	Loam	CL-ML	A-4	0	85-95	80-95	75-90	60-70	25-30	5-10
	13-31	Loam, clay loam, sandy clay loam.	CL	A-6	0	90-100	85-100	75-90	50-70	30-40	10-15
	31-48	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC	A-2, A-4	0	60-80	55-75	40-60	25-50	25-30	5-10
	48	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Fk Four Star	0-20	Loam	ML	A-4	0	100	90-100	80-90	60-70	25-35	NP-10
	20-60	Stratified loamy sand to silt loam.	SM	A-2, A-4	0	100	90-100	50-70	25-40	15-25	NP-5
Fm Four Star	0-15	Loam	ML	A-4	0	100	90-100	80-90	60-70	25-35	NP-10
	15-60	Stratified sandy loam to silt loam.	SM, ML	A-2, A-4	0	100	90-100	60-80	30-60	20-35	NP-10
Fn*:											
Four Star	0-20	Loam	ML	A-4	0	100	90-100	80-90	60-70	25-35	NP-10
	20-60	Stratified loamy sand to silt loam.	SM	A-2, A-4	0	100	90-100	50-70	25-40	15-25	NP-5
Bosco	0-15	Very gravelly loam.	GM	A-1	0	30-45	25-35	20-30	15-25	---	NP
	15-46	Stratified very gravelly loam to very gravelly sandy loam.	GW-GM, GM	A-1	0	20-45	15-35	10-30	5-20	---	NP
	46-70	Very gravelly sand.	GW, GP	A-1	0	15-25	10-20	5-15	0-5	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
Fo*:											
Four Star----------	0-15	Loam-------------	ML	A-4	0	100	90-100	80-90	60-70	25-35	NP-10
	15-60	Stratified sandy loam to silt loam.	SM, ML	A-2, A-4	0	100	90-100	60-80	30-60	20-35	NP-10
Bosco--------------	0-15	Very gravelly loam.	GM	A-1	0	30-45	25-35	20-30	15-25	---	NP
	15-46	Stratified very gravelly loam to very gravelly sandy loam.	GW-GM, GM	A-1	0	20-45	15-35	10-30	5-20	---	NP
	46-70	Very gravelly sand.	GW, GP	A-1	0	15-25	10-20	5-15	0-5	---	NP
Ge----------------- Geysen	0-7	Silt loam--------	ML	A-4	0	95-100	95-100	85-95	75-85	30-35	NP-5
	7-14	Loam, clay loam, silty clay loam.	CL	A-6	0	95-100	95-100	85-95	70-85	30-40	15-25
	14-60	Loam, very fine sandy loam, fine sandy loam.	SM-SC, SC, CL-ML, CL	A-4	0	85-95	75-90	60-75	45-60	25-30	5-10
Gg----------------- Geysen	0-5	Silt loam--------	ML	A-4	0	95-100	95-100	85-95	75-85	30-35	NP-5
	5-12	Loam, clay loam, silty clay loam.	CL	A-6	0	95-100	95-100	85-95	70-85	30-40	15-25
	12-60	Loam, very fine sandy loam, fine sandy loam.	SM-SC, SC, CL-ML, CL	A-4	0	85-95	75-90	60-75	45-60	25-30	5-10
GH*:											
Glean--------------	0-8	Extremely stony loam.	SM	A-2, A-4	35-50	65-75	60-70	40-60	25-40	25-30	NP-5
	8-15	Very gravelly loam, very gravelly sandy loam.	GM	A-1, A-2	25-35	45-55	40-50	25-40	15-30	25-30	NP-5
	15-51	Very cobbly loam, very cobbly sandy loam.	SM	A-2, A-4	30-45	65-75	55-65	40-60	25-40	25-30	NP-5
	51	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Rubble land.											
Gk----------------- Griver	0-14	Loam-------------	ML	A-4	0	95-100	95-100	80-90	60-70	25-30	NP-5
	14-37	Stratified loamy sand to silt loam.	SM	A-4	0	95-100	95-100	70-85	40-50	---	NP
	37-60	Stratified loamy fine sand to gravel.	GP-GM, GW-GM, SP-SM	A-1	0	45-60	35-55	20-30	5-10	---	NP
Gm----------------- Griver	0-10	Loam-------------	ML	A-4	0	95-100	95-100	80-90	60-70	25-30	NP-5
	10-34	Stratified silt loam to sand.	SM, ML	A-4	0	95-100	80-95	65-80	40-60	---	NP
	34-60	Stratified gravelly sand to fine sandy loam.	SM, GM	A-1	0	60-80	50-75	30-50	15-25	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
Gn: Griver	0-7	Silt loam	ML	A-4	0	95-100	95-100	85-95	70-85	30-35	NP-5
	7-42	Stratified sandy loam to silt loam.	SM, ML	A-4	0	95-100	95-100	70-85	40-60	---	NP
	42-60	Clay, silty clay	CH	A-7	0	100	100	90-100	75-95	55-60	35-40
Go: Griver	0-6	Silt loam	ML	A-4	0	95-100	95-100	90-100	80-90	30-35	NP-5
	6-60	Stratified sand to silty clay.	SM, ML	A-4	0	95-100	95-100	65-70	40-55	25-30	NP-5
Gr*:											
Griver	0-14	Loam	ML	A-4	0	95-100	95-100	80-90	60-70	25-30	NP-5
	14-37	Stratified loamy sand to silt loam.	SM	A-4	0	95-100	95-100	70-85	40-50	---	NP
	37-60	Stratified loamy fine sand to gravel.	GP-GM, GW-GM, SP-SM	A-1	0	45-60	35-55	20-30	5-10	---	NP
Griver Wet	0-6	Silt loam	ML	A-4	0	95-100	95-100	90-100	80-90	30-35	NP-5
	6-60	Stratified sand to silty clay.	SM, ML	A-4	0	95-100	95-100	65-70	40-55	25-30	NP-5
Gx*:											
Griver	0-14	Loam	ML	A-4	0	95-100	95-100	80-90	60-70	25-30	NP-5
	14-37	Stratified loamy sand to silt loam.	SM	A-4	0	95-100	95-100	70-85	40-50	---	NP
	37-60	Stratified loamy fine sand to gravel.	GP-GM, GW-GM, SP-SM	A-1	0	45-60	35-55	20-30	5-10	---	NP
Alluvial land.											
HG*:											
Hapgood Very gravelly loam	0-8	Very gravelly loam.	GM-GC, GC	A-2	0	40-50	35-45	30-40	25-35	25-30	5-10
	8-36	Very gravelly loam, very gravelly fine sandy loam.	GM-GC, GC	A-2	0-10	50-60	45-55	35-50	25-35	25-30	5-10
	36-50	Very cobbly loam, very gravelly sandy loam.	GM, SM	A-1, A-2	15-40	55-65	50-60	35-45	20-30	25-30	NP-5
	50	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hapgood Silt loam	0-13	Silt loam	ML	A-4	0	85-95	80-90	75-85	60-70	30-35	NP-5
	13-50	Very cobbly loam, very gravelly sandy loam.	GM, SM	A-1, A-2	15-40	55-65	50-60	35-45	20-30	25-30	NP-5
	50	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Packer	0-13	Very cobbly loam	GM	A-2, A-4	25-40	55-65	45-55	40-50	30-40	25-30	NP-5
	13-27	Very cobbly clay loam, very cobbly sandy clay loam, very cobbly loam.	GC	A-2	30-50	35-50	25-45	20-40	15-30	30-40	15-25
	50	Very cobbly sandy loam, very cobbly loamy sand.	GW-GM, GP-GM, GM	A-1	30-50	35-50	25-45	15-25	5-15	20-25	NP-5

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Hh------------------ Humboldt	0-18	Silty clay loam	CL	A-6, A-7	0	100	100	100	90-100	35-45	10-20
	18-43	Stratified silty clay loam to clay.	MH	A-7	0	90-100	90-100	85-100	80-100	50-60	15-25
	43-60	Stratified silt loam to silty clay.	ML, CL	A-6, A-7	0	90-100	90-100	85-100	80-100	30-50	10-20
Hk, Hm-------------- Humboldt	0-11	Silty clay------	MH	A-7	0	100	100	100	90-100	50-60	20-25
	11-43	Stratified silty clay loam to clay.	MH	A-7	0	90-100	90-100	85-100	80-100	50-60	15-25
	43-60	Stratified silt loam to silty clay.	ML, CL	A-6, A-7	0	90-100	90-100	85-100	80-100	30-50	10-20
Hn*:											
Humboldt---------- Slightly saline	0-11	Silty clay------	MH	A-7	0	100	100	100	90-100	50-60	20-25
	11-43	Stratified silty clay loam to clay.	MH	A-7	0	90-100	90-100	85-100	80-100	50-60	15-25
	43-60	Stratified silt loam to silty clay.	ML, CL	A-6, A-7	0	90-100	90-100	85-100	80-100	30-50	10-20
Humboldt---------- Strongly saline	0-11	Silty clay------	MH	A-7	0	100	100	100	90-100	50-60	20-25
	11-43	Stratified silty clay loam to clay.	MH	A-7	0	90-100	90-100	85-100	80-100	50-60	15-25
	43-60	Stratified silt loam to silty clay.	ML, CL	A-6, A-7	0	90-100	90-100	85-100	80-100	30-50	10-20
HO*:											
Humdun------------	0-8	Silt loam-------	ML	A-4	0	100	100	90-100	70-90	30-40	NP-10
	8-30	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
	30-60	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
Bucan-------------	0-7	Stony loam------	CL	A-6	5-15	75-85	70-80	65-75	50-60	30-35	10-15
	7-25	Clay------------	CH	A-7	0-10	85-95	80-90	75-85	65-75	50-60	35-45
	25-50	Cobbly clay, gravelly clay loam.	CL	A-7	25-35	70-80	60-75	60-70	50-60	40-50	25-35
Havingdon---------	0-6	Gravelly silt loam.	GM	A-4	0	60-70	50-65	50-60	40-50	30-40	5-10
	6-21	Very gravelly clay, very gravelly sandy clay.	GC	A-2	0	30-40	15-35	15-30	10-25	40-50	15-25
	21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Hr---------------- Hussa	0-7	Loam------------	ML	A-4	0	95-100	90-100	85-95	60-75	25-35	NP-10
	7-30	Loam, clay loam	CL, ML	A-6, A-7	0	95-100	90-100	85-95	65-75	30-50	10-20
	30-48	Fine sandy loam, loam.	SM	A-4	0	85-95	75-90	60-75	35-50	20-25	NP-5
	48-60	Gravelly loamy sand, gravelly sand.	SW-SM, SM	A-1	0	70-80	60-75	35-50	5-15	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
Hs------------------ Hussa	0-12	Loam------------	ML	A-4	0	95-100	95-100	85-95	60-75	25-35	NP-10
	12-60	Stratified sandy clay loam to silty clay loam.	CL, ML	A-6, A-7	0	95-100	95-100	85-95	50-80	30-50	10-20
Ht------------------ Hussa	0-10	Loam------------	ML	A-4	0	100	100	85-95	60-75	25-35	NP-10
	10-40	Stratified loam to clay loam.	CL, ML	A-6, A-7	0	100	100	85-95	60-80	30-50	10-20
	40-60	Silty clay loam, silty clay, clay.	CL, CH	A-7	0	100	100	95-100	85-95	45-55	25-35
Ib, Is------------- Iron Blossom	0-3	Silt loam-------	ML	A-4	0	100	100	90-100	85-95	30-35	5-10
	3-17	Silt loam-------	ML	A-4	0	100	100	90-100	85-95	30-35	5-10
	17-36	Stratified loam to silty clay.	CL	A-6	0	100	100	90-100	75-85	30-40	15-25
	36-50	Stratified loam to silty clay loam.	CL	A-6	0	100	100	90-100	75-85	30-40	10-20
KAD---------------- Kawich	0-60	Fine sand-------	SM	A-2	0	100	100	70-80	20-30	---	NP
MA*:											
Malpais-----------	0-3	Extremely stony loam.	GM	A-2	40-50	45-55	35-50	35-45	25-35	20-30	NP-5
	3-30	Very gravelly loam, very cobbly fine sandy loam, very stony sandy loam.	GM	A-1	40-50	30-40	25-35	20-30	10-20	20-30	NP-5
	30-60	Very stony loam, very cobbly fine sandy loam, very gravelly sandy loam.	GM	A-1, A-2	40-50	45-55	35-50	25-45	20-30	20-30	NP-5
Rock outcrop.											
Rubble land.											
Mc*: Marsh.											
Crooked Creek-----	0-8	Silt loam-------	CL	A-6	0	95-100	95-100	90-100	80-90	30-35	10-15
	8-38	Clay, silty clay	CH	A-7	0	95-100	95-100	90-100	75-95	50-65	25-35
	38-60	Silty clay loam, clay loam.	CL	A-6, A-7	0	85-100	80-100	75-95	60-85	35-50	15-25
ME*:											
Mascamp-----------	0-13	Very gravelly loam.	GM	A-2	0-5	40-50	35-45	30-40	25-35	25-30	NP-5
	13-19	Very gravelly loam, very gravelly sandy clay loam, very gravelly clay loam.	GC	A-2	0-5	25-40	15-35	15-30	10-25	30-40	15-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
ME*:											
Carstump	0-4	Very gravelly loam.	SM	A-2	0	65-75	35-50	35-45	25-35	20-30	NP-5
	4-15	Gravelly loam	SM-SC	A-4	0	75-90	50-75	40-50	35-45	25-35	5-10
	15-29	Very gravelly clay.	SC	A-2, A-6, A-7	0	65-75	35-50	35-45	30-40	35-55	15-30
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Mf	0-20	Gravelly fine sandy loam.	GM	A-2, A-4	0	60-70	50-70	40-60	25-45	---	NP
McConnel	20-60	Stratified very gravelly coarse sand to very gravelly loamy sand.	GP	A-1	0-15	25-35	15-35	5-15	0-5	---	NP
Mh*:											
McConnel	0-20	Gravelly fine sandy loam.	GM	A-2, A-4	0	60-70	50-70	40-60	25-45	---	NP
	20-60	Stratified very gravelly coarse sand to very gravelly loamy sand.	GP	A-1	0-15	25-35	15-35	5-15	0-5	---	NP
Blackhawk	0-6	Gravelly loam	SM, ML	A-4	0	75-85	70-75	60-70	45-55	30-35	NP-5
	6-15	Gravelly loam, gravelly very fine sandy loam, gravelly silt loam.	SM, GM	A-4	0	65-75	55-70	50-65	35-50	30-35	NP-5
	15-19	Cemented	---	---	---	---	---	---	---	---	---
	19-42	Very gravelly fine sandy loam, very gravelly sandy loam.	GM	A-1	0	35-45	25-35	20-25	10-15	---	NP
	42-60	Very gravelly sand, very gravelly coarse sand.	GP, GW	A-1	0	25-35	15-25	10-15	0-5	---	NP
Mo*:											
McConnel	0-20	Gravelly fine sandy loam.	GM	A-2, A-4	0	60-70	50-70	40-60	25-45	---	NP
	20-60	Stratified very gravelly coarse sand to very gravelly loamy sand.	GP	A-1	0-15	25-35	15-35	5-15	0-5	---	NP
Ocala	0-15	Silt loam	CL	A-6	0	100	100	90-100	70-95	30-40	15-25
	15-45	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
	45-60	Gravelly very fine sandy loam.	GM, SM	A-4	0	55-75	55-70	50-60	35-45	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Mr------------------ Midas	0-4	Silt loam--------	ML	A-4	0	95-100	90-100	85-95	80-90	30-35	NP-5
	4-21	Silt loam, loam, very fine sandy loam.	ML	A-4	0	90-100	85-95	75-85	60-75	30-35	NP-5
	21-30	Very gravelly fine sandy loam, very gravelly sandy loam.	GW-GM, GP-GM, GM	A-1	25-40	25-40	15-35	10-20	5-15	---	NP
	30-50	Very gravelly coarse sand.	GW, GP	A-1	0-10	25-40	15-35	10-20	0-5	---	NP
Ms*:											
Midas------------- Deep	0-4	Silt loam--------	ML	A-4	0	95-100	90-100	85-95	80-90	30-35	NP-5
	4-30	Silt loam, loam, very fine sandy loam.	ML	A-4	0	90-100	85-95	75-85	60-75	30-35	NP-5
	30-48	Very gravelly fine sandy loam, very gravelly sandy loam.	GW-GM, GP-GM, GM	A-1	25-40	25-40	15-35	10-20	5-15	---	NP
	48-50	Very gravelly coarse sand.	GW, GP	A-1	0-10	25-40	15-35	10-20	0-5	---	NP
Midas-------------	0-4	Silt loam--------	ML	A-4	0	95-100	90-100	85-95	80-90	30-35	NP-5
	4-21	Silt loam, loam, very fine sandy loam.	ML	A-4	0	90-100	85-95	75-85	60-75	30-35	NP-5
	21-30	Very gravelly fine sandy loam, very gravelly sandy loam.	GW-GM, GP-GM, GM	A-1	25-40	25-40	15-35	10-20	5-15	---	NP
	30-50	Very gravelly coarse sand.	GW, GP	A-1	0-10	25-40	15-35	10-20	0-5	---	NP
Oc------------------ Ocala	0-15	Fine sandy loam	SM	A-4	0	95-100	95-100	65-75	40-50	---	NP
	15-45	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
	45-60	Gravelly very fine sandy loam.	GM, SM	A-4	0	55-75	55-70	50-60	35-45	---	NP
Od------------------ Ocala	0-4	Silt loam--------	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
	4-16	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
	16-60	Silt loam, silty clay loam.	CL	A-6	0	90-100	90-100	90-95	85-90	30-40	15-25
Og------------------ Ocala	0-15	Silt loam--------	CL	A-6	0	100	100	90-100	70-95	30-40	15-25
	15-45	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
	45-60	Gravelly very fine sandy loam.	GM, SM	A-4	0	55-75	55-70	50-60	35-45	---	NP
Oh------------------ Ocala	0-4	Silty clay loam	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
	4-16	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
	16-60	Silt loam, silty clay loam.	CL	A-6	0	90-100	90-100	90-95	85-90	30-40	15-25
Ok------------------ Ocala	0-15	Silty clay loam	CL	A-6	0	100	100	90-100	70-95	30-40	15-25
	15-45	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
	45-60	Gravelly very fine sandy loam.	GM, SM	A-4	0	55-75	55-70	50-60	35-45	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Om*:											
Ocala-------------- Slightly saline	0-15	Silty clay loam	CL	A-6	0	100	100	90-100	70-95	30-40	15-25
	15-45	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
	45-60	Gravelly very fine sandy loam.	GM, SM	A-4	0	55-75	55-70	50-60	35-45	---	NP
Ocala-------------- Strongly saline	0-15	Silt loam--------	CL	A-6	0	100	100	90-100	70-95	30-40	15-25
	15-45	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
	45-60	Gravelly very fine sandy loam.	GM, SM	A-4	0	55-75	55-70	50-60	35-45	---	NP
OP*:											
Ocala--------------	0-4	Silt loam--------	CL	A-6	0	100	100	90-100	70-95	30-40	15-25
	4-60	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
Ocala-------------- Drained	0-9	Silty clay loam	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
	9-60	Silt loam, silty clay loam.	CL	A-6	0	100	100	90-100	85-95	30-40	15-25
Playa.											
ORC------------------ Orovada	0-5	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	5-18	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	18-61	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
OSB------------------ Orovada	0-5	Gravelly fine sandy loam.	GM, SM	A-4	0	60-80	60-75	50-70	35-50	20-30	NP-5
	5-18	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	18-61	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
OtA------------------ Orovada	0-9	Silt loam--------	ML	A-4	0	95-100	90-100	80-95	60-75	25-35	NP-5
	9-30	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	30-60	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
OU*:											
Orovada------------	0-5	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	5-18	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	18-61	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Humdun-------------	0-8	Silt loam--------	ML	A-4	0	100	100	90-100	70-90	30-40	NP-10
	8-30	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
	30-60	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
Puett--------------	0-18	Fine sandy loam	SM	A-4	0	90-100	85-95	60-80	35-50	---	NP
	18	Weathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
OV*:											
Orovada----------	0-5	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	5-18	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	18-61	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Puett------------	0-18	Fine sandy loam	SM	A-4	0	90-100	85-95	60-80	35-50	---	NP
	18	Weathered bedrock.	---	---	---	---	---	---	---	---	---
OW*:											
Orovada----------	0-5	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	5-18	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	18-61	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
Puett------------	0-18	Fine sandy loam	SM	A-4	0	90-100	85-95	60-80	35-50	---	NP
	18	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Ferdelford--------	0-3	Very gravelly clay loam.	GC	A-2	0-5	35-55	25-50	25-45	20-35	35-40	20-25
	3-14	Loam, sandy clay loam, clay loam.	SC, CL	A-6	0-5	80-90	75-85	65-75	40-60	30-40	15-25
	14-26	Gravelly sandy clay loam.	SC, GC	A-2, A-6	0-5	60-80	50-75	45-60	30-40	30-35	15-20
	26	Weathered bedrock.	---	---	---	---	---	---	---	---	---
PC*:											
Pie Creek---------	0-5	Loam------------	ML	A-4	0-10	95-100	90-100	80-90	60-70	25-30	NP-5
	5-21	Clay------------	CH	A-7	0	95-100	90-100	85-95	80-90	65-70	35-40
	21-35	Clay loam, clay	CL	A-7	0	95-100	90-100	80-90	70-80	45-50	20-25
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Susie Creek-------	0-12	Loam------------	CL-ML	A-4	0	90-100	85-95	75-85	60-70	25-30	5-10
	12-25	Clay loam, sandy clay, clay.	CH, CL	A-7	0	90-100	85-95	80-90	55-75	45-55	25-35
	25-57	Sandy loam, loam	SM, ML	A-4	0	85-100	75-95	60-80	45-65	20-25	NP-5
	57	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Toeja-------------	0-13	Loam------------	CL-ML	A-4	0	85-95	80-95	75-90	60-70	25-30	5-10
	13-31	Loam, clay loam, sandy clay loam.	CL	A-6	0	90-100	85-100	75-90	50-70	30-40	10-15
	31-48	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC	A-2, A-4	0	60-80	55-75	40-60	25-50	25-30	5-10
	48	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Pk---------------- Pocker	0-10	Silt loam-------	ML	A-4	0	100	100	90-95	70-80	30-35	NP-5
	10-46	Stratified loam to clay.	CH	A-7	0	100	95-100	90-100	80-95	50-60	25-35
	46-60	Clay, silty clay loam.	CH	A-7	0	85-90	75-85	70-80	60-70	55-65	30-40

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
PM*:											
Primeaux----------	0-11	Gravelly loam---	SM, GM	A-4	0	65-80	55-75	50-65	35-50	25-30	NP-5
	11-20	Loam, sandy clay loam, clay loam.	SC, CL	A-6	0	80-90	75-85	65-75	45-65	35-40	20-25
	20-35	Very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	40-55	30-50	25-40	20-30	30-35	15-20
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Packer------------	0-9	Very cobbly loam	GM	A-2, A-4	25-40	55-65	45-55	40-50	30-40	25-30	NP-5
	9-13	Very cobbly clay loam, very cobbly sandy clay loam, very cobbly loam.	GC	A-2	30-50	35-50	25-45	20-40	15-30	30-40	15-25
	13-50	Very cobbly sandy loam, very cobbly loamy sand.	GW-GM, GP-GM, GM	A-1	30-50	35-50	25-45	15-25	5-15	20-25	NP-5
Tusel-------------	0-17	Very gravelly loam.	GM	A-2	0-15	50-60	40-50	35-45	25-35	25-35	NP-10
	17-50	Very gravelly sandy clay loam, very gravelly clay loam.	GC	A-2	25-40	30-50	25-35	20-30	15-25	30-40	15-25
PS*:											
Puett-------------	0-18	Fine sandy loam	SM	A-4	0	90-100	85-95	60-80	35-50	---	NP
	18	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Orovada-----------	0-5	Fine sandy loam	SM	A-2, A-4	0	95-100	90-100	75-95	30-50	---	NP
	5-18	Fine sandy loam, loam.	SM, ML	A-4	0	75-100	75-95	60-80	40-60	20-30	NP-5
	18-61	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	75-100	75-95	60-85	35-55	20-30	NP-5
RaA--------------- Rad	0-8	Silt loam-------	ML	A-4	0	100	100	90-100	80-90	30-35	5-10
	8-20	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	95-100	80-95	65-85	30-35	NP-5
	20-30	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	75-85	25-30	NP-5
	30-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	95-100	80-90	65-75	25-30	NP-5
RaB--------------- Rad	0-8	Silt loam-------	ML	A-4	0	100	100	90-100	80-90	30-35	5-10
	8-18	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	95-100	80-95	65-85	30-35	NP-5
	18-45	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	75-85	25-30	NP-5
	45-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	95-100	80-90	65-75	25-30	NP-5

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
RAC-----------------Rad	0-6	Silt loam-------	ML	A-4	0	100	100	90-100	80-90	30-35	5-10
	6-18	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	95-100	80-95	65-85	30-35	NP-5
	18-45	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	75-85	25-30	NP-5
	45-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	95-100	80-90	65-75	25-30	NP-5
RbB-----------------Rad	0-7	Silt loam-------	ML	A-4	0	100	100	95-100	75-85	25-30	NP-5
	7-17	Silt loam-------	ML	A-4	0	100	100	95-100	75-85	25-30	NP-5
	17-32	Silt loam-------	ML	A-4	0	100	100	95-100	75-85	25-30	NP-5
	32-60	Silt loam-------	ML	A-4	0	100	100	95-100	75-85	25-30	NP-5
RC*:											
Rad---------------Slightly alkali	0-7	Silt loam-------	ML	A-4	0	100	100	95-100	75-85	25-30	NP-5
	7-17	Silt loam-------	ML	A-4	0	100	100	95-100	75-85	25-30	NP-5
	17-32	Silt loam-------	ML	A-4	0	100	100	95-100	75-85	25-30	NP-5
	32-60	Silt loam-------	ML	A-4	0	100	100	95-100	75-85	25-30	NP-5
Rad---------------	0-6	Silt loam-------	ML	A-4	0	100	100	90-100	80-90	30-35	5-10
	6-18	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	95-100	80-95	65-85	30-35	NP-5
	18-45	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	75-85	25-30	NP-5
	45-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	95-100	80-90	65-75	25-30	NP-5
Rd*:											
Rad---------------	0-6	Silt loam-------	ML	A-4	0	100	100	90-100	80-90	30-35	5-10
	6-18	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	95-100	80-95	65-85	30-35	NP-5
	18-45	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	75-85	25-30	NP-5
	45-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	95-100	80-90	65-75	25-30	NP-5
Blackhawk---------	0-6	Gravelly loam---	SM, ML	A-4	0	75-85	70-75	60-70	45-55	30-35	NP-5
	6-15	Gravelly loam, gravelly very fine sandy loam.	SM, GM	A-4	0	65-75	55-70	50-65	35-50	30-35	NP-5
	15-19	Cemented--------	---	---	---	---	---	---	---	---	---
	19-42	Very gravelly fine sandy loam, very gravelly sandy loam.	GM	A-1	0	35-45	25-35	20-25	10-15	---	NP
	42-60	Very gravelly sand, very gravelly coarse sand.	GP, GW	A-1	0	25-35	15-25	10-15	0-5	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
RE*:											
Rad	0-6	Silt loam	ML	A-4	0	100	100	90-100	80-90	30-35	5-10
	6-18	Stratified fine sandy loam to silt loam.	ML	A-4	0	100	95-100	80-95	65-85	30-35	NP-5
	18-45	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	75-85	25-30	NP-5
	45-60	Stratified sandy loam to silt loam.	ML	A-4	0	95-100	95-100	80-90	65-75	25-30	NP-5
Brock	0-5	Cobbly loam	SM, GM	A-4	20-25	65-85	60-75	45-65	35-50	20-25	NP-5
	5-14	Very cobbly loam, very gravelly sandy clay loam, very gravelly clay loam.	GM-GC, GC	A-1, A-2	20-45	35-45	30-40	25-35	15-25	25-30	5-10
	14	Indurated	---	---	---	---	---	---	---	---	---
RF*:											
Ramires	0-6	Gravelly loam	GM	A-6, A-4	0-15	60-65	50-60	45-55	35-45	30-40	5-15
	6-24	Gravelly clay, gravelly sandy clay, clay.	CL, CH	A-7	0-10	75-85	65-85	60-80	50-65	40-55	25-40
	24-30	Sandy loam, sandy clay loam.	SC, SM-SC	A-2	0-10	85-90	75-85	50-65	25-35	20-30	5-15
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Chen	0-8	Cobbly loam	SM-SC	A-4	20-25	80-90	60-80	55-70	40-50	25-35	5-10
	8-17	Very gravelly clay.	GC, SC	A-2, A-7	5-15	60-75	35-50	30-50	30-45	40-55	15-30
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bobs	0-4	Gravelly loam	SM, ML, GM	A-4	0-15	70-80	65-75	55-70	40-55	20-25	NP-5
	4-12	Gravelly loam, gravelly very fine sandy loam, gravelly silt loam.	GM, SM	A-4	0-24	60-80	50-75	45-70	35-50	20-25	NP-5
	12	Indurated	---	---	---	---	---	---	---	---	---
RG*:											
Ramires	0-9	Very stony loam	ML	A-4	20-40	80-85	70-80	65-75	50-60	30-40	5-10
	9-26	Clay, gravelly clay, gravelly sandy clay.	CL, CH	A-7	0-10	75-85	65-85	60-80	50-65	40-55	25-40
	26-34	Sandy loam, sandy clay loam.	SC	A-2	0-10	85-90	75-85	50-65	25-35	25-30	10-15
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Chen	0-8	Cobbly loam	SM-SC	A-4	20-25	80-90	60-80	55-70	40-50	25-35	5-10
	8-17	Very gravelly clay.	GC, SC	A-2, A-7	5-15	60-75	35-50	30-50	30-45	40-55	15-30
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
RG*:											
Pie Creek----------	0-5	Very cobbly loam	ML	A-4	40-50	85-95	80-90	70-80	50-60	25-30	NP-5
	5-21	Clay-------------	CH	A-7	0	95-100	90-100	85-95	80-90	65-70	35-40
	21-30	Clay loam, clay	CL	A-7	0	95-100	90-100	80-90	70-80	45-50	20-25
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
RH*:											
Ramires------------	0-9	Gravelly clay loam.	GM	A-6, A-4	0-15	60-65	50-60	45-55	35-45	30-40	5-15
	9-26	Gravelly clay, gravelly sandy clay, clay.	CL, CH	A-7	0-10	75-85	65-85	60-80	50-65	40-55	25-40
	26-34	Sandy loam, sandy clay loam.	SC, SM-SC	A-2	0-10	85-90	75-85	50-65	25-35	20-30	5-15
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Creva--------------	0-5	Gravelly loam---	SM	A-4	10-30	75-85	65-75	60-70	40-50	20-30	NP-5
	5-19	Gravelly clay loam.	GC	A-6	5-25	55-60	45-55	40-50	35-45	30-40	15-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
RH2*:											
Ramires------------	0-6	Gravelly loam---	GM	A-6, A-4	0-15	60-65	50-60	45-55	35-45	30-40	5-15
	6-24	Gravelly clay, gravelly sandy clay, clay.	CL, CH	A-7	0-10	75-85	65-85	60-80	50-65	40-55	25-40
	24-30	Sandy loam, sandy clay loam.	SC, SM-SC	A-2	0-10	85-90	75-85	50-65	25-35	20-30	5-15
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Creva--------------	0-5	Gravelly loam---	SM	A-4	10-30	75-85	65-75	60-70	40-50	20-30	NP-5
	5-19	Gravelly clay loam.	GC	A-6	5-25	55-60	45-55	40-50	35-45	30-40	15-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
RK*:											
Ramires------------	0-9	Very stony loam	ML	A-4	20-40	80-85	70-80	65-75	50-60	30-40	5-10
	9-26	Clay, gravelly clay, gravelly sandy clay.	CL, CH	A-7	0-10	75-85	65-85	60-80	50-65	40-55	25-40
	26-34	Sandy loam, sandy clay loam.	SC	A-2	0-10	85-90	75-85	50-65	25-35	25-30	10-15
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Creva--------------	0-5	Gravelly loam---	SM	A-4	10-30	75-85	65-75	60-70	40-50	20-30	NP-5
	5-19	Gravelly clay loam.	GC	A-6	5-25	55-60	45-55	40-50	35-45	30-40	15-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
RL*:											
Ramires-----------	0-6	Gravelly loam---	GM	A-6, A-4	0-15	60-65	50-60	45-55	35-45	30-40	5-15
	6-24	Gravelly clay, gravelly sandy clay, clay.	CL, CH	A-7	0-10	75-85	65-85	60-80	50-65	40-55	25-40
	24-30	Sandy loam, sandy clay loam.	SC, SM-SC	A-2	0-10	85-90	75-85	50-65	25-35	20-30	5-15
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Singletree--------	0-17	Gravelly loam---	GM	A-4	0	65-75	60-75	55-70	40-50	25-35	NP-5
	17-32	Loam, gravelly loam, clay loam.	SC, GC, CL	A-6	0-15	70-80	60-80	50-70	40-60	30-40	10-15
	32-49	Sandy loam, sandy clay loam, gravelly sandy loam.	SM-SC	A-2	0-15	60-80	50-80	30-60	20-30	25-30	5-10
	49	Weathered bedrock.	---	---	---	---	---	---	---	---	---
RM*:											
Ramires-----------	0-6	Gravelly loam---	GM	A-6, A-4	0-15	60-65	50-60	45-55	35-45	30-40	5-15
	6-24	Gravelly clay, gravelly sandy clay, clay.	CL, CH	A-7	0-10	75-85	65-85	60-80	50-65	40-55	25-40
	24-30	Sandy loam, sandy clay loam.	SC, SM-SC	A-2	0-10	85-90	75-85	50-65	25-35	20-30	5-15
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Taylor Creek------	0-15	Loam------------	CL-ML, CL	A-4, A-6	0	90-100	85-95	75-85	55-70	25-35	5-15
	15-40	Gravelly clay---	CH	A-7	0	70-80	65-75	60-70	55-65	60-70	35-45
	40-60	Gravelly clay, gravelly sandy clay.	SC, CH, GC	A-7	0-5	70-80	65-75	60-70	40-55	50-60	25-35
Rn----------------- Rixie	0-10	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	90-95	35-45	15-20
	10-60	Stratified silt loam to silty clay.	CL	A-6, A-7	0	100	100	95-100	80-95	35-45	15-20
Ro----------------- Rixie	0-10	Silty clay loam	CL, ML	A-6, A-7	0	100	100	95-100	90-95	35-45	10-20
	10-60	Stratified silt loam to silty clay.	CL	A-6, A-7	0	100	100	95-100	80-95	35-45	15-20
Rr----------------- Rixie	0-10	Silty clay------	CL, CH	A-7	0	100	100	95-100	90-95	40-55	20-30
	10-60	Stratified silt loam to silty clay.	CL	A-6, A-7	0	100	100	95-100	80-95	35-45	15-20
Rs----------------- Rose Creek	0-10	Loam------------	ML	A-4	0	95-100	90-100	80-90	60-70	25-30	NP-5
	10-60	Stratified gravelly sand to silt loam.	SM	A-2, A-4	0	85-100	70-95	50-70	30-50	20-25	NP-5
Rt----------------- Rose Creek	0-16	Loam------------	SM, ML	A-4	0-5	90-100	80-95	65-80	45-55	25-30	NP-5
	16-60	Stratified gravelly sand to silt loam.	SM	A-2, A-4	0-5	85-100	70-95	50-70	30-40	20-25	NP-5
Ru----------------- Rosney	0-10	Silt loam-------	ML	A-4	0	100	100	95-100	85-90	25-35	NP-5
	10-60	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	80-95	30-45	10-20

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Frag- ments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
SA*:											
Short Creek------- 30 to 50 percent slopes	0-8	Gravelly clay loam.	GC, SC	A-6	0-15	60-80	50-75	45-65	35-50	35-40	20-25
	8-23	Very gravelly clay.	GC	A-2, A-7	0-10	45-55	35-50	35-45	30-40	50-55	35-40
	23-60	Very gravelly sandy clay, very gravelly clay loam, very gravelly sandy clay loam.	GW-GC, GC	A-2	0-15	30-35	15-25	15-20	5-15	35-45	20-30
Short Creek------- 50 to 75 percent slopes	0-8	Gravelly clay loam.	GC, SC	A-6	0-15	60-80	50-75	45-65	35-50	35-40	20-25
	8-23	Very gravelly clay.	GC	A-2, A-7	0-10	45-55	35-50	35-45	30-40	50-55	35-40
	23-60	Very gravelly sandy clay, very gravelly clay loam, very gravelly sandy clay loam.	GW-GC, GC	A-2	0-15	30-35	15-25	15-20	5-15	35-45	20-30
SBB---------------- Simon	0-12	Loam------------	ML	A-4	0	80-90	75-90	65-80	50-65	20-30	NP-5
	12-41	Loam, clay loam, cobbly clay loam.	CL	A-6	0-20	80-90	75-85	70-80	50-65	30-40	10-20
	41-60	Very gravelly clay loam, very gravelly sandy clay loam.	GM-GC, GC	A-2	20-40	35-50	25-35	20-30	15-25	25-35	5-15
SC*:											
Simon-------------	0-12	Loam------------	ML	A-4	0	80-90	75-90	65-80	50-65	20-30	NP-5
	12-41	Loam, clay loam, cobbly clay loam.	CL	A-6	0-20	80-90	75-85	70-80	50-65	30-40	10-20
	41-60	Very gravelly clay loam, very gravelly sandy clay loam.	GM-GC, GC	A-2	20-40	35-50	25-35	20-30	15-25	25-35	5-15
Bosco-------------	0-15	Very gravelly loam.	GM	A-1	0	30-45	25-35	20-30	15-25	---	NP
	15-46	Stratified very gravelly loam to very gravelly sandy loam.	GW-GM, GM	A-1	0	20-45	15-35	10-30	5-20	---	NP
	46-70	Very gravelly sand.	GW, GP	A-1	0	15-25	10-20	5-15	0-5	---	NP
SD*:											
Slaven------------ 15 to 30 percent slopes	0-5	Very gravelly loam.	GM	A-2	0	45-55	35-45	30-40	25-30	25-30	NP-5
	5-22	Very gravelly clay, very gravelly sandy clay, very gravelly clay loam.	GC	A-2	0	25-35	15-25	15-20	10-20	40-50	25-35
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
SD*: Slaven------------- 30 to 50 percent slopes	0-8	Very gravelly loam.	GM	A-2	0	45-55	35-45	30-40	25-30	25-30	NP-5
	8-30	Very gravelly clay, very gravelly sandy clay, very gravelly clay loam.	GC	A-2	0	25-35	15-25	15-20	10-20	40-50	25-35
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Mascamp-----------	0-13	Very gravelly loam.	GM	A-2	0-5	40-50	35-45	30-40	25-35	25-30	NP-5
	13-19	Very gravelly loam, very gravelly sandy clay loam, very gravelly clay loam.	GC	A-2	0-5	25-40	15-35	15-30	10-25	30-40	15-25
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
SE*: Slaven------------	0-5	Very gravelly loam.	GM	A-2	0	45-55	35-45	30-40	25-30	25-30	NP-5
	5-22	Very gravelly clay, very gravelly sandy clay, very gravelly clay loam.	GC	A-2	0	25-35	15-25	15-20	10-20	40-50	25-35
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Primeaux----------	0-11	Gravelly loam---	SM, GM	A-4	0	65-80	55-75	50-65	35-50	25-30	NP-5
	11-20	Loam, sandy clay loam, clay loam.	SC, CL	A-6	0	80-90	75-85	65-75	45-65	35-40	20-25
	20-35	Very gravelly loam, very gravelly sandy clay loam.	GC	A-2	0	40-55	30-50	25-40	20-30	30-35	15-20
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
SF*: Slaven------------	0-5	Very gravelly loam.	GM	A-2	0	45-55	35-45	30-40	25-30	25-30	NP-5
	5-22	Very gravelly clay, very gravelly sandy clay, very gravelly clay loam.	GC	A-2	0	25-35	15-25	15-20	10-20	40-50	25-35
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ramires-----------	0-9	Gravelly clay loam.	GM	A-6, A-4	0-15	60-65	50-60	45-55	35-45	30-40	5-15
	9-26	Gravelly clay, gravelly sandy clay, clay.	CL, CH	A-7	0-10	75-85	65-85	60-80	50-65	40-55	25-40
	26-34	Sandy loam, sandy clay loam.	SC, SM-SC	A-2	0-10	85-90	75-85	50-65	25-35	20-30	5-15
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
SG*:											
Slaven	0-5	Very gravelly loam.	GM	A-2	0	45-55	35-45	30-40	25-30	25-30	NP-5
	5-22	Very gravelly clay, very gravelly sandy clay, very gravelly clay loam.	GC	A-2	0	25-35	15-25	15-20	10-20	40-50	25-35
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Toeja	0-13	Loam	CL-ML	A-4	0	85-95	80-95	75-90	60-70	25-30	5-10
	13-31	Loam, clay loam, sandy clay loam.	CL	A-6	0	90-100	85-100	75-90	50-70	30-40	10-15
	31-48	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC	A-2, A-4	0	60-80	55-75	40-60	25-50	25-30	5-10
	48	Weathered bedrock.	---	---	---	---	---	---	---	---	---
SH*:											
Slaven	0-8	Very gravelly loam.	GM	A-2	0	45-55	35-45	30-40	25-30	25-30	NP-5
	8-30	Very gravelly clay, very gravelly sandy clay, very gravelly clay loam.	GC	A-2	0	25-35	15-25	15-20	10-20	40-50	25-35
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Torro	0-13	Very gravelly loam.	GM	A-1, A-2	0	45-55	35-50	30-40	20-35	20-25	NP-5
	13-25	Very gravelly loam, very gravelly clay loam, very gravelly sandy clay loam.	GM-GC, GC	A-2	0	25-35	20-30	15-25	10-20	25-35	5-15
	25-50	Very gravelly coarse sandy loam, very gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP
Tusel	0-17	Very gravelly loam.	GM	A-2	0-15	50-60	40-50	35-45	25-35	25-35	NP-10
	17-50	Very gravelly sandy clay loam, very gravelly clay loam.	GC	A-2	25-40	30-50	25-35	20-30	15-25	30-40	15-25
SR*:											
Stampede	0-12	Gravelly loam	CL, ML	A-4, A-6	0	70-80	65-75	60-70	50-65	30-40	5-15
	12-28	Clay	CH	A-7	0	90-100	85-95	80-90	70-85	50-60	30-40
	28	Indurated	---	---	---	---	---	---	---	---	---
Donna	0-8	Gravelly loam	ML	A-4	0	65-75	60-75	55-70	50-60	30-40	5-10
	8-22	Clay	CH	A-7	0	80-90	75-85	75-80	70-80	60-70	30-40
	22-38	Indurated	---	---	---	---	---	---	---	---	---
	38-68	Stratified very gravelly loam to very gravelly sandy loam.	GM	A-1, A-2	10-35	40-50	30-40	20-30	10-20	25-35	5-10

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
SS*:											
Stampede	0-12	Gravelly loam	CL, ML	A-4, A-6	0	70-80	65-75	60-70	50-65	30-40	5-15
	12-28	Clay	CH	A-7	0	90-100	85-95	80-90	70-85	50-60	30-40
	28	Indurated	---	---	---	---	---	---	---	---	---
Donna	0-8	Gravelly loam	ML	A-4	0	65-75	60-75	55-70	50-60	30-40	5-10
	8-22	Clay	CH	A-7	0	80-90	75-85	75-80	70-80	60-70	30-40
	22-38	Indurated	---	---	---	---	---	---	---	---	---
	38-68	Stratified very gravelly loam to very gravelly sandy loam.	GM	A-1, A-2	10-35	40-50	30-40	20-30	10-20	25-35	5-10
Short Creek	0-8	Gravelly clay loam.	GC, SC	A-6	0-15	60-80	50-75	45-65	35-50	35-40	20-25
	8-23	Very gravelly clay.	GC	A-2, A-7	0-10	45-55	35-50	35-45	30-40	50-55	35-40
	23-60	Very gravelly sandy clay, very gravelly clay loam, very gravelly sandy clay loam.	GW-GC, GC	A-2	0-15	30-35	15-25	15-20	5-15	35-45	20-30
ST*:											
Stampede	0-12	Gravelly loam	CL, ML	A-4, A-6	0	70-80	65-75	60-70	50-65	30-40	5-15
	12-28	Clay	CH	A-7	0	90-100	85-95	80-90	70-85	50-60	30-40
	28	Indurated	---	---	---	---	---	---	---	---	---
Short Creek	0-8	Gravelly clay loam.	GC, SC	A-6	0-15	60-80	50-75	45-65	35-50	35-40	20-25
	8-23	Very gravelly clay.	GC	A-2, A-7	0-10	45-55	35-50	35-45	30-40	50-55	35-40
	23-60	Very gravelly sandy clay, very gravelly clay loam, very gravelly sandy clay loam.	GW-GC, GC	A-2	0-15	30-35	15-25	15-20	5-15	35-45	20-30
SU*:											
Susie Creek	0-12	Loam	CL-ML	A-4	0	90-100	85-95	75-85	60-70	25-30	5-10
	12-25	Clay loam, sandy clay, clay.	CH, CL	A-7	0	90-100	85-95	80-90	55-75	45-55	25-35
	25-57	Sandy loam, loam	SM, ML	A-4	0	85-100	75-95	60-80	45-65	20-25	NP-5
	57	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Pattani	0-10	Clay	CH	A-7	0	95-100	90-100	80-90	70-80	50-60	30-40
	10-20	Clay loam, silty clay loam, clay.	CL, CH	A-7	0	85-95	80-90	75-85	65-80	40-55	25-35
	20	Weathered bedrock.	---	---	---	---	---	---	---	---	---
SV*:											
Susie Creek	0-12	Loam	CL-ML	A-4	0	90-100	85-95	75-85	60-70	25-30	5-10
	12-25	Clay loam, sandy clay, clay.	CH, CL	A-7	0	90-100	85-95	80-90	55-75	45-55	25-35
	25-57	Sandy loam, loam	SM, ML	A-4	0	85-100	75-95	60-80	45-65	20-25	NP-5
	57	Weathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
SV*:											
Pie Creek	0-5	Loam	ML	A-4	0-10	95-100	90-100	80-90	60-70	25-30	NP-5
	5-21	Clay	CH	A-7	0	95-100	90-100	85-95	80-90	65-70	35-40
	21-35	Clay loam, clay	CL	A-7	0	95-100	90-100	80-90	70-80	45-50	20-25
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Pattani	0-10	Clay	CH	A-7	0	95-100	90-100	80-90	70-80	50-60	30-40
	10-20	Clay loam, silty clay loam, clay.	CL, CH	A-7	0	85-95	80-90	75-85	65-80	40-55	25-35
	20	Weathered bedrock.	---	---	---	---	---	---	---	---	---
SW*:											
Susie Creek	0-12	Loam	CL-ML	A-4	0	90-100	85-95	75-85	60-70	25-30	5-10
	12-25	Clay loam, sandy clay, clay.	CH, CL	A-7	0	90-100	85-95	80-90	55-75	45-55	25-35
	25-57	Sandy loam, loam	SM, ML	A-4	0	85-100	75-95	60-80	45-65	20-25	NP-5
	57	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Short Creek	0-8	Gravelly clay loam.	GC, SC	A-6	0-15	60-80	50-75	45-65	35-50	35-40	20-25
	8-23	Very gravelly clay.	GC	A-2, A-7	0-10	45-55	35-50	35-45	30-40	50-55	35-40
	23-60	Very gravelly sandy clay, very gravelly clay loam, very gravelly sandy clay loam.	GW-GC, GC	A-2	0-15	30-35	15-25	15-20	5-15	35-45	20-30
Toeja	0-13	Loam	CL-ML	A-4	0	85-95	80-95	75-90	60-70	25-30	5-10
	13-31	Loam, clay loam, sandy clay loam.	CL	A-6	0	90-100	85-100	75-90	50-70	30-40	10-15
	31-48	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC	A-2, A-4	0	60-80	55-75	40-60	25-50	25-30	5-10
	48	Weathered bedrock.	---	---	---	---	---	---	---	---	---
TA*:											
Taylor Creek	0-15	Loam	CL-ML, CL	A-4, A-6	0	90-100	85-95	75-85	55-70	25-35	5-15
	15-40	Gravelly clay	CH	A-7	0	70-80	65-75	60-70	55-65	60-70	35-45
	40-60	Gravelly clay, gravelly sandy clay.	SC, CH, GC	A-7	0-5	70-80	65-75	60-70	40-55	50-60	25-35
Chen	0-8	Cobbly loam	SM-SC	A-4	20-25	80-90	60-80	55-70	40-50	25-35	5-10
	8-17	Very gravelly clay.	GC, SC	A-2, A-7	5-15	60-75	35-50	30-50	30-45	40-55	15-30
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ramires	0-6	Gravelly loam	GM	A-6, A-4	0-15	60-65	50-60	45-55	35-45	30-40	5-15
	6-24	Gravelly clay, gravelly sandy clay, clay.	CL, CH	A-7	0-10	75-85	65-85	60-80	50-65	40-55	25-40
	24-30	Sandy loam, sandy clay loam.	SC, SM-SC	A-2	0-10	85-90	75-85	50-65	25-35	20-30	5-15
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
TC*:											
Taylor Creek------	0-15	Loam------------	CL-ML, CL	A-4, A-6	0	90-100	85-95	75-85	55-70	25-35	5-15
	15-40	Gravelly clay---	CH	A-7	0	70-80	65-75	60-70	55-65	60-70	35-45
	40-60	Gravelly clay, gravelly sandy clay.	SC, CH, GC	A-7	0-5	70-80	65-75	60-70	40-55	50-60	25-35
Singletree--------	0-17	Loam------------	ML	A-4	0	85-90	80-90	70-85	50-65	25-35	NP-5
	17-32	Loam, gravelly loam, clay loam.	SC, GC, CL	A-6	0-15	70-80	60-80	50-70	40-60	30-40	10-15
	32-49	Sandy loam, sandy clay loam, gravelly sandy loam.	SM-SC	A-2	0-15	60-80	50-80	30-60	20-30	25-30	5-10
	49	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Torro-------------	0-13	Very gravelly loam.	GM	A-1, A-2	0	45-55	35-50	30-40	20-35	20-25	NP-5
	13-25	Very gravelly loam, very gravelly clay loam, very gravelly sandy clay loam.	GM-GC, GC	A-2	0	25-35	20-30	15-25	10-20	25-35	5-15
	25-50	Very gravelly coarse sandy loam, very gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP
TDA---------------- Tenabo	0-7	Silt loam-------	ML	A-4	0	95-100	90-100	85-95	75-85	25-35	NP-10
	7-18	Clay loam, silty clay loam.	CL	A-6	0	95-100	85-95	80-90	70-80	30-40	15-25
	18-26	Indurated-------	---	---	---	---	---	---	---	---	---
	26-40	Very gravelly sandy loam, very gravelly loamy sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
TEC---------------- Tenabo	0-7	Cobbly silt loam	ML	A-4	25-40	85-95	75-90	70-85	55-70	---	NP
	7-18	Clay loam, silty clay loam.	CL	A-6	0	95-100	85-95	80-90	70-80	30-40	15-25
	18-26	Indurated-------	---	---	---	---	---	---	---	---	---
	26-40	Very gravelly sandy loam, very gravelly loamy sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
TF*:											
Tenabo------------ Extremely stony loam	0-7	Extremely stony loam.	ML	A-4	25-50	85-95	75-90	70-85	50-70	---	NP
	7-18	Clay loam, sandy clay loam.	CL	A-6	0	90-100	85-95	70-85	50-65	30-40	15-25
	18-26	Indurated-------	---	---	---	---	---	---	---	---	---
	26-40	Very gravelly sandy loam, very gravelly loamy sand, very gravelly sand.	GW-GM, GM	A-1	10-25	40-60	35-55	25-40	5-20	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
TF*:											
Tenabo------------ Cobbly silt loam	0-7	Cobbly silt loam	ML	A-4	25-40	85-95	75-90	70-85	55-70	---	NP
	7-18	Clay loam, silty clay loam.	CL	A-6	0	95-100	85-95	80-90	70-80	30-40	15-25
	18-26	Indurated-------	---	---	---	---	---	---	---	---	---
	26-40	Very gravelly sandy loam, very gravelly loamy sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
TG*:											
Tenabo------------	0-7	Cobbly silt loam	ML	A-4	25-40	85-95	75-90	70-85	55-70	---	NP
	7-18	Clay loam, silty clay loam.	CL	A-6	0	95-100	85-95	80-90	70-80	30-40	15-25
	18-26	Indurated-------	---	---	---	---	---	---	---	---	---
	26-40	Very gravelly sandy loam, very gravelly loamy sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
Brock-------------	0-5	Cobbly loam-----	SM, GM	A-4	20-25	65-85	60-75	45-65	35-50	20-25	NP-5
	5-14	Very cobbly sandy loam, very gravelly sandy clay loam very gravelly clay loam.	GM-GC, GC	A-1, A-2	20-45	35-45	30-40	25-35	15-25	25-30	5-10
	14	Indurated-------	---	---	---	---	---	---	---	---	---
Whirlo------------	0-12	Gravelly silt loam.	ML	A-4	0	60-75	55-75	55-70	50-60	20-30	NP-5
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	25-40	15-35	---	NP
	24-60	Very gravelly sandy loam, very gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	15-25	5-10	---	NP
TH*:											
Tenabo------------	0-7	Extremely stony loam.	ML	A-4	25-50	85-95	75-90	70-85	50-70	---	NP
	7-18	Clay loam, sandy clay loam.	CL	A-6	0	90-100	85-95	70-85	50-65	30-40	15-25
	18-26	Indurated-------	---	---	---	---	---	---	---	---	---
	26-40	Very gravelly sandy loam, very gravelly loamy sand, very gravelly sand.	GW-GM, GM	A-1	10-25	40-60	35-55	25-40	5-20	---	NP
Rubble land.											
TL*:											
Toeja------------- 15 to 30 percent slopes	0-13	Loam------------	CL-ML	A-4	0	85-95	80-95	75-90	60-70	25-30	5-10
	13-31	Loam, clay loam, sandy clay loam.	CL	A-6	0	90-100	85-100	75-90	50-70	30-40	10-15
	31-48	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC	A-2, A-4	0	60-80	55-75	40-60	25-50	25-30	5-10
	48	Weathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
TL*:											
Toeja---------------- 4 to 15 percent slopes	0-13	Loam-------------	CL-ML	A-4	0	85-95	80-95	75-90	60-70	25-30	5-10
	13-31	Loam, clay loam, sandy clay loam.	CL	A-6	0	90-100	85-100	75-90	50-70	30-40	10-15
	31-48	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC	A-2, A-4	0	60-80	55-75	40-60	25-50	25-30	5-10
	48	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Puett----------------	0-18	Fine sandy loam	SM	A-4	0	90-100	85-95	60-80	35-50	---	NP
	18	Weathered bedrock.	---	---	---	---	---	---	---	---	---
TM*:											
Toeja----------------	0-13	Loam-------------	CL-ML	A-4	0	85-95	80-95	75-90	60-70	25-30	5-10
	13-31	Loam, clay loam, sandy clay loam.	CL	A-6	0	90-100	85-100	75-90	50-70	30-40	10-15
	31-48	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC	A-2, A-4	0	60-80	55-75	40-60	25-50	25-30	5-10
	48	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Ucopia---------------	0-5	Loamy fine sand	SM	A-2, A-4	0	95-100	90-100	70-80	30-40	---	NP
	5-50	Fine sandy loam, sandy loam, coarse sandy loam.	SM	A-2, A-4	0	85-100	80-95	45-60	25-40	---	NP
	50	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Ucopia--------------- Eroded	0-5	Gravelly sandy loam.	SM	A-1, A-2	0	70-80	60-75	35-50	20-30	---	NP
	5-50	Fine sandy loam, sandy loam, coarse sandy loam.	SM	A-2, A-4	0	85-100	80-95	45-60	25-40	---	NP
	50	Weathered bedrock.	---	---	---	---	---	---	---	---	---
TN*:											
Tomera---------------	0-9	Silt loam--------	ML	A-4	0	90-100	80-95	75-90	70-80	30-40	NP-5
	9-39	Gravelly clay, clay.	CH	A-7	0	70-85	55-80	50-75	50-60	50-60	25-35
	39-60	Very gravelly sandy loam, very gravelly loamy sand.	GM	A-1	10-40	40-50	30-45	20-35	10-15	---	NP
Cherry Spring--------	0-15	Silt loam--------	ML	A-4	0	95-100	95-100	90-95	75-85	20-25	NP-5
	15-36	Loam, silt loam, clay loam.	CL-ML, CL	A-4, A-6	0	90-100	85-95	80-90	65-75	25-35	5-15
	36-54	Cemented---------	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
TO*:											
Torro	0-13	Very gravelly loam.	GM	A-1, A-2	0	45-55	35-50	30-40	20-35	20-25	NP-5
	13-25	Very gravelly loam, very gravelly clay loam, very gravelly sandy clay loam.	GM-GC, GC	A-2	0	25-35	20-30	15-25	10-20	25-35	5-15
	25-50	Very gravelly coarse sandy loam, very gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP
Jack Creek	0-15	Very gravelly loamy coarse sand.	GP	A-1	0	20-40	15-25	5-15	0-5	---	NP
	15-60	Very gravelly loamy coarse sand, very gravelly loamy fine sand.	GP	A-1	0	20-40	15-25	5-15	0-5	---	NP
TR*:											
Torro	0-13	Very gravelly loam.	GM	A-1, A-2	0	45-55	35-50	30-40	20-35	20-25	NP-5
	13-25	Very gravelly loam, very gravelly clay loam, very gravelly sandy clay loam.	GM-GC, GC	A-2	0	25-35	20-30	15-25	10-20	25-35	5-15
	25-50	Very gravelly coarse sandy loam, very gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP
Tusel	0-17	Very gravelly loam.	GM	A-2	0-15	50-60	40-50	35-45	25-35	25-35	NP-10
	17-50	Very gravelly sandy clay loam, very gravelly clay loam.	GC	A-2	25-40	30-50	25-35	20-30	15-25	30-40	15-25
TS*:											
Torro	0-13	Very gravelly loam.	GM	A-1, A-2	0	45-55	35-50	30-40	20-35	20-25	NP-5
	13-25	Very gravelly loam, very gravelly clay loam, very gravelly sandy clay loam.	GM-GC, GC	A-2	0	25-35	20-30	15-25	10-20	25-35	5-15
	25-50	Very gravelly coarse sandy loam, very gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
S*:											
Tusel	0-17	Very gravelly loam.	GM	A-2	0-15	50-60	40-50	35-45	25-35	25-35	NP-10
	17-50	Very gravelly sandy clay loam, very gravelly clay loam.	GC	A-2	25-40	30-50	25-35	20-30	15-25	30-40	15-25
Badland.											
TT*:											
Torro	0-13	Very gravelly loam.	GM	A-1, A-2	0	45-55	35-50	30-40	20-35	20-25	NP-5
	13-25	Very gravelly loam, very gravelly clay loam, very gravelly sandy clay loam.	GM-GC, GC	A-2	0	25-35	20-30	15-25	10-20	25-35	5-15
	25-50	Very gravelly coarse sandy loam, very gravelly loamy coarse sand.	GP-GM	A-1	5-15	30-40	20-30	10-20	5-10	---	NP
Tusel	0-17	Very gravelly loam.	GM	A-2	0-15	50-60	40-50	35-45	25-35	25-35	NP-10
	17-50	Very gravelly sandy clay loam, very gravelly clay loam.	GC	A-2	25-40	30-50	25-35	20-30	15-25	30-40	15-25
Packer	0-6	Very cobbly loam	GM	A-2, A-4	25-40	55-65	45-55	40-50	30-40	25-30	NP-5
	6-13	Very cobbly clay loam, very cobbly sandy clay loam, very cobbly loam.	GC	A-2	30-50	35-50	25-45	20-40	15-30	30-40	15-25
	13-50	Very cobbly sandy loam, very cobbly loamy sand.	GW-GM, GP-GM, GM	A-1	30-50	35-50	25-45	15-25	5-15	20-25	NP-5
TU*:											
Triplen	0-8	Silt loam	ML	A-4	0	90-100	80-95	75-85	60-75	---	NP
	8-60	Stratified very gravelly fine sandy loam to loamy fine sand.	SM	A-1, A-2	0	70-80	55-75	35-50	20-35	---	NP
Tenabo	0-2	Silt loam	ML	A-4	0	95-100	90-100	85-95	75-85	25-35	NP-10
	2-12	Clay loam, silty clay loam.	CL	A-6	0	95-100	85-95	80-90	70-80	30-40	15-25
	12-17	Indurated	---	---	---	---	---	---	---	---	---
	17-40	Very gravelly sandy loam, very gravelly loamy sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
TV*:											
Tusel	0-17	Very gravelly loam.	GM	A-2	0-15	50-60	40-50	35-45	25-35	25-35	NP-10
	17-50	Very gravelly sandy clay loam, very gravelly clay loam.	GC	A-2	25-40	30-50	25-35	20-30	15-25	30-40	15-25
Hapgood	0-13	Silt loam	ML	A-4	0	85-95	80-90	75-85	60-70	30-35	NP-5
	13-50	Very cobbly loam, very gravelly sandy loam.	GM, SM	A-1, A-2	15-40	55-65	50-60	35-45	20-30	25-30	NP-5
	50	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Packer	0-13	Very cobbly loam	GM	A-2, A-4	25-40	55-65	45-55	40-50	30-40	25-30	NP-5
	13-27	Very cobbly clay loam, very cobbly sandy clay loam, very cobbly loam.	GC	A-2	30-50	35-50	25-45	20-40	15-30	30-40	15-25
	27-50	Very cobbly sandy loam, very cobbly loamy sand.	GW-GM, GP-GM, GM	A-1	30-50	35-50	25-45	15-25	5-15	20-25	NP-5
UHE*, UHF*:											
Ucopia 15 to 30 percent slopes	0-5	Loamy fine sand	SM	A-2, A-4	0	95-100	90-100	70-80	30-40	---	NP
	5-50	Fine sandy loam, sandy loam, coarse sandy loam.	SM	A-2, A-4	0	85-100	80-95	45-60	25-40	---	NP
	50	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Ucopia 30 to 50 percent slopes	0-5	Gravelly sandy loam.	SM	A-1, A-2	0	70-80	60-75	35-50	20-30	---	NP
	5-50	Fine sandy loam, sandy loam, coarse sandy loam.	SM	A-2, A-4	0	85-100	80-95	45-60	25-40	---	NP
	50	Weathered bedrock.	---	---	---	---	---	---	---	---	---
Humdun	0-8	Silt loam	ML	A-4	0	100	100	90-100	70-90	30-40	NP-10
	8-30	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
	30-60	Loam, very fine sandy loam, silt loam.	ML	A-4	0	100	100	85-95	60-80	30-40	NP-10
UKF Urtah	0-4	Gravelly loam	GM	A-4	5-15	55-65	50-60	45-55	35-45	25-30	NP-5
	4-16	Gravelly sandy loam.	GM, SM	A-1	10-25	55-65	50-60	30-40	15-20	20-25	NP-5
	16-36	Very gravelly sandy clay loam.	GM-GC, GC	A-2	10-25	35-50	25-40	25-35	10-20	25-30	5-10
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Fragments > 3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Wc-----------------Welch	0-5	Loam------------	CL-ML, CL	A-4	0	95-100	95-100	85-95	60-70	25-30	5-10
	5-60	Stratified sandy loam to silty clay loam.	CL	A-6	0	95-100	95-100	80-90	50-70	30-40	10-20
Wd-----------------Welch	0-7	Loam------------	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	7-60	Stratified very fine sandy loam to gravelly clay loam.	CL	A-6	0	85-95	75-90	70-80	50-60	30-40	10-20
WE*: Welch-------------	0-7	Loam------------	ML	A-4	0	85-95	75-90	70-80	50-60	25-30	NP-5
	7-60	Stratified very fine sandy loam to gravelly clay loam.	CL	A-6	0	85-95	75-90	70-80	50-60	30-40	10-20
Bosco-------------	0-15	Very gravelly loam.	GM	A-1	0	30-45	25-35	20-30	15-25	---	NP
	15-46	Stratified very gravelly loam to very gravelly sandy loam.	GW-GM, GM	A-1	0	20-45	15-35	10-30	5-20	---	NP
	46-70	Very gravelly sand.	GW, GP	A-1	0	15-25	10-20	5-15	0-5	---	NP
WGB-----------------Whirlo	0-12	Gravelly silt loam.	ML	A-4	0	60-75	55-75	55-70	50-60	20-30	NP-5
	12-24	Very gravelly fine sandy loam, very gravelly loam.	GM	A-1, A-2	0-5	45-55	35-50	25-40	15-35	---	NP
	24-60	Very gravelly sandy loam, very gravelly coarse sandy loam.	GW-GM, GP-GM	A-1	0-5	40-50	20-35	15-25	5-10	---	NP
WH*: Whirlo------------	0-13	Very stony fine sandy loam.	GM, SM	A-4	15-35	60-85	55-85	40-60	35-50	---	NP
	13-60	Very gravelly sandy loam.	GM	A-1	15-35	45-55	25-45	20-30	10-20	---	NP
Tenabo------------	0-7	Cobbly silt loam	ML	A-4	25-40	85-95	75-90	70-85	55-70	---	NP
	7-18	Clay loam, silty clay loam.	CL	A-6	0	95-100	85-95	80-90	70-80	30-40	15-25
	18-26	Indurated-------	---	---	---	---	---	---	---	---	---
	26-40	Very gravelly sandy loam, very gravelly loamy sand.	GP-GM, GM	A-1	5-25	40-60	35-55	25-35	5-20	---	NP
W1A, W1B-----------Wholan	0-6	Silt loam-------	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
	6-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
WmA----------------- Wholan	0-6	Silt loam-------	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
	6-45	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5
	45-60	Stratified very gravelly loam to very gravelly sand.	GP-GM, GM	A-1	0-10	35-45	30-40	15-25	5-20	15-25	NP-5
WnA----------------- Wholan	0-6	Silt loam-------	ML	A-4	0	100	100	95-100	80-90	20-30	NP-5
	6-60	Very fine sandy loam, silt loam.	ML	A-4	0	100	100	95-100	75-90	20-30	NP-5

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
ALF------------- Alley	0-7	5-10	2.0-6.0	0.13-0.15	6.6-7.3	<2	Low----------	0.24	5	5
	7-18	20-30	0.2-0.6	0.14-0.18	7.4-8.4	2-4	Moderate-----	0.20		
	18-34	5-10	2.0-6.0	0.11-0.13	7.9-9.0	4-8	Low----------	0.20		
	34-50	5-10	2.0-6.0	0.06-0.08	7.9-9.0	4-8	Low----------	0.20		
AN*: Alley-----------	0-7	5-10	2.0-6.0	0.13-0.15	6.6-7.3	<2	Low----------	0.24	5	5
	7-18	20-30	0.2-0.6	0.14-0.18	7.4-8.4	2-4	Moderate-----	0.20		
	18-34	5-10	2.0-6.0	0.11-0.13	7.9-9.0	4-8	Low----------	0.20		
	34-50	5-10	2.0-6.0	0.06-0.08	7.9-9.0	4-8	Low----------	0.20		
Brock-----------	0-5	10-15	0.6-2.0	0.13-0.15	7.4-8.4	<4	Low----------	0.32	1	6
	5-14	18-30	0.2-0.6	0.11-0.13	7.9-9.0	<4	Low----------	0.24		
	14	---	---	---	---	---	-------------	----		
AR*: Alley-----------	0-5	5-10	2.0-6.0	0.12-0.14	6.6-7.3	<2	Low----------	0.24	5	5
	5-15	20-30	0.2-0.6	0.14-0.18	7.4-8.4	2-4	Moderate-----	0.20		
	15-27	5-10	2.0-6.0	0.11-0.13	7.9-9.0	4-8	Low----------	0.20		
	27-50	5-10	2.0-6.0	0.06-0.08	7.9-9.0	4-8	Low----------	0.20		
Rock outcrop.										
Rubble land.										
Au*. Alluvial land										
BaA------------- Beowawe	0-9	10-15	0.6-2.0	0.18-0.20	6.6-8.4	4-8	Low----------	0.55	5	6
	9-16	18-25	0.6-2.0	0.19-0.21	8.5-9.0	4-8	Low----------	0.49		
	16-50	8-12	0.2-0.6	0.13-0.17	8.5-9.0	8-16	Low----------	0.43		
BB*: Beowawe---------	0-9	10-15	0.6-2.0	0.18-0.20	6.6-8.4	4-8	Low----------	0.55	5	6
	9-16	18-25	0.6-2.0	0.19-0.21	8.5-9.0	4-8	Low----------	0.49		
	16-50	8-12	0.2-0.6	0.13-0.17	8.5-9.0	8-16	Low----------	0.43		
Broyles---------	0-13	5-15	0.6-2.0	0.17-0.19	7.9-9.0	2-8	Low----------	0.55	5	6
	13-60	5-15	2.0-6.0	0.09-0.11	>8.4	4-16	Low----------	0.24		
BC-------------- Beowawe variant	0-1	27-35	0.06-0.2	0.19-0.21	>9.0	4-8	Moderate-----	0.43	5	7
	1-15	35-45	<0.06	0.16-0.19	>9.0	8-16	High---------	0.32		
	15-60	30-45	<0.2	0.17-0.20	>9.0	4-16	Moderate-----	0.43		
BD*: Berning---------	0-8	20-25	0.6-2.0	0.15-0.17	6.1-7.3	<2	Low----------	0.37	5	6
	8-24	35-45	0.06-0.2	0.07-0.09	6.6-7.3	<2	Moderate-----	0.20		
	24-60	---	0.6-6.0	0.05-0.07	6.6-7.3	<2	Low----------	0.20		
Short Creek-----	0-8	30-35	0.2-0.6	0.18-0.20	6.6-7.3	<2	Moderate-----	0.24	5	7
	8-23	40-50	0.06-0.2	0.08-0.10	6.6-7.3	<2	Moderate-----	0.15		
	23-60	30-40	0.2-0.6	0.05-0.07	7.9-9.0	<2	Moderate-----	0.10		
BE*: Berning---------	0-8	20-25	0.6-2.0	0.15-0.17	6.1-7.3	<2	Low----------	0.37	5	6
	8-24	35-45	0.06-0.2	0.07-0.09	6.6-7.3	<2	Moderate-----	0.20		
	24-60	---	0.6-6.0	0.05-0.07	6.6-7.3	<2	Low----------	0.20		
Toeja-----------	0-13	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.37	4	5
	13-31	20-35	0.2-0.6	0.16-0.19	6.6-7.3	<2	Moderate-----	0.28		
	31-48	10-15	2.0-6.0	0.13-0.15	7.4-9.0	<2	Low----------	0.24		
	48	---	---	---	---	---	-------------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
Bf----------------- Bicondoa	0-11	30-40	0.2-0.6	0.20-0.22	7.4-8.4	2-8	Moderate-----	0.28	5	7
	11-60	35-50	0.06-0.2	0.16-0.19	7.4-8.4	<4	High---------	0.28		
Bg----------------- Bicondoa	0-10	40-45	0.06-0.2	0.15-0.17	6.6-7.3	<2	High---------	0.28	5	8
	10-40	35-50	0.06-0.2	0.16-0.19	7.9-8.4	<2	High---------	0.28		
	40-60	20-30	0.6-2.0	0.15-0.17	7.4-7.8	<2	Low----------	0.28		
BHD---------------- Bobs	0-6	10-20	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low----------	0.37	2	6
	6-18	10-20	0.6-2.0	0.14-0.17	7.9-9.0	<2	Low----------	0.37		
	18	---	---	---	---	---	-------------	----		
Bk----------------- Bosco	0-15	8-15	2.0-6.0	0.10-0.12	6.1-6.5	<2	Low----------	0.24	5	7
	15-46	8-15	2.0-6.0	0.09-0.11	6.6-7.3	<2	Low----------	0.20		
	46-70	0-5	>20	0.03-0.05	6.6-7.3	<2	Low----------	0.10		
BL*:										
Bosco------------	0-15	8-15	2.0-6.0	0.10-0.12	6.1-6.5	<2	Low----------	0.24	5	7
	15-46	8-15	2.0-6.0	0.09-0.11	6.6-7.3	<2	Low----------	0.20		
	46-70	0-5	>20	0.03-0.05	6.6-7.3	<2	Low----------	0.10		
Welch------------	0-7	10-15	0.6-2.0	0.16-0.20	6.1-7.3	<2	Low----------	0.32	5	6
	7-60	25-35	0.2-0.6	0.18-0.20	6.1-7.3	<2	Moderate-----	0.28		
BM*:										
Boulflat---------	0-4	10-20	0.6-2.0	0.14-0.17	7.4-7.8	<2	Low----------	0.32	3	6
	4-13	25-35	0.2-0.6	0.15-0.18	6.6-7.3	<2	Moderate-----	0.28		
	13-23	10-20	2.0-6.0	0.08-0.11	7.9-8.4	<2	Low----------	0.24		
	23-34	---	---	---	---	---	-------------	----		
	34	---	---	---	---	---	-------------	----		
Havingdon--------	0-6	10-20	0.6-2.0	0.17-0.19	6.6-7.3	<2	Low----------	0.32	2	7
	6-21	35-45	0.06-0.2	0.07-0.09	6.6-7.3	<2	Moderate-----	0.17		
	21	---	---	---	---	---	-------------	----		
Brock------------	0-5	10-15	0.6-2.0	0.13-0.15	7.4-8.4	<2	Low----------	0.32	1	6
	5-14	18-30	0.2-0.6	0.11-0.13	7.9-9.0	<4	Low----------	0.24		
	14	---	---	---	---	---	-------------	----		
BN*:										
Old Camp variant	0-9	10-15	2.0-6.0	0.07-0.09	7.9-8.4	<4	Low----------	0.20	1	5
	9-13	20-30	0.2-0.6	0.06-0.08	7.9-8.4	<4	Low----------	0.15		
	13	---	---	---	---	---	-------------	----		
Boulflat---------	0-4	10-20	0.6-2.0	0.14-0.17	7.4-7.8	<2	Low----------	0.32	3	6
	4-13	25-35	0.2-0.6	0.15-0.18	6.6-7.3	<2	Moderate-----	0.28		
	13-23	10-20	2.0-6.0	0.08-0.11	7.9-8.4	<2	Low----------	0.24		
	23-34	---	---	---	---	---	-------------	----		
	34	---	---	---	---	---	-------------	----		
Humdun-----------	0-8	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.49	5	6
	8-30	10-15	0.6-2.0	0.17-0.20	6.6-8.4	<2	Low----------	0.49		
	30-60	10-15	0.6-2.0	0.17-0.20	7.9-9.0	2-4	Low----------	0.49		
BO*:										
Brock------------	0-5	10-15	0.6-2.0	0.13-0.15	7.4-8.4	<2	Low----------	0.32	1	6
	5-14	18-30	0.2-0.6	0.11-0.13	7.9-9.0	<4	Low----------	0.24		
	14	---	---	---	---	---	-------------	----		
Boulflat---------	0-4	10-20	0.6-2.0	0.14-0.17	7.4-7.8	<2	Low----------	0.32	3	6
	4-13	25-35	0.2-0.6	0.15-0.18	6.6-7.3	<2	Moderate-----	0.28		
	13-23	10-20	2.0-6.0	0.08-0.11	7.9-8.4	<2	Low----------	0.24		
	23-34	---	---	---	---	---	-------------	----		
	34	---	---	---	---	---	-------------	----		
Rad--------------	0-6	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.55	5	6
	6-18	5-10	0.6-2.0	0.15-0.21	7.4-8.4	<4	Low----------	0.43		
	18-45	5-10	0.06-0.2	0.17-0.21	>7.8	8-16	Low----------	0.43		
	45-60	5-10	0.6-2.0	0.13-0.21	>7.8	8-16	Low----------	0.43		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
BpA, BPB--------- Broyles	0-13	5-15	0.6-2.0	0.17-0.19	7.9-9.0	>2	Low----------	0.55	5	6
	13-60	5-15	2.0-6.0	0.09-0.11	>8.4	4-16	Low----------	0.24		
BQE-------------- Bucan	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	5
	7-25	45-55	0.06-2.0	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
BRF-------------- Bucan	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	6
	7-25	50-60	0.06-0.2	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
BS*: Bucan----------- Loam	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	5
	7-25	45-55	0.06-2.0	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Bucan----------- Gravelly loam	0-4	20-25	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low----------	0.32	4	6
	4-25	45-55	0.06-2.0	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-40	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
BT*: Bucan----------- Stony loam	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	6
	7-25	50-60	0.06-0.2	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Bucan----------- Extremely stony loam	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	6
	7-25	50-60	0.06-0.2	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
BU*: Bucan-----------	0-4	20-25	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low----------	0.32	4	6
	4-25	45-55	0.06-2.0	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-40	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Clurde-----------	0-5	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.55	5	6
	5-29	20-30	0.2-0.6	0.17-0.19	6.6-9.0	<2	Moderate-----	0.49		
	29-50	10-30	0.6-6.0	0.13-0.16	>8.4	<2	Low----------	0.32		
Orovada---------	0-5	5-10	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low----------	0.43	5	3
	5-18	5-18	0.6-2.0	0.15-0.17	7.4-8.4	<4	Low----------	0.43		
	18-61	5-18	0.6-2.0	0.14-0.16	>7.8	4-16	Low----------	0.43		
BV*: Bucan-----------	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	6
	7-25	50-60	0.06-0.2	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Creva-----------	0-5	10-15	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low----------	0.37	1	6
	5-19	35-40	0.06-0.2	0.14-0.16	6.6-7.3	<2	Moderate-----	0.28		
	19	---	---	---	---	---	-------------	----		
Brock-----------	0-5	10-15	0.6-2.0	0.13-0.15	7.4-8.4	<2	Low----------	0.32	1	6
	5-14	18-30	0.2-0.6	0.11-0.13	7.9-9.0	<4	Low----------	0.24		
	14	---	---	---	---	---	-------------	----		
BW*: Bucan-----------	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	6
	7-25	50-60	0.06-0.2	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Glean-----------	0-8	8-18	2.0-6.0	0.06-0.10	6.1-7.3	<2	Low----------	0.17	5	---
	8-15	8-18	2.0-6.0	0.06-0.10	6.1-7.3	<2	Low----------	0.37		
	15-51	8-18	2.0-6.0	0.06-0.09	6.1-7.3	<2	Low----------	0.17		
	51	---	---	---	---	---	-------------	----		
Rock outcrop.										

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
BX*:										
Bucan-----------	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	6
Stony	7-25	50-60	0.06-0.2	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Bucan-----------	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	6
Extremely stony	7-25	50-60	0.06-0.2	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Humdun----------	0-8	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.49	5	6
	8-30	10-15	0.6-2.0	0.17-0.20	6.6-8.4	<2	Low----------	0.49		
	30-60	10-15	0.6-2.0	0.17-0.20	7.9-9.0	2-4	Low----------	0.49		
BY*:										
Bucan-----------	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	6
	7-25	50-60	0.06-0.2	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Humdun----------	0-8	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.49	5	6
	8-30	10-15	0.6-2.0	0.17-0.20	6.6-8.4	<2	Low----------	0.49		
	30-60	10-15	0.6-2.0	0.17-0.20	7.9-9.0	2-4	Low----------	0.49		
Brock-----------	0-5	10-15	0.6-2.0	0.13-0.15	7.4-8.4	<2	Low----------	0.32	1	6
	5-14	18-30	0.2-0.6	0.11-0.13	7.9-9.0	<4	Low----------	0.24		
	14	---	---	---	---	---	-------------	----		
BZ*:										
Bucan-----------	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	6
	7-25	50-60	0.06-0.2	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Humdun----------	0-8	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.49	5	6
	8-30	10-15	0.6-2.0	0.17-0.20	6.6-8.4	<2	Low----------	0.49		
	30-60	10-15	0.6-2.0	0.17-0.20	7.9-9.0	2-4	Low----------	0.49		
Rock outcrop.										
BZm*:										
Bucan-----------	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	5
	7-25	45-55	0.06-2.0	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Malpais---------	0-3	10-18	0.6-2.0	0.07-0.09	6.6-7.3	<2	Low----------	0.20	5	7
	3-30	10-18	0.6-6.0	0.06-0.09	6.6-8.4	<2	Low----------	0.20		
	30-60	10-18	0.6-6.0	0.06-0.09	7.9-9.0	<2	Low----------	0.20		
BZs*:										
Bucan-----------	0-4	20-25	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low----------	0.32	4	6
	4-25	45-55	0.06-2.0	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-40	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Singletree------	0-17	10-15	0.6-2.0	0.17-0.19	6.6-7.3	<2	Low----------	0.37	4	5
	17-32	25-35	0.2-0.6	0.14-0.19	6.6-7.3	<2	Moderate-----	0.32		
	32-49	15-25	2.0-6.0	0.09-0.14	6.6-9.0	<2	Low----------	0.28		
	49	---	---	---	---	---	-------------	----		
BZt*:										
Bucan-----------	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	6
Stony	7-25	50-60	0.06-0.2	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Bucan-----------	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	6
Extremely stony	7-25	50-60	0.06-0.2	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
BZt*:										
Toeja-----------	0-13	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.37	4	5
	13-31	20-35	0.2-0.6	0.16-0.19	6.6-7.3	<2	Moderate-----	0.28		
	31-48	10-15	2.0-6.0	0.13-0.15	7.4-9.0	<2	Low----------	0.24		
	48	---	---	---	---	---	-------------	----		
BZu*:										
Bunky-----------	0-16	18-25	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low----------	0.32	3	5
	16-22	18-27	0.6-2.0	0.15-0.17	6.6-7.8	<2	Low----------	0.28		
	22	---	---	---	---	---	-------------	----		
Clurde----------	0-5	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.55	5	6
	5-29	20-30	0.2-0.6	0.17-0.19	6.6-9.0	<2	Moderate-----	0.49		
	29-50	10-30	0.6-6.0	0.13-0.16	>8.4	<2	Low----------	0.32		
Short Creek-----	0-8	30-35	0.2-0.6	0.18-0.20	6.6-7.3	<2	Moderate-----	0.24	5	7
	8-23	40-50	0.06-0.2	0.08-0.10	6.6-7.3	<2	Moderate-----	0.15		
	23-60	30-40	0.2-0.6	0.05-0.07	7.9-9.0	<2	Moderate-----	0.10		
CAD-------------- Carstump	0-4	15-25	0.6-2.0	0.12-0.15	6.6-7.3	<2	Low----------	0.24	3	7
	4-15	15-25	0.6-2.0	0.15-0.17	6.6-7.3	<2	Low----------	0.28		
	15-29	40-50	0.06-0.2	0.13-0.15	6.6-8.4	<2	Moderate-----	0.20		
	29	---	---	---	---	---	-------------	----		
CBE-------------- Chen	0-6	15-25	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low----------	0.28	1	6
	6-14	40-55	<0.06	0.12-0.14	6.6-7.3	<2	-------------	0.20		
	14	---	---	---	---	---	-------------	----		
CC*:										
Chen------------	0-8	15-25	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low----------	0.28	1	6
	8-17	40-55	<0.06	0.12-0.14	6.6-7.3	<2	Moderate-----	0.20		
	17	---	---	---	---	---	-------------	----		
Pie Creek-------	0-5	10-20	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low----------	0.32	2	7
	5-21	60-70	<0.06	0.14-0.16	6.6-7.3	<2	High---------	0.20		
	21-30	35-45	0.06-0.2	0.16-0.19	7.4-8.4	<2	Moderate-----	0.28		
	30	---	---	---	---	---	-------------	----		
Ramires---------	0-9	20-27	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low----------	0.17	3	6
	9-26	35-50	0.06-0.2	0.13-0.16	6.6-7.3	<2	High---------	0.28		
	26-34	15-25	2.0-6.0	0.11-0.15	7.9-8.4	2-4	Low----------	0.17		
	34	---	---	---	---	---	-------------	----		
CD*:										
Chen------------	0-8	15-25	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low----------	0.28	1	6
	8-17	40-55	<0.06	0.12-0.14	6.6-7.3	<2	Moderate-----	0.20		
	17	---	---	---	---	---	-------------	----		
Pie Creek-------	0-5	10-20	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low----------	0.32	2	7
	5-21	60-70	<0.06	0.14-0.16	6.6-7.3	<2	High---------	0.20		
	21-30	35-45	0.06-0.2	0.16-0.19	7.4-8.4	<2	Moderate-----	0.28		
	30	---	---	---	---	---	-------------	----		
Taylor Creek----	0-15	15-20	0.6-2.0	0.19-0.21	6.1-7.3	<2	Low----------	0.37	5	5
	15-40	60-65	<0.06	0.15-0.17	6.6-7.3	<2	High---------	0.17		
	40-60	50-60	<0.2	0.14-0.16	7.9-8.4	<2	High---------	0.17		
CEE*, CEF*:										
Chen------------	0-8	15-25	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low----------	0.28	1	6
	8-17	40-55	<0.06	0.12-0.14	6.6-7.3	<2	Moderate-----	0.20		
	17	---	---	---	---	---	-------------	----		
Taylor Creek----	0-15	15-20	0.6-2.0	0.19-0.21	6.1-7.3	<2	Low----------	0.37	5	5
	15-40	60-65	<0.06	0.15-0.17	6.6-7.3	<2	High---------	0.17		
	40-60	50-60	<0.2	0.14-0.16	7.9-8.4	<2	High---------	0.17		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
CEE*, CEF*:										
Mosquet----------	0-6	10-20	2.0-6.0	0.06-0.08	6.1-7.3	<2	Low----------	0.17	1	5
	6-20	35-50	0.06-0.2	0.13-0.15	6.1-7.3	<2	High---------	0.15		
	20	---	---	---	---	---	-------------	----		
CF*:										
Cherry Spring---	0-15	10-15	0.6-2.0	0.19-0.21	6.6-7.8	<2	Low----------	0.55	2	6
	15-36	20-30	0.2-0.6	0.17-0.19	7.4-8.4	<2	Low----------	0.49		
	36-54	---	---	---	---	---	-------------	----		
Berning----------	0-8	20-25	0.6-2.0	0.15-0.17	6.1-7.3	<2	Low----------	0.37	5	6
	8-24	35-45	0.06-0.2	0.07-0.09	6.6-7.3	<2	Moderate-----	0.20		
	24-60	---	0.6-6.0	0.05-0.07	6.6-7.3	<2	Low----------	0.20		
CG*:										
Cherry Spring---	0-15	10-15	0.6-2.0	0.19-0.21	6.6-7.8	<2	Low----------	0.55	2	6
	15-36	20-30	0.2-0.6	0.17-0.19	7.4-8.4	<2	Low----------	0.49		
	36-54	---	---	---	---	---	-------------	----		
Cortez-----------	0-10	5-10	0.6-2.0	0.19-0.21	6.6-7.8	<2	Low----------	0.55	2	6
	10-22	40-50	0.06-0.2	0.14-0.16	7.4-8.4	<2	High---------	0.24		
	22-48	---	---	---	---	---	-------------	----		
	48-60	5-10	6.0-20	0.05-0.07	8.5-9.0	>8	Low----------	0.15		
Chiara-----------	0-4	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.55	1	6
	4-13	10-15	0.6-2.0	0.16-0.19	7.4-9.0	2-4	Low----------	0.49		
	13	---	---	---	---	---	-------------	----		
CH*:										
Cherry Spring---	0-15	10-15	0.6-2.0	0.19-0.21	6.6-7.8	<2	Low----------	0.55	2	6
	15-36	20-30	0.2-0.6	0.17-0.19	7.4-8.4	<2	Low----------	0.49		
	36-54	---	---	---	---	---	-------------	----		
Cortez-----------	0-10	5-10	0.6-2.0	0.19-0.21	6.6-7.8	<2	Low----------	0.55	2	6
	10-22	40-50	0.06-0.2	0.14-0.16	7.4-8.4	<2	High---------	0.24		
	22-48	---	---	---	---	---	-------------	----		
	48-60	5-10	6.0-20	0.05-0.07	8.5-9.0	>8	Low----------	0.15		
Tomera-----------	0-9	5-10	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.49	5	6
	9-39	40-60	0.06-0.2	0.13-0.16	7.4-9.0	2-8	High---------	0.28		
	39-60	2-8	2.0-20	0.05-0.07	>8.4	4-8	Low----------	0.17		
CK*:										
Cherry Spring---	0-15	10-15	0.6-2.0	0.19-0.21	6.6-7.8	<2	Low----------	0.55	2	6
	15-36	20-30	0.2-0.6	0.17-0.19	7.4-8.4	<2	Low----------	0.49		
	36-54	---	---	---	---	---	-------------	----		
Orovada----------	0-5	5-10	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low----------	0.43	5	3
	5-18	5-18	0.6-2.0	0.15-0.17	7.4-8.4	<4	Low----------	0.43		
	18-61	5-18	0.6-2.0	0.14-0.16	>7.8	4-16	Low----------	0.43		
CL*:										
Chiara----------- Very stony	0-4	10-15	0.6-2.0	0.16-0.19	6.6-7.3	<2	Low----------	0.43	1	7
	4-14	10-15	0.6-2.0	0.17-0.19	7.4-9.0	2-4	Low----------	0.49		
	14	---	---	---	---	---	-------------	----		
Chiara----------- Extremely stony	0-4	8-15	0.6-2.0	0.16-0.19	6.6-7.3	2-4	Low----------	0.43	1	7
	4-14	10-15	0.6-2.0	0.17-0.19	7.4-9.0	2-4	Low----------	0.49		
	14	---	---	---	---	---	-------------	----		
Brock------------	0-5	10-15	0.6-2.0	0.13-0.15	7.4-8.4	<2	Low----------	0.32	1	6
	5-14	18-30	0.2-0.6	0.11-0.13	7.9-9.0	<4	Low----------	0.24		
	14	---	---	---	---	---	-------------	----		
CM*:										
Chiara-----------	0-4	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.55	1	6
	4-13	10-15	0.6-2.0	0.16-0.19	7.4-9.0	2-4	Low----------	0.49		
	13	---	---	---	---	---	-------------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
CM*:										
Cherry Spring	0-15	10-15	0.6-2.0	0.19-0.21	6.6-7.8	<2	Low	0.55	2	6
	15-36	20-30	0.2-0.6	0.17-0.19	7.4-8.4	<2	Low	0.49		
	36-54	---	---	---	---	---	---	----		
Cortez	0-10	5-10	0.6-2.0	0.19-0.21	6.6-7.8	<2	Low	0.55	2	6
	10-22	40-50	0.06-0.2	0.14-0.16	7.4-8.4	<2	High	0.24		
	22-48	---	---	---	---	---	---	----		
	48-60	5-10	6.0-20	0.05-0.07	8.5-9.0	>8	Low	0.15		
CN	0-7	10-15	0.6-2.0	0.19-0.21	7.4-8.4	>16	Low	0.49	5	6
Cluro	7-13	10-15	0.6-2.0	0.19-0.21	7.9-8.4	>16	Low	0.49		
	13-45	18-25	0.2-0.6	0.19-0.21	8.5-9.0	4-16	Low	0.43		
	45-60	0-10	6.0-20	0.05-0.07	8.5-9.0	4-8	Low	0.15		
Co, Cp	0-5	10-15	0.6-2.0	0.19-0.21	6.6-7.8	2-8	Low	0.49	5	6
Cluro	5-12	10-15	0.6-2.0	0.19-0.21	6.6-7.8	2-8	Low	0.49		
	12-38	18-25	0.2-0.6	0.19-0.21	7.4-8.4	2-8	Low	0.43		
	38-60	0-10	2.0-6.0	0.14-0.17	7.4-8.4	4-16	Low	0.37		
Cr	0-7	10-15	0.6-2.0	0.19-0.21	7.4-8.4	4-8	Low	0.49	5	6
Cluro	7-13	10-15	0.6-2.0	0.19-0.21	7.9-8.4	4-8	Low	0.49		
	13-45	18-25	0.2-0.6	0.19-0.21	8.5-9.0	4-16	Low	0.43		
	45-60	0-10	6.0-20	0.05-0.07	8.5-9.0	4-8	Low	0.15		
CS*:										
Coff	0-5	10-15	0.6-2.0	0.09-0.11	7.9-8.4	<2	Low	0.37	2	8
	5-29	10-15	0.6-2.0	0.09-0.11	7.9-8.4	<2	Low	0.37		
	29	---	---	---	---	---	---	----		
Denay	0-10	10-15	0.6-2.0	0.15-0.17	7.4-7.8	<2	Low	0.37	5	7
	10-50	10-15	0.2-0.6	0.09-0.11	7.9-8.4	<2	Low	0.32		
Ct	0-10	10-15	0.6-2.0	0.19-0.21	7.9-8.4	<4	Low	0.37	5	5
Coit	10-38	20-30	0.6-2.0	0.19-0.21	7.9-8.4	<4	Low	0.37		
	38-60	10-20	2.0-6.0	0.11-0.15	7.4-7.8	<4	Low	0.24		
Cu*:										
Coit	0-10	10-15	0.6-2.0	0.19-0.21	7.9-8.4	<4	Low	0.37	5	5
	10-38	20-30	0.6-2.0	0.19-0.21	7.9-8.4	<4	Low	0.37		
	38-60	10-20	2.0-6.0	0.11-0.15	7.4-7.8	<4	Low	0.24		
Griver	0-14	10-15	0.6-2.0	0.16-0.18	7.9-8.4	4-8	Low	0.37	5	5
	14-37	5-10	2.0-6.0	0.13-0.16	7.9-8.4	4-8	Low	0.37		
	37-60	0-5	>20	0.03-0.07	7.9-8.4	4-8	Low	0.10		
CV*:										
Creva	0-5	10-15	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low	0.37	1	6
	5-19	35-40	0.06-0.2	0.14-0.16	6.6-7.3	<2	Moderate	0.28		
	19	---	---	---	---	---	---	----		
Chen	0-8	15-25	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low	0.28	1	6
	8-17	40-55	<0.06	0.12-0.14	6.6-7.3	<2	Moderate	0.20		
	17	---	---	---	---	---	---	----		
CW2*:										
Creva	0-5	10-15	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low	0.37	1	6
	5-19	35-40	0.06-0.2	0.14-0.16	6.6-7.3	<2	Moderate	0.28		
	19	---	---	---	---	---	---	----		
Ramires	0-6	20-30	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low	0.17	3	6
	6-24	35-50	0.06-0.2	0.13-0.16	6.6-7.3	<2	High	0.28		
	24-30	15-25	2.0-6.0	0.11-0.15	7.9-8.4	2-4	Low	0.17		
	30	---	---	---	---	---	---	----		
Cx	0-8	20-27	0.6-2.0	0.19-0.21	6.6-8.4	<2	Low	0.32	5	6
Crooked Creek	8-38	35-50	0.06-0.2	0.15-0.17	6.6-7.3	<2	High	0.24		
	38-60	30-40	0.2-0.6	0.19-0.21	6.6-7.3	<2	Moderate	0.28		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
CY----------------- Crooked Creek	0-8	27-30	0.2-0.6	0.19-0.21	6.6-8.4	<2	Moderate-----	0.24	5	6
	8-60	35-50	0.06-0.2	0.18-0.20	6.6-7.3	<2	High---------	0.24		
DM*:										
Donna-----------	0-8	15-25	0.6-2.0	0.18-0.20	6.1-7.3	<2	Low----------	0.37	2	6
	8-22	60-70	<0.06	0.14-0.16	6.1-7.3	<2	High---------	0.20		
	22-38	---	---	---	---	---	-------------	----		
	38-68	15-25	2.0-6.0	<0.03	7.4-8.4	<4	Low----------	0.20		
Simon-----------	0-12	10-15	0.6-2.0	0.17-0.19	6.6-7.3	<2	Low----------	0.37	5	5
	12-41	27-35	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate-----	0.37		
	41-60	20-30	0.6-2.0	0.08-0.10	6.6-7.3	<2	Low----------	0.24		
DN*:										
Donna-----------	0-8	15-25	0.6-2.0	0.18-0.20	6.1-7.3	<2	Low----------	0.37	2	6
	8-22	60-70	<0.06	0.14-0.16	6.1-7.3	<2	High---------	0.20		
	22-38	---	---	---	---	---	-------------	----		
	38-68	15-25	2.0-6.0	<0.03	7.4-8.4	<4	Low----------	0.20		
Stampede--------	0-12	20-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.43	2	6
	12-28	40-55	<0.06	0.14-0.16	6.6-7.3	<2	High---------	0.28		
	28	---	---	---	---	---	-------------	----		
Short Creek-----	0-8	30-35	0.2-0.6	0.18-0.20	6.6-7.3	<2	Moderate-----	0.24	5	7
	8-23	40-50	0.06-0.2	0.08-0.10	6.6-7.3	<2	Moderate-----	0.15		
	23-60	30-40	0.2-0.6	0.05-0.07	7.9-9.0	<2	Moderate-----	0.10		
Do, Dp----------- Dunphy	0-3	5-15	0.6-2.0	0.19-0.21	>8.4	4-8	Low----------	0.49	5	6
	3-11	5-15	2.0-6.0	0.14-0.16	>8.4	4-16	Low----------	0.37		
	11-60	5-15	0.2-0.6	0.15-0.17	>8.4	4-16	Low----------	0.37		
Dr--------------- Dunphy	0-7	10-15	0.6-2.0	0.19-0.21	>8.4	4-8	Low----------	0.49	5	6
	7-35	10-15	0.2-0.6	0.16-0.18	>8.4	4-8	Low----------	0.37		
	35-61	5-10	0.6-6.0	0.13-0.15	8.5-9.0	4-8	Low----------	0.32		
	61-65	0-5	>20	0.03-0.05	8.5-9.0	4-8	Low----------	0.10		
Ds--------------- Dunphy	0-7	10-15	0.6-2.0	0.19-0.21	>8.4	>16	Low----------	0.49	5	6
	7-35	10-15	0.2-0.6	0.16-0.18	>8.4	>16	Low----------	0.37		
	35-61	5-10	0.6-6.0	0.13-0.15	8.5-9.0	4-8	Low----------	0.32		
	61-65	0-5	>20	0.03-0.05	8.5-9.0	4-8	Low----------	0.10		
FB*:										
Ferdelford------ 15 to 30 percent slopes	0-3	27-35	0.2-0.6	0.17-0.20	7.9-8.4	<2	Moderate-----	0.28	2	7
	3-14	25-35	0.2-0.6	0.17-0.20	7.9-9.0	<4	Moderate-----	0.28		
	14-38	20-30	0.2-0.6	0.12-0.14	7.9-9.0	<4	Moderate-----	0.17		
	38	---	---	---	---	---	-------------	----		
Ferdelford------ 30 to 50 percent slopes	0-3	27-35	0.2-0.6	0.17-0.20	7.9-8.4	<2	Moderate-----	0.28	2	7
	3-14	25-35	0.2-0.6	0.17-0.20	7.9-9.0	<4	Moderate-----	0.28		
	14-38	20-30	0.2-0.6	0.12-0.14	7.9-9.0	<4	Moderate-----	0.17		
	38	---	---	---	---	---	-------------	----		
Bucan-----------	0-4	20-25	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low----------	0.32	4	6
	4-25	45-55	0.06-2.0	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-40	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
FD*:										
Ferdelford------	0-3	27-35	0.2-0.6	0.17-0.20	7.9-8.4	<2	Moderate-----	0.28	2	7
	3-14	25-35	0.2-0.6	0.17-0.20	7.9-9.0	<4	Moderate-----	0.28		
	14-38	20-30	0.2-0.6	0.12-0.14	7.9-9.0	<4	Moderate-----	0.17		
	38	---	---	---	---	---	-------------	----		
Puett-----------	0-18	5-10	2.0-6.0	0.13-0.15	7.9-9.0	<2	Low----------	0.28	1	3
	18	---	---	---	---	---	-------------	----		
Berning---------	0-8	20-25	0.6-2.0	0.15-0.17	6.1-7.3	<2	Low----------	0.37	5	6
	8-24	35-45	0.06-0.2	0.07-0.09	6.6-7.3	<2	Moderate-----	0.20		
	24-60	---	0.6-6.0	0.05-0.07	6.6-7.3	<2	Low----------	0.20		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
FE*:										
Ferdelford------	0-3	27-35	0.2-0.6	0.17-0.20	7.9-8.4	<2	Moderate-----	0.28	2	7
	3-14	25-35	0.2-0.6	0.17-0.20	7.9-9.0	<4	Moderate-----	0.28		
	14-38	20-30	0.2-0.6	0.12-0.14	7.9-9.0	<4	Moderate-----	0.17		
	38	---	---	---	---	---	-------------	----		
Puett-----------	0-13	5-10	2.0-6.0	0.09-0.11	7.9-9.0	<2	Low----------	0.20	1	3
	13	---	---	---	---	---	-------------	----		
Susie Creek-----	0-12	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.32	4	5
	12-25	35-50	0.06-0.2	0.15-0.17	7.4-8.4	<2	High---------	0.20		
	25-57	10-15	0.6-2.0	0.12-0.16	7.9-8.4	<2	Low----------	0.17		
	57	---	---	---	---	---	-------------	----		
FF*:										
Ferdelford------	0-3	27-35	0.2-0.6	0.13-0.15	7.9-8.4	<2	Moderate-----	0.20	2	8
	3-14	25-35	0.2-0.6	0.17-0.20	7.9-9.0	<4	Moderate-----	0.28		
	14-26	20-30	0.2-0.6	0.12-0.14	7.9-9.0	<4	Moderate-----	0.17		
	26	---	---	---	---	---	-------------	----		
Ramires---------	0-9	20-27	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low----------	0.17	3	6
	9-26	35-50	0.06-0.2	0.13-0.16	6.6-7.3	<2	High---------	0.28		
	26-34	15-25	2.0-6.0	0.11-0.15	7.9-8.4	2-4	Low----------	0.17		
	34	---	---	---	---	---	-------------	----		
FH*:										
Ferdelford------	0-3	27-35	0.2-0.6	0.17-0.20	7.9-8.4	<2	Moderate-----	0.28	2	7
	3-14	25-35	0.2-0.6	0.17-0.20	7.9-9.0	<4	Moderate-----	0.28		
	14-38	20-30	0.2-0.6	0.12-0.14	7.9-9.0	<4	Moderate-----	0.17		
	38	---	---	---	---	---	-------------	----		
Susie Creek-----	0-12	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.32	4	5
	12-25	35-50	0.06-0.2	0.15-0.17	7.4-8.4	<2	High---------	0.20		
	25-57	10-15	0.6-2.0	0.12-0.16	7.9-8.4	<2	Low----------	0.17		
	57	---	---	---	---	---	-------------	----		
Toeja-----------	0-13	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.37	4	5
	13-31	20-35	0.2-0.6	0.16-0.19	6.6-7.3	<2	Moderate-----	0.28		
	31-48	10-15	2.0-6.0	0.13-0.15	7.4-9.0	<2	Low----------	0.24		
	48	---	---	---	---	---	-------------	----		
Fk--------------- Four Star	0-20	10-20	0.6-2.0	0.15-0.17	6.6-7.3	<2	Low----------	0.28	5	8
	20-60	7-18	2.0-6.0	0.11-0.14	6.6-7.3	<2	Low----------	0.28		
Fm--------------- Four Star	0-15	10-20	0.6-2.0	0.15-0.17	6.6-7.3	<2	Low----------	0.28	5	5
	15-60	7-18	2.0-6.0	0.12-0.16	6.6-7.3	<2	Low----------	0.32		
Fn*:										
Four Star-------	0-20	10-20	0.6-2.0	0.15-0.17	6.6-7.3	<2	Low----------	0.28	5	8
	20-60	7-18	2.0-6.0	0.11-0.14	6.6-7.3	<2	Low----------	0.28		
Bosco-----------	0-15	8-15	2.0-6.0	0.10-0.12	6.1-6.5	<2	Low----------	0.24	5	7
	15-46	8-15	2.0-6.0	0.09-0.11	6.6-7.3	<2	Low----------	0.20		
	46-70	0-5	>20	0.03-0.05	6.6-7.3	<2	Low----------	0.10		
Fo*:										
Four Star-------	0-15	10-20	0.6-2.0	0.15-0.17	6.6-7.3	<2	Low----------	0.28	5	5
	15-60	7-18	2.0-6.0	0.12-0.16	6.6-7.3	<2	Low----------	0.32		
Bosco-----------	0-15	8-15	2.0-6.0	0.10-0.12	6.1-6.5	<2	Low----------	0.24	5	7
	15-46	8-15	2.0-6.0	0.09-0.11	6.6-7.3	<2	Low----------	0.20		
	46-70	0-5	>20	0.03-0.05	6.6-7.3	<2	Low----------	0.10		
Ge--------------- Geysen	0-7	10-15	0.6-2.0	0.19-0.21	>7.8	4-8	Low----------	0.43	5	6
	7-14	20-30	0.06-0.2	0.18-0.21	>8.4	8-16	Moderate-----	0.37		
	14-60	15-20	0.6-2.0	0.14-0.17	>8.4	8-16	Low----------	0.28		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
Gg---------------- Geysen	0-5	10-15	0.6-2.0	0.19-0.21	>7.8	>16	Low-----------	0.43	5	6
	5-12	20-30	0.06-0.2	0.18-0.21	>8.4	>16	Moderate------	0.37		
	12-60	15-20	0.6-2.0	0.14-0.17	>8.4	>16	Low-----------	0.28		
GH*:										
Glean------------	0-8	8-18	2.0-6.0	0.06-0.10	6.1-7.3	<2	Low-----------	0.17	5	8
	8-15	8-18	2.0-6.0	0.06-0.10	6.1-7.3	<2	Low-----------	0.37		
	15-51	8-18	2.0-6.0	0.06-0.09	6.1-7.3	<2	Low-----------	0.17		
	51	---	---	---	---	---	-------------	----		
Rock outcrop.										
Rubble land.										
Gk---------------- Griver	0-14	10-15	0.6-2.0	0.16-0.18	7.9-8.4	4-8	Low-----------	0.37	5	5
	14-37	5-10	2.0-6.0	0.13-0.16	7.9-8.4	4-8	Low-----------	0.37		
	37-60	0-5	>20	0.03-0.07	7.9-8.4	4-8	Low-----------	0.10		
Gm---------------- Griver	0-10	10-15	0.6-2.0	0.16-0.18	7.9-8.4	4-8	Low-----------	0.37	5	5
	10-34	5-10	2.0-6.0	0.13-0.17	7.9-8.4	4-8	Low-----------	0.32		
	34-60	0-5	6.0-20	0.05-0.09	7.9-8.4	4-8	Low-----------	0.24		
Gn---------------- Griver	0-7	10-15	0.6-2.0	0.19-0.21	7.9-8.4	4-8	Low-----------	0.49	5	6
	7-42	5-10	2.0-6.0	0.13-0.17	7.9-8.4	4-8	Low-----------	0.37		
	42-60	50-55	<0.06	0.14-0.16	7.9-8.4	4-8	High----------	0.28		
Go---------------- Griver	0-6	10-15	0.6-2.0	0.19-0.21	7.9-8.4	<4	Low-----------	0.49	5	8
	6-60	10-18	2.0-6.0	0.13-0.17	7.9-8.4	<4	Low-----------	0.32		
Gr*:										
Griver-----------	0-14	10-15	0.6-2.0	0.16-0.18	7.9-8.4	4-8	Low-----------	0.37	5	5
	14-37	5-10	2.0-6.0	0.13-0.16	7.9-8.4	4-8	Low-----------	0.37		
	37-60	0-5	>20	0.03-0.07	7.9-8.4	4-8	Low-----------	0.10		
Griver----------- Wet	0-6	10-15	0.6-2.0	0.19-0.21	7.9-8.4	<4	Low-----------	0.49	5	8
	6-60	10-18	2.0-6.0	0.13-0.17	7.9-8.4	<4	Low-----------	0.32		
Gx*:										
Griver-----------	0-14	10-15	0.6-2.0	0.16-0.18	7.9-8.4	4-8	Low-----------	0.37	5	5
	14-37	5-10	2.0-6.0	0.13-0.16	7.9-8.4	4-8	Low-----------	0.37		
	37-60	0-5	>20	0.03-0.07	7.9-8.4	4-8	Low-----------	0.10		
Alluvial land.										
HG*:										
Hapgood---------- Very gravelly loam	0-8	15-25	0.6-2.0	0.08-0.10	6.1-7.3	<2	Low-----------	0.20	3	7
	8-36	15-25	0.6-2.0	0.08-0.10	6.1-7.3	<2	Low-----------	0.17		
	36-50	10-15	0.6-2.0	0.07-0.09	6.1-7.3	<2	Low-----------	0.17		
	50	---	---	---	---	---	-------------	----		
Hapgood---------- Silt loam	0-13	15-20	0.6-2.0	0.19-0.21	6.1-7.3	<2	Low-----------	0.32	3	6
	13-50	10-15	0.6-2.0	0.07-0.09	6.1-7.3	<2	Low-----------	0.17		
	50	---	---	---	---	---	-------------	----		
Packer-----------	0-13	10-20	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low-----------	0.28	3	8
	13-27	20-30	0.6-2.0	0.07-0.08	6.6-7.3	<2	Low-----------	0.17		
	50	10-15	2.0-6.0	0.05-0.07	6.6-7.3	<2	Low-----------	0.15		
Hh---------------- Humboldt	0-18	30-40	0.2-2.0	0.19-0.21	>8.4	4-8	Moderate------	----	---	7
	18-43	40-50	0.2-0.6	0.17-0.19	>7.8	>2	Moderate------	----		
	43-60	20-35	0.2-2.0	0.17-0.19	>7.8	>2	Moderate------	----		
Hk---------------- Humboldt	0-11	40-50	0.06-0.2	0.17-0.19	>7.8	4-8	Moderate------	----	---	4
	11-43	40-50	0.2-0.6	0.17-0.19	>7.8	>2	Moderate------	----		
	43-60	20-35	0.2-2.0	0.17-0.19	>7.8	>2	Moderate------	----		
Hm---------------- Humboldt	0-11	40-50	0.06-0.2	0.17-0.19	>7.8	>16	Moderate------	----	---	4
	11-43	40-50	0.2-0.6	0.17-0.19	>7.8	>2	Moderate------	----		
	43-60	20-35	0.2-2.0	0.17-0.19	>7.8	>2	Moderate------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
Hn*:										
Humboldt-------- Slightly saline	0-11	40-50	0.06-0.2	0.17-0.19	>7.8	4-8	Moderate-----	----	---	4
	11-43	40-50	0.2-0.6	0.17-0.19	>7.8	>2	Moderate-----	----		
	43-60	20-35	0.2-2.0	0.17-0.19	>7.8	>2	Moderate-----	----		
Humboldt-------- Strongly saline	0-11	40-50	0.06-0.2	0.17-0.19	>8.4	>16	Moderate-----	----	---	4
	11-43	40-50	0.2-0.6	0.17-0.19	>7.8	>2	Moderate-----	----		
	43-60	20-35	0.2-2.0	0.17-0.19	>7.8	>2	Moderate-----	----		
HO*:										
Humdun----------	0-8	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.49	5	6
	8-30	10-15	0.6-2.0	0.17-0.20	6.6-8.4	<2	Low----------	0.49		
	30-60	10-15	0.6-2.0	0.17-0.20	7.9-9.0	2-4	Low----------	0.49		
Bucan-----------	0-7	20-25	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low----------	0.37	4	6
	7-25	50-60	0.06-0.2	0.14-0.16	6.6-7.3	<2	High---------	0.24		
	25-50	35-45	0.2-0.6	0.18-0.20	7.9-9.0	<2	High---------	0.24		
Havingdon-------	0-6	10-20	0.6-2.0	0.17-0.19	6.6-7.3	<2	Low----------	0.32	2	7
	6-21	35-45	0.06-0.2	0.07-0.09	6.6-7.3	<2	Moderate-----	0.17		
	21	---	---	---	---	---	-------------	----		
Hr--------------- Hussa	0-7	15-20	0.6-2.0	0.16-0.18	7.9-8.4	<4	Low----------	0.37	5	5
	7-30	25-35	0.2-0.6	0.18-0.20	7.9-8.4	<4	Moderate-----	0.32		
	30-48	10-20	2.0-6.0	0.13-0.16	7.9-8.4	<4	Low----------	0.37		
	48-60	0-5	>6.0	0.05-0.07	7.9-8.4	<4	Low----------	0.17		
Hs--------------- Hussa	0-12	15-27	0.6-2.0	0.15-0.17	7.9-9.0	<4	Low----------	0.37	5	5
	12-60	25-35	0.2-0.6	0.16-0.19	6.6-8.4	<4	Moderate-----	0.32		
Ht--------------- Hussa	0-10	15-25	0.6-2.0	0.16-0.17	8.5-9.0	4-8	Low----------	0.37	5	5
	10-40	25-35	0.2-0.6	0.15-0.19	8.5-9.0	4-8	Moderate-----	0.32		
	40-60	35-45	0.06-0.2	0.15-0.18	7.9-9.0	<8	High---------	0.28		
Ib, Is----------- Iron Blossom	0-3	20-25	0.6-2.0	0.19-0.21	>8.4	>16	Low----------	0.55	5	6
	3-17	20-25	0.6-2.0	0.19-0.21	>8.4	>16	Low----------	0.55		
	17-36	27-35	0.2-0.6	0.19-0.21	>9.0	>16	Moderate-----	0.37		
	36-50	25-30	0.06-0.2	0.19-0.21	>9.0	>16	Moderate-----	0.37		
KAD-------------- Kawich	0-60	0-5	>20	0.05-0.07	>8.4	4-8	Low----------	0.15	5	1
MA*:										
Malpais---------	0-3	10-18	0.6-2.0	0.07-0.09	6.6-7.3	<2	Low----------	0.20	5	7
	3-30	10-18	0.6-6.0	0.06-0.09	6.6-8.4	<2	Low----------	0.20		
	30-60	10-18	0.6-6.0	0.06-0.09	7.9-9.0	<2	Low----------	0.20		
Rock outcrop.										
Rubble land.										
Mc*: Marsh.										
Crooked Creek---	0-8	20-27	0.6-2.0	0.19-0.21	6.6-8.4	<2	Low----------	0.32	5	6
	8-38	35-50	0.06-0.2	0.15-0.17	6.6-7.3	<2	High---------	0.24		
	38-60	30-40	0.2-0.6	0.19-0.21	6.6-7.3	<2	Moderate-----	0.28		
ME*:										
Mascamp---------	0-13	10-15	0.6-2.0	0.08-0.11	6.1-7.3	<2	Low----------	0.24	1	8
	13-19	25-35	0.2-0.6	0.07-0.09	6.1-7.3	<2	Low----------	0.17		
	19	---	---	---	---	---	-------------	----		
Carstump--------	0-4	15-25	0.6-2.0	0.12-0.15	6.6-7.3	<2	Low----------	0.24	3	7
	4-15	15-25	0.6-2.0	0.15-0.17	6.6-7.3	<2	Low----------	0.28		
	15-29	40-50	0.06-0.2	0.13-0.15	6.6-8.4	<2	Moderate-----	0.20		
	29	---	---	---	---	---	-------------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
Mf----------------- McConnel	0-20	5-15	2.0-6.0	0.12-0.15	6.6-7.8	<2	Low-----------	0.32	5	5
	20-60	0-5	>20	0.03-0.05	>7.8	>2	Low-----------	0.10		
Mh*:										
McConnel---------	0-20	5-15	2.0-6.0	0.12-0.15	6.6-7.8	<2	Low-----------	0.32	5	5
	20-60	0-5	>20	0.03-0.05	>7.8	2-8	Low-----------	0.10		
Blackhawk--------	0-6	5-10	0.6-2.0	0.15-0.17	7.4-7.8	<2	Low-----------	0.37	1	6
	6-15	5-10	0.6-2.0	0.15-0.17	7.9-8.4	<2	Low-----------	0.37		
	15-19	---	---	---	---	---	-------------	----		
	19-42	0-5	6.0-20	0.06-0.08	7.9-9.0	>16	Low-----------	0.17		
	42-60	0-5	>20	0.03-0.05	>8.4	>16	Low-----------	0.10		
Mo*:										
McConnel---------	0-20	5-15	2.0-6.0	0.12-0.15	6.6-7.8	<2	Low-----------	0.32	5	5
	20-60	0-5	>20	0.03-0.05	>7.8	2-8	Low-----------	0.10		
Ocala------------	0-15	25-35	0.2-0.6	0.19-0.21	>8.4	>16	Moderate-----	0.43	5	7
	15-45	25-35	0.06-0.2	0.19-0.21	8.5-9.0	>16	Moderate-----	0.43		
	45-60	5-10	0.6-2.0	0.15-0.17	8.5-9.0	4-8	Low-----------	0.32		
Mr----------------- Midas	0-4	5-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low-----------	0.55	5	6
	4-21	5-15	0.6-2.0	0.17-0.21	7.4-7.8	<2	Low-----------	0.49		
	21-30	0-5	0.06-0.2	0.05-0.07	7.9-9.0	4-8	Low-----------	0.15		
	30-50	0-5	>20	0.03-0.05	7.4-8.4	<4	Low-----------	0.10		
Ms*:										
Midas------------ Deep	0-4	5-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low-----------	0.55	5	6
	4-30	5-15	0.6-2.0	0.17-0.21	7.4-7.8	<2	Low-----------	0.49		
	30-48	0-5	0.06-0.2	0.05-0.07	7.9-9.0	4-8	Low-----------	0.15		
	48-50	0-5	>20	0.03-0.05	7.4-8.4	<4	Low-----------	0.10		
Midas------------	0-4	5-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low-----------	0.55	5	6
	4-21	5-15	0.6-2.0	0.17-0.21	7.4-7.8	<2	Low-----------	0.49		
	21-30	0-5	0.06-0.2	0.05-0.07	7.9-9.0	4-8	Low-----------	0.15		
	30-50	0-5	>20	0.03-0.05	7.4-8.4	<4	Low-----------	0.10		
Oc----------------- Ocala	0-15	5-10	2.0-6.0	0.13-0.15	>8.4	4-8	Low-----------	0.28	5	3
	15-45	25-35	0.06-0.2	0.19-0.21	8.5-9.0	4-8	Moderate-----	0.43		
	45-60	5-10	0.6-2.0	0.15-0.17	8.5-9.0	4-8	Low-----------	0.32		
Od----------------- Ocala	0-4	25-35	0.2-0.6	0.19-0.21	>8.4	4-8	Moderate-----	0.43	5	7
	4-16	25-35	0.06-0.2	0.19-0.21	>8.4	4-8	Moderate-----	0.43		
	16-60	25-35	0.06-0.6	0.19-0.21	8.5-9.0	8-16	Moderate-----	0.43		
Og----------------- Ocala	0-15	25-35	0.2-0.6	0.19-0.21	>8.4	>16	Moderate-----	0.43	5	7
	15-45	25-35	0.06-0.2	0.19-0.21	8.5-9.0	>16	Moderate-----	0.43		
	45-60	5-10	0.6-2.0	0.15-0.17	8.5-9.0	4-8	Low-----------	0.32		
Oh----------------- Ocala	0-4	25-35	0.2-0.6	0.19-0.21	>8.4	>16	Moderate-----	0.43	5	7
	4-16	25-35	0.06-0.2	0.19-0.21	>8.4	>16	Moderate-----	0.43		
	16-60	25-35	0.06-0.6	0.19-0.21	8.5-9.0	8-16	Moderate-----	0.43		
Ok----------------- Ocala	0-15	25-35	0.2-0.6	0.19-0.21	>8.4	4-8	Moderate-----	0.43	5	7
	15-45	25-35	0.06-0.2	0.19-0.21	8.5-9.0	4-8	Moderate-----	0.43		
	45-60	5-10	0.6-2.0	0.15-0.17	8.5-9.0	4-8	Low-----------	0.32		
Om*:										
Ocala------------ Slightly saline	0-15	25-35	0.2-0.6	0.19-0.21	>8.4	4-8	Moderate-----	0.43	5	7
	15-45	25-35	0.06-0.2	0.19-0.21	8.5-9.0	4-8	Moderate-----	0.43		
	45-60	5-10	0.6-2.0	0.15-0.17	8.5-9.0	4-8	Low-----------	0.32		
Ocala------------ Strongly saline	0-15	25-35	0.2-0.6	0.19-0.21	>8.4	>16	Moderate-----	0.43	5	7
	15-45	25-35	0.06-0.2	0.19-0.21	8.5-9.0	>16	Moderate-----	0.43		
	45-60	5-10	0.6-2.0	0.15-0.17	8.5-9.0	4-8	Low-----------	0.32		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
OP*:										
Ocala	0-4	25-35	0.2-0.6	0.19-0.21	>8.4	>16	Moderate	0.43	5	7
	4-60	25-35	0.06-0.2	0.19-0.21	8.5-9.0	4-16	Moderate	0.43		
Ocala Drained	0-9	25-35	0.2-0.6	0.19-0.21	>8.4	>16	Moderate	0.43	5	7
	9-60	25-35	0.06-0.2	0.19-0.21	>8.4	8-16	Moderate	0.43		
Playa.										
ORC Orovada	0-5	5-10	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low	0.43	5	3
	5-18	5-18	0.6-2.0	0.15-0.17	7.4-8.4	<4	Low	0.43		
	18-61	5-18	0.6-2.0	0.14-0.16	>7.8	4-16	Low	0.43		
OSB Orovada	0-5	5-15	0.6-2.0	0.12-0.15	6.6-7.8	<2	Low	0.37	5	6
	5-18	5-18	0.6-2.0	0.15-0.17	7.4-8.4	<4	Low	0.43		
	18-61	5-18	0.6-2.0	0.14-0.16	>7.8	4-16	Low	0.43		
OtA Orovada	0-9	10-15	0.6-2.0	0.18-0.20	6.6-7.8	<2	Low	0.49	5	5
	9-30	5-18	0.6-2.0	0.15-0.17	7.4-8.4	<4	Low	0.43		
	30-60	5-18	0.6-2.0	0.14-0.16	>7.8	4-16	Low	0.43		
OU*:										
Orovada	0-5	5-10	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low	0.43	5	3
	5-18	5-18	0.6-2.0	0.15-0.17	7.4-8.4	<4	Low	0.43		
	18-61	5-18	0.6-2.0	0.14-0.16	>7.8	4-16	Low	0.43		
Humdun	0-8	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low	0.49	5	6
	8-30	10-15	0.6-2.0	0.17-0.20	6.6-8.4	<2	Low	0.49		
	30-60	10-15	0.6-2.0	0.17-0.20	7.9-9.0	2-4	Low	0.49		
Puett	0-18	5-10	2.0-6.0	0.13-0.15	7.9-9.0	<2	Low	0.28	1	3
	18	---	---	---	---	---	-------------	----		
OV*:										
Orovada	0-5	5-10	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low	0.43	5	3
	5-18	5-18	0.6-2.0	0.15-0.17	7.4-8.4	<4	Low	0.43		
	18-61	5-18	0.6-2.0	0.14-0.16	>7.8	4-16	Low	0.43		
Puett	0-18	5-10	2.0-6.0	0.13-0.15	7.9-9.0	<2	Low	0.28	1	3
	18	---	---	---	---	---	-------------	----		
OW*:										
Orovada	0-5	5-10	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low	0.43	5	3
	5-18	5-18	0.6-2.0	0.15-0.17	7.4-8.4	<4	Low	0.43		
	18-61	5-18	0.6-2.0	0.14-0.16	>7.8	4-16	Low	0.43		
Puett	0-18	5-10	2.0-6.0	0.13-0.15	7.9-9.0	<2	Low	0.28	1	3
	18	---	---	---	---	---	-------------	----		
Ferdelford	0-3	27-35	0.2-0.6	0.13-0.15	7.9-8.4	<2	Moderate	0.20	2	8
	3-14	25-35	0.2-0.6	0.17-0.20	7.9-9.0	<4	Moderate	0.28		
	14-26	20-30	0.2-0.6	0.12-0.14	7.9-9.0	<4	Moderate	0.17		
	26	---	---	---	---	---	-------------	----		
PC*:										
Pie Creek	0-5	10-20	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low	0.37	2	5
	5-21	60-70	<0.06	0.14-0.16	6.6-7.3	<2	High	0.20		
	21-35	35-45	0.06-0.2	0.16-0.19	7.4-8.4	<2	Moderate	0.28		
	35	---	---	---	---	---	-------------	----		
Susie Creek	0-12	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low	0.32	4	5
	12-25	35-50	0.06-0.2	0.15-0.17	7.4-8.4	<2	High	0.20		
	25-57	10-15	0.6-2.0	0.12-0.16	7.9-8.4	<2	Low	0.17		
	57	---	---	---	---	---	-------------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
PC*:										
Toeja-----------	0-13	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.37	4	5
	13-31	20-35	0.2-0.6	0.16-0.19	6.6-7.3	<2	Moderate-----	0.28		
	31-48	10-15	2.0-6.0	0.13-0.15	7.4-9.0	<2	Low----------	0.24		
	48	---	---	---	---	---	-------------	----		
Pk--------------- Pocker	0-10	10-20	0.6-2.0	0.17-0.21	>9.0	>8	Low----------	0.55	5	6
	10-46	35-50	0.06-0.2	0.14-0.16	>8.4	>16	High---------	0.32		
	46-60	35-45	0.06-0.2	0.14-0.16	>8.4	>16	High---------	0.32		
PM*:										
Primeaux--------	0-11	15-20	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low----------	0.32	2	6
	11-20	25-35	0.2-0.6	0.15-0.19	6.1-7.3	<2	Moderate-----	0.28		
	20-35	20-25	0.6-2.0	0.15-0.17	6.1-7.3	<2	Low----------	0.20		
	35	---	---	---	---	---	-------------	----		
Packer----------	0-9	10-20	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low----------	0.28	3	8
	9-13	20-30	0.6-2.0	0.07-0.08	6.6-7.3	<2	Low----------	0.17		
	13-50	10-15	2.0-6.0	0.05-0.07	6.6-7.3	<2	Low----------	0.15		
Tusel-----------	0-17	10-20	0.6-2.0	0.13-0.15	6.1-7.3	<2	Low----------	0.24	4	6
	17-50	25-35	0.2-0.6	0.08-0.11	6.1-7.3	<2	Moderate-----	0.20		
PS*:										
Puett-----------	0-18	5-10	2.0-6.0	0.13-0.15	7.9-9.0	<2	Low----------	0.28	1	3
	18	---	---	---	---	---	-------------	----		
Orovada---------	0-5	5-10	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low----------	0.43	5	3
	5-18	5-18	0.6-2.0	0.15-0.17	7.4-8.4	<4	Low----------	0.43		
	18-61	5-18	0.6-2.0	0.14-0.16	>7.8	4-16	Low----------	0.43		
RaA-------------- Rad	0-8	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.55	5	6
	8-20	5-10	0.6-2.0	0.15-0.21	7.4-8.4	<4	Low----------	0.43		
	20-30	5-10	0.06-0.2	0.17-0.21	>7.8	8-16	Low----------	0.43		
	30-60	5-10	0.6-2.0	0.13-0.21	>7.8	8-16	Low----------	0.43		
RaB-------------- Rad	0-8	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.55	5	6
	8-18	5-10	0.6-2.0	0.15-0.21	7.4-8.4	<4	Low----------	0.43		
	18-45	5-10	0.06-0.2	0.17-0.21	>7.8	8-16	Low----------	0.43		
	45-60	5-10	0.6-2.0	0.13-0.21	>7.8	8-16	Low----------	0.43		
RAC-------------- Rad	0-6	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.55	5	6
	6-18	5-10	0.6-2.0	0.15-0.21	7.4-8.4	<4	Low----------	0.43		
	18-45	5-10	0.06-0.2	0.17-0.21	>7.8	8-16	Low----------	0.43		
	45-60	5-10	0.6-2.0	0.13-0.21	>7.8	8-16	Low----------	0.43		
RbB-------------- Rad	0-7	5-10	0.6-2.0	0.17-0.19	7.9-8.4	<2	Low----------	0.43	5	6
	7-17	5-10	0.6-2.0	0.17-0.19	>8.4	2-4	Low----------	0.43		
	17-32	5-10	0.06-0.2	0.17-0.19	>9.0	4-8	Low----------	0.43		
	32-60	5-10	0.6-2.0	0.17-0.19	>8.4	8-16	Low----------	0.43		
RC*:										
Rad------------- Slightly alkali	0-7	5-10	0.6-2.0	0.17-0.19	7.9-8.4	<2	Low----------	0.43	5	6
	7-17	5-10	0.6-2.0	0.17-0.19	>8.4	2-4	Low----------	0.43		
	17-32	5-10	0.06-0.2	0.17-0.19	>9.0	4-8	Low----------	0.43		
	32-60	5-10	0.6-2.0	0.17-0.19	>8.4	8-16	Low----------	0.43		
Rad-------------	0-6	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.55	5	6
	6-18	5-10	0.6-2.0	0.15-0.21	7.4-8.4	<4	Low----------	0.43		
	18-45	5-10	0.06-0.2	0.17-0.21	>7.8	8-16	Low----------	0.43		
	45-60	5-10	0.6-2.0	0.13-0.21	>7.8	8-16	Low----------	0.43		
Rd*:										
Rad-------------	0-6	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low----------	0.55	5	6
	6-18	5-10	0.6-2.0	0.15-0.21	7.4-8.4	<4	Low----------	0.43		
	18-45	5-10	0.06-0.2	0.17-0.21	>7.8	8-16	Low----------	0.43		
	45-60	5-10	0.6-2.0	0.13-0.21	>7.8	8-16	Low----------	0.43		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
Rd*: Blackhawk	0-6	5-10	0.6-2.0	0.15-0.17	7.4-7.8	<2	Low	0.37	1	6
	6-15	5-10	0.6-2.0	0.15-0.17	7.9-8.4	<2	Low	0.37		
	15-19	---	---	---	---	---	---	----		
	19-42	0-5	6.0-20	0.06-0.08	7.9-9.0	>16	Low	0.17		
	42-60	0-5	>20	0.03-0.05	>8.4	>16	Low	0.10		
RE*: Rad	0-6	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low	0.55	5	6
	6-18	5-10	0.6-2.0	0.15-0.21	7.4-8.4	<4	Low	0.43		
	18-45	5-10	0.06-0.2	0.17-0.21	>7.8	8-16	Low	0.43		
	45-60	5-10	0.6-2.0	0.13-0.21	>7.8	8-16	Low	0.43		
Brock	0-5	10-15	0.6-2.0	0.13-0.15	7.4-8.4	<2	Low	0.32	1	6
	5-14	18-30	0.2-0.6	0.11-0.13	7.9-9.0	<4	Low	0.24		
	14	---	---	---	---	---	---	----		
RF*: Ramires	0-6	20-30	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low	0.17	3	6
	6-24	35-50	0.06-0.2	0.13-0.16	6.6-7.3	<2	High	0.28		
	24-30	15-25	2.0-6.0	0.11-0.15	7.9-8.4	2-4	Low	0.17		
	30	---	---	---	---	---	---	----		
Chen	0-8	15-25	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low	0.28	1	6
	8-17	40-55	<0.06	0.12-0.14	6.6-7.3	<2	Moderate	0.20		
	17	---	---	---	---	---	---	----		
Bobs	0-4	10-20	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low	0.37	---	---
	4-12	10-20	0.6-2.0	0.14-0.17	7.9-9.0	<2	Low	0.37		
	12	---	---	---	---	---	---	----		
RG*: Ramires	0-9	20-27	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low	0.17	3	6
	9-26	35-50	0.06-0.2	0.13-0.16	6.6-7.3	<2	High	0.28		
	26-34	15-25	2.0-6.0	0.11-0.15	7.9-8.4	2-4	Low	0.17		
	34	---	---	---	---	---	---	----		
Chen	0-8	15-25	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low	0.28	1	6
	8-17	40-55	<0.06	0.12-0.14	6.6-7.3	<2	Moderate	0.20		
	17	---	---	---	---	---	---	----		
Pie Creek	0-5	10-20	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low	0.32	2	7
	5-21	60-70	<0.06	0.14-0.16	6.6-7.3	<2	High	0.20		
	21-30	35-45	0.06-0.2	0.16-0.19	7.4-8.4	<2	Moderate	0.28		
	30	---	---	---	---	---	---	----		
RH*: Ramires	0-9	20-30	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low	0.17	3	6
	9-26	35-50	0.06-0.2	0.13-0.16	6.6-7.3	<2	High	0.28		
	26-34	15-25	2.0-6.0	0.11-0.15	7.9-8.4	2-4	Low	0.17		
	34	---	---	---	---	---	---	----		
Creva	0-5	10-15	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low	0.37	1	6
	5-19	35-40	0.06-0.2	0.14-0.16	6.6-7.3	<2	Moderate	0.28		
	19	---	---	---	---	---	---	----		
RH2*: Ramires	0-6	20-30	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low	0.17	3	6
	6-24	35-50	0.06-0.2	0.13-0.16	6.6-7.3	<2	High	0.28		
	24-30	15-25	2.0-6.0	0.11-0.15	7.9-8.4	2-4	Low	0.17		
	30	---	---	---	---	---	---	----		
Creva	0-5	10-15	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low	0.37	1	6
	5-19	35-40	0.06-0.2	0.14-0.16	6.6-7.3	<2	Moderate	0.28		
	19	---	---	---	---	---	---	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
RK*:										
Ramires---------	0-9	20-27	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low----------	0.17	3	6
	9-26	35-50	0.06-0.2	0.13-0.16	6.6-7.3	<2	High---------	0.28		
	26-34	15-25	2.0-6.0	0.11-0.15	7.9-8.4	2-4	Low----------	0.17		
	34	---	---	---	---	---	-------------	----		
Creva-----------	0-5	10-15	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low----------	0.37	1	6
	5-19	35-40	0.06-0.2	0.14-0.16	6.6-7.3	<2	Moderate-----	0.28		
	19	---	---	---	---	---	-------------	----		
RL*:										
Ramires---------	0-6	20-30	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low----------	0.17	3	6
	6-24	35-50	0.06-0.2	0.13-0.16	6.6-7.3	<2	High---------	0.28		
	24-30	15-25	2.0-6.0	0.11-0.15	7.9-8.4	2-4	Low----------	0.17		
	30	---	---	---	---	---	-------------	----		
Singletree------	0-17	10-15	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low----------	0.32	4	5
	17-32	25-35	0.2-0.6	0.14-0.19	6.6-7.3	<2	Moderate-----	0.32		
	32-49	15-25	2.0-6.0	0.09-0.14	6.6-9.0	<2	Low----------	0.28		
	49	---	---	---	---	---	-------------	----		
RM*:										
Ramires---------	0-6	20-30	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low----------	0.17	3	6
	6-24	35-50	0.06-0.2	0.13-0.16	6.6-7.3	<2	High---------	0.28		
	24-30	15-25	2.0-6.0	0.11-0.15	7.9-8.4	2-4	Low----------	0.17		
	30	---	---	---	---	---	-------------	----		
Taylor Creek----	0-15	15-20	0.6-2.0	0.19-0.21	6.1-7.3	<2	Low----------	0.37	5	5
	15-40	60-65	<0.06	0.15-0.17	6.6-7.3	<2	High---------	0.17		
	40-60	50-60	<0.2	0.14-0.16	7.9-8.4	<2	High---------	0.17		
Rn--------------- Rixie	0-10	28-40	0.2-0.6	0.17-0.19	7.9-9.0	4-8	Moderate-----	0.37	5	8
	10-60	25-35	0.06-0.2	0.17-0.19	>7.8	4-8	Moderate-----	0.43		
Ro--------------- Rixie	0-10	20-40	0.2-0.6	0.17-0.19	7.9-9.0	>16	Moderate-----	0.37	5	8
	10-60	25-35	0.06-0.2	0.17-0.19	>7.8	>2	Moderate-----	0.43		
Rr--------------- Rixie	0-10	40-50	0.06-0.2	0.17-0.19	7.9-9.0	4-8	High---------	0.32	5	8
	10-60	25-35	0.06-0.2	0.17-0.19	>7.8	>2	Moderate-----	0.43		
Rs--------------- Rose Creek	0-10	10-15	0.6-2.0	0.16-0.18	7.9-8.4	2-4	Low----------	0.37	5	8
	10-60	10-18	2.0-6.0	0.13-0.15	7.9-8.4	2-4	Low----------	0.28		
Rt--------------- Rose Creek	0-16	10-15	0.6-6.0	0.14-0.16	7.4-8.4	<4	Low----------	0.32	5	4
	16-60	10-18	2.0-6.0	0.13-0.15	7.9-9.0	2-4	Low----------	0.28		
Ru--------------- Rosney	0-10	5-10	0.6-2.0	0.17-0.19	>7.9	8-16	Low----------	0.64	5	5
	10-60	2-35	0.2-0.6	0.17-0.19	>7.9	>16	Moderate-----	0.49		
SA*:										
Short Creek----- 30 to 50 percent slopes	0-8	30-35	0.2-0.6	0.18-0.20	6.6-7.3	<2	Moderate-----	0.24	5	7
	8-23	40-50	0.06-0.2	0.08-0.10	6.6-7.3	<2	Moderate-----	0.15		
	23-60	30-40	0.2-0.6	0.05-0.07	7.9-9.0	<2	Moderate-----	0.10		
Short Creek----- 50 to 75 percent slopes	0-8	30-35	0.2-0.6	0.18-0.20	6.6-7.3	<2	Moderate-----	0.24	5	7
	8-23	40-50	0.06-0.2	0.08-0.10	6.6-7.3	<2	Moderate-----	0.15		
	23-60	30-40	0.2-0.6	0.05-0.07	7.9-9.0	<2	Moderate-----	0.10		
SBB-------------- Simon	0-12	10-15	0.6-2.0	0.17-0.19	6.6-7.3	<2	Low----------	0.37	5	5
	12-41	27-35	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate-----	0.37		
	41-60	20-30	0.6-2.0	0.08-0.10	6.6-7.3	<2	Low----------	0.24		
SC*:										
Simon-----------	0-12	10-15	0.6-2.0	0.17-0.19	6.6-7.3	<2	Low----------	0.37	5	5
	12-41	27-35	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate-----	0.37		
	41-60	20-30	0.6-2.0	0.08-0.10	6.6-7.3	<2	Low----------	0.24		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
SC*:										
Bosco-----------	0-15	8-15	2.0-6.0	0.10-0.12	6.1-6.5	<2	Low-----------	0.24	5	7
	15-46	8-15	2.0-6.0	0.09-0.11	6.6-7.3	<2	Low-----------	0.20		
	46-70	0-5	>20	0.03-0.05	6.6-7.3	<2	Low-----------	0.10		
SD*:										
Slaven---------- 15 to 30 percent slopes	0-5	10-15	0.6-2.0	0.07-0.09	6.1-6.5	<2	Low-----------	0.28	2	7
	5-22	35-45	0.06-0.2	0.08-0.11	6.6-7.3	<2	Moderate-----	0.17		
	22	---	---	---	---	---	-------------	----		
Slaven---------- 30 to 50 percent slopes	0-8	10-15	0.6-2.0	0.07-0.09	6.1-6.5	<2	Low-----------	0.28	2	7
	8-30	35-45	0.06-0.2	0.08-0.11	6.6-7.3	<2	Moderate-----	0.17		
	30	---	---	---	---	---	-------------	----		
Mascamp---------	0-13	10-15	0.6-2.0	0.08-0.11	6.1-7.3	<2	Low-----------	0.24	1	8
	13-19	25-35	0.2-0.6	0.07-0.09	6.1-7.3	<2	Low-----------	0.17		
	19	---	---	---	---	---	-------------	----		
SE*:										
Slaven----------	0-5	10-15	0.6-2.0	0.07-0.09	6.1-6.5	<2	Low-----------	0.28	2	7
	5-22	35-45	0.06-0.2	0.08-0.11	6.6-7.3	<2	Moderate-----	0.17		
	22	---	---	---	---	---	-------------	----		
Primeaux--------	0-11	15-20	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low-----------	0.32	2	6
	11-20	25-35	0.2-0.6	0.15-0.19	6.1-7.3	<2	Moderate-----	0.28		
	20-35	20-25	0.6-2.0	0.15-0.17	6.1-7.3	<2	Low-----------	0.20		
	35	---	---	---	---	---	-------------	----		
SF*:										
Slaven----------	0-5	10-15	0.6-2.0	0.07-0.09	6.1-6.5	<2	Low-----------	0.28	2	7
	5-22	35-45	0.06-0.2	0.08-0.11	6.6-7.3	<2	Moderate-----	0.17		
	22	---	---	---	---	---	-------------	----		
Ramires---------	0-9	20-30	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low-----------	0.17	3	6
	9-26	35-50	0.06-0.2	0.13-0.16	6.6-7.3	<2	High----------	0.28		
	26-34	15-25	2.0-6.0	0.11-0.15	7.9-8.4	2-4	Low-----------	0.17		
	34	---	---	---	---	---	-------------	----		
SG*:										
Slaven----------	0-5	10-15	0.6-2.0	0.07-0.09	6.1-6.5	<2	Low-----------	0.28	2	7
	5-22	35-45	0.06-0.2	0.08-0.11	6.6-7.3	<2	Moderate-----	0.17		
	22	---	---	---	---	---	-------------	----		
Toeja-----------	0-13	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low-----------	0.37	4	5
	13-31	20-35	0.2-0.6	0.16-0.19	6.6-7.3	<2	Moderate-----	0.28		
	31-48	10-15	2.0-6.0	0.13-0.15	7.4-9.0	<2	Low-----------	0.24		
	48	---	---	---	---	---	-------------	----		
SH*:										
Slaven----------	0-8	10-15	0.6-2.0	0.07-0.09	6.1-6.5	<2	Low-----------	0.28	2	7
	8-30	35-45	0.06-0.2	0.08-0.11	6.6-7.3	<2	Moderate-----	0.17		
	30	---	---	---	---	---	-------------	----		
Torro-----------	0-13	10-15	2.0-6.0	0.10-0.13	6.6-7.3	<2	Low-----------	0.28	5	7
	13-25	20-30	0.6-2.0	0.09-0.11	6.6-7.3	<2	Low-----------	0.28		
	25-50	5-10	6.0-20	0.05-0.07	6.6-7.3	<2	Low-----------	0.20		
Tusel-----------	0-17	10-20	0.6-2.0	0.13-0.15	6.1-7.3	<2	Low-----------	0.24	4	6
	17-50	25-35	0.2-0.6	0.08-0.11	6.1-7.3	<2	Moderate-----	0.20		
SR*:										
Stampede--------	0-12	20-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low-----------	0.43	2	6
	12-28	40-55	<0.06	0.14-0.16	6.6-7.3	<2	High----------	0.28		
	28	---	---	---	---	---	-------------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
SR*:										
Donna-----------	0-8	15-25	0.6-2.0	0.18-0.20	6.1-7.3	<2	Low----------	0.37	2	6
	8-22	60-70	<0.06	0.14-0.16	6.1-7.3	<2	High---------	0.20		
	22-38	---	---	---	---	---	-------------	----		
	38-68	15-25	2.0-6.0	<0.03	7.4-8.4	<4	Low----------	0.20		
SS*:										
Stampede--------	0-12	20-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.43	2	6
	12-28	40-55	<0.06	0.14-0.16	6.6-7.3	<2	High---------	0.28		
	28	---	---	---	---	---	-------------	----		
Donna-----------	0-8	15-25	0.6-2.0	0.18-0.20	6.1-7.3	<2	Low----------	0.37	2	6
	8-22	60-70	<0.06	0.14-0.16	6.1-7.3	<2	High---------	0.20		
	22-38	---	---	---	---	---	-------------	----		
	38-68	15-25	2.0-6.0	<0.03	7.4-8.4	<4	Low----------	0.20		
Short Creek-----	0-8	30-35	0.2-0.6	0.18-0.20	6.6-7.3	<2	Moderate-----	0.24	5	7
	8-23	40-50	0.06-0.2	0.08-0.10	6.6-7.3	<2	Moderate-----	0.15		
	23-60	30-40	0.2-0.6	0.05-0.07	7.9-9.0	<2	Moderate-----	0.10		
ST*:										
Stampede--------	0-12	20-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.43	2	6
	12-28	40-55	<0.06	0.14-0.16	6.6-7.3	<2	High---------	0.28		
	28	---	---	---	---	---	-------------	----		
Short Creek-----	0-8	30-35	0.2-0.6	0.18-0.20	6.6-7.3	<2	Moderate-----	0.24	5	7
	8-23	40-50	0.06-0.2	0.08-0.10	6.6-7.3	<2	Moderate-----	0.15		
	23-60	30-40	0.2-0.6	0.05-0.07	7.9-9.0	<2	Moderate-----	0.10		
SU*:										
Susie Creek-----	0-12	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.32	4	5
	12-25	35-50	0.06-0.2	0.15-0.17	7.4-8.4	<2	High---------	0.20		
	25-57	10-15	0.6-2.0	0.12-0.16	7.9-8.4	<2	Low----------	0.17		
	57	---	---	---	---	---	-------------	----		
Pattani---------	0-10	40-50	<0.06	0.14-0.16	6.6-7.8	<2	High---------	0.28	2	4
	10-20	35-50	<0.06	0.15-0.20	7.9-9.0	<2	High---------	0.28		
	20	---	---	---	---	---	-------------	----		
SV*:										
Susie Creek-----	0-12	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.32	4	5
	12-25	35-50	0.06-0.2	0.15-0.17	7.4-8.4	<2	High---------	0.20		
	25-57	10-15	0.6-2.0	0.12-0.16	7.9-8.4	<2	Low----------	0.17		
	57	---	---	---	---	---	-------------	----		
Pie Creek-------	0-5	10-20	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low----------	0.37	2	5
	5-21	60-70	<0.06	0.14-0.16	6.6-7.3	<2	High---------	0.20		
	21-35	35-45	0.06-0.2	0.16-0.19	7.4-8.4	<2	Moderate-----	0.28		
	35	---	---	---	---	---	-------------	----		
Pattani---------	0-10	40-50	<0.06	0.14-0.16	6.6-7.8	<2	High---------	0.28	2	4
	10-20	35-50	<0.06	0.15-0.20	7.9-9.0	<2	High---------	0.28		
	20	---	---	---	---	---	-------------	----		
SW*:										
Susie Creek-----	0-12	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.32	4	5
	12-25	35-50	0.06-0.2	0.15-0.17	7.4-8.4	<2	High---------	0.20		
	25-57	10-15	0.6-2.0	0.12-0.16	7.9-8.4	<2	Low----------	0.17		
	57	---	---	---	---	---	-------------	----		
Short Creek-----	0-8	30-35	0.2-0.6	0.18-0.20	6.6-7.3	<2	Moderate-----	0.24	5	7
	8-23	40-50	0.06-0.2	0.08-0.10	6.6-7.3	<2	Moderate-----	0.15		
	23-60	30-40	0.2-0.6	0.05-0.07	7.9-9.0	<2	Moderate-----	0.10		
Toeja-----------	0-13	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low----------	0.37	4	5
	13-31	20-35	0.2-0.6	0.16-0.19	6.6-7.3	<2	Moderate-----	0.28		
	31-48	10-15	2.0-6.0	0.13-0.15	7.4-9.0	<2	Low----------	0.24		
	48	---	---	---	---	---	-------------	----		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
TA*:										
Taylor Creek----	0-15	15-20	0.6-2.0	0.19-0.21	6.1-7.3	<2	Low----------	0.37	5	5
	15-40	60-65	<0.06	0.15-0.17	6.6-7.3	<2	High---------	0.17		
	40-60	50-60	<0.2	0.14-0.16	7.9-8.4	<2	High---------	0.17		
Chen------------	0-8	15-25	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low----------	0.28	1	6
	8-17	40-55	<0.06	0.12-0.14	6.6-7.3	<2	Moderate-----	0.20		
	17	---	---	---	---	---	-------------	----		
Ramires---------	0-6	20-30	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low----------	0.17	3	6
	6-24	35-50	0.06-0.2	0.13-0.16	6.6-7.3	<2	High---------	0.28		
	24-30	15-25	2.0-6.0	0.11-0.15	7.9-8.4	2-4	Low----------	0.17		
	30	---	---	---	---	---	-------------	----		
TC*:										
Taylor Creek----	0-15	15-20	0.6-2.0	0.19-0.21	6.1-7.3	<2	Low----------	0.37	5	5
	15-40	60-65	<0.06	0.15-0.17	6.6-7.3	<2	High---------	0.17		
	40-60	50-60	<0.2	0.14-0.16	7.9-8.4	<2	High---------	0.17		
Singletree------	0-17	10-15	0.6-2.0	0.17-0.19	6.6-7.3	<2	Low----------	0.37	4	5
	17-32	25-35	0.2-0.6	0.14-0.19	6.6-7.3	<2	Moderate-----	0.32		
	32-49	15-25	2.0-6.0	0.09-0.14	6.6-9.0	<2	Low----------	0.28		
	49	---	---	---	---	---	-------------	----		
Torro-----------	0-13	10-15	2.0-6.0	0.10-0.13	6.6-7.3	<2	Low----------	0.28	5	7
	13-25	20-30	0.6-2.0	0.09-0.11	6.6-7.3	<2	Low----------	0.28		
	25-50	5-10	6.0-20	0.05-0.07	6.6-7.3	<2	Low----------	0.20		
TDA--------------	0-7	5-15	0.6-2.0	0.19-0.21	7.9-8.4	2-4	Low----------	0.55	1	6
Tenabo	7-18	28-35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate-----	0.37		
	18-26	---	---	---	---	---	-------------	----		
	26-40	5-10	2.0-20	0.03-0.07	>8.4	>4	Low----------	0.17		
TEC--------------	0-7	5-10	0.6-2.0	0.18-0.20	7.9-8.4	2-4	Low----------	0.49	1	7
Tenabo	7-18	28-35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate-----	0.37		
	18-26	---	---	---	---	---	-------------	----		
	26-40	5-10	2.0-20	0.03-0.07	>8.4	>4	Low----------	0.17		
TF*:										
Tenabo----------	0-7	5-10	0.6-2.0	0.17-0.20	7.9-8.4	2-4	Low----------	0.49	1	7
Extremely stony	7-18	28-35	0.2-0.6	0.15-0.18	7.9-9.0	2-4	Moderate-----	0.32		
loam	18-26	---	---	---	---	---	-------------	----		
	26-40	5-10	2.0-20	0.03-0.07	>8.4	>4	Low----------	0.17		
Tenabo----------	0-7	5-10	0.6-2.0	0.18-0.20	7.9-8.4	2-4	Low----------	0.49	1	7
Cobbly silt	7-18	28-35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate-----	0.37		
loam	18-26	---	---	---	---	---	-------------	----		
	26-40	5-10	2.0-20	0.03-0.07	>8.4	>4	Low----------	0.17		
TG*:										
Tenabo----------	0-7	5-10	0.6-2.0	0.18-0.20	7.9-8.4	2-4	Low----------	0.49	1	7
	7-18	28-35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate-----	0.37		
	18-26	---	---	---	---	---	-------------	----		
	26-40	5-10	2.0-20	0.03-0.07	>8.4	>4	Low----------	0.17		
Brock-----------	0-5	10-15	0.6-2.0	0.13-0.15	7.4-8.4	<2	Low----------	0.32	1	6
	5-14	18-30	0.2-0.6	0.11-0.13	7.9-9.0	<4	Low----------	0.24		
	14	---	---	---	---	---	-------------	----		
Whirlo----------	0-12	5-10	0.6-2.0	0.17-0.19	7.4-8.4	2-4	Low----------	0.43	5	7
	12-24	5-10	2.0-6.0	0.07-0.09	7.9-9.0	2-8	Low----------	0.28		
	24-60	0-10	2.0-6.0	0.05-0.07	7.9-9.0	4-16	Low----------	0.24		
TH*:										
Tenabo----------	0-7	5-10	0.6-2.0	0.17-0.20	7.9-8.4	2-4	Low----------	0.49	1	7
	7-18	28-35	0.2-0.6	0.15-0.18	7.9-9.0	2-4	Moderate-----	0.32		
	18-26	---	---	---	---	---	-------------	----		
	26-40	5-10	2.0-20	0.03-0.07	>8.4	>4	Low----------	0.17		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
TH*:										
Rubble land.										
TL*:										
Toeja-----------	0-13	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low-----------	0.37	4	5
15 to 30	13-31	20-35	0.2-0.6	0.16-0.19	6.6-7.3	<2	Moderate------	0.28		
percent slopes	31-48	10-15	2.0-6.0	0.13-0.15	7.4-9.0	<2	Low-----------	0.24		
	48	---	---	---	---	---	-------------	----		
Toeja-----------	0-13	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low-----------	0.37	4	5
4 to 15 percent	13-31	20-35	0.2-0.6	0.16-0.19	6.6-7.3	<2	Moderate------	0.28		
slopes	31-48	10-15	2.0-6.0	0.13-0.15	7.4-9.0	<2	Low-----------	0.24		
	48	---	---	---	---	---	-------------	----		
Puett-----------	0-18	5-10	2.0-6.0	0.13-0.15	7.9-9.0	<2	Low-----------	0.28	1	3
	18	---	---	---	---	---	-------------	----		
TM*:										
Toeja-----------	0-13	15-25	0.6-2.0	0.17-0.20	6.6-7.3	<2	Low-----------	0.37	4	5
	13-31	20-35	0.2-0.6	0.16-0.19	6.6-7.3	<2	Moderate------	0.28		
	31-48	10-15	2.0-6.0	0.13-0.15	7.4-9.0	<2	Low-----------	0.24		
	48	---	---	---	---	---	-------------	----		
Ucopia----------	0-5	2-10	6.0-20	0.08-0.11	6.6-7.3	<2	Low-----------	0.17	4	2
	5-50	5-15	2.0-6.0	0.11-0.14	6.6-7.3	<2	Low-----------	0.24		
	50	---	---	---	---	---	-------------	----		
Ucopia----------	0-5	5-10	2.0-6.0	0.08-0.11	6.6-7.3	<2	Low-----------	0.20	4	4
Eroded	5-50	5-15	2.0-6.0	0.11-0.14	6.6-7.3	<2	Low-----------	0.24		
	50	---	---	---	---	---	-------------	----		
TN*:										
Tomera----------	0-9	5-10	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low-----------	0.49	5	6
	9-39	40-60	0.06-0.2	0.13-0.16	7.4-9.0	2-8	High----------	0.28		
	39-60	2-8	2.0-20	0.05-0.07	>8.4	4-16	Low-----------	0.17		
Cherry Spring---	0-15	10-15	0.6-2.0	0.19-0.21	6.6-7.8	<2	Low-----------	0.55	2	6
	15-36	20-30	0.2-0.6	0.17-0.19	7.4-8.4	<2	Low-----------	0.49		
	36-54	---	---	---	---	---	-------------	----		
TO*:										
Torro-----------	0-13	10-15	2.0-6.0	0.10-0.13	6.6-7.3	<2	Low-----------	0.28	5	7
	13-25	20-30	0.6-2.0	0.09-0.11	6.6-7.3	<2	Low-----------	0.28		
	25-50	5-10	6.0-20	0.05-0.07	6.6-7.3	<2	Low-----------	0.20		
Jack Creek------	0-15	5-10	6.0-20	0.05-0.07	6.1-7.3	<2	Low-----------	0.10	4	5
	15-60	5-10	6.0-20	0.05-0.07	6.1-7.3	<2	Low-----------	0.10		
TR*:										
Torro-----------	0-13	10-15	2.0-6.0	0.10-0.13	6.6-7.3	<2	Low-----------	0.28	5	7
	13-25	20-30	0.6-2.0	0.09-0.11	6.6-7.3	<2	Low-----------	0.28		
	25-50	5-10	6.0-20	0.05-0.07	6.6-7.3	<2	Low-----------	0.20		
Tusel-----------	0-17	10-20	0.6-2.0	0.13-0.15	6.1-7.3	<2	Low-----------	0.24	4	6
	17-50	25-35	0.2-0.6	0.08-0.11	6.1-7.3	<2	Moderate------	0.20		
TS*:										
Torro-----------	0-13	10-15	2.0-6.0	0.10-0.13	6.6-7.3	<2	Low-----------	0.28	5	7
	13-25	20-30	0.6-2.0	0.09-0.11	6.6-7.3	<2	Low-----------	0.28		
	25-50	5-10	6.0-20	0.05-0.07	6.6-7.3	<2	Low-----------	0.20		
Tusel-----------	0-17	10-20	0.6-2.0	0.13-0.15	6.1-7.3	<2	Low-----------	0.24	4	6
	17-50	25-35	0.2-0.6	0.08-0.11	6.1-7.3	<2	Moderate------	0.20		
Badland.										

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
TT*:										
Torro------------	0-13	10-15	2.0-6.0	0.10-0.13	6.6-7.3	<2	Low-----------	0.28	5	7
	13-25	20-30	0.6-2.0	0.09-0.11	6.6-7.3	<2	Low-----------	0.28		
	25-50	5-10	6.0-20	0.05-0.07	6.6-7.3	<2	Low-----------	0.20		
Tusel------------	0-17	10-20	0.6-2.0	0.13-0.15	6.1-7.3	<2	Low-----------	0.24	4	6
	17-50	25-35	0.2-0.6	0.08-0.11	6.1-7.3	<2	Moderate-----	0.20		
Packer-----------	0-6	10-20	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low-----------	0.28	3	8
	6-13	20-30	0.6-2.0	0.07-0.08	6.6-7.3	<2	Low-----------	0.17		
	13-50	10-15	2.0-6.0	0.05-0.07	6.6-7.3	<2	Low-----------	0.15		
TU*:										
Triplen----------	0-8	5-15	0.6-2.0	0.18-0.20	6.6-7.3	<2	Low-----------	0.49	5	6
	8-60	5-15	2.0-6.0	0.08-0.11	7.9-9.0	2-8	Low-----------	0.24		
Tenabo-----------	0-2	5-15	0.6-2.0	0.19-0.21	7.9-8.4	2-4	Low-----------	0.55	1	6
	2-12	28-35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate-----	0.37		
	12-17	---	---	---	---	---	-------------	----		
	17-40	5-10	2.0-20	0.03-0.07	>8.4	>4	Low-----------	0.17		
TV*:										
Tusel------------	0-17	10-20	0.6-2.0	0.13-0.15	6.1-7.3	<2	Low-----------	0.24	4	6
	17-50	25-35	0.2-0.6	0.08-0.11	6.1-7.3	<2	Moderate-----	0.20		
Hapgood----------	0-13	15-20	0.6-2.0	0.19-0.21	6.1-7.3	<2	Low-----------	0.32	3	6
	13-50	10-15	0.6-2.0	0.07-0.09	6.1-7.3	<2	Low-----------	0.17		
	50	---	---	---	---	---	-------------	----		
Packer-----------	0-13	10-20	0.6-2.0	0.13-0.15	6.6-7.3	<2	Low-----------	0.28	3	8
	13-27	20-30	0.6-2.0	0.07-0.08	6.6-7.3	<2	Low-----------	0.17		
	27-50	10-15	2.0-6.0	0.05-0.07	6.6-7.3	<2	Low-----------	0.15		
UHE*, UHF*:										
Ucopia----------- 15 to 30 percent slopes	0-5	2-10	6.0-20	0.08-0.11	6.6-7.3	<2	Low-----------	0.17	4	2
	5-50	5-15	2.0-6.0	0.11-0.14	6.6-7.3	<2	Low-----------	0.24		
	50	---	---	---	---	---	-------------	----		
Ucopia----------- 30 to 50 percent slopes	0-5	5-10	2.0-6.0	0.08-0.11	6.6-7.3	<2	Low-----------	0.20	4	4
	5-50	5-15	2.0-6.0	0.11-0.14	6.6-7.3	<2	Low-----------	0.24		
	50	---	---	---	---	---	-------------	----		
Humdun-----------	0-8	10-15	0.6-2.0	0.19-0.21	6.6-7.3	<2	Low-----------	0.49	5	6
	8-30	10-15	0.6-2.0	0.17-0.20	6.6-8.4	<2	Low-----------	0.49		
	30-60	10-15	0.6-2.0	0.17-0.20	7.9-9.0	2-4	Low-----------	0.49		
UKF-------------- Urtah	0-4	10-15	0.6-2.0	0.13-0.15	7.9-8.4	<2	Low-----------	0.28	2	6
	4-16	10-15	2.0-6.0	0.07-0.09	7.9-8.4	<2	Low-----------	0.20		
	16-36	20-25	0.6-2.0	0.06-0.08	7.9-8.4	<2	Low-----------	0.17		
	36	---	---	---	---	---	-------------	----		
Wc--------------- Welch	0-5	15-20	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low-----------	0.32	5	8
	5-60	25-35	0.2-0.6	0.16-0.21	6.1-7.3	<2	Moderate-----	0.28		
Wd--------------- Welch	0-7	10-15	0.6-2.0	0.16-0.20	6.1-7.3	<2	Low-----------	0.32	5	6
	7-60	25-35	0.2-0.6	0.18-0.20	6.1-7.3	<2	Moderate-----	0.28		
WE*:										
Welch------------	0-7	10-15	0.6-2.0	0.16-0.20	6.1-7.3	<2	Low-----------	0.32	5	6
	7-60	25-35	0.2-0.6	0.18-0.20	6.1-7.3	<2	Moderate-----	0.28		
Bosco------------	0-15	8-15	2.0-6.0	0.10-0.12	6.1-6.5	<2	Low-----------	0.24	5	7
	15-46	8-15	2.0-6.0	0.09-0.11	6.6-7.3	<2	Low-----------	0.20		
	46-70	0-5	>20	0.03-0.05	6.6-7.3	<2	Low-----------	0.10		
WGB-------------- Whirlo	0-12	5-10	0.6-2.0	0.17-0.19	7.4-8.4	2-4	Low-----------	0.43	5	7
	12-24	5-10	2.0-6.0	0.07-0.09	7.9-9.0	2-8	Low-----------	0.28		
	24-60	0-10	2.0-6.0	0.05-0.07	7.9-9.0	4-16	Low-----------	0.24		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group
	In	Pct	In/hr	In/in	pH	Mmhos/cm				
WH*:										
Whirlo----------	0-13	5-10	2.0-6.0	0.07-0.11	6.6-8.4	<4	Low----------	0.32	5	4
	13-60	5-10	2.0-6.0	0.05-0.07	7.9-9.0	2-8	Low----------	0.24		
Tenabo----------	0-7	5-10	0.6-2.0	0.18-0.20	7.9-8.4	2-4	Low----------	0.49	1	7
	7-18	28-35	0.2-0.6	0.19-0.21	7.9-9.0	2-4	Moderate-----	0.37		
	18-26	---	---	---	---	---	-------------	----		
	26-40	5-10	2.0-20	0.03-0.07	>8.4	>4	Low----------	0.17		
WlA, WlB--------- Wholan	0-6	5-15	0.6-2.0	0.16-0.19	7.9-9.0	2-4	Low----------	0.55	5	6
	6-60	5-15	0.6-2.0	0.16-0.19	>7.9	4-16	Low----------	0.55		
WmA-------------- Wholan	0-6	5-15	0.6-2.0	0.16-0.19	7.9-9.0	<4	Low----------	0.55	5	4L
	6-45	5-15	0.6-2.0	0.16-0.19	7.9-9.0	4-16	Low----------	0.55		
	45-60	2-10	2.0-6.0	0.05-0.07	7.9-9.0	8-16	Low----------	0.24		
WnA-------------- Wholan	0-6	5-15	0.6-2.0	0.16-0.19	7.9-9.0	4-8	Low----------	0.55	5	6
	6-60	5-15	0.6-2.0	0.16-0.19	>7.9	4-16	Low----------	0.55		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--WATER FEATURES

[See text for definitions of "flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
ALF----- Alley	B	None	---	---	>6.0	---	---
AN*:							
Alley	B	None	---	---	>6.0	---	---
Brock	D	None	---	---	>6.0	---	---
AR*:							
Alley	B	None	---	---	>6.0	---	---
Rock outcrop.							
Rubble land.							
Au*. Alluvial land							
BaA----- Beowawe	C	None	---	---	>6.0	---	---
BB*:							
Beowawe	C	None	---	---	>6.0	---	---
Broyles	B	None	---	---	>6.0	---	---
BC----- Beowawe variant	D	None	---	---	>6.0	---	---
BD*:							
Berning	C	None	---	---	>6.0	---	---
Short Creek	C	None	---	---	>6.0	---	---
BE*:							
Berning	C	None	---	---	>6.0	---	---
Toeja	C	None	---	---	>6.0	---	---
Bf----- Bicondoa	C	Occasional	Brief	Feb-Jun	3.5-6.0	Apparent	Jan-Jun
Bg----- Bicondoa	D	Occasional	Brief	Feb-May	0-1.5	Apparent	Dec-Jul
BHD----- Bobs	D	None	---	---	>6.0	---	---
Bk----- Bosco	B	None	---	---	>6.0	---	---
BL*:							
Bosco	B	None	---	---	>6.0	---	---
Welch	C	Frequent	Brief	Mar-May	4.0-6.0	Apparent	Feb-May
BM*:							
Boulflat	C	None	---	---	>6.0	---	---
Havingdon	C	None	---	---	>6.0	---	---
Brock	D	None	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
BN*:							
Old Camp variant	D	None	---	---	>6.0	---	---
Boulflat	C	None	---	---	>6.0	---	---
Humdun	B	None	---	---	>6.0	---	---
BO*:							
Brock	D	None	---	---	>6.0	---	---
Boulflat	C	None	---	---	>6.0	---	---
Rad	B	None	---	---	>6.0	---	---
BpA, BPB: Broyles	B	None	---	---	>6.0	---	---
BQE, BRF: Bucan	C	None	---	---	>6.0	---	---
BS*, BT*:							
Bucan, Loam, stony loam	C	None	---	---	>6.0	---	---
Bucan, Gravelly loam, extremely stony loam	C	None	---	---	>6.0	---	---
BU*:							
Bucan	C	None	---	---	>6.0	---	---
Clurde	B	None	---	---	>6.0	---	---
Orovada	B	None	---	---	>6.0	---	---
BV*:							
Bucan	C	None	---	---	>6.0	---	---
Creva	D	None	---	---	>6.0	---	---
Brock	D	None	---	---	>6.0	---	---
BW*:							
Bucan	C	None	---	---	>6.0	---	---
Glean	B	None	---	---	>6.0	---	---
Rock outcrop.							
BX*:							
Bucan, Stony	C	None	---	---	>6.0	---	---
Bucan, Extremely stony	C	None	---	---	>6.0	---	---
Humdun	B	None	---	---	>6.0	---	---
BY*:							
Bucan	C	None	---	---	>6.0	---	---
Humdun	B	None	---	---	>6.0	---	---
Brock	D	None	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
BZ*:							
Bucan	C	None	---	---	>6.0	---	---
Humdun	B	None	---	---	>6.0	---	---
Rock outcrop.							
BZm*:							
Bucan	C	None	---	---	>6.0	---	---
Malpais	B	None	---	---	>6.0	---	---
BZs*:							
Bucan	C	None	---	---	>6.0	---	---
Singletree	C	None	---	---	>6.0	---	---
BZt*:							
Bucan Stony	C	None	---	---	>6.0	---	---
Bucan Extremely stony	C	None	---	---	>6.0	---	---
Toeja	C	None	---	---	>6.0	---	---
BZu*:							
Bunky	C	None	---	---	>6.0	---	---
Clurde	B	None	---	---	>6.0	---	---
Short Creek	C	None	---	---	>6.0	---	---
CAD Carstump	C	None	---	---	>6.0	---	---
CBE Chen	D	None	---	---	>6.0	---	---
CC*:							
Chen	D	None	---	---	>6.0	---	---
Pie Creek	D	None	---	---	>6.0	---	---
Ramires	D	None	---	---	>6.0	---	---
CD*:							
Chen	D	None	---	---	>6.0	---	---
Pie Creek	D	None	---	---	>6.0	---	---
Taylor Creek	C	None	---	---	>6.0	---	---
CEE*, CEF*:							
Chen	D	None	---	---	>6.0	---	---
Taylor Creek	C	None	---	---	>6.0	---	---
Mosquet	D	None	---	---	>6.0	---	---
CF*:							
Cherry Spring	C	None	---	---	>6.0	---	---
Berning	C	None	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
CG*:							
Cherry Spring	C	None	---	---	>6.0	---	---
Cortez	D	None	---	---	>6.0	---	---
Chiara	D	None	---	---	>6.0	---	---
CH*:							
Cherry Spring	C	None	---	---	>6.0	---	---
Cortez	D	None	---	---	>6.0	---	---
Tomera	D	None	---	---	>6.0	---	---
CK*:							
Cherry Spring	C	None	---	---	>6.0	---	---
Orovada	B	None	---	---	>6.0	---	---
CL*:							
Chiara, Very stony	D	None	---	---	>6.0	---	---
Chiara, Extremely stony	D	None	---	---	>6.0	---	---
Brock	D	None	---	---	>6.0	---	---
CM*:							
Chiara	D	None	---	---	>6.0	---	---
Cherry Spring	C	None	---	---	>6.0	---	---
Cortez	D	None	---	---	>6.0	---	---
CN Cluro	B	None	---	---	4.0-6.0	Apparent	Feb-Jun
Co, Cp Cluro	B	None	---	---	>6.0	---	---
Cr Cluro	B	None	---	---	4.0-6.0	Apparent	Feb-Jun
CS*:							
Coff	C	None	---	---	>6.0	---	---
Denay	B	None	---	---	>6.0	---	---
Ct Coit	D	Occasional	Brief	Feb-May	1.5-2.0	Apparent	Mar-Jun
Cu*:							
Coit	D	Occasional	Brief	Feb-May	1.5-2.0	Apparent	Mar-Jun
Griver	D	Frequent	Long	Feb-May	2.0-2.5	Apparent	Feb-Jun
CV*:							
Creva	D	None	---	---	>6.0	---	---
Chen	D	None	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
CW2*:							
Creva	D	None	---	---	>6.0	---	---
Ramires	D	None	---	---	>6.0	---	---
Cx Crooked Creek	D	Occasional	Brief	Mar-Jun	1.0-1.5	Apparent	Jan-Jul
CY Crooked Creek	C	Occasional	Brief	Mar-Jun	3.5-5.0	Apparent	Jan-Dec
DM*:							
Donna	D	None	---	---	>6.0	---	---
Simon	C	None	---	---	>6.0	---	---
DN*:							
Donna	D	None	---	---	>6.0	---	---
Stampede	D	None	---	---	>6.0	---	---
Short Creek	C	None	---	---	>6.0	---	---
Do, Dp Dunphy	B	None	---	---	>6.0	---	---
Dr, Ds Dunphy	C	Rare	---	---	2.5-3.5	Apparent	Mar-Jun
FB*:							
Ferdelford 15 to 30 percent slopes	C	None	---	---	>6.0	---	---
Ferdelford 30 to 50 percent slopes	C	None	---	---	>6.0	---	---
Bucan	C	None	---	---	>6.0	---	---
FD*:							
Ferdelford	C	None	---	---	>6.0	---	---
Puett	D	None	---	---	>6.0	---	---
Berning	C	None	---	---	>6.0	---	---
FE*:							
Ferdelford	C	None	---	---	>6.0	---	---
Puett	D	None	---	---	>6.0	---	---
Susie Creek	C	None	---	---	>6.0	---	---
FF*:							
Ferdelford	C	None	---	---	>6.0	---	---
Ramires	D	None	---	---	>6.0	---	---
FH*:							
Ferdelford	C	None	---	---	>6.0	---	---
Susie Creek	C	None	---	---	>6.0	---	---
Toeja	C	None	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
Fk----------------------- Four Star	D	Occasional------	Brief---------	Feb-Jun	1.5-2.0	Apparent	Dec-Jun
Fm----------------------- Four Star	B	Occasional------	Brief---------	Feb-May	>6.0	---	---
Fn*:							
Four Star--------------	D	Occasional------	Brief---------	Feb-Jun	1.5-2.0	Apparent	Dec-Jun
Bosco------------------	B	None------------	---	---	>6.0	---	---
Fo*:							
Four Star--------------	B	Occasional------	Brief---------	Feb-May	>6.0	---	---
Bosco------------------	B	None------------	---	---	>6.0	---	---
Ge, Gg------------------ Geysen	C	None------------	---	---	>6.0	---	---
GH*:							
Glean------------------	B	None------------	---	---	>6.0	---	---
Rock outcrop.							
Rubble land.							
Gk----------------------- Griver	D	Frequent--------	Long----------	Feb-May	2.0-2.5	Apparent	Feb-Jun
Gm----------------------- Griver	C	Frequent--------	Long----------	Feb-May	5.0-6.0	Apparent	Feb-Jun
Gn----------------------- Griver	D	Frequent--------	Long----------	Feb-May	2.0-3.0	Apparent	Feb-Jun
Go----------------------- Griver	D	Frequent--------	Long----------	Feb-Jun	1.0-2.0	Apparent	Feb-Aug
Gr*:							
Griver-----------------	D	Frequent--------	Long----------	Feb-May	2.0-2.5	Apparent	Feb-Jun
Griver----------------- Wet	D	Frequent--------	Long----------	Feb-Jun	1.0-2.0	Apparent	Feb-Aug
Gx*:							
Griver-----------------	D	Frequent--------	Long----------	Feb-May	2.0-2.5	Apparent	Feb-Jun
Alluvial land.							
HG*:							
Hapgood---------------- Very gravelly loam	B	None------------	---	---	>6.0	---	---
Hapgood---------------- Silt loam	B	None------------	---	---	>6.0	---	---
Packer-----------------	B	None------------	---	---	>6.0	---	---
Hh, Hk, Hm-------------- Humboldt	D	Common----------	Brief to long	Feb-Jun	0.5-2.0	Apparent	Dec-Jun
Hn*:							
Humboldt--------------- Slightly saline	D	Common----------	Brief to long	Feb-Jun	0.5-2.0	Apparent	Dec-Jun
Humboldt--------------- Strongly saline	D	Common----------	Brief to long	Feb-Jun	0.5-2.0	Apparent	Dec-Jun

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
HO*:							
Humdun	B	None	---	---	>6.0	---	---
Bucan	C	None	---	---	>6.0	---	---
Havingdon	C	None	---	---	>6.0	---	---
Hr Hussa	D	Frequent	Long	Mar-Jun	0-1.0	Apparent	Feb-Jun
Hs Hussa	C	Occasional	Brief	Mar-Jun	3.0-4.0	Apparent	Feb-Jun
Ht Hussa	D	Occasional	Brief	Mar-Jun	0.5-1.5	Apparent	Feb-Jun
Ib, Is Iron Blossom	C	None	---	---	>6.0	---	---
KAD Kawich	A	None	---	---	>6.0	---	---
MA*:							
Malpais	B	None	---	---	>6.0	---	---
Rock outcrop.							
Rubble land.							
Mc*:							
Marsh.							
Crooked Creek	D	Occasional	Brief	Mar-Jun	1.0-1.5	Apparent	Jan-Jul
ME*:							
Mascamp	D	None	---	---	>6.0	---	---
Carstump	C	None	---	---	>6.0	---	---
Mf McConnel	B	None	---	---	>6.0	---	---
Mh*:							
McConnel	B	None	---	---	>6.0	---	---
Blackhawk	D	None	---	---	>6.0	---	---
Mo*:							
McConnel	B	None	---	---	>6.0	---	---
Ocala	C	Occasional	Long	Mar-Jun	3.0-3.5	Apparent	Feb-Jun
Mr Midas	B	None	---	---	>6.0	---	---
Ms*:							
Midas Deep	B	None	---	---	>6.0	---	---
Midas	B	None	---	---	>6.0	---	---
Oc Ocala	C	Occasional	Long	Mar-Jun	3.0-3.5	Apparent	Feb-Jun

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
Od: Ocala	C	Rare	---	---	3.5-5.0	Apparent	Feb-May
Og: Ocala	C	Occasional	Long	Mar-Jun	3.0-3.5	Apparent	Feb-Jun
Oh: Ocala	C	Rare	---	---	3.5-5.0	Apparent	Feb-May
Ok: Ocala	C	Occasional	Long	Mar-Jun	3.0-3.5	Apparent	Feb-Jun
Om*:							
Ocala, Slightly saline	C	Occasional	Long	Mar-Jun	3.0-3.5	Apparent	Feb-Jun
Ocala, Strongly saline	C	Occasional	Long	Mar-Jun	3.0-3.5	Apparent	Feb-Jun
OP*:							
Ocala	C	Occasional	Long	Mar-Jun	3.0-3.5	Apparent	Feb-Jun
Ocala, Drained	C	Rare	---	---	3.5-5.0	Apparent	Feb-May
Playa.							
ORC, OSB, OtA: Orovada	B	None	---	---	>6.0	---	---
OU*:							
Orovada	B	None	---	---	>6.0	---	---
Humdun	B	None	---	---	>6.0	---	---
Puett	D	None	---	---	>6.0	---	---
OV*:							
Orovada	B	None	---	---	>6.0	---	---
Puett	D	None	---	---	>6.0	---	---
OW*:							
Orovada	B	None	---	---	>6.0	---	---
Puett	D	None	---	---	>6.0	---	---
Ferdelford	C	None	---	---	>6.0	---	---
PC*:							
Pie Creek	D	None	---	---	>6.0	---	---
Susie Creek	C	None	---	---	>6.0	---	---
Toeja	C	None	---	---	>6.0	---	---
Pk: Pocker	D	None	---	---	5.0-6.0	Apparent	Mar-Jul
PM*:							
Primeaux	C	None	---	---	>6.0	---	---
Packer	B	None	---	---	>6.0	---	---
Tusel	B	None	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months
					Ft		
PS*:							
Puett	D	None	---	---	>6.0	---	---
Orovada	B	None	---	---	>6.0	---	---
RaA, RaB, RAC, RbB	B	None	---	---	>6.0	---	---
Rad							
RC*:							
Rad	B	None	---	---	>6.0	---	---
Slightly alkali							
Rad	B	None	---	---	>6.0	---	---
Rd*:							
Rad	B	None	---	---	>6.0	---	---
Blackhawk	D	None	---	---	>6.0	---	---
RE*:							
Rad	B	None	---	---	>6.0	---	---
Brock	D	None	---	---	>6.0	---	---
RF*:							
Ramires	D	None	---	---	>6.0	---	---
Chen	D	None	---	---	>6.0	---	---
Bobs	D	None	---	---	>6.0	---	---
RG*:							
Ramires	D	None	---	---	>6.0	---	---
Chen	D	None	---	---	>6.0	---	---
Pie Creek	D	None	---	---	>6.0	---	---
RH*, RH2*, RK*:							
Ramires	D	None	---	---	>6.0	---	---
Creva	D	None	---	---	>6.0	---	---
RL*:							
Ramires	D	None	---	---	>6.0	---	---
Singletree	C	None	---	---	>6.0	---	---
RM*:							
Ramires	D	None	---	---	>6.0	---	---
Taylor Creek	C	None	---	---	>6.0	---	---
Rn	C	Rare	---	---	4.0-6.0	Apparent	Feb-Jul
Rixie							
Ro, Rr	C	Occasional	Brief to long	Feb-Jun	2.0-4.0	Apparent	Feb-Jul
Rixie							
Rs	C	Frequent	Brief to long	Feb-Jun	1.5-3.0	Apparent	Dec-Jul
Rose Creek							
Rt	B	Rare	---	---	4.0-6.0	Apparent	Feb-Jul
Rose Creek							

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
Ru: Rosney	B	None	---	---	>6.0	---	---
SA*:							
Short Creek, 30 to 50 percent slopes	C	None	---	---	>6.0	---	---
Short Creek, 50 to 75 percent slopes	C	None	---	---	>6.0	---	---
SBB: Simon	C	None	---	---	>6.0	---	---
SC*:							
Simon	C	None	---	---	>6.0	---	---
Bosco	B	None	---	---	>6.0	---	---
SD*:							
Slaven, 15 to 30 percent slopes	C	None	---	---	>6.0	---	---
Slaven, 30 to 50 percent slopes	C	None	---	---	>6.0	---	---
Mascamp	D	None	---	---	>6.0	---	---
SE*:							
Slaven	C	None	---	---	>6.0	---	---
Primeaux	C	None	---	---	>6.0	---	---
SF*:							
Slaven	C	None	---	---	>6.0	---	---
Ramires	D	None	---	---	>6.0	---	---
SG*:							
Slaven	C	None	---	---	>6.0	---	---
Toeja	C	None	---	---	>6.0	---	---
SH*:							
Slaven	C	None	---	---	>6.0	---	---
Torro	B	None	---	---	>6.0	---	---
Tusel	B	None	---	---	>6.0	---	---
SR*:							
Stampede	D	None	---	---	>6.0	---	---
Donna	D	None	---	---	>6.0	---	---
SS*:							
Stampede	D	None	---	---	>6.0	---	---
Donna	D	None	---	---	>6.0	---	---
Short Creek	C	None	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months
					Ft		
ST*:							
Stampede	D	None	---	---	>6.0	---	---
Short Creek	C	None	---	---	>6.0	---	---
SU*:							
Susie Creek	C	None	---	---	>6.0	---	---
Pattani	D	None	---	---	>6.0	---	---
SV*:							
Susie Creek	C	None	---	---	>6.0	---	---
Pie Creek	D	None	---	---	>6.0	---	---
Pattani	D	None	---	---	>6.0	---	---
SW*:							
Susie Creek	C	None	---	---	>6.0	---	---
Short Creek	C	None	---	---	>6.0	---	---
Toeja	C	None	---	---	>6.0	---	---
TA*:							
Taylor Creek	C	None	---	---	>6.0	---	---
Chen	D	None	---	---	>6.0	---	---
Ramires	D	None	---	---	>6.0	---	---
TC*:							
Taylor Creek	C	None	---	---	>6.0	---	---
Singletree	C	None	---	---	>6.0	---	---
Torro	B	None	---	---	>6.0	---	---
TDA, TEC Tenabo	D	None	---	---	>6.0	---	---
TF*:							
Tenabo Extremely stony loam	D	None	---	---	>6.0	---	---
Tenabo Cobbly silt loam	D	None	---	---	>6.0	---	---
TG*:							
Tenabo	D	None	---	---	>6.0	---	---
Brock	D	None	---	---	>6.0	---	---
Whirlo	B	None	---	---	>6.0	---	---
TH*:							
Tenabo	D	None	---	---	>6.0	---	---
Rubble land.							
TL*:							
Toeja 15 to 30 percent slopes	C	None	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
TL*:							
Toeja------------------ 4 to 15 percent slopes	C	None------------	---	---	>6.0	---	---
Puett------------------	D	None------------	---	---	>6.0	---	---
TM*:							
Toeja------------------	C	None------------	---	---	>6.0	---	---
Ucopia-----------------	B	None------------	---	---	>6.0	---	---
Ucopia----------------- Eroded	B	None------------	---	---	>6.0	---	---
TN*:							
Tomera-----------------	D	None------------	---	---	>6.0	---	---
Cherry Spring----------	C	None------------	---	---	>6.0	---	---
TO*:							
Torro------------------	B	None------------	---	---	>6.0	---	---
Jack Creek-------------	A	None------------	---	---	>6.0	---	---
TR*:							
Torro------------------	B	None------------	---	---	>6.0	---	---
Tusel------------------	B	None------------	---	---	>6.0	---	---
TS*:							
Torro------------------	B	None------------	---	---	>6.0	---	---
Tusel------------------	B	None------------	---	---	>6.0	---	---
Badland.							
TT*:							
Torro------------------	B	None------------	---	---	>6.0	---	---
Tusel------------------	B	None------------	---	---	>6.0	---	---
Packer-----------------	B	None------------	---	---	>6.0	---	---
TU*:							
Triplen----------------	B	None------------	---	---	>6.0	---	---
Tenabo-----------------	D	None------------	---	---	>6.0	---	---
TV*:							
Tusel------------------	B	None------------	---	---	>6.0	---	---
Hapgood----------------	B	None------------	---	---	>6.0	---	---
Packer-----------------	B	None------------	---	---	>6.0	---	---
UHE*, UHF*:							
Ucopia----------------- 15 to 30 percent slopes	B	None------------	---	---	>6.0	---	---
Ucopia----------------- 30 to 50 percent slopes	B	None------------	---	---	>6.0	---	---
Humdun-----------------	B	None------------	---	---	>6.0	---	---

See footnote at end of table.

TABLE 16.--WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
UKF Urtah	C	None	---	---	>6.0	---	---
Wc Welch	D	Frequent	Brief	Mar-Jun	1.0-1.5	Apparent	Nov-Jun
Wd Welch	C	Frequent	Brief	Mar-May	4.0-6.0	Apparent	Feb-May
WE*:							
Welch	C	Frequent	Brief	Mar-May	4.0-6.0	Apparent	Feb-May
Bosco	B	None	---	---	>6.0	---	---
WGB Whirlo	B	None	---	---	>6.0	---	---
WH*:							
Whirlo	B	None	---	---	>6.0	---	---
Tenabo	D	None	---	---	>6.0	---	---
WlA, WlB Wholan	B	Rare	---	---	>6.0	---	---
WmA Wholan	B	Rare	---	---	>6.0	---	---
WnA Wholan	B	Rare	---	---	>6.0	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL FEATURES

[The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
ALF------------------- Alley	>60	---	---	---	Moderate-------	High-----------	Moderate.
AN*:							
Alley-----------------	>60	---	---	---	Moderate-------	High-----------	Moderate.
Brock-----------------	>60	---	8-20	Rippable	Moderate-------	High-----------	Low.
AR*:							
Alley-----------------	>60	---	---	---	Moderate-------	High-----------	Moderate.
Rock outcrop.							
Rubble land.							
Au*. Alluvial land							
BaA------------------- Beowawe	>60	---	---	---	Moderate-------	High-----------	High.
BB*:							
Beowawe---------------	>60	---	---	---	Moderate-------	High-----------	High.
Broyles---------------	>60	---	---	---	Moderate-------	High-----------	Moderate.
BC-------------------- Beowawe variant	>60	---	---	---	Low------------	High-----------	High.
BD*:							
Berning---------------	>60	---	---	---	Moderate-------	High-----------	Low.
Short Creek-----------	>60	---	---	---	Moderate-------	High-----------	Low.
BE*:							
Berning---------------	>60	---	---	---	Moderate-------	High-----------	Low.
Toeja-----------------	40-60	Rippable	---	---	Moderate-------	High-----------	Low.
Bf, Bg---------------- Bicondoa	>60	---	---	---	High-----------	High-----------	Low.
BHD------------------- Bobs	>60	---	10-20	Hard	Moderate-------	High-----------	---
Bk-------------------- Bosco	>60	---	---	---	Moderate-------	Low------------	Low.
BL*:							
Bosco-----------------	>60	---	---	---	Moderate-------	Low------------	Low.
Welch-----------------	>60	---	---	---	High-----------	High-----------	Low.
BM*:							
Boulflat--------------	22-40	Hard	20-34	Rippable	Moderate-------	High-----------	Low.
Havingdon-------------	20-26	Hard	---	---	Moderate-------	High-----------	Low.
Brock-----------------	>60	---	8-20	Rippable	Moderate-------	High-----------	Low.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
Bn*:							
Old Camp variant	8-15	Hard	---	---	Low	High	Low.
Boulflat	22-40	Hard	20-34	Rippable	Moderate	High	Low.
Humdun	>60	---	---	---	Moderate	High	Low.
BO*:							
Brock	>60	---	8-20	Rippable	Moderate	High	Low.
Boulflat	22-40	Hard	20-34	Rippable	Moderate	High	Low.
Rad	>60	---	---	---	Low	High	Moderate.
BpA, BPB	>60	---	---	---	Moderate	High	Moderate.
Broyles							
BQE, BRF	40-60	Hard	---	---	Moderate	High	Low.
Bucan							
BS*, BT*:							
Bucan	40-60	Hard	---	---	Moderate	High	Low.
Loam, stony loam							
Bucan	40-60	Hard	---	---	Moderate	High	Low.
Gravelly loam, extremely stony loam							
BU*:							
Bucan	40-60	Hard	---	---	Moderate	High	Low.
Clurde	>60	---	---	---	Moderate	---	---
Orovada	>60	---	---	---	Moderate	High	Moderate.
BV*:							
Bucan	40-60	Hard	---	---	Moderate	High	Low.
Creva	4-20	Hard	---	---	Moderate	Moderate	Low.
Brock	>60	---	8-20	Rippable	Moderate	High	Low.
BW*:							
Bucan	40-60	Hard	---	---	Moderate	High	Low.
Glean	40-60	Hard	---	---	Moderate	Moderate	Moderate.
Rock outcrop.							
BX*:							
Bucan	40-60	Hard	---	---	Moderate	High	Low.
Stony							
Bucan	40-60	Hard	---	---	Moderate	High	Low.
Extremely stony							
Humdun	>60	---	---	---	Moderate	High	Low.
BY*:							
Bucan	40-60	Hard	---	---	Moderate	High	Low.
Humdun	>60	---	---	---	Moderate	High	Low.
Brock	>60	---	8-20	Rippable	Moderate	High	Low.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
BZ*:							
Bucan	40-60	Hard	---	---	Moderate	High	Low.
Humdun	>60	---	---	---	Moderate	High	Low.
Rock outcrop.							
BZm*:							
Bucan	40-60	Hard	---	---	Moderate	High	Low.
Malpais	>60	---	---	---	Moderate	High	Moderate.
BZs*:							
Bucan	40-60	Hard	---	---	Moderate	High	Low.
Singletree	40-60	Rippable	---	---	Moderate	High	Moderate.
BZt*:							
Bucan Stony	40-60	Hard	---	---	Moderate	High	Low.
Bucan Extremely stony	40-60	Hard	---	---	Moderate	High	Low.
Toeja	40-60	Rippable	---	---	Moderate	High	Low.
BZu*:							
Bunky	>60	---	20-36	Rippable	Moderate	Moderate	Low.
Clurde	>60	---	---	---	Moderate	---	---
Short Creek	>60	---	---	---	Moderate	High	Low.
CAD Carstump	20-40	Hard	---	---	Moderate	---	Low.
CBE Chen	12-16	Hard	---	---	Moderate	Moderate	Low.
CC*:							
Chen	12-20	Hard	---	---	Moderate	Moderate	Low.
Pie Creek	24-40	Hard	---	---	Moderate	High	Low.
Ramires	24-40	Hard	---	---	Moderate	High	Moderate.
CD*:							
Chen	12-20	Hard	---	---	Moderate	Moderate	Low.
Pie Creek	24-40	Hard	---	---	Moderate	High	Low.
Taylor Creek	>60	---	---	---	Moderate	High	Low.
CEE*, CEF*:							
Chen	12-20	Hard	---	---	Moderate	Moderate	Low.
Taylor Creek	>60	---	---	---	Moderate	High	Low.
Mosquet	6-20	Hard	---	---	Moderate	Moderate	Low.
CF*:							
Cherry Spring	>60	---	20-40	Rippable	Moderate	---	Low.
Berning	>60	---	---	---	Moderate	High	Low.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
CG*:							
Cherry Spring	>60	---	20-40	Rippable	Moderate	---	Low.
Cortez	>60	---	22-36	Hard	Moderate	High	Moderate.
Chiara	>60	---	10-20	Hard	Moderate	High	Low.
CH*:							
Cherry Spring	>60	---	20-40	Rippable	Moderate	---	Low.
Cortez	>60	---	22-36	Hard	Moderate	High	Moderate.
Tomera	>60	---	---	---	Moderate	High	Moderate.
CK*:							
Cherry Spring	>60	---	20-40	Rippable	Moderate	---	Low.
Orovada	>60	---	---	---	Moderate	High	Moderate.
CL*:							
Chiara, Very stony	>60	---	10-20	Hard	Moderate	High	Low.
Chiara, Extremely stony	>60	---	10-20	Hard	Moderate	High	Low.
Brock	>60	---	8-20	Rippable	Moderate	High	Low.
CM*:							
Chiara	>60	---	10-20	Hard	Moderate	High	Low.
Cherry Spring	>60	---	20-40	Rippable	Moderate	---	Low.
Cortez	>60	---	22-36	Hard	Moderate	High	Moderate.
CN, Cluro	>60	---	---	---	High	High	Moderate.
Co, Cp, Cluro	>60	---	---	---	Moderate	High	Moderate.
Cr, Cluro	>60	---	---	---	High	High	Moderate.
Cs*:							
Coff	>60	---	24-36	Hard	Moderate	---	Low.
Denay	>60	---	---	---	Moderate	---	Low.
Ct, Coit	>60	---	---	---	High	High	Low.
Cu*:							
Coit	>60	---	---	---	High	High	Low.
Griver	>60	---	---	---	High	High	Moderate.
CV*:							
Creva	4-20	Hard	---	---	Moderate	Moderate	Low.
Chen	12-20	Hard	---	---	Moderate	Moderate	Low.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
CW2*:							
Creva	4-20	Hard	---	---	Moderate	Moderate	Low.
Ramires	24-40	Hard	---	---	Moderate	High	Moderate.
Cx, CY Crooked Creek	>60	---	---	---	High	High	Low.
DM*:							
Donna	>60	---	20-26	Hard	Moderate	High	Low.
Simon	>60	---	---	---	Moderate	Moderate	Low.
DN*:							
Donna	>60	---	20-26	Hard	Moderate	High	Low.
Stampede	>60	---	20-32	Hard	Moderate	High	Low.
Short Creek	>60	---	---	---	Moderate	High	Low.
Do, Dp Dunphy	>60	---	---	---	Low	High	High.
Dr, Ds Dunphy	>60	---	---	---	High	High	High.
FB*:							
Ferdelford 15 to 30 percent slopes	24-40	Rippable	---	---	Moderate	High	Moderate.
Ferdelford 30 to 50 percent slopes	24-40	Rippable	---	---	Moderate	High	Moderate.
Bucan	40-60	Hard	---	---	Moderate	High	Low.
FD*:							
Ferdelford	24-40	Rippable	---	---	Moderate	High	Moderate.
Puett	10-20	Rippable	---	---	Moderate	High	Low.
Berning	>60	---	---	---	Moderate	High	Low.
FE*:							
Ferdelford	24-40	Rippable	---	---	Moderate	High	Moderate.
Puett	10-20	Rippable	---	---	Moderate	High	Low.
Susie Creek	40-60	Rippable	---	---	Moderate	High	Low.
FF*:							
Ferdelford	24-40	Rippable	---	---	Moderate	High	Moderate.
Ramires	24-40	Hard	---	---	Moderate	High	Moderate.
FH*:							
Ferdelford	24-40	Rippable	---	---	Moderate	High	Moderate.
Susie Creek	40-60	Rippable	---	---	Moderate	High	Low.
Toeja	40-60	Rippable	---	---	Moderate	High	Low.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
Fk: Four Star	>60	---	---	---	High	High	Low.
Fm: Four Star	>60	---	---	---	Moderate	High	Low.
Fn*:							
Four Star	>60	---	---	---	High	High	Low.
Bosco	>60	---	---	---	Moderate	Low	Low.
Fo*:							
Four Star	>60	---	---	---	Moderate	High	Low.
Bosco	>60	---	---	---	Moderate	Low	Low.
Ge, Gg: Geysen	>60	---	---	---	Moderate	High	High.
GH*:							
Glean	40-60	Hard	---	---	Moderate	Moderate	Moderate.
Rock outcrop.							
Rubble land.							
Gk, Gm, Gn: Griver	>60	---	---	---	High	High	Moderate.
Go: Griver	>60	---	---	---	High	High	Low.
Gr*:							
Griver	>60	---	---	---	High	High	Moderate.
Griver Wet	>60	---	---	---	High	High	Low.
Gx*:							
Griver	>60	---	---	---	High	High	Moderate.
Alluvial land.							
HG*:							
Hapgood Very gravelly loam	40-60	Hard	---	---	Moderate	High	Low.
Hapgood Silt loam	40-60	Hard	---	---	Moderate	High	Low.
Packer	40-60	Hard	---	---	Moderate	High	Low.
Hh, Hk, Hm: Humboldt	>60	---	---	---	High	High	High.
Hn*:							
Humboldt Slightly saline	>60	---	---	---	High	High	High.
Humboldt Strongly saline	>60	---	---	---	High	High	High.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
HO*:							
Humdun	>60	---	---	---	Moderate	High	Low.
Bucan	40-60	Hard	---	---	Moderate	High	Low.
Havingdon	20-26	Hard	---	---	Moderate	High	Low.
Hr, Hs Hussa	>60	---	---	---	High	High	Low.
Ht Hussa	>60	---	---	---	High	High	Moderate.
Ib, Is Iron Blossom	>60	---	---	---	Low	High	High.
KAD Kawich	>60	---	---	---	Low	High	High.
MA*:							
Malpais	>60	---	---	---	Moderate	High	Moderate.
Rock outcrop.							
Rubble land.							
Mc*:							
Marsh.							
Crooked Creek	>60	---	---	---	High	High	Low.
ME*:							
Mascamp	12-20	Hard	---	---	Moderate	High	Low.
Carstump	20-40	Hard	---	---	Moderate	---	Low.
Mf McConnel	>60	---	---	---	Low	High	Low.
Mh*:							
McConnel	>60	---	---	---	Low	High	Low.
Blackhawk	>60	---	12-18	Rippable	Low	High	Low.
Mo*:							
McConnel	>60	---	---	---	Low	High	Low.
Ocala	>60	---	---	---	High	High	High.
Mr Midas	>60	---	---	---	Low	High	Low.
Ms*:							
Midas Deep	>60	---	---	---	Low	High	Low.
Midas	>60	---	---	---	Low	High	Low.
Oc, Od, Og, Oh, Ok Ocala	>60	---	---	---	High	High	High.
Om*:							
Ocala Slightly saline	>60	---	---	---	High	High	High.
Ocala Strongly saline	>60	---	---	---	High	High	High.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
OP*:							
Ocala	>60	---	---	---	High	High	High.
Ocala Drained	>60	---	---	---	High	High	High.
Playa.							
ORC, OSB, OtA Orovada	>60	---	---	---	Moderate	High	Moderate.
OU*:							
Orovada	>60	---	---	---	Moderate	High	Moderate.
Humdun	>60	---	---	---	Moderate	High	Low.
Puett	10-20	Rippable	---	---	Moderate	High	Low.
OV*:							
Orovada	>60	---	---	---	Moderate	High	Moderate.
Puett	10-20	Rippable	---	---	Moderate	High	Low.
OW*:							
Orovada	>60	---	---	---	Moderate	High	Moderate.
Puett	10-20	Rippable	---	---	Moderate	High	Low.
Ferdelford	24-40	Rippable	---	---	Moderate	High	Moderate.
PC*:							
Pie Creek	24-40	Hard	---	---	Moderate	High	Low.
Susie Creek	40-60	Rippable	---	---	Moderate	High	Low.
Toeja	40-60	Rippable	---	---	Moderate	High	Low.
Pk Pocker	>60	---	---	---	Low	High	High.
PM*:							
Primeaux	20-40	Hard	---	---	Moderate	High	Low.
Packer	40-60	Hard	---	---	Moderate	High	Low.
Tusel	>60	---	---	---	Moderate	Moderate	Low.
PS*:							
Puett	10-20	Rippable	---	---	Moderate	High	Low.
Orovada	>60	---	---	---	Moderate	High	Moderate.
RaA, RaB, RAC, RbB Rad	>60	---	---	---	Low	High	Moderate.
RC*:							
Rad Slightly alkali	>60	---	---	---	Low	High	Moderate.
Rad	>60	---	---	---	Low	High	Moderate.
Rd*:							
Rad	>60	---	---	---	Low	High	Moderate.
Blackhawk	>60	---	12-18	Rippable	Low	High	Low.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
RE*:							
Rad	>60	---	---	---	Low	High	Moderate.
Brock	>60	---	8-20	Rippable	Moderate	High	Low.
RF*:							
Ramires	24-40	Hard	---	---	Moderate	High	Moderate.
Chen	12-20	Hard	---	---	Moderate	Moderate	Low.
Bobs	>60	---	10-20	Hard	Moderate	High	---
RG*:							
Ramires	24-40	Hard	---	---	Moderate	High	Moderate.
Chen	12-20	Hard	---	---	Moderate	Moderate	Low.
Pie Creek	24-40	Hard	---	---	Moderate	High	Low.
RH*, RH2*, RK*:							
Ramires	24-40	Hard	---	---	Moderate	High	Moderate.
Creva	4-20	Hard	---	---	Moderate	Moderate	Low.
RL*:							
Ramires	24-40	Hard	---	---	Moderate	High	Moderate.
Singletree	40-60	Rippable	---	---	Moderate	High	Moderate.
RM*:							
Ramires	24-40	Hard	---	---	Moderate	High	Moderate.
Taylor Creek	>60	---	---	---	Moderate	High	Low.
Rn, Ro, Rr Rixie	>60	---	---	---	High	High	Moderate.
Rs Rose Creek	>60	---	---	---	High	High	Low.
Rt Rose Creek	>60	---	---	---	High	High	Low.
Ru Rosney	>60	---	---	---	Moderate	High	High.
SA*:							
Short Creek 30 to 50 percent slopes	>60	---	---	---	Moderate	High	Low.
Short Creek 50 to 75 percent slopes	>60	---	---	---	Moderate	High	Low.
SBB Simon	>60	---	---	---	Moderate	Moderate	Low.
SC*:							
Simon	>60	---	---	---	Moderate	Moderate	Low.
Bosco	>60	---	---	---	Moderate	Low	Low.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
SD*:							
Slaven------------------ 15 to 30 percent slopes	20-36	Hard	---	---	Moderate-------	High-----------	Low.
Slaven------------------ 30 to 50 percent slopes	20-36	Hard	---	---	Moderate-------	High-----------	Low.
Mascamp-----------------	12-20	Hard	---	---	Moderate-------	High-----------	Low.
SE*:							
Slaven------------------	20-36	Hard	---	---	Moderate-------	High-----------	Low.
Primeaux----------------	20-40	Hard	---	---	Moderate-------	High-----------	Low.
SF*:							
Slaven------------------	20-36	Hard	---	---	Moderate-------	High-----------	Low.
Ramires-----------------	24-40	Hard	---	---	Moderate-------	High-----------	Moderate.
SG*:							
Slaven------------------	20-36	Hard	---	---	Moderate-------	High-----------	Low.
Toeja-------------------	40-60	Rippable	---	---	Moderate-------	High-----------	Low.
SH*:							
Slaven------------------	20-36	Hard	---	---	Moderate-------	High-----------	Low.
Torro-------------------	>60	---	---	---	Moderate-------	Moderate-------	Low.
Tusel-------------------	>60	---	---	---	Moderate-------	Moderate-------	Low.
SR*:							
Stampede----------------	>60	---	20-32	Hard	Moderate-------	High-----------	Low.
Donna-------------------	>60	---	20-26	Hard	Moderate-------	High-----------	Low.
SS*:							
Stampede----------------	>60	---	20-32	Hard	Moderate-------	High-----------	Low.
Donna-------------------	>60	---	20-26	Hard	Moderate-------	High-----------	Low.
Short Creek-------------	>60	---	---	---	Moderate-------	High-----------	Low.
ST*:							
Stampede----------------	>60	---	20-32	Hard	Moderate-------	High-----------	Low.
Short Creek-------------	>60	---	---	---	Moderate-------	High-----------	Low.
SU*:							
Susie Creek-------------	40-60	Rippable	---	---	Moderate-------	High-----------	Low.
Pattani-----------------	20-40	Rippable	---	---	Low------------	High-----------	Low.
SV*:							
Susie Creek-------------	40-60	Rippable	---	---	Moderate-------	High-----------	Low.
Pie Creek---------------	24-40	Hard	---	---	Moderate-------	High-----------	Low.
Pattani-----------------	20-40	Rippable	---	---	Low------------	High-----------	Low.
SW*:							
Susie Creek-------------	40-60	Rippable	---	---	Moderate-------	High-----------	Low.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
SW*:							
Short Creek	>60	---	---	---	Moderate	High	Low.
Toeja	40-60	Rippable	---	---	Moderate	High	Low.
TA*:							
Taylor Creek	>60	---	---	---	Moderate	High	Low.
Chen	12-20	Hard	---	---	Moderate	Moderate	Low.
Ramires	24-40	Hard	---	---	Moderate	High	Moderate.
TC*:							
Taylor Creek	>60	---	---	---	Moderate	High	Low.
Singletree	40-60	Rippable	---	---	Moderate	High	Moderate.
Torro	>60	---	---	---	Moderate	Moderate	Low.
TDA, TEC Tenabo	>60	---	9-20	Rippable	Moderate	High	Moderate.
TF*:							
Tenabo Extremely stony loam	>60	---	12-20	Rippable	Moderate	High	Moderate.
Tenabo Cobbly silt loam	>60	---	9-20	Rippable	Moderate	High	Moderate.
TG*:							
Tenabo	>60	---	9-20	Rippable	Moderate	High	Moderate.
Brock	>60	---	8-20	Rippable	Moderate	High	Low.
Whirlo	>60	---	---	---	Moderate	High	High.
TH*:							
Tenabo	>60	---	12-20	Rippable	Moderate	High	Moderate.
Rubble land.							
TL*:							
Toeja 15 to 30 percent slopes	40-60	Rippable	---	---	Moderate	High	Low.
Toeja 4 to 15 percent slopes	40-60	Rippable	---	---	Moderate	High	Low.
Puett	10-20	Rippable	---	---	Moderate	High	Low.
TM*:							
Toeja	40-60	Rippable	---	---	Moderate	High	Low.
Ucopia	40-60	Rippable	---	---	Moderate	High	Low.
Ucopia Eroded	40-60	Rippable	---	---	Moderate	High	Low.
TN*:							
Tomera	>60	---	---	---	Moderate	High	Moderate.
Cherry Spring	>60	---	20-40	Rippable	Moderate	---	Low.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
TO*:							
Torro	>60	---	---	---	Moderate	Moderate	Low.
Jack Creek	48-62	Rippable	---	---	Low	Moderate	Low.
TR*:							
Torro	>60	---	---	---	Moderate	Moderate	Low.
Tusel	>60	---	---	---	Moderate	Moderate	Low.
TS*:							
Torro	>60	---	---	---	Moderate	Moderate	Low.
Tusel	>60	---	---	---	Moderate	Moderate	Low.
Badland.							
TT*:							
Torro	>60	---	---	---	Moderate	Moderate	Low.
Tusel	>60	---	---	---	Moderate	Moderate	Low.
Packer	40-60	Hard	---	---	Moderate	High	Low.
TU*:							
Triplen	>60	---	---	---	Moderate	High	Moderate.
Tenabo	>60	---	9-20	Rippable	Moderate	High	Moderate.
TV*:							
Tusel	>60	---	---	---	Moderate	Moderate	Low.
Hapgood	40-60	Hard	---	---	Moderate	High	Low.
Packer	40-60	Hard	---	---	Moderate	High	Low.
UHE*, UHF*:							
Ucopia 15 to 30 percent slopes	40-60	Rippable	---	---	Moderate	High	Low.
Ucopia 30 to 50 percent slopes	40-60	Rippable	---	---	Moderate	High	Low.
Humdun	>60	---	---	---	Moderate	High	Low.
UKF Urtah	20-40	Hard	---	---	Moderate	High	Low.
Wc, Wd Welch	>60	---	---	---	High	High	Low.
WE*:							
Welch	>60	---	---	---	High	High	Low.
Bosco	>60	---	---	---	Moderate	Low	Low.
WGB Whirlo	>60	---	---	---	Moderate	High	High.

See footnote at end of table.

TABLE 17.--SOIL FEATURES--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
	In		In				
WH*:							
Whirlo	>60	---	---	---	Moderate	High	Moderate.
Tenabo	>60	---	9-20	Rippable	Moderate	High	Moderate.
WlA, WlB Wholan	>60	---	---	---	Moderate	High	Low.
WmA Wholan	>60	---	---	---	Moderate	High	High.
WnA Wholan	>60	---	---	---	Moderate	High	Low.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 18.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Alley	Fine-loamy, mixed, mesic Durixerollic Haplargids
Beowawe	Fine-loamy, mixed, mesic Duric Natrargids
Beowawe variant	Fine, montmorillonitic, mesic Duric Natrargids
Berning	Clayey-skeletal, montmorillonitic, mesic Xerollic Haplargids
Bicondoa	Fine, montmorillonitic (calcareous), frigid Fluvaquentic Haplaquolls
Blackhawk	Loamy, mixed, mesic, shallow Entic Durorthids
Bobs	Loamy, carbonatic, frigid, shallow Aridic Petrocalcic Palexerolls
Bosco	Loamy-skeletal, mixed, frigid Torriorthentic Haploxerolls
Boulflat	Fine-loamy, mixed, mesic Haploxerollic Durargids
Brock	Loamy-skeletal, mixed, mesic, shallow Xerollic Durargids
Broyles	Coarse-loamy, mixed, mesic Duric Camborthids
Bucan	Fine, montmorillonitic, frigid Xerollic Haplargids
Bunky	Fine-loamy, mixed, mesic Haploxerollic Durorthids
Carstump	Clayey-skeletal, montmorillonitic, frigid Aridic Calcic Argixerolls
Chen	Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls
Cherry Spring	Fine-loamy, mixed, mesic Haploxerollic Durargids
Chiara	Loamy, mixed, mesic, shallow Xerollic Durorthids
Clurde	Fine-loamy, mixed, mesic Durixerollic Camborthids
Cluro	Fine-loamy, mixed, mesic Durixerollic Camborthids
Coff	Loamy-skeletal, carbonatic, frigid Xerollic Paleorthids
Coit	Fine-loamy, mixed, mesic Cumulic Haploxerolls
Cortez	Fine, montmorillonitic, mesic Xerollic Nadurargids
Creva	Clayey-skeletal, montmorillonitic, frigid Lithic Ruptic-Entic Xerollic Haplargids
Crooked Creek	Fine, montmorillonitic, frigid Cumulic Haplaquolls
Denay	Loamy-skeletal, mixed, frigid Aridic Calcixerolls
Donna	Very-fine, montmorillonitic, frigid Abruptic Aridic Durixerolls
Dunphy	Coarse-loamy, mixed (calcareous), mesic Aeric Halaquepts
Ferdelford	Fine-loamy, mixed, mesic Xerollic Camborthids
Four Star	Coarse-loamy, mixed, frigid Cumulic Haplaquolls
Geysen	Fine-loamy, mixed, mesic Durixerollic Natrargids
Glean	Loamy-skeletal, mixed, frigid Pachic Haploxerolls
Griver	Coarse-loamy, mixed (calcareous), mesic Aquic Xerofluvents
Hapgood	Loamy-skeletal, mixed Pachic Cryoborolls
Havingdon	Clayey-skeletal, montmorillonitic, mesic Xerollic Haplargids
Humboldt	Fine, montmorillonitic (calcareous), mesic Fluvaquentic Haplaquolls
Humdun	Coarse-loamy, mixed, frigid Durixerollic Camborthids
Hussa	Fine-loamy, mixed (calcareous), frigid Fluvaquentic Haplaquolls
Iron Blossom	Fine-loamy, mixed (calcareous), mesic Durorthidic Torrifluvents
Jack Creek	Sandy-skeletal, mixed, frigid Torriorthentic Haploxerolls
Kawich	Mixed, mesic Typic Torripsamments
Malpais	Loamy-skeletal, mixed, mesic Typic Camborthids
Mascamp	Loamy-skeletal, mixed, frigid Lithic Argixerolls
McConnel	Sandy-skeletal, mixed, mesic Xerollic Camborthids
Midas	Loamy-skeletal, mixed, mesic Duric Camborthids
Mosquet	Clayey, montmorillonitic Lithic Ruptic-Argic Cryoborolls
Ocala	Fine-silty, mixed (calcareous), mesic Aeric Halaquepts
Old Camp variant	Loamy-skeletal, mixed, mesic Lithic Haplargids
Orovada	Coarse-loamy, mixed, mesic Durixerollic Camborthids
Packer	Loamy-skeletal, mixed Argic Cryoborolls
Pattani	Fine, montmorillonitic, frigid Xerertic Camborthids
Pie Creek	Very-fine, montmorillonitic, frigid Aridic Palexerolls
Pocker	Fine, montmorillonitic (calcareous), mesic Typic Torrifluvents
Primeaux	Fine-loamy, mixed Argic Cryoborolls
Puett	Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents
Rad	Coarse-silty, mixed, mesic Durixerollic Camborthids
Ramires	Fine, montmorillonitic, frigid Aridic Calcic Argixerolls
Rixie	Fine-loamy, mixed, mesic Aquic Duric Haploxerolls
Rose Creek	Coarse-loamy, mixed, mesic Fluvaquentic Haploxerolls
Rosney	Fine-silty, mixed (calcareous), mesic Typic Torriorthents
Short Creek	Clayey-skeletal, montmorillonitic, frigid Xerollic Haplargids
Simon	Fine-loamy, mixed, frigid Aridic Argixerolls
Singletree	Fine-loamy, mixed, frigid Aridic Calcic Argixerolls
Slaven	Clayey-skeletal, montmorillonitic, frigid Aridic Argixerolls
Stampede	Fine, montmorillonitic, frigid Aridic Durixerolls
Susie Creek	Fine, montmorillonitic, frigid Durargidic Argixerolls
Taylor Creek	Very-fine, montmorillonitic Argic Cryoborolls
Tenabo	Loamy, mixed, mesic, shallow Typic Nadurargids
Toeja	Fine-loamy, mixed, frigid Aridic Argixerolls
Tomera	Fine, montmorillonitic, mesic Xerollic Natrargids

TABLE 18.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Torro	Loamy-skeletal, mixed, frigid Aridic Argixerolls
Triplen	Coarse-loamy, mixed, mesic Durixerollic Calciorthids
Tusel	Loamy-skeletal, mixed Arigic Pachic Cryoborolls
Ucopia	Coarse-loamy, mixed, frigid Xerollic Camborthids
Urtah	Loamy-skeletal, carbonatic Cryic Rendolls
Welch	Fine-loamy, mixed, frigid Cumulic Haplaquolls
Whirlo	Loamy-skeletal, mixed, mesic Typic Camborthids
Wholan	Coarse-silty, mixed, mesic Typic Camborthids

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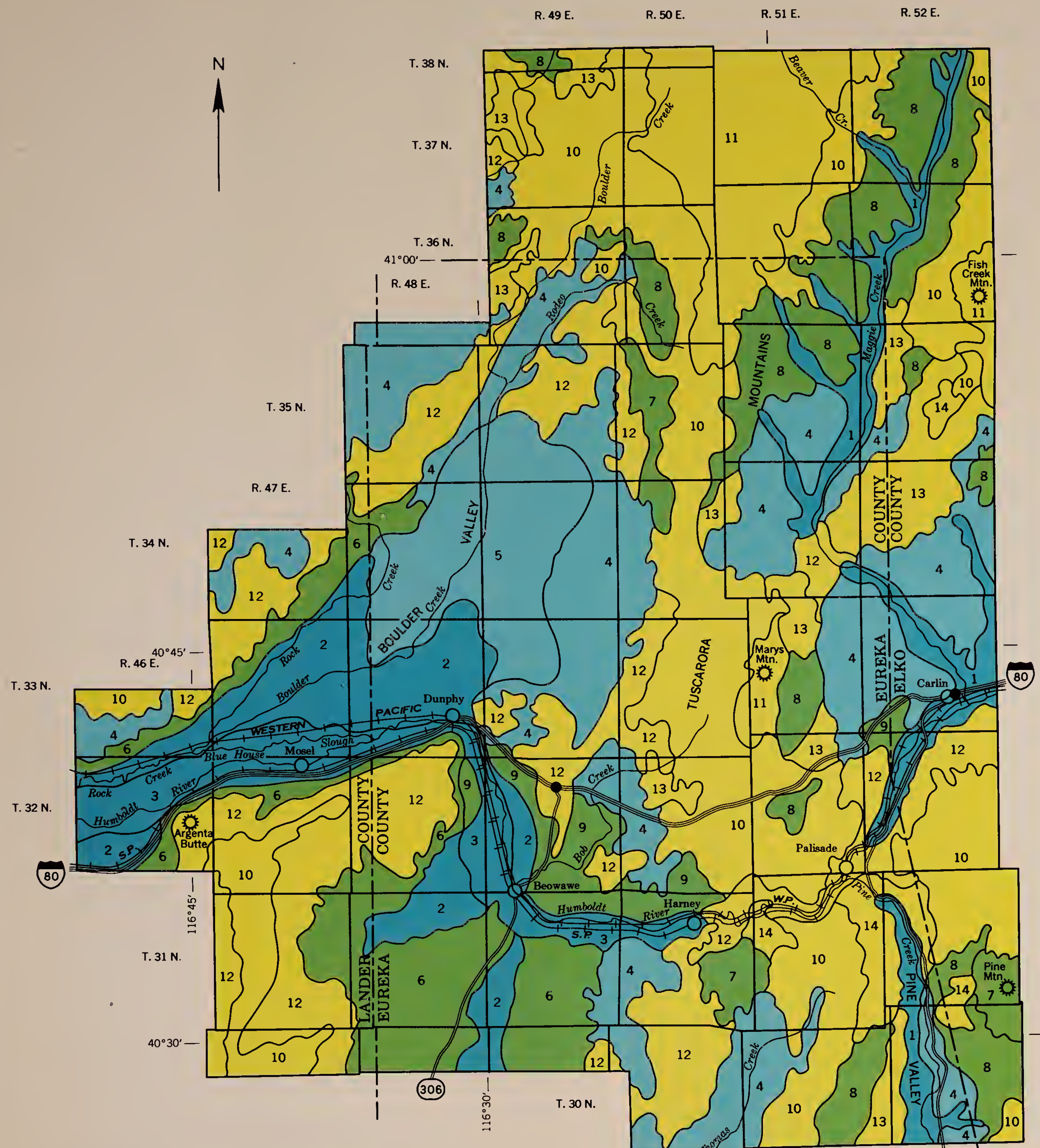

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

MAP UNITS

AREAS DOMINATED BY WET SOILS ON FLOOD PLAINS

- **1** Welch-Four Star-Bosco: Nearly level, very deep, poorly drained and somewhat excessively drained soils; on flood plains and low stream terraces
- **2** Ocala-Dunphy-Rosney: Nearly level, somewhat poorly drained and well drained soils; on flood plains and low terraces
- **3** Humboldt-Rixie-Griver: Nearly level, very deep, poorly drained and somewhat poorly drained soils; on flood plains

AREAS DOMINATED BY WELL DRAINED SOILS ON LOW TERRACES AND ALLUVIAL FANS

- **4** Cherry Spring-Orovada-Chiara: Nearly level to strongly sloping, shallow, moderately deep and very deep, well drained soils; on alluvial fans and terraces
- **5** Cluro-Midas-Geysen: Nearly level, very deep, somewhat poorly drained and well drained soils; on alluvial fans and terraces

AREAS DOMINATED BY WELL DRAINED SOILS ON HIGH TERRACES AND ALLUVIAL FANS

- **6** Tenabo-Alley-Whirlo: Nearly level to very steep, shallow and very deep, well drained soils; on alluvial fans and low foothills
- **7** Coff-Clurde-Bunky: Gently sloping to steep, moderately deep and very deep, well drained soils; on alluvial fans, dissected terraces, and foothills
- **8** Stampede-Short Creek-Donna: Gently sloping to very steep, moderately deep and deep, well drained soils; on terraces and their side slopes
- **9** Rad-Brock: Nearly level to moderately steep, shallow and very deep, well drained soils; on alluvial fans and terraces

AREAS DOMINATED BY WELL DRAINED SOILS ON MOUNTAINS AND HILLS

- **10** Chen-Ramires-Slaven: Strongly sloping to steep, shallow and moderately deep, well drained soils; on uplands
- **11** Torro-Tusel-Jack Creek: Steep and very steep, deep and very deep, well drained and excessively drained soils; on mountainous uplands
- **12** Bucan-Humdun-Creva: Moderately sloping to steep, shallow, deep and very deep, well drained soils; on uplands
- **13** Pie Creek-Susie Creek-Toeja: Moderately sloping to moderately steep, moderately deep and deep, well drained soils; on uplands
- **14** Puett-Ferdelford: Moderately steep to very steep, shallow and moderately deep, well drained soils; on uplands

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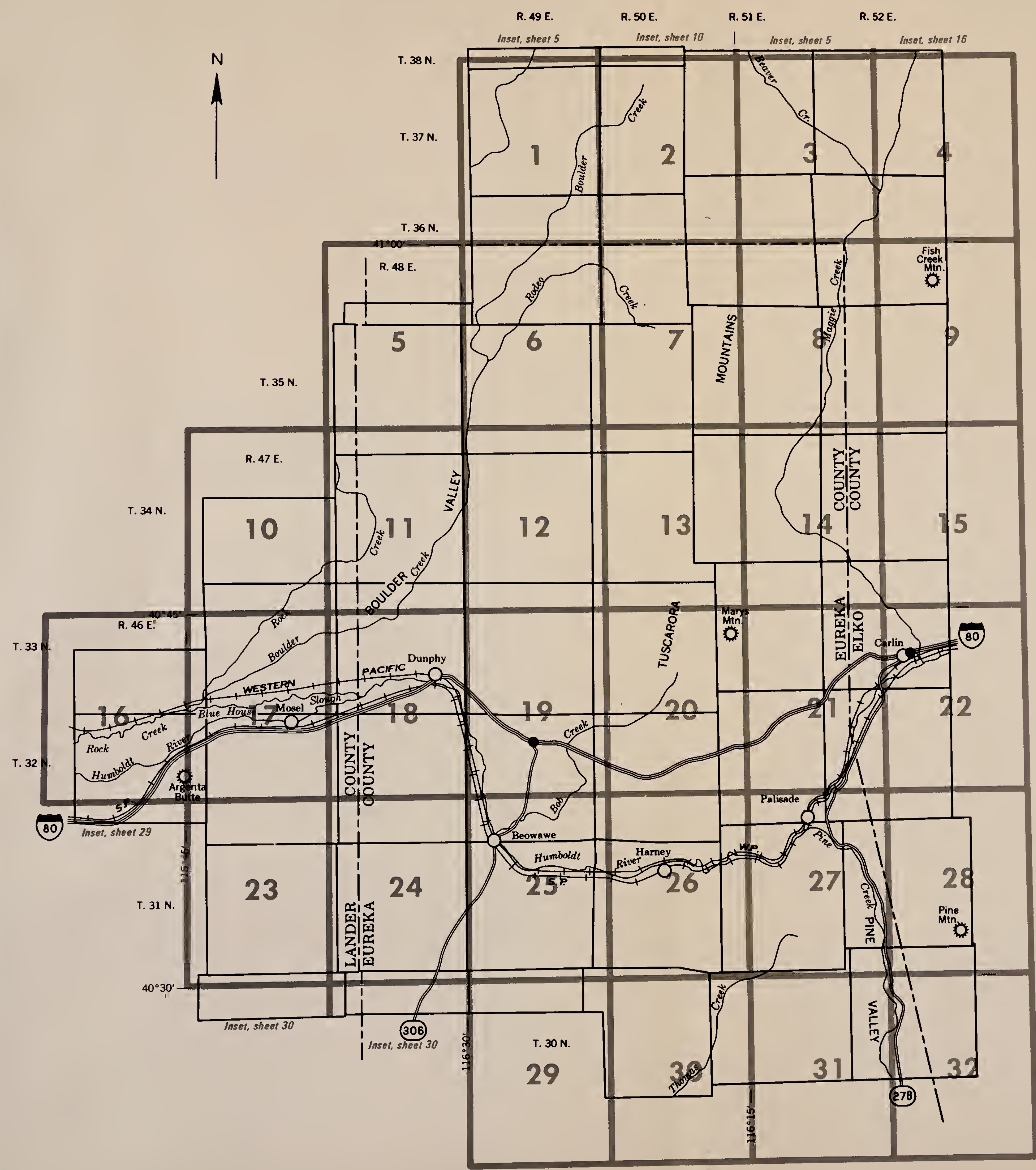
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
UNIVERSITY OF NEVADA AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

TUSCARORA MOUNTAIN AREA, NEVADA, PARTS OF ELKO, EUREKA, AND LANDER COUNTIES

Scale 1: 380,160
1 0 1 2 3 4 5 Miles



INDEX TO MAP SHEETS

TUSCARORA MOUNTAIN AREA, NEVADA,
PARTS OF ELKO, EUREKA, AND LANDER COUNTIES

Scale 1: 380,160

1 0 1 2 3 4 5 Miles

SOIL LEGEND

SYMBOL	NAME
ALF	Alley cobbly fine sandy loam, 30 to 50 percent slopes
AN	Alley-Brock association
AR	Alley-Rock outcrop association
Au	Alluvial land*
BaA	Beowawe silt loam, 0 to 2 percent slopes*
BB	Beowawe-Broyles association
BC	Beowawe silty clay loam, heavy subsoil variant
BD	Berning-Short Creek association
BE	Berning-Toeja association
Bf	Bicondoa silty clay loam, drained, slightly saline*
Bg	Bicondoa silty clay*
BHD	Bobs cobbly loam, 4 to 15 percent slopes
Bk	Bosco very gravelly loam*
BL	Bosco-Welch association
BM	Bouflat-Havingdon association
BN	Boulflat-Humdun association
BO	Brock-Bouflat association
BpA	Broyles silt loam, 0 to 2 percent slopes*
BPB	Broyles silt loam, 2 to 8 percent slopes
BQE	Bucan loam, 15 to 30 percent slopes
BRF	Bucan very rocky loam, 15 to 30 percent slopes
BS	Bucan association
BT	Bucan stony association
BU	Bucan-Clurde association
BV	Bucan-Creva association
BW	Bucan-Glean association
BX	Bucan-Humdun association
BY	Bucan-Humdun-Brock association
BZ	Bucan-Humdun-Rock outcrop association
BZm	Bucan-Malpais association
BZs	Bucan-Singletree association
BZt	Bucan-Toeja association
BZu	Bunky-Clurde association
CAD	Carstump very gravelly loam, 4 to 30 percent slopes
CBE	Chen very rock loam, 8 to 30 percent slopes
CC	Chen-Pie Creek-Ramires association
CD	Chen-Pie Creek-Taylor Creek association
CEE	Chen-Taylor Creek association, hilly
CEF	Chen-Taylor Creek association, steep
CF	Cherry Spring-Berning association
CG	Cherry Spring-Cortez-Chiara association
CH	Cherry Spring-Cortez-Tomera association
CK	Cherry Spring-Orovada association
CL	Chiara-Brock association
CM	Chiara-Cherry Spring association
CN	Cluro loam, strongly saline
CO	Cluro silt loam, drained*
Cp	Cluro silt loam, drained, slightly saline*
Cr	Cluro silt loam, slightly saline*
CS	Coff-Denay association
Ct	Coit loam*
Cu	Coit-Griver complex*
CV	Crevw-Chen association
CW2	Creva-Ramires association, eroded
Cx	Crooked Creek silt loam*
CY	Crooked Creek clay loam, drained*
DM	Donna-Simon association
DN	Donna-Stampede association
Do	Dunphy silt loam, drained, slightly saline*
Dp	Dunphy silt loam, drained, strongly saline*
Dr	Dunphy silt loam, slightly saline*
Ds	Dunphy silt loam, strongly saline*
FB	Ferdelford-Bucan association
FD	Ferdelford-Puett-Berning association
FE	Ferdelford-Puett-Susie Creek association
FF	Ferdelford-Ramires association
FH	Ferdelford-Susie Creek association
Fk	Four Star loam*
Fm	Four Star loam, drained*
Fn	Four Star-Bosco complex*
FO	Four Star-Bosco complex, drained*
Ge	Geysen silt loam*
Gg	Geysen silt loam, strongly saline*
GH	Glean-Rock outcrop association
Gk	Griver loam*
Gm	Griver loam, drained*
Gn	Griver silt loam, clay substratum*
Go	Griver silt loam, wet*
Gr	Griver complex*
Gx	Griver-Alluvial land complex*
HG	Hapgood-Packer association
Hh	Humboldt silty clay, saline complex*
Hk	Humboldt silty clay, slightly saline*
Hm	Humboldt silty clay, strongly saline*
Hn	Humboldt complex, saline*
HO	Humdun-Bucan association
Hr	Hussa loam*
Hs	Hussa loam, drained*
Ht	Hussa loam, slightly saline
Ib	Iron Blossom silt loam*
Is	Iron Blossom silt loam, strongly saline*
KAD	Kawich fine sand, 2 to 30 percent slopes
MA	Malpais-Rock outcrop association
Mc	Marsh-Crooked Creek complex*
ME	Mascamp-Carstump association
Mf	McConnel gravelly fine sandy loam*
Mh	McConnel-Blackhawk complex*
Mo	McConnel-Ocala complex*
Mr	Midas silt loam*
Ms	Midas complex*
Oc	Ocala fine sandy loam*
Od	Ocala silt loam, drained, slightly saline*
Og	Ocala silt loam, strongly saline*
Oh	Ocala silty clay loam, drained strongly saline*
Ok	Ocala silty clay loam, slightly saline*
Om	Ocala silty clay loam, saline complex*
OP	Ocala Playa association
ORC	Orovada fine sandy loam, 4 to 15 percent slopes
OSB	Orovada gravelly fine sandy loam, 2 to 4 percent slopes
OtA	Orovada silt loam, 0 to 2 percent slopes
OU	Orovada-Humdun association
OV	Orovada-Puett association
OW	Orovada-Puett-Ferdelford association
PC	Pie Creek-Susie Creek association
Pk	Pocker silt loam*
PM	Primeaux-Packer association
PS	Puett-Orovada association
RaA	Rad silt loam, 0 to 2 percent slopes*
RaB	Rad silt loam, 2 to 4 percent slopes*
RAC	Rad silt loam, 2 to 8 percent slopes
RbB	Rad silt loam, slightly alkali, 0 to 4 percent slopes*
RC	Rad association
Rd	Rad-Blackhawk complex**
RE	Rad-Brock association
RF	Ramires-Chen-Bobs association
RG	Ramires-Chen-Pie Creek association
RH	Ramires-Creva association
RH2	Ramires-Creva association, eroded
RK	Ramires-Creva association, stony
RL	Ramires-Singletree association
RM	Ramires-Taylor Creeion
Rn	Rixie silty clay loam, drained, slightly saline*
Ro	Rixie silty clay loam, strongly saline*
Rr	Rixie silty clay, slightly saline*
Rs	Rose Creek loam*
Rt	Rose Creek loam, drained*
Ru	Rosney silt loam*
SA	Short Creek association
SBB	Simon loam, 2 to 8 percent slopes
SC	Simon-Bosco association
SD	Slaven-Mascamp association
SE	Slaven-Primeaux association
SF	Slaven-Ramires association
SG	Slaven-Toeja association
SH	Slaven-Torro association
SR	Stampede-Donna association
SS	Stampede-Donna-Short Creek association
ST	Stampede-Short Creek association
SU	Susie Creek-Pattani association
SV	Susie Creek-Pie Creek association
SW	Susie Creek-Short Creek association
TA	Taylor Creek-Chen association
TC	Taylor Creek-Singletree association
TDA	Tenabo silt loam, 0 to 2 percent slopes
TEC	Tenabo cobbly silt loam, 2 to 15 percent slopes
TF	Tenabo association
TG	Tenabo-Brock association
TH	Tenabo-Rubble land association
TL	Toeja-Puett association
TM	Toeja-Ucopia association
TN	Tomera-Cherry Spring association
TO	Torro-Jack Creek association
TR	Torro-Tusel association
TS	Torro-Tusel-Badland association
TT	Torro-Tusel-Packer association
TU	Triplen-Tenabo association
TV	Tusel-Hapgood association
UHE	Ucopia-Humdun association, hilly
UHF	Ucopia-Humdun association, steep
UKF	Urtah gravelly loam, 30 to 50 percent slopes
Wc	Welch loam*
Wd	Welch loam, drained*
WE	Welch-Bosco association
WGB	Whirlo gravelly silt loam, 2 to 8 percent slopes
WH	Whirlo-Tenabo association
WIA	Wholan silt loam, 0 to 2 percent sloppes*
WIB	Wholan silt loam, 2 to 4 percent slopes*
WmA	Wholan silt loam, overflow, 0 to 2 percent slopes*
WnA	Wholan silt loam, slightly alkali*

Throughout this report the asterisk following the approved name indicates these units were mapped at a higher degree of intensity. Consequently, the mapping units are not so broadly defined as the unmarked mapping units

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 & neatline

AD HOC BOUNDARY (label)

- Small airport, airfield, park, oilfield, cemetery, or flood pool — Davis Airstrip; FLOOD POOL LINE

STATE COORDINATE TICK

LAND DIVISION CORNERS (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEMS & DESIGNATIONS

- Interstate — 79
- Federal — 410
- State — 52
- County, farm or ranch — 378

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 — water; w

PITS

- Gravel pit — G.P.
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- 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
- Drainage end
- Canals or ditches
  - Double-line (label) — CANAL
  - Drainage and/or irrigation

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 — SvE 107

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

SOIL SAMPLE SITE (normally not shown) — S

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
- Borrow pit — B.P.
- Glacial till

DATE LOANED	BORROWER