USDA United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with United States Department of the Interior, Bureau of Land Management; United States Department of Agriculture, Forest Service; and Utah Agricultural Experiment Station

Soil Survey of Box Elder County Utah, Western Part

How to Use This Soil Survey

General Soil Map

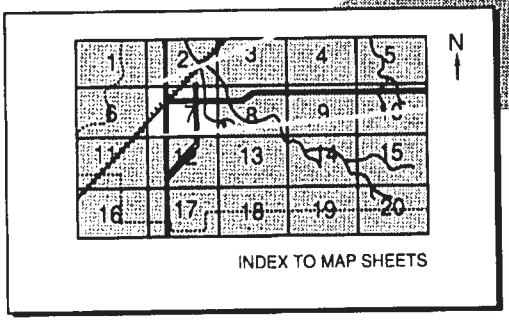
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

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

Detailed Soil Maps

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

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



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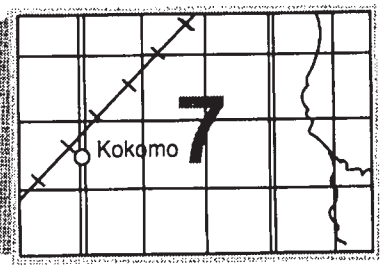
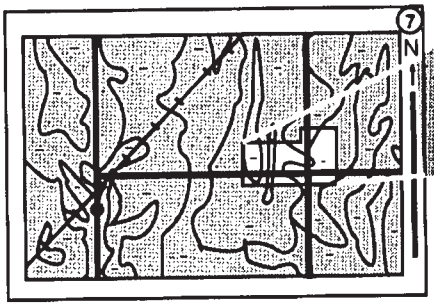


MAP SHEET

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



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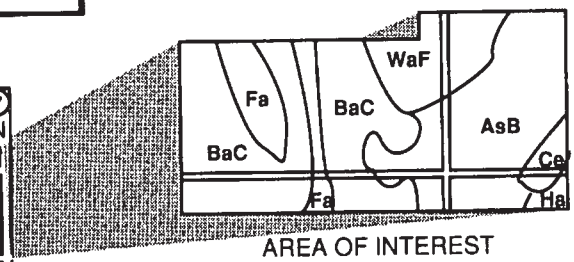

AREA OF INTEREST

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

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

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

Major fieldwork for this soil survey was completed in 1984. Soil names and descriptions were approved in 1985. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1985. This soil survey was made cooperatively by the Natural Resources Conservation Service and the United States Department of the Interior, Bureau of Land Management; the United States Department of Agriculture, Forest Service; and the Utah Agricultural Experiment Station. It is part of the technical assistance furnished to the West Box Elder Soil Conservation District.

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

All programs and services of the Natural Resources Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

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Foreword

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

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

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

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

Phillip J. Nelson
State Conservationist
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Soil Survey of
Box Elder County, Utah, Western Part

By J. Cameron Loerch, Kenneth D. Adams, and Victor L. Parslow, Natural Resources Conservation Service

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United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
the United States Department of the Interior, Bureau of Land Management; the United States Department of Agriculture, Forest Service; and the Utah Agricultural Experiment Station

Box Elder County, Western Part, is in the extreme northwest corner of Utah (fig. 1). The survey area is bordered on the west by the State of Nevada, on the north by the State of Idaho, on the east by the eastern part of Box Elder County, and on the south by Tooele County, Utah.

The total survey area is 2,801,112 acres, or about 4,377 square miles. It includes 2,137,659 acres, or about 3,340 square miles, of land and 663,453 acres, or about 1,037 square miles, of water. The acreage of water consists predominantly of the Great Salt Lake. Brigham City, the county seat, is located in the eastern part of the county, outside of the survey area. The survey area supports a small population, mainly near the Park Valley-Kelton area, Grouse Creek, and Yost. The population of the survey area in 1980 was about 300.

Soil scientists have identified about 80 different kinds of soil in the survey area. The soils range widely in texture, natural drainage, and other characteristics. Complete coverage of the county is provided by this soil survey together with the soil survey of Box Elder County, Eastern Part, which was issued June 1975.

General Nature of the Survey Area

This section gives general information about the survey area. It describes history and development; physiography, relief, and drainage; climate; land use; land ownership; and natural resources.

History and Development

The early inhabitants of the survey area were the Shoshone Indians. Famous mountain men and fur trappers also worked in and passed through the region. Livestock ranchers seeking new forage resources brought herds of cattle and sheep into the area as early as 1860.

The construction of the first transcontinental railroad through the survey area is one of the most significant events in the development of the area. Early settlers at Park Valley, Grouse Creek, and Yost established dwellings shortly after the driving of the golden spike at Promontory Summit on May 10, 1869.

Kelton, a section station on the railroad, served as a major shipping and travel connection for much of the Northwest. It was the southern terminus of the Utah, Idaho and Oregon Stage Company and a substation on the Overland Mail route. In a typical year during the 1870's, 6 million pounds of supplies were loaded from trains onto wagons in exchange for wool and furs from the intermountain north.

By 1871, pioneers had established homes at Rosette and Park Valley. Livestock husbandry and mining provided economic impetus. The community of Yost was

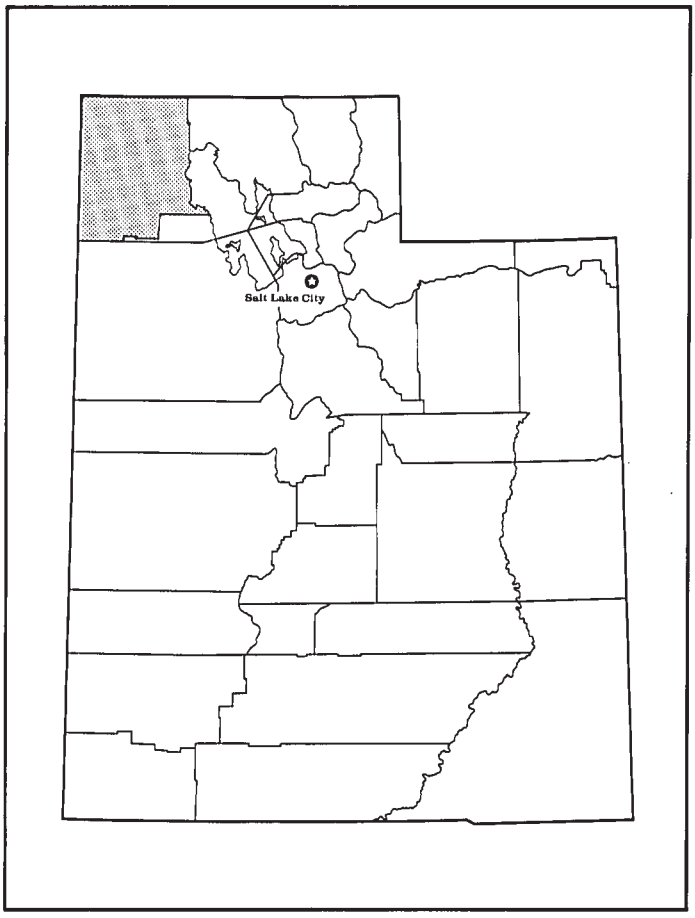

Figure 1.—Location of Box Elder County, Western Part, in Utah.

established in 1873. It was named in honor of its first settler, Charles Yost. Grouse Creek attracted permanent inhabitants in 1875. In 1882, a settlement was established at Lynn, or Junction, for the purpose of cultivating the soil. These pioneers did not receive a very warm welcome from the cattlemen who used the open range. The value of growing supplemental feed and pasture, however, was soon realized.

The Old Emigrant Trail passes diagonally across the survey area from Curlew Valley over to Emigrant Pass, through Lucin, and on west into Nevada. A branch of this trail also crosses the extreme northwest corner of the survey area in the valley of Goose Creek.

Mining has been a big factor in the development of the area. Some of the better known mines are the Century, the Lucky Guy Opportunity, and the Vipont.

Because of native and improved grasses in the valleys and good grazing lands in the foothills, mountains, and deserts, livestock farming remains the base industry in the survey area.

Physiography, Relief, and Drainage

The survey area is in the Basin and Range physiographic province. Elevations range from about 4,200 feet above sea level along the shores of the Great Salt Lake to about 10,000 feet in the Raft River Mountains. The average annual precipitation near the Great Salt Lake is about 4 inches. Areas in the mountains receive 30 inches or more, mostly as snow. The three distinct physiographic areas in the survey area are the basin floor, the mountainous areas, and the piedmont slopes.

The basin floor consists of level and nearly level playas (mud flats), salt flats, and beaches that are part of the Great Salt Lake Desert and were formed by the ancient Lake Bonneville. The most extensive areas are the playas, which are at the lowest elevations in the survey area (about 4,200 to 4,300 feet) and are on the west side of the Great Salt Lake. These areas are very flat, very saline, gray, and barren. They consist dominantly of fine textured lacustrine sediments that have a very shallow water table (Eardley, 1957). Small dunes of gypsum, oolite, or sand are along the edges of the playas.

The mountainous areas have steep and very steep slopes and stand in contrast against the featureless mud flats. Natural vegetation includes pinyon and juniper at the lower elevations and conifers and mountainmahogany at the higher elevations. The northern mountain ranges are the Raft River, Grouse Creek, and Goose Creek Mountains. Elevations range from about 5,600 to 10,000 feet. The mountains in the eastern and western parts of the survey area include the Lakeside and Hogup Ranges, which are next to the Great Salt Lake, and the Pilot Mountains, which are on the border between Utah and Nevada. Elevations range from about 5,000 to 8,000 feet. Other mountains are in scattered areas across the basin floor. They include the Silver Island, Newfoundland, Pigeon, and Terrace Mountains. Elevations range from about 4,500 to 7,000 feet. The mountainous areas consist dominantly of hard, consolidated bedrock and materials weathered from the bedrock. The dominant types of rock are limestone, dolomite, quartzite, schist, and igneous rock.

The piedmont slopes consist of alluvial fans, lake terraces, pediments, fan terraces, and related fluvial and lacustrine landforms. This area surrounds the mountains and extends to the playas. From a distance this area appears to be smooth and uninterrupted. Upon close examination, however, the landscape is commonly dissected by deep gullies and washes. At the lower elevations natural vegetation consists of sagebrush, shadscale, greasewood, and other desert shrubbery and grasses. At the higher elevations it consists of pinyon and

juniper woodland. The piedmont slopes range from about 4,300 to 6,000 feet in elevation. Two of the most prominent and commonly recognized shoreline features of ancient Lake Bonneville are the Bonneville and Provo terraces, which are at about 5,200 and 4,800 feet, respectively.

The survey area has two major surface drainage areas. Most of the survey area is drained south, toward the Great Salt Lake. The major stream systems that drain south include Grouse Creek and Dove Creek in the western part of the survey area and Indian Creek and One Mile Creek in the eastern part. The rest of the survey area is drained north into the Snake River drainage. The major stream systems that drain north are the Raft River, Hardesty Creek, Clear Creek, and Goose Creek. Many smaller streams flow from the mountains into adjacent valleys. Most of the watercourses in the survey area are intermittent and have base flow or no flow during fall and winter.

Climate

Summers are warm or hot in most of the valleys in the survey area and much cooler in the mountains. Winters are cold in the mountains. The valleys are colder than the lower slopes of the adjacent mountains because of cold air drainage. Precipitation occurs in the mountains throughout the year, and a deep snowpack accumulates during winter. During summer, precipitation in the valleys occurs as showers and occasionally as thunderstorms. During winter, the ground is covered by snow much of the time. Chinook winds, which blow downslope and are warm and dry, often melt and evaporate the snow.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Park Valley, Utah, in the period 1961 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 26 degrees F and the average daily minimum temperature is 18 degrees. The lowest temperature on record, which occurred at Park Valley on December 10, 1972, is -28 degrees. In summer, the average temperature is 69 degrees and the average daily maximum temperature is 82 degrees. The highest recorded temperature, which occurred at Park Valley on July 12, 1954, is 99 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (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.

The total annual precipitation is about 12 inches. Of this, 6 inches, or 50 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 2 inches. The heaviest 1-day rainfall during the period of record was 1.75 inches at Park Valley on October 30, 1974. Thunderstorms occur on about 35 days each year.

The average seasonal snowfall is about 32 inches. The greatest snow depth at any one time during the period of record was 20 inches. On an average of 10 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 45 percent. Humidity is higher at night, and the average at dawn is about 65 percent. The sun shines 80 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the south-southwest. Average windspeed is highest, 10 miles per hour, in spring.

Land Use

Rangeland, woodland, irrigated cropland, dry cropland, and mining are land uses in the survey area. About 70 percent of the total land acreage is used for agriculture. The other 30 percent includes playas (mud flats) and steep, rocky mountainsides. About 99 percent of the agricultural land is used for livestock grazing. The remaining 1 percent is used mainly for cropland that is associated with the livestock industry.

Livestock raising is the most important enterprise in the survey area and is responsible for maintaining the economic stability of the area. The most important activities include cow-calf operations and sheep raising. The grazing land includes desert areas (winter range), foothills (fall and spring range), and mountains (summer range).

The principal crops are hay, alfalfa, and small grain. Most of the cropland is irrigated. It is dominantly in the northern part of the survey area, generally in small, narrow strips where adequate water supplies are available. The largest irrigated acreages are near Rosette, Park Valley, and Kelton. A few small scattered areas that are used for dryland wheat or barley are in the northern part of the survey area.

Land Ownership

The United States Department of the Interior, Bureau of Land Management, manages about 55 percent of the land in the survey area. Most of this land is dispersed throughout the survey area. The south-central part is in a checkerboard pattern with State and private lands. This pattern is the result of old railroad grants, which included

every other section of land on either side of the railroad. The Bureau of Land Management is a multiple-use agency. Land uses include rangeland in the form of grazing allotments, wildlife habitat, watersheds, mineral leases, and recreation.

Private ownership accounts for about 32 percent of the survey area. The majority of the privately owned land is in large blocks surrounding the Raft River Mountains and in the area of Cotton Thomas Basin.

The United States Department of Agriculture, Forest Service, manages about 3 percent of the survey area. This land is in the Raft River Mountains, which are part of the Sawtooth National Forest. The Forest Service also is a multiple-use agency. It manages for grazing, watersheds, wildlife habitat, and recreation. The timber stands in these areas are not economically merchantable at this time.

The remaining land in the survey area, about 10 percent, is owned or managed by the State of Utah. Most of this land is managed for grazing or wildlife habitat.

Natural Resources

Soil, water, and minerals are important natural resources in the survey area. Soil and water are the most important and renewable resources. Crops produced on farms and livestock grazed on rangeland are marketable products derived from these resources. Careful use and wise management can maintain or improve the value of these resources.

The soils in the survey area range from saline, nonproductive soils in the desert to fertile soils that have a high content of organic matter in the mountains. The soils in much of the survey area have a root inhibiting layer within 40 inches of the surface.

Ground water from wells and natural springs and streamflows in spring and early summer are important sources of water for irrigation, livestock watering ponds, and domestic use.

The mineral resources in the survey area include large deposits of construction materials and small amounts of industrial minerals and precious metals, such as diatomaceous earth, brines, gold, silver, and copper (Doelling, 1980). Construction materials make up over 70 percent of the cumulative mineral value. These materials are used for riprap, railroad ballast, sand, gravel, crushed stone, roadfill, and decorative stone.

How This Survey Was Made

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

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

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

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

While a soil survey is in progress, samples of some of

the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists.

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

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

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

Survey Procedures

Soil scientists, in association with range conservationists, prepared this survey by working in teams to study soil and plant community relationships. They identified the soils in the area, the location of the soils, the plant communities associated with the soils, and the major uses of the soil information. Before progressive mapping was begun, available information on soils, geology, climate, vegetation, landforms, and patterns of land use was gathered. This information was interpreted on the basis of a National system for classifying soils, premapping activities in the field, and knowledge of soil-plant relationships in similar areas of the State. This information was generalized and placed on a map at a scale of 1:250,000. It was used to locate expected major breaks between types of soils and plant communities. These breaks were based on differences in precipitation, soil temperature, and landform. The map was later adjusted to reflect the soils and plant communities encountered during more detailed mapping.

Breaks between types of soils and plant communities based on precipitation were assigned on the basis of Statewide convention for the major climatic zones. These breaks divide areas on the basis of an estimate of the precipitation available for a plant community or a range site. The major climatic zones in the survey area are Desert, Semidesert, Upland, Mountain, High Mountain, and Subalpine. Each zone has distinct plant communities and range sites.

Soil moisture regimes, by convention, also correspond to the precipitation breaks. Soils in the aridic moisture regime are usually dry throughout during the growing season and are never moist for as long as 90 days when plants are actively growing. Soils in the xeric moisture regime are usually dry during the growing season and moist during the winter, when the potential for evapotranspiration is minimal.

Soil temperature is critical for a period of time each year because it determines the biological activity that can be expected in the soil. Breaks separating areas having different soil temperatures were assigned on the basis of plant communities. Checks were made during the course of the survey to determine if soil temperatures are within the predicted ranges.

Breaks relating to landform were made on the basis of photo interpretation, surface geology maps of the area, and topographic maps. Landforms at similar elevations and in similar climate zones were expected to have developed similar soils and plant communities. Field mapping identified the major soil characteristics that had developed on these surfaces over time.

After the team members reviewed all of the premapping materials, they used a stereoscope to delineate major landforms, prominent areas of vegetation, and possible breaks among soils on aerial photographs. They then went to the field to become familiar with the area. Observation notes were taken for future use in correlating and in refining the delineations on the aerial photographs.

The team selected representative locations to typify each map unit and range site. At these locations a soil scientist described the soil profile, surface features, and landforms. A range conservationist determined the forage production and the present and potential plant communities. The team then documented transects, samples and clippings of plants, photographs of soil profiles and landscapes, and field notes. These data were used to refine delineations, set up map units, and select range sites based on relationships among soils, landforms, and plant communities.

The team surveyed similar landforms and extrapolated the map unit concepts throughout the area.

General Soil Map Units

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, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The soils or miscellaneous areas making up one unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils or miscellaneous areas can be identified on the map. Likewise, areas that 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 general soil map units in this survey have been grouped for broad interpretive purposes. Each of the broad groups and the map units in each group are described on the following pages.

Map Unit Descriptions

Areas Dominated by Playas and Nearly Level, Poorly Drained Soils; on Lake Plains

This group consists of the Playas-Saltair general soil map unit. It makes up about 30 percent of the land acreage in the survey area.

1. Playas-Saltair

Playas and very deep, poorly drained, nearly level soils; on lake plains in a desert climatic zone

This map unit is in the southern part of the survey area. It is on lake plains. Slope is 0 to 2 percent. The vegetation on the Saltair soils is mainly pickleweed and inland saltgrass. Elevation is 4,210 to 4,230 feet. The average annual precipitation is about 6 to 8 inches, the mean annual air temperature is 47 to 52 degrees F, and the average freeze-free period is 120 to 140 days.

This unit makes up about 30 percent of the land acreage in the survey area. It is about 75 percent Playas, 5 percent Saltair soils, and 20 percent Salt flats and minor soils. The soils of minor extent are Dynal, Skumpah, and Swingler soils.

The Playas are barren, undrained flats consisting of stratified, strongly saline lacustrine sediments.

The Saltair soils are on lake plains. They formed in mixed lacustrine sediments derived dominantly from limestone and quartzite. The surface layer is light gray silt loam. Below this to a depth of 60 inches or more is light gray and light brownish gray silty clay loam. These soils are strongly saline. A seasonal high water table is within a depth of 12 inches.

Much of the unit is barren and has limited value as rangeland or wildlife habitat.

Areas Dominated by Playas, Rock Outcrop, and Nearly Level to Moderately Steep, Well Drained and Somewhat Excessively Drained Soils; on Lake Plains, Lake Terraces, Alluvial Fans, and Hillsides

This group consists of the Skumpah-Playas-Smaug and Cliffdown-Rock outcrop-Promo general soil map units. It makes up about 21 percent of the land acreage in the survey area.

2. Skumpah-Playas-Smaug

Playas and very deep, well drained, nearly level soils; on lake plains and lake terraces in a desert climatic zone

This map unit is in the western and central parts of the survey area. It is mainly on nearly level lake plains. Slope is 0 to 5 percent. The vegetation on the Skumpah and Smaug soils is mainly xerophytic shrubs, grasses, and annual weeds. Elevation is 4,200 to 5,000 feet. The average annual precipitation is about 4 to 8 inches, the mean annual air temperature is 45 to 52 degrees F, and the average freeze-free period is 100 to 150 days.

This unit makes up about 19 percent of the land acreage in the survey area. It is about 45 percent Skumpah soils, 15 percent Playas, 10 percent Smaug soils, and 30 percent Rock outcrop and minor soils. The soils of minor extent are Dynal, Lynndyl, Mellor, Saltair, Saxby, Sitar, Swingler, and Tosser soils.

The Skumpah soils are on lake plains. They formed in

lacustrine sediments and alluvium derived dominantly from limestone and quartzite. The surface layer is light gray silt loam. The subsoil is light yellowish brown silty clay loam. Below this to a depth of 60 inches or more are light gray silty clay loam and silt loam. These soils are strongly affected by salt and alkali.

The Playas are barren, undrained flats consisting of stratified, strongly saline lacustrine sediments.

The Smaug soils are on lake plains and lake terraces. They formed in lacustrine sediments and alluvium derived dominantly from limestone and other sedimentary rocks. The surface layer is light gray very fine sandy loam. Below this to a depth of 60 inches or more are very pale brown very fine sandy loam and silt loam.

This unit is used dominantly for rangeland or wildlife habitat. A few areas are used as irrigated cropland.

3. Cliffdown-Rock Outcrop-Promo

Rock outcrop and shallow and very deep, well drained and somewhat excessively drained, gently sloping to moderately steep soils; on lake terraced alluvial fans and hillsides in desert and semidesert climatic zones

This map unit is in the southern part of the survey area. It is mainly on alluvial fans and hillsides terraced by ancient Lake Bonneville. Slope is 3 to 35 percent. The vegetation is mainly shadscale, bud sagebrush, and bottlebrush squirreltail on the Cliffdown soils and black sagebrush, shadscale, and Sandberg bluegrass on the Promo soils. Elevation is 4,300 to 6,000 feet. The average annual precipitation is about 6 to 12 inches, the mean annual air temperature is 47 to 54 degrees F, and the average freeze-free period is 120 to 160 days.

This unit makes up about 2 percent of the land acreage in the survey area. It is about 65 percent Cliffdown soils, 10 percent Rock outcrop, 10 percent Promo soils, and 15 percent minor soils. The soils of minor extent are Dynal, Lynndyl, and Skumpah soils.

The Cliffdown soils are on lake terraced alluvial fans and lake terraced hillsides. These very deep, somewhat excessively drained soils formed in alluvium derived dominantly from limestone and other sedimentary rocks. About 65 percent of the surface is covered with gravel. The surface layer is pale brown gravelly sandy loam. Below this to a depth of 60 inches or more are very pale brown and light gray very gravelly sandy loam and very gravelly loamy sand.

The Rock outcrop consists of barren, exposed ridges and ledges of limestone and other sedimentary rocks.

The Promo soils are on hillsides associated with the Rock outcrop. These shallow, well drained soils formed in colluvium derived dominantly from limestone, sandstone, and siltstone. About 60 percent of the surface is covered with rock fragments. These soils are light gray and very pale brown very gravelly loam and are underlain by fractured siltstone at a depth of 10 to 20 inches.

This unit is used for rangeland or wildlife habitat.

Areas Dominated by Nearly Level to Moderately Steep, Well Drained Soils; on Fan Terraces and Alluvial Fans

This group consists of the Lembos-Acana-Kunzler, Declo-Mellor-Darkbull, and Tosser-Hiko Peak-Sitar general soil map units. It makes up about 21 percent of the land acreage in the survey area.

4. Lembos-Acana-Kunzler

Shallow, moderately deep, and very deep, well drained, nearly level and gently sloping soils; on fan terraces in a semidesert climatic zone

This map unit is in the central part of the survey area. It is mainly on south- and east-facing fan terraces. Slope is 1 to 8 percent. The vegetation is mainly Wyoming big sagebrush on the Lembos soils, black sagebrush and bottlebrush squirreltail on the Acana soils, and Wyoming big sagebrush and black greasewood on the Kunzler soils. Elevation is 4,800 to 5,800 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 46 to 51 degrees F, and the average freeze-free period is 120 to 160 days.

This unit makes up about 11 percent of the land acreage in the survey area. It is about 25 percent Lembos soils, 15 percent Acana soils, 15 percent Kunzler soils, and 45 percent minor soils (fig. 2). The soils of minor extent are Birdow, Brobett, Collard, Crooked Creek, Jericho, Mellor, Puett, Scalade, Shalper, Taylorsflat, and Tosser soils.

The Lembos soils are on fan terraces. These moderately deep soils formed in alluvium derived dominantly from sandstone and limestone. About 10 percent of the surface is covered with gravel. The surface layer is pale brown loam. The subsoil is pale brown silt loam and very pale brown loam and cobbly loam. A cemented hardpan of silica and carbonate is at a depth of 20 to 40 inches.

The Acana soils are on fan terraces. These shallow soils formed in alluvium derived dominantly from sandstone and limestone. About 20 percent of the surface is covered with gravel. The surface layer is light brownish gray gravelly loam. The subsoil is pale brown loam and very pale brown sandy loam. A cemented hardpan of silica and carbonate is at a depth of 10 to 20 inches.

The Kunzler soils are on the lower parts of fan terraces. These very deep soils formed in alluvium derived dominantly from sandstone and limestone. About 5 percent of the surface is covered with gravel. The surface layer is pale brown loam. Below this to a depth of

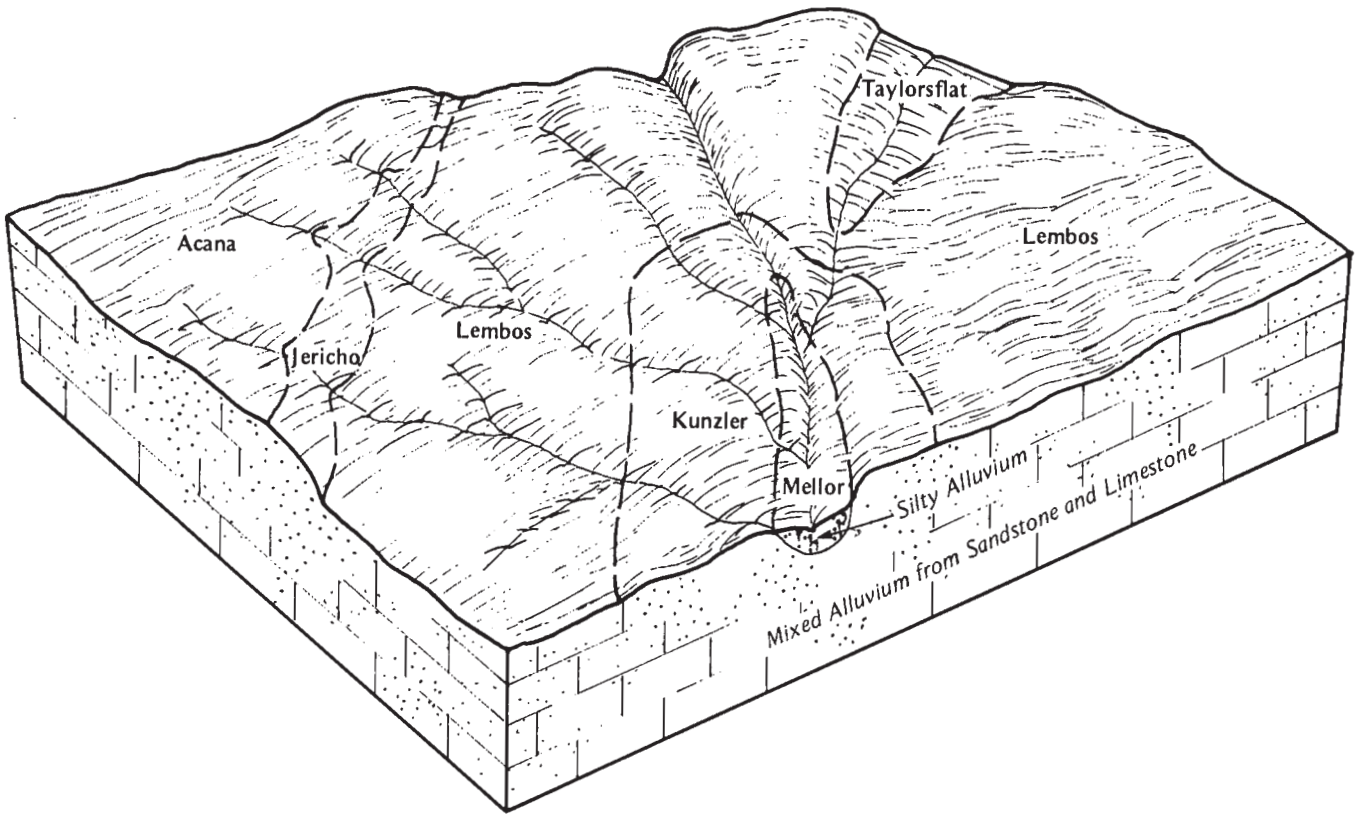

Figure 2.—Relationship of soils and parent material in the Lembos-Acana-Kunzler general soil map unit.

60 inches or more are light gray loam and very pale brown and pink sandy loam and fine sandy loam. These soils have an accumulation of silica and are brittle below a depth of about 11 inches.

This unit is used dominantly for rangeland or wildlife habitat. A few areas are used as irrigated cropland.

5. Declo-Mellor-Darkbull

Very deep, well drained, nearly level to strongly sloping soils; on fan terraces in a semidesert climatic zone

This map unit is east of the Raft River Mountains in the northern part of the survey area. It is mainly on north- and west-facing fan terraces. Slope is 1 to 12 percent. The vegetation is mainly shadscale, black greasewood, and bottlebrush squirreltail on the Declo soils; Wyoming big sagebrush and black greasewood on the Mellor soils; and Wyoming big sagebrush and bluebunch wheatgrass on the Darkbull soils. Elevation is 5,200 to 6,000 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 50 degrees F, and the average freeze-free period is 100 to 140 days.

This unit makes up about 1 percent of the land acreage in the survey area. It is about 50 percent Declo soils, 20 percent Mellor soils, 15 percent Darkbull soils, and 15 percent minor soils. The soils of minor extent are Birdow, Donnardo, Puett, and Tosser soils.

The Declo soils are on fan terraces. They formed in alluvium derived dominantly from sandstone and limestone. The surface layer is pale brown loam. Below this to a depth of 60 inches or more is very pale brown loam.

The Mellor soils are on fan terraces. They formed in alluvium derived dominantly from limestone and lacustrine sediments. The surface layer is light brownish gray silt loam. The subsoil is pale brown silty clay loam. Below this to a depth of 60 inches or more is very pale brown and light gray silt loam.

The Darkbull soils are on fan terraces. They formed in alluvium derived dominantly from quartzite, schist, and limestone. The surface layer is pale brown loam. The subsoil is light yellowish brown and very pale brown loam. Below this to a depth of 60 inches or more are very pale brown and light yellowish brown very gravelly loamy sand and extremely gravelly loamy sand.

This unit is used dominantly for rangeland or wildlife habitat. A few areas are used as irrigated cropland.

6. Tosser-Hiko Peak-Sitar

Very deep, well drained, nearly level to moderately steep soils; on fan terraces and lake terraced alluvial fans in a semidesert climatic zone

This map unit is in the central and eastern parts of the survey area. It is mainly on fan terraces and lake terraced alluvial fans of ancient Lake Bonneville. Slope is 1 to 25 percent. The vegetation is mainly black sagebrush on the Tosser soils and Wyoming big sagebrush on the Hiko Peak and Sitar soils. Elevation is 4,300 to 5,800 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 51 degrees F, and the average freeze-free period is 120 to 160 days.

This unit makes up about 9 percent of the land acreage in the survey area. It is about 30 percent Tosser soils, 20 percent Hiko Peak soils, 10 percent Sitar soils, and 40 percent minor soils. The soils of minor extent are Acana, Hiko Springs, Kunzler, Lembos, Mellor, Pomat, Saxby, Scalade, Skumpah, Tarnach, and Taylorsflat soils.

The Tosser soils are on dissected fan terraces. They formed in alluvium derived dominantly from limestone, rhyolite, and chert. About 45 percent of the surface is covered with gravel. The surface layer is light brownish gray very gravelly sandy loam and gravelly fine sandy loam. Below this to a depth of 60 inches or more are pale brown and grayish brown very gravelly loamy sand and extremely gravelly sand.

The Hiko Peak soils are on lake terraced alluvial fans. They formed in alluvium derived dominantly from quartzite and limestone. About 20 percent of the surface is covered with gravel. The surface layer is pale brown gravelly loam. Below this to a depth of 60 inches or more are pale brown and very pale brown gravelly loam and very gravelly sandy loam.

The Sitar soils are on fan terraces. They formed in alluvium derived dominantly from limestone. About 10 percent of the surface is covered with gravel. The surface layer is light gray silt loam. Below this to a depth of 60 inches or more are light gray, pale brown, and very pale brown silt loam, very gravelly silt loam, and very gravelly very fine sandy loam.

This unit is used dominantly for rangeland or wildlife habitat. It also is used for improved pasture.

Areas Dominated by Rock Outcrop and Nearly Level to Steep, Well Drained and Somewhat Excessively Drained Soils; on Fan Terraces, Alluvial Fans, and Hillsides

This group consists of the Donnardo-Kapod-Collard, Fontreen-Borvant-Overland, Dahar-Bullump-Raftriver, Cottonthomas-Tomsherry, and Clavicon-Rock outcrop-Rexmont general soil map units. It makes up about 14 percent of the land acreage in the survey area.

7. Donnardo-Kapod-Collard

Very deep, well drained, gently sloping soils; on alluvial fans and fan terraces in an upland climatic zone

This map unit is south of the Raft River Mountains in the northern part of the survey area. It is mainly on south-facing alluvial fans and fan terraces. Slope is 2 to 10 percent. The vegetation is mainly Wyoming big sagebrush and bluebunch wheatgrass on the Donnardo soils, black sagebrush and bluebunch wheatgrass on the Kapod soils, and Utah juniper on the Collard soils. Elevation is 5,400 to 6,400 feet. The average annual precipitation is 12 to 16 inches, the mean annual air temperature is 45 to 49 degrees F, and the average freeze-free period is 100 to 140 days.

This unit makes up about 1 percent of the land acreage in the survey area. It is about 25 percent Donnardo soils, 15 percent Kapod soils, 15 percent Collard soils, and 45 percent minor soils. The soils of minor extent are Birdow, Borvant, Bullump, Crooked Creek, Fontreen, Hupp, Ridd, and Taylorsflat soils.

The Donnardo soils are on alluvial fans and fan terraces. They formed in alluvium derived dominantly from limestone and sandstone. The surface layer is grayish brown gravelly loam. The subsoil is light brownish gray very cobbly loam and pale brown very cobbly sandy loam. Below this to a depth of 60 inches or more is light gray very cobbly sandy loam.

The Kapod soils are on fan terraces. They formed in alluvium derived dominantly from quartzite, sandstone, and limestone. About 5 to 15 percent of the surface is covered with rock fragments. The surface layer is dark brown cobbly loam and brown very cobbly loam. The subsoil is light brownish gray and pale brown very cobbly loam and very pale brown extremely gravelly loam. Below this to a depth of 60 inches or more is very pale brown extremely gravelly loam.

The Collard soils are on fan terraces. They formed in alluvium derived dominantly from quartzite. The surface layer is brown gravelly loam. The subsoil is brown gravelly sandy clay loam and dark yellowish brown very gravelly sandy clay loam. Below this to a depth of 60 inches or more is yellowish brown extremely gravelly loamy sand.

This unit is used as irrigated cropland, pasture, rangeland, or wildlife habitat.

8. Fontreen-Borvant-Overland

Shallow, moderately deep, and very deep, well drained, gently sloping to steep soils; on fan terraces and hillsides in an upland climatic zone

This map unit is on the eastern end of the Raft River Mountains in the northern part of the survey area. Slope is 3 to 40 percent. The vegetation is mainly Utah juniper, pinyon pine, and black sagebrush. Elevation is 5,200 to

7,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 43 to 47 degrees F, and the average freeze-free period is 80 to 130 days.

This unit makes up about 1 percent of the land acreage in the survey area. It is about 45 percent Fontreen soils, 30 percent Borvant soils, 10 percent Overland soils, and 15 percent minor soils. The soils of minor extent are Bullump, Phage, Puett, Reebok, and Sonlet soils.

The Fontreen soils are on hillsides and fan terraces. These very deep soils formed in alluvium and colluvium derived dominantly from limestone and quartzite. About 20 percent of the surface is covered with rock fragments. The surface layer is grayish brown gravelly loam. The subsoil is very pale brown very gravelly loam. Below this to a depth of 60 inches or more is very pale brown very gravelly loam.

The Borvant soils are on fan terraces. These shallow soils formed in alluvium derived dominantly from limestone and quartzite. About 35 percent of the surface is covered with rock fragments. The surface layer is grayish brown and brown gravelly loam and very gravelly loam. The subsoil is white very gravelly loam. A hardpan that is cemented by carbonates is at a depth of 10 to 20 inches.

The Overland soils are on hillsides. These moderately deep soils formed in colluvium and residuum derived dominantly from limestone. About 65 percent of the surface is covered with rock fragments. The surface layer is dark brown and light brownish gray gravelly loam. The subsoil is pale brown and light gray very gravelly loam. Limestone bedrock is at a depth of 20 to 40 inches.

This unit is used for rangeland, wildlife habitat, or woodland.

9. Dahar-Bullump-Raftriver

Moderately deep and very deep, well drained, gently sloping to moderately steep soils; on hillsides and fan terraces in an upland climatic zone

This map unit is in the northwestern part of the survey area. It is mainly on the hillsides and ridges of dissected fan terraces. Slope is 2 to 30 percent. The vegetation is mainly Utah juniper and Wyoming big sagebrush on the Dahar soils; antelope bitterbrush, mountain big sagebrush, and Idaho fescue on the Bullump soils; and Wyoming big sagebrush and bluebunch wheatgrass on the Raftriver soils. Elevation is 5,300 to 6,800 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 80 to 120 days.

This unit makes up about 6 percent of the land acreage in the survey area. It is about 25 percent Dahar soils, 20 percent Bullump soils, 10 percent Raftriver soils, and 45 percent minor soils (fig. 3). The soils of minor extent are Acord, Ant Flat, Birdow, Codquin, Crooked Creek, Duckree, Fontreen, Hiko Peak, Koosharem, Plegomir, Ramshorn family, Rodrof, Sonlet, and Vicking soils.

The Dahar soils are on dissected hillsides. These moderately deep soils formed in alluvium and colluvium derived dominantly from sandstone and limestone. About 20 percent of the surface is covered with gravel. The surface layer is grayish brown gravelly sandy loam and brown gravelly loam. The subsoil is light brownish gray gravelly loam and light gray sandy loam. A strongly cemented hardpan is at a depth of 20 to 40 inches.

The Bullump soils are on hillsides. These very deep soils formed in colluvium and alluvium derived dominantly from quartzite and mica schist. The surface layer is very dark grayish brown and dark grayish brown loam. Below this to a depth of 60 inches are brown, yellowish brown, and light yellowish brown very gravelly clay loam and very cobbly sandy clay loam.

The Raftriver soils are on the rounded ridges of dissected fan terraces. These moderately deep soils formed in alluvium and colluvium derived dominantly from quartzite, schist, and volcanic ash. About 5 percent of the surface is covered with gravel. The surface layer is pale brown loam. The subsoil is pale brown and very pale brown loam and sandy loam. A weakly cemented duripan is at a depth of 20 to 40 inches.

This unit is used dominantly for rangeland, wildlife habitat, or woodland. A few areas are used for irrigated or dryland crops.

10. Cottonthomas-Tomsherry

Moderately deep and very deep, well drained, nearly level to strongly sloping soils; on fan terraces in an upland climatic zone

This map unit is in the northwestern part of the survey area. It is mainly on fan terraces. Slope is 0 to 15 percent. The vegetation is mainly Wyoming big sagebrush, Nevada bluegrass, and Utah juniper. Elevation is 5,000 to 6,600 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 80 to 100 days.

This unit makes up about 1 percent of the land acreage in the survey area. It is about 50 percent Cottonthomas soils, 30 percent Tomsherry soils, and 20 percent minor soils. The soils of minor extent are Birdow, Bluehill, Coalbank, Crooked Creek, and Koosharem soils.

The Cottonthomas soils are on fan terraces. These very deep soils formed in alluvium derived dominantly from volcanic ash. The surface layer is brown fine sandy loam. The subsoil is pale brown, very pale brown, and light gray fine sandy loam to a depth of 60 inches.

The Tomsherry soils are on fan terraces. These moderately deep soils formed in alluvium derived

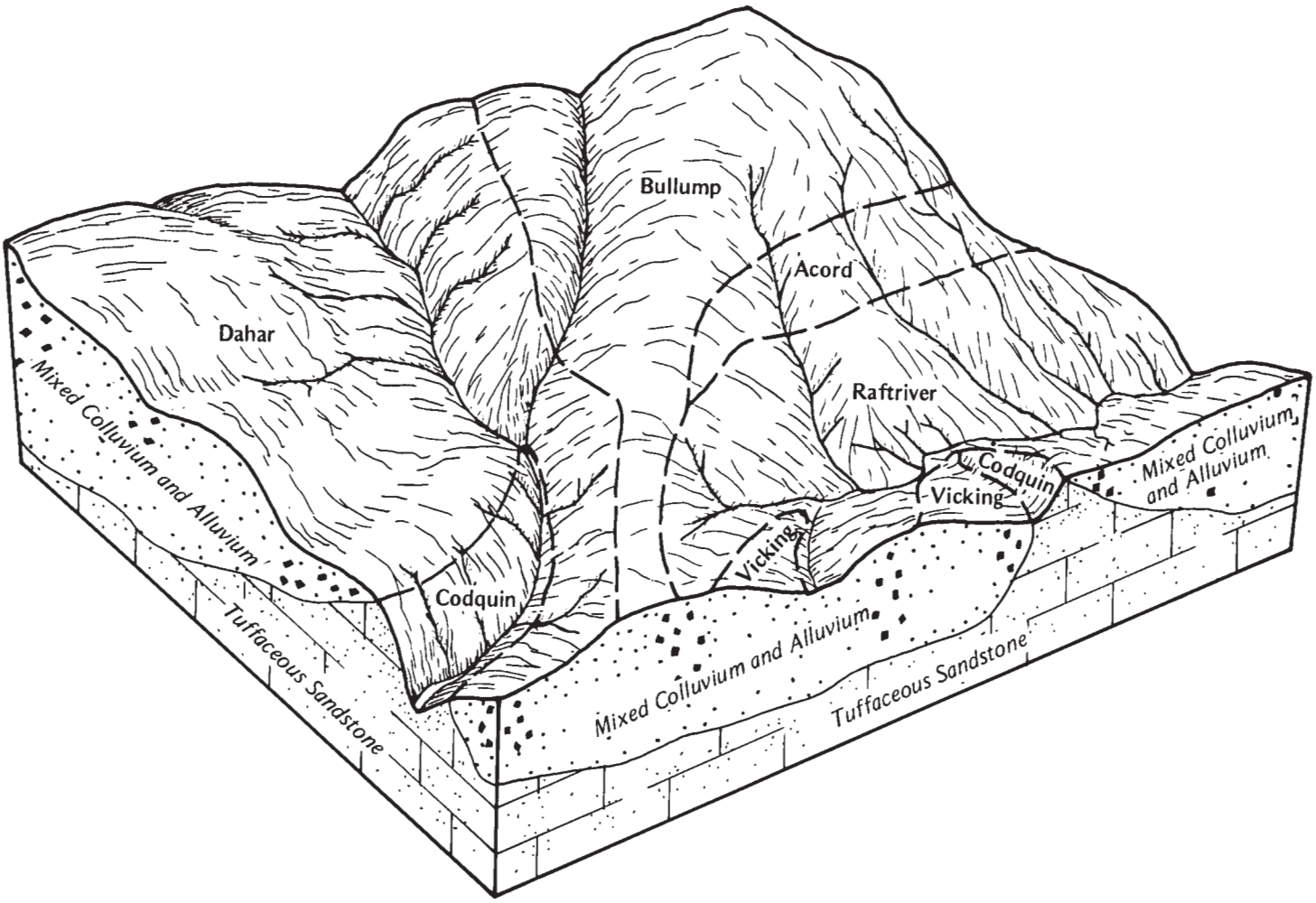

Figure 3.—Relationship of soils and parent material in the Dahar-Bullump-Raftriver general soil map unit.

dominantly from volcanic ash. About 10 percent of the surface is covered with gravel and cobbles. The surface layer is grayish brown fine sandy loam. The subsoil is pale brown fine sandy loam. A duripan that is cemented by silica is at a depth of 20 to 40 inches.

This unit is used dominantly for rangeland, wildlife habitat, or woodland. A few areas are used for irrigated or dryland crops.

11. Clavicon-Rock Outcrop-Rexmont

Rock outcrop and shallow and moderately deep, well drained and somewhat excessively drained, moderately steep and steep soils; on hillsides in an upland climatic zone

This map unit is in the western and northern parts of the survey area. It is mainly on hillsides. Slope is 15 to 60 percent. The vegetation is mainly Utah juniper and pinyon pine on the Clavicon soils and Utah juniper on the Rexmont soils. Elevation is 5,400 to 7,000 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 75 to 100 days.

This unit makes up about 5 percent of the land acreage in the survey area. It is about 20 percent Clavicon soils, 20 percent Rock outcrop, 15 percent Rexmont soils, and 45 percent Rubble land and minor soils. The soils of minor extent are Brobett, Broad Canyon family, Dahar, Lodar, Lundy, Ramshorn family, Shalper, Solak, and Sonlet soils.

The Clavicon soils are on hillsides. These moderately deep, well drained soils formed in colluvium and residuum derived dominantly from limestone, chert, and dolomite. About 45 percent of the surface is covered with rock fragments. The surface layer is brown very gravelly loam. The subsoil is pale brown and very pale brown very gravelly loam. Weathered limestone bedrock is at a depth of 20 to 40 inches.

The Rock outcrop consists of barren, exposed ridges and ledges of limestone, chert, dolomite, rhyolite, and other igneous rocks.

The Rexmont soils are on hillsides. These shallow, somewhat excessively drained soils formed in colluvium derived dominantly from rhyolite and other extrusive igneous rocks. About 40 percent of the surface is covered with rock fragments. The surface layer is brown very stony loam and extremely stony loam. Unweathered, fractured rhyolite bedrock is at a depth of 10 to 20 inches.

This unit is used for rangeland, wildlife habitat, or woodland.

Areas Dominated by Gently Sloping to Very Steep, Well Drained and Somewhat Excessively Drained Soils; on Hillsides, Ridges, Alluvial Fans, and Mountainsides

This group consists of the Tarnach-Amtoft-Cliffdown and Parkay-Bickmore-Broad Canyon families general soil map units. It makes up about 14 percent of the land acreage in the survey area.

12. Tarnach-Amtoft-Cliffdown

Shallow and very deep, well drained and somewhat excessively drained, strongly sloping to very steep soils; on hillsides, ridges, and alluvial fans in desert and semidesert climatic zones

This map unit is in the southern part of the survey area. It is mainly on hillsides and ridges. It is characterized by steep slopes, rocky ridges, and escarpments. Slope is 12 to 80 percent. The vegetation is mainly Utah juniper, black sagebrush, and grasses on the Tarnach and Amtoft soils and shadscale and Indian ricegrass on the Cliffdown soils. Elevation is 4,200 to 7,000 feet. The average annual precipitation is about 6 to 12 inches, the mean annual air temperature is 45 to 54 degrees F, and the average freeze-free period is 120 to 160 days.

This unit makes up about 5 percent of the land acreage in the survey area. It is about 40 percent Tarnach soils, 15 percent Amtoft soils, 10 percent Cliffdown soils, and 35 percent Rock outcrop and minor soils. The soils of minor extent are Declo, Hiko Peak, Jericho, Promo, Puett, and Sitar soils.

The Tarnach soils are on hillsides and ridges. These shallow, well drained soils formed in colluvium and residuum derived dominantly from limestone and sandstone. About 65 percent of the surface is covered with gravel. These soils are pale brown very gravelly loam and are underlain by limestone and sandstone bedrock at a depth of 10 to 20 inches.

The Amtoft soils are on hillsides. These shallow, well drained soils formed in colluvium and residuum derived dominantly from limestone. About 75 percent of the surface is covered with gravel, cobbles, and stones. These soils are light gray and very pale brown very gravelly loam and are underlain by limestone bedrock at a depth of 10 to 20 inches.

The Cliffdown soils are on alluvial fans. These very deep, somewhat excessively drained soils formed in alluvium derived dominantly from limestone, dolomite, quartzite, and sandstone. The surface layer is pale brown gravelly sandy loam. Below this to a depth of 60 inches or are very pale brown and light gray very gravelly sandy loam and very gravelly loamy sand.

This unit is used for rangeland or wildlife habitat.

13. Parkay-Bickmore-Broad Canyon Families

Moderately deep to very deep, well drained, gently sloping to very steep soils; on mountainsides and ridges in mountain and high mountain climatic zones

This map unit is in the northern part of the survey area. It is mainly on mountainsides and ridges. It is characterized by low vegetation on the west- and north-facing slopes and taller, thicker vegetation on the lee side of ridges where snow accumulates in the winter. Slope is 5 to 60 percent. The vegetation is mainly mountain big sagebrush, spike fescue, basin wildrye, and slender wheatgrass on the Parkay family and Bickmore family soils and low sagebrush and bluebunch wheatgrass on the Broad Canyon family soils. Elevation is 6,000 to 9,500 feet. The average annual precipitation is about 16 to more than 22 inches, the mean annual air temperature is 38 to 43 degrees F, and the average freeze-free period is 40 to 80 days.

This unit makes up about 9 percent of the land acreage in the survey area. It is about 30 percent Parkay family soils, 15 percent Bickmore family soils, 10 percent Broad Canyon family soils, and 45 percent Rock outcrop, Rubble land, and minor soils. The soils of minor extent are Bearskin, Eyre family, Hades, Jughandle family, Nielsen family, Ridgecrest family, Skylick, and Solak soils.

The Parkay family soils are in concave pockets leeward of ridges and on the lower parts of mountainsides protected from the wind. These very deep soils formed in colluvium derived dominantly from quartzite, schist, and gneiss. About 10 percent of the surface is covered with gravel. The surface layer is dark grayish brown gravelly loam and very gravelly loam. The subsoil to a depth of 60 inches or more is yellowish brown very gravelly loam and extremely gravelly clay loam.

The Bickmore family soils are on mountainsides. These moderately deep soils formed in colluvium derived dominantly from chert, limestone, and quartzite. The surface layer is dark grayish brown and brown gravelly loam and very gravelly loam. Below this is pale brown and very pale brown very gravelly loam. Fractured bedrock is at a depth of 20 to 40 inches.

The Broad Canyon family soils are on mountainsides and summits. These deep soils formed in colluvium derived dominantly from quartzite, schist, and gneiss. About 40 percent of the surface is covered with gravel. The surface layer is brown very gravelly loam. Below this are light yellowish brown extremely gravelly sandy loam and extremely gravelly loamy sand. Highly weathered bedrock is at a depth of 40 to 60 inches.

This unit is used for rangeland, wildlife habitat, or woodland.

Broad Land Use Considerations

Rangeland is the most important land use in the survey area. It makes up about 65 percent of the total land acreage. Parts of all general soil map units in the survey area are grazed. Units 2, 3, and 12 are used primarily for winter grazing. Units 11 and 13 are used primarily for summer grazing. The Bovine Mountains, which are in unit 11, are used for winter grazing. Unit 9 is used mainly for spring and fall grazing and some summer grazing at the higher elevations. Units 4, 5, 6, 7, 8, and 10 are used mainly for spring and fall grazing.

About 25 percent of the total acreage in the survey area is Playas (mud flats). Playas are nearly devoid of vegetation and are very poorly drained. They are of major extent in general soil map units 1 and 2.

About 9 percent of the total land acreage is woodland. Wood products are harvested on only a small part of this acreage. The slope and difficult access are the main limitations. If well managed, some of the woodland has good potential to produce sufficient understory vegetation to support grazing. The areas of woodland are in general soil map units 8 to 13.

About 1 percent of the total land acreage is cropland. Crops include alfalfa, hay, and small grain. Most of the cropland is irrigated and is in scattered areas throughout general soil map units 2, 4, 5, 9, and 10. Soils that have a high potential for irrigated crops are the Smaug soils in unit 2; the Birdow, Lembos, and Taylorsflat soils in unit 4; and the Birdow and Koosharem soils in units 5, 9, and 10. A few small areas are used for dryland wheat or barley in units 4, 5, 6, and 7. The lack of an adequate, nonsaline water supply is the major limitation affecting crop production.

About 1,037 square miles in the survey area is water, predominantly in the Great Salt Lake. The lake is used for recreation and wildlife management areas. It also is used by the mineral industry.

The potential of the soils for recreational uses ranges from low to high, depending on the intensity of the expected use and the properties of the soil. The soils in general soil map units 1 and 2 have low potential for recreational development because of wetness, ponding, and excess salts. Most areas of units 3 to 13 are suited to various types of recreational development. The slope generally is a limitation affecting intensive recreational development, such as playgrounds and camp areas, in units 3, 6, 8, 9, 10, 11, 12, and 13. Small areas that are suitable for intensive recreational development, however, are available in some areas of these units. All of these units are suitable for such recreational uses as hiking and horseback riding.

Much of the survey area is unpopulated. It has hundreds of square miles of undeveloped land that supports a variety of wildlife habitats. General soil map units 6, 7, 8, 9, 10, and 13 have the highest potential for wildlife habitat. Units 6, 7, 9, 10, and 13 have the highest potential for rangeland habitat. Units 8 and 13 have the highest potential for woodland habitat.

Detailed Soil Map Units

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

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

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

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

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

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

Soils of one series can differ in texture of the surface layer or of the underlying layers. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Hiko Peak gravelly loam, 3 to 12 percent slopes, is a phase of the Hiko Peak series.

Soil families consist of soils that have not been defined in sufficient detail to be included in a soil series. The family level is the next higher level of classification above the series within soil taxonomy. A reference pedon is provided to indicate the general characteristics of the soils as they occur in the survey area. Interpretations for the uses of these soils are broader than those for a soil series. An example of a map unit classified at the family level is Bickmore-Nielsen families association, 5 to 45 percent slopes.

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

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Dahar-Codquin gravelly sandy loams, 8 to 60 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Kunzler-Lembos association, 1 to 5 percent slopes, is an example.

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

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 or miscellaneous areas.

Map Unit Descriptions

1—Acana gravelly loam, 1 to 3 percent slopes. This shallow, well drained soil is on fan terraces. It is in areas east of the Grouse Creek Mountains. It formed in alluvium derived dominantly from limestone and sandstone. Slopes are 150 to more than 300 feet long, are linear and convex, and face south and east. The vegetation is dominantly black sagebrush, shadscale, Nevada bluegrass, and bottlebrush squirreltail. Elevation is 4,900 to 5,500 feet. The average annual precipitation is about 8 to 10 inches, the mean annual air temperature is 46 to 50 degrees F, and the average freeze-free period is 120 to 160 days.

Typically, 20 percent of the surface is covered with gravel. The surface layer is light brownish gray gravelly loam 3 inches thick. The upper 10 inches of the subsoil is pale brown loam. The lower 4 inches is very pale brown, strongly saline sandy loam. A weakly cemented hardpan of silica and carbonates is at a depth of about 17 inches. The hardpan is indurated at a depth of about 24 inches.

Included in this unit are small areas of Declo, Jericho, and Lembos soils. The deep Declo soils are in concave drainage areas. They support shadscale. Jericho soils contain more gravel than the Acana soil and are on eroded hillsides. They support juniper. Lembos soils are moderately deep to a hardpan and are in concave areas. They support Wyoming big sagebrush. Included areas make up about 15 percent of the total acreage.

Permeability is moderately slow in the Acana soil. Available water capacity is about 1.5 to 3.0 inches. The water-supplying capacity is 2.0 to 4.5 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, winterfat, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, excess salinity, and low annual precipitation.

The capability subclass is VIIs in nonirrigated areas. The range site is Semidesert Shallow Hardpan (Black Sagebrush).

2—Acana-Collard gravelly loams, 3 to 8 percent slopes. This map unit is in the area of Muddy Creek Ranch. The Acana soil is on the convex parts of fan terraces. The Collard soil is on the concave parts of fan terraces. Slopes are 100 to 300 feet long in areas of the Acana soil and 200 to 500 feet long in areas of the Collard soil. The vegetation is dominantly black sagebrush and Indian ricegrass on the Acana soil and Wyoming big sagebrush and bluebunch wheatgrass on the Collard soil. Elevation is 5,300 to 6,400 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 48 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 40 percent Acana gravelly loam and 40 percent Collard gravelly loam. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Bullump, Crooked Creek, and Jericho soils. Bullump soils have a dark surface layer that is more than 20 inches thick and are in drainageways. They support antelope bitterbrush, Idaho fescue, and bluebunch wheatgrass. The poorly drained Crooked Creek soils are on narrow drainage bottoms. They support Nevada bluegrass and sedges. Jericho soils are shallow to a hardpan, have more than 35 percent rock fragments, and are on side slopes. They support Utah juniper. Also included are areas of a deep, loamy soil that has a thick, dark surface layer and

supports Wyoming big sagebrush. Included areas make up about 20 percent of the total acreage.

The Acana soil is shallow and well drained. It formed in alluvium derived dominantly from limestone and calcareous sandstone. Typically, 25 percent of the surface is covered with rock fragments. The surface layer is light brownish gray gravelly loam 3 inches thick. The subsoil is pale brown gravelly loam 8 inches thick. An indurated duripan of silica and carbonates is at a depth of about 11 inches.

Permeability is moderately slow in the Acana soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight.

The Collard soil is very deep and well drained. It formed in alluvium derived dominantly from quartzite and phyllite. Typically, 60 percent of the surface is covered with rock fragments. The surface layer is brown gravelly loam 5 inches thick. The upper 5 inches of the subsoil is brown gravelly sandy clay loam. The lower 8 inches is dark yellowish brown very gravelly sandy clay loam. The underlying material to a depth of 60 inches is yellowish brown extremely gravelly loamy sand.

Permeability is moderate in the Collard soil. Available water capacity is about 2.5 to 4.5 inches. The water-supplying capacity is 4 to 7 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is slow, and the hazard of water erosion is slight.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Acana soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, winterfat, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, excess salinity, and low annual precipitation.

The potential plant community on the Collard soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, Indian ricegrass, bottlebrush squirreltail, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is low annual precipitation.

The capability subclass is VIIs in nonirrigated areas. The Acana soil is in the Semidesert Shallow Hardpan (Black Sagebrush) range site. The Collard soil is in the Semidesert Gravelly Loam (Wyoming Big Sagebrush) North range site.

3—Acana-Jericho association, 3 to 10 percent slopes. This map unit is at the foot of Warm Spring Hills, Dove Creek Hills, and other hills east of the Grouse Creek Mountains. The Acana soil is on the remnant upper surfaces of dissected fan terraces. The Jericho soil is on the side slopes of fan terraces. Slopes are linear and convex and 75 to 150 feet long in areas of the Acana soil. They are linear and convex or concave and 25 to 100 feet long in areas of the Jericho soil. The vegetation is dominantly black sagebrush on the Acana soil and Utah juniper on the Jericho soil. Elevation is 5,200 to 5,800 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 46 to 50 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 50 percent Acana gravelly loam, 3 to 8 percent slopes, and 25 percent Jericho gravelly loam, 5 to 10 percent slopes.

Included in this unit are small areas of Bullump, Clavicon, Declo, and Lembos soils. The very deep Bullump soils are in concave areas. They support antelope bitterbrush and mountain big sagebrush. The Clavicon soils are moderately deep to limestone bedrock and are on side slopes and ridges. They support Utah juniper and pinyon pine. The very deep Declo soils do not have a cemented layer and are on concave drainage bottoms. They support shadscale, Indian ricegrass, and bottlebrush squirreltail. Lembos soils average more than 18 percent clay and are in drainageways. They support Wyoming big sagebrush, bluebunch wheatgrass, and bottlebrush squirreltail. Included areas make up about 25 percent of the total acreage.

The Acana soil is shallow and well drained. It formed in alluvium derived dominantly from sandstone and limestone. Typically, 25 percent of the surface is covered with gravel. The surface layer is light brownish gray gravelly loam 3 inches thick. The subsoil is pale brown gravelly loam 8 inches thick. An indurated duripan of silica and carbonates is at a depth of about 11 inches. In some areas the soil is shallow over bedrock and does not have a cemented layer.

Permeability is moderately slow in the Acana soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is slight.

The Jericho soil is shallow and well drained. It formed in alluvium derived dominantly from limestone. Typically, 40 percent of the surface is covered with gravel. The surface layer is light gray gravelly loam 3 inches thick. The upper 5 inches of the subsoil is very pale brown gravelly fine sandy loam. The lower 9 inches is white very

gravelly fine sandy loam. An indurated duripan is at a depth of about 17 inches. This soil is calcareous throughout. In some areas it is shallow over bedrock and does not have a cemented layer.

Permeability is moderately rapid in the Jericho soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 5 inches. The effective rooting depth is 14 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland, woodland, or wildlife habitat.

The potential plant community on the Acana soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, winterfat, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, excess salinity, and low annual precipitation.

The potential vegetation on the Jericho soil is an overstory of Utah juniper with a 30 percent canopy cover. The understory vegetation is 45 percent grasses, 10 percent forbs, and 45 percent shrubs. Important plants are black sagebrush, Indian ricegrass, bluebunch wheatgrass, and winterfat. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and low annual precipitation.

The capability subclass is VIIs in nonirrigated areas. The Acana soil is in the Semidesert Shallow Hardpan (Black Sagebrush) range site. The Jericho soil is in the Semidesert Shallow Hardpan (Juniper) range site.

4—Acord very cobbly loam, 5 to 15 percent slopes. This very deep, well drained soil is on strongly sloping fan terraces. It is on the western side of Junction Valley in the northern part of the survey area. It formed in alluvium derived dominantly from quartzite, mica schist, and siltstone. Slopes face northeast, are slightly convex, and are 150 to 300 feet long. The vegetation is dominantly low sagebrush, Nevada bluegrass, and bluebunch wheatgrass. Elevation is 6,000 to 6,500 feet. The average annual precipitation is about 13 to 16 inches, the mean annual air temperature is 40 to 44 degrees F, and the average freeze-free period is 80 to 90 days.

Typically, 40 percent of the surface is covered with rock fragments. The surface layer is dark grayish brown very cobbly loam 4 inches thick. The upper 14 inches of the subsoil is brown and yellowish brown very cobbly clay loam. The lower 6 inches is light yellowish brown very cobbly clay loam. The underlying material to a depth of 60 inches is very pale brown and light yellowish brown very gravelly sandy loam. In some areas the subsoil is very cobbly loam.

Included in this unit are small areas of Bullump, Koosharem, and Raftriver soils. Bullump soils have a dark surface layer that is more than 20 inches thick and are on the upper parts of alluvial fans and mountain foot slopes. They support antelope bitterbrush and mountain big sagebrush. Koosharem soils do not contain gravel and are in wide, deep drainageways. They support basin big sagebrush. The moderately deep Raftriver soils are on the lower parts of fan terraces. They support Wyoming big sagebrush. Also included are small areas of cobbly soils that have a water table near the surface and are in concave areas near springs, seeps, and intermittent streams. Included areas make up about 20 percent of the total acreage.

Permeability is moderately slow in the Acord soil. Available water capacity is about 4 to 6 inches. The water-supplying capacity is 6 to 10 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 3 percent. Runoff is medium, and the hazard of water erosion is slight.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community is 50 percent grasses, 15 percent forbs, and 35 percent shrubs. Important plants are low sagebrush, Idaho fescue, bluebunch wheatgrass, western wheatgrass, and Douglas rabbitbrush. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is the content of rock fragments in the surface layer.

The capability subclass is VIIs in nonirrigated areas. The range site is Upland Stony Clay (Low Sagebrush).

5—Ant Flat-Acord association, 10 to 30 percent slopes. This map unit is in areas south of Cotton Thomas Basin. The Ant Flat soil is on foot slopes and mountainsides. The Acord soil is on ridges and shoulder slopes. Slopes commonly are less than 100 feet long, face all directions, and are concave in areas of the Ant Flat soil and convex in areas of the Acord soil. The vegetation is dominantly basin big sagebrush, Douglas rabbitbrush, western wheatgrass, Sandberg bluegrass, and bottlebrush squirreltail on the Ant Flat soil and low sagebrush, Sandberg bluegrass, Hood phlox, bluebunch wheatgrass, and goldenweed on the Acord soil. Elevation is 5,000 to 6,500 feet. The average annual precipitation is about 13 to 16 inches, the mean annual air temperature is 40 to 45 degrees F, and the average freeze-free period is 80 to 100 days.

This unit is about 60 percent Ant Flat gravelly loam, 10

to 30 percent slopes, and 25 percent Acord very gravelly loam, 15 to 30 percent slopes.

Included in this unit are small areas of Codquin and Crooked Creek soils. The shallow Codquin soils are on steep slopes. They support juniper. The poorly drained Crooked Creek soils are on flat drainage bottoms and in seepy areas. They support silver sage and wire grass. Included areas make up about 15 percent of the total acreage.

The Ant Flat soil is very deep and well drained. It formed in alluvium and colluvium derived dominantly from mixed sedimentary rocks. Typically, 15 percent of the surface is covered with gravel. The surface layer is dark brown gravelly loam 10 inches thick. The upper 8 inches of the subsoil is dark brown clay loam, the next 13 inches is light yellowish brown clay, and the lower 29 inches is very pale brown clay loam. In some places the soil contains 15 to 30 percent rock fragments throughout. In other places it is loamy throughout.

Permeability is slow in the Ant Flat soil. Available water capacity is about 8 to 12 inches. The water-supplying capacity is 9 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Acord soil is very deep and well drained. It formed in alluvium and colluvium derived dominantly from mixed sedimentary rocks. Typically, 20 percent of the surface is covered with gravel. The surface layer is dark brown very cobbly loam 4 inches thick. The subsurface layer is dark brown very cobbly loam 7 inches thick. The upper 25 inches of the subsoil is brown very gravelly clay loam and very gravelly clay. The lower 8 inches is light yellowish brown very gravelly clay loam. The underlying material to a depth of 60 inches is white very gravelly clay loam.

Permeability is moderately slow in the Acord soil. Available water capacity is about 5 to 8 inches. The water-supplying capacity is 8 to 11 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Ant Flat soil is 60 percent grasses, 15 percent forbs, and 25 percent shrubs. Important plants are bluebunch wheatgrass, western wheatgrass, and basin big sagebrush. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is the slope.

The potential plant community on the Acord soil is 35 percent grasses, 15 percent forbs, and 50 percent shrubs. Important plants are low sagebrush, bluebunch wheatgrass, western wheatgrass, and Douglas rabbitbrush. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the content of rock fragments in the surface layer.

The Ant Flat soil is in capability subclass VIe in nonirrigated areas and is in the Upland Loam (Basin Big Sagebrush) range site. The Acord soil is in capability subclass VIs in nonirrigated areas and is in the Upland Stony Clay (Low Sagebrush) range site.

6—Bickmore-Eyre families-Rock outcrop association, 30 to 60 percent slopes. This map unit is near Rocky Pass in the southern part of the Grouse Creek Mountains. The Bickmore family soils are on mountainsides. The Eyre family soils are on ridges and mountainsides and are commonly associated with areas of Rock outcrop. The Rock outcrop is on ridges and mountain back slopes. Slopes face all directions. They are concave and 10 to 15 feet long in areas of the Bickmore family soils and convex and 5 to 15 feet long in areas of the Eyre family soils. The vegetation is dominantly mountain big sagebrush, western wheatgrass, and mountain snowberry on the Bickmore family soils and curlleaf mountainmahogany, mountain snowberry, and basin wildrye on the Eyre family soils. The Rock outcrop is mostly bare of vegetation. Elevation is 6,300 to 8,300 feet. The average annual precipitation is about 16 to 22 inches, the mean annual air temperature is 38 to 43 degrees F, and the average freeze-free period is 60 to 80 days.

This unit is about 30 percent Bickmore family gravelly loam, 30 to 60 percent slopes; 25 percent Eyre family very gravelly sandy loam, 30 to 60 percent slopes; and 20 percent Rock outcrop.

Included in this unit are small areas of Bullump, Nielsen family, and Parkay family soils. The very deep Bullump soils are warmer than the major soils and are on the lower slopes. They support antelope bitterbrush and bluebunch wheatgrass. The shallow Nielsen family soils have a developed subsoil and are on mountain shoulders and ridges. They support low sagebrush. The deep Parkay family soils are on steep, concave mountain slopes. They support aspen. Included areas make up about 25 percent of the total acreage.

The Bickmore family soils are moderately deep and well drained. They formed in colluvium derived dominantly from chert, quartzite, and dolomite. Typically, 20 percent of the surface is covered with gravel. The surface layer is dark grayish brown gravelly loam about 3 inches thick. The subsurface layer is brown very gravelly loam 17 inches thick. The subsoil is pale brown and very pale brown very gravelly loam 17 inches thick. Fractured chert bedrock is at a depth of about 37 inches. In some areas the depth to bedrock is more than 40 inches.

Permeability is moderate in the Bickmore family soils.

Available water capacity is about 3 to 5 inches. The water-supplying capacity is 7 to 11 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 5 to 15 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Eyre family soils are shallow and well drained. They formed in colluvium and residuum derived dominantly from quartzite. Typically, the surface layer is brown very gravelly sandy loam 4 inches thick. The subsurface layer also is brown very gravelly sandy loam 4 inches thick. The underlying material is brown extremely gravelly sandy loam 2 inches thick. Below this is quartzite bedrock. In places the depth to bedrock is less than 10 inches.

Permeability is rapid in the Eyre family soils. Available water capacity is about 0.5 to 1.0 inch. The water-supplying capacity is 2 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Rock outcrop consists of exposed bedrock on ridges and mountain back slopes.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Bickmore family soils is 65 percent grasses, 15 percent forbs, and 20 percent shrubs. Important plants are Idaho fescue, basin wildrye, mountain big sagebrush, slender wheatgrass, and bluebunch wheatgrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The potential plant community on the Eyre family soils is 15 percent grasses, 10 percent forbs, and 75 percent shrubs. Important plants are curlleaf mountainmahogany, bluebunch wheatgrass, Idaho fescue, and mountain big sagebrush. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are the slope and a low available water capacity.

The Bickmore and Eyre family soils are in capability subclass VIIe in nonirrigated areas. The Bickmore family soils are in the Mountain Gravelly Loam (Mountain Big Sagebrush) range site. The Eyre family soils are in the Mountainmahogany Thickets (Curlleaf Mountainmahogany) range site. The Rock outcrop is in capability class VIII and has not been assigned a range site.

7—Bickmore-Nielsen families association, 5 to 45 percent slopes. This map unit is in the Raft River Mountains. The Bickmore family soils are on gently sloping to moderately steep slopes. The Nielsen family soils are on gently sloping to steep ridges. Slopes are 300 to more than 800 feet long and face all directions. The vegetation is dominantly subalpine big sagebrush and Idaho fescue on the Bickmore family soils and fringed sagebrush and Idaho fescue on the Nielsen family soils. Elevation is 8,000 to 10,000 feet. The average annual precipitation is more than 20 inches, the mean annual air temperature is 39 to 42 degrees F, and the average freeze-free period is 40 to 80 days.

This unit is about 45 percent Bickmore family gravelly loam, 5 to 30 percent slopes, and 30 percent Nielsen family loam, 5 to 45 percent slopes.

Included in this unit are small areas of Dateman family and Parkay family soils. The very deep Dateman family soils are on ridges and concave side slopes. They support subalpine fir and limber pine. The very deep Parkay family soils are in concave areas. They support mountain big sagebrush. Also included are small areas of rock outcrop and a deep, wet soil in concave areas around springs and seeps. The deep, wet soil supports sedges and field horsetail. Included areas make up about 25 percent of the total acreage.

The Bickmore family soils are moderately deep and well drained. They formed in mixed alluvium derived dominantly from quartzite and mica schist. Typically, the surface layer is very dark grayish brown gravelly loam 12 inches thick. The upper 14 inches of the subsoil is dark brown very gravelly loam. The lower 5 inches is light brownish gray very gravelly loam. Bedrock is at a depth of about 31 inches.

Permeability is moderate in the Bickmore family soils. Available water capacity is about 3 to 4 inches. The water-supplying capacity is 8 to 13 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 5 to 15 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Nielsen family soils are shallow and well drained. They formed in mixed alluvium derived dominantly from quartzite and mica schist. Typically, the surface layer is very dark grayish brown loam 8 inches thick. The subsoil is dark grayish brown and brown very gravelly clay loam 9 inches thick. Bedrock is at a depth of about 17 inches.

Permeability is moderately slow in the Nielsen family soils. Available water capacity is about 1.5 to 2.5 inches. The water-supplying capacity is 3 to 10 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Bickmore family soils is 55 percent grasses, 35 percent forbs, and 10 percent shrubs. Important plants are Idaho fescue, whitepoint locoweed, yarrow, and subalpine sagebrush.

The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is the slope.

The potential plant community on the Nielsen family soils is 70 percent grasses, 20 percent forbs, and 10 percent shrubs. Important plants are Idaho fescue, muttongrass, fringed sagewort, and yarrow. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitation affecting range seeding is a low available water capacity.

The capability subclass is VIIe in nonirrigated areas. The Bickmore family soils are in the Subalpine Loam (Subalpine Big Sagebrush-Idaho Fescue) range site. The Nielsen family soils are in the Subalpine Windswept Ridge range site.

8—Birdow silt loam, 0 to 2 percent slopes. This very deep, well drained soil is in wide drainageways and on valley bottoms throughout the survey area. It formed in mixed alluvium derived dominantly from quartzite and limestone. Slopes are concave, are 100 to 300 feet long, and face all directions. The vegetation is dominantly basin big sagebrush and rubber rabbitbrush. Elevation is 5,200 to 6,000 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 45 to 47 degrees F, and the average freeze-free period is 130 to 170 days.

Typically, the surface layer is grayish brown and brown silt loam 30 inches thick. The upper 12 inches of the underlying material is pale brown loam. The lower part to a depth of 60 inches is light gray loam. In some areas the dark surface layer is 10 to 20 inches thick.

Included in this unit are small areas of Declo and Donnardo soils. Declo soils have less than 18 percent clay, do not have a dark surface layer, and are on low fan terraces. They support Wyoming big sagebrush. Donnardo soils are gravelly and cobbly. They have more than 35 percent rock fragments and are on the lower end of fan terraces. Also included are small areas of very deep soils that have a seasonal high water table within a depth of 60 inches and are on the lowest parts of drainageways and stream valleys. Included areas make up about 15 percent of the total acreage.

Permeability is moderately slow in the Birdow soil. Available water capacity is about 9 to 12 inches. The water-supplying capacity is 8 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 3 to 7 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used mainly for irrigated cropland, pasture, rangeland, or wildlife habitat.

This unit is well suited to cropland and pasture (fig. 4). Maintaining crop residue on or in the surface layer helps to control soil blowing and helps to maintain tilth and the organic matter content.

The potential plant community is 70 percent grasses, 10 percent forbs, and 20 percent shrubs. Important plants are basin wildrye, western wheatgrass, and basin big sagebrush. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and range seeding can be used to improve the rangeland vegetation. The suitability for range seeding is good.

The capability subclass is IIe in irrigated areas and IVs in nonirrigated areas. The range site is Loamy Bottom (Basin Wildrye).

9—Bluehill-Coalbank association, 20 to 60 percent slopes. This map unit is on the hillsides and side slopes of mesas north of Goose Creek in the northwest corner of the survey area. The Bluehill soil is on south-facing slopes. The Coalbank soil is on north-facing slopes. The vegetation is dominantly Wyoming big sagebrush, Indian ricegrass, and Utah juniper on the Bluehill soil and mountain big sagebrush, needleandthread, and Sandberg bluegrass on the Coalbank soil. Elevation is 5,100 to 5,700 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 42 to 48 degrees F, and the average freeze-free period is 80 to 110 days.

This unit is about 45 percent Bluehill fine sandy loam, 20 to 60 percent slopes, and 30 percent Coalbank fine sandy loam, 20 to 60 percent slopes.

Included in this unit are small areas of Codquin and Cottonthomas soils. The shallow Codquin soils are on steep south-facing slopes. They support Utah juniper and bluebunch wheatgrass. The very deep Cottonthomas soils are on the less sloping, concave foot slopes. They support Wyoming big sagebrush. Also included are small areas of a deep soil that has more than 35 percent rock fragments, is on side slopes, and supports mountain big sagebrush. Included areas make up about 25 percent of the total acreage.

The Bluehill soil is moderately deep and somewhat excessively drained. It formed in alluvium and residuum derived dominantly from volcanic ash. Typically, 15 percent of the surface is covered with gravel. The surface layer is light brownish gray fine sandy loam 4 inches thick. The next layer is pale brown very fine sandy loam 6 inches thick. The upper 5 inches of the subsoil is pale brown very fine sandy loam. The lower 17 inches is very pale brown very fine sandy loam. Weakly consolidated volcanic ash is at a depth of about 32 inches.

Permeability is moderately rapid in the Bluehill soil. Available water capacity is about 4.5 to 6.5 inches. The water-supplying capacity is 7 to 10 inches. The effective

Figure 4.—Irrigated hay on Birdow silt loam, 0 to 2 percent slopes.

rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 0 to 1 percent. Runoff is rapid, and the hazard of water erosion is severe. The hazard of soil blowing is moderate.

The Coalbank soil is deep and well drained. It formed in alluvium and colluvium derived dominantly from weakly consolidated volcanic ash. Typically, the surface layer is grayish brown fine sandy loam 18 inches thick. The subsoil is light brownish gray fine sandy loam 14 inches thick. The next layer is light gray fine sandy loam 13 inches thick. Highly fractured sandstone bedrock is at a depth of about 45 inches.

Permeability is moderately rapid in the Coalbank soil. Available water capacity is about 6.0 to 7.5 inches. The water-supplying capacity is 8 to 11 inches. The effective rooting depth is 40 to 60 inches. The organic matter content in the surface layer is about 2 to 4 percent. Runoff is rapid, and the hazard of water erosion is severe. The hazard of soil blowing is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Bluehill soil is 70 percent grasses, 10 percent forbs, and 20 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, Thurber needlegrass, and Nevada bluegrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The potential plant community on the Coalbank soil is 70 percent grasses, 10 percent forbs, and 20 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, and Nevada bluegrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The capability subclass is VIIe in nonirrigated areas. The range site is Upland Loam (Wyoming Big Sagebrush).

10—Borvant gravelly loam, 5 to 15 percent slopes. This shallow, well drained soil is on fan terraces near Park Valley in the northern part of the survey area. It formed in alluvium derived dominantly from limestone and influenced by quartzite. Slopes face south, are linear and slightly convex, and are 20 to 80 feet long. The vegetation is dominantly Utah juniper, black sagebrush, and pinyon pine. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 47 degrees F, and the average freeze-free period is 110 to 140 days.

Typically, 35 percent of the surface is covered with rock fragments. The surface layer is grayish brown gravelly loam 4 inches thick. The subsurface layer is brown very gravelly loam 4 inches thick. The subsoil is white very gravelly loam 4 inches thick. An indurated, cemented hardpan of carbonates is at a depth of about 12 inches. In places the surface layer is loam.

Included in this unit are small areas of Fontreen soils. These very deep, very gravelly soils are on the higher and steeper parts of the landscape. They support Utah juniper and pinyon pine. Also included are areas where depth to the hardpan is less than 10 inches. Included areas make up about 15 percent of the total acreage.

Permeability is moderate in the Borvant soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation is an overstory of pinyon pine and Utah juniper with a 40 percent canopy cover. The understory vegetation is 40 percent grasses, 10 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, antelope bitterbrush, bluebunch wheatgrass, and Indian ricegrass.

Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor.

The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is a low available water capacity.

The capability subclass is VIIs in nonirrigated areas. The range site is Upland Shallow Hardpan (Pinyon-Juniper).

11—Brobett-Plegomir association, 3 to 8 percent slopes. This map unit is in areas south of Etna in the northwestern part of the survey area. Both the Brobett and Plegomir soils are on dissected fan terraces. Slopes face east and north. They are linear and concave and 50 to 120 feet long in areas of the Brobett soil and are convex and 100 to 200 feet long in areas of the Plegomir soil. The vegetation is dominantly Wyoming big sagebrush, Douglas rabbitbrush, and bottlebrush squirreltail on the Brobett soil and black sagebrush and Indian ricegrass on the Plegomir soil. Elevation is 5,000 to 5,400 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 47 to 49 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 45 percent Brobett loam, 3 to 8 percent slopes, and 35 percent Plegomir gravelly loam, 3 to 8 percent slopes.

Included in this unit are small areas of Mellor, Puett, and Rexmont soils. The Mellor soils are saline and are at the mouth of drainageways. They support Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail. Puett soils are shallow over bedrock and are on the gently sloping sides of drainageways. They support Utah juniper, black sagebrush, and bluebunch wheatgrass. Rexmont soils are shallow over bedrock and are on foot slopes and pediment slopes. They support Utah juniper, antelope bitterbrush, and Wyoming big sagebrush. Also included are small areas of a soil that is less than 10 inches deep over a hardpan and supports black sagebrush. Included areas make up about 20 percent of the total acreage.

The Brobett soil is moderately deep and well drained. It formed in alluvium derived dominantly from rhyolite and quartzite. Typically, 20 percent of the surface is covered with gravel. The surface layer is brown loam 3 inches thick. The upper 5 inches of the subsoil is pale brown gravelly loam. The lower 22 inches is very pale brown very gravelly sandy loam. A continuous, strongly cemented hardpan of silica is at a depth of about 30 inches. In places, the soil contains less than 35 percent gravel throughout and the hardpan is at a depth of more than 40 inches.

Permeability is moderate in the Brobett soil. Available water capacity is about 1.5 to 3.0 inches. The water-supplying capacity is 3 to 5 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing also is moderate.

The Plegomir soil is shallow and well drained. It formed in alluvium derived dominantly from sandstone and influenced by rhyolite and quartzite. Typically, 15 percent of the surface is covered with gravel. The surface layer is

brown gravelly loam 2 inches thick. The subsurface layer is pale brown loam 3 inches thick. The subsoil is very pale brown gravelly sandy loam 8 inches thick. A continuous, indurated, cemented hardpan of silica is at a depth of about 13 inches.

Permeability is moderate in the Plegomir soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Brobett soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, Indian ricegrass, bottlebrush squirreltail, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is low annual precipitation.

The potential plant community on the Plegomir soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, winterfat, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and low annual precipitation.

The Brobett soil is in capability subclass VIs in nonirrigated areas and is in the Semidesert Gravelly Loam (Wyoming Big Sagebrush) North range site. The Plegomir soil is in capability subclass VIIs in nonirrigated areas and is in the Semidesert Shallow Hardpan (Black Sagebrush) range site.

12—Bullump loam, 3 to 15 percent slopes. This very deep, well drained soil is on hillsides and along valley bottoms in the Dove Creek Mountains. It formed in alluvium and colluvium derived dominantly from quartzite and mica schist. Slopes are linear and convex, mostly face east and south, and are 200 to 400 feet long. The vegetation is dominantly antelope bitterbrush, mountain big sagebrush, and Idaho fescue. Elevation is 6,000 to 6,800 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 80 to 90 days.

Typically, 10 percent of the surface is covered with gravel. The surface layer is very dark grayish brown loam 8 inches thick. The subsurface layer is dark grayish brown loam 8 inches thick. The upper part of the subsoil is brown and yellowish brown very gravelly clay loam 30 inches thick. The lower part to a depth of 60 inches is light yellowish brown very cobbly sandy clay loam.

Included in this unit are small areas of Acord, Codquin, Collard, and Crooked Creek soils. Acord soils are cobbly throughout and are on ridges. They support low sagebrush. The shallow Codquin soils are on the escarpments of drainageways. They support juniper. Collard soils are dark colored to a depth of less than 20 inches and are lower on the landscape than the Bullump soil. They support Wyoming big sagebrush and Indian ricegrass. Crooked Creek soils are poorly drained and are in drainageways and wet concave areas. They support tufted hairgrass and sedges. Included areas make up about 20 percent of the total acreage.

Permeability is moderately slow in the Bullump soil. Available water capacity is about 8.0 to 10.5 inches. The water-supplying capacity is 8 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 3 to 7 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat (fig. 5).

The potential plant community is 50 percent grasses, 15 percent forbs, and 35 percent shrubs. Important plants are antelope bitterbrush, Idaho fescue, bluebunch wheatgrass, and mountain snowberry. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and reseeding may be used to improve the rangeland vegetation. The suitability for range seeding is good.

The capability subclass is VIe in nonirrigated areas. The range site is Upland Loam (Browse).

13—Bullump-Sonlet-Rodrof association, 5 to 30 percent slopes. This map unit is on foothills and toe slopes in the Muddy Range and Dove Creek Mountains. The Bullump soil is on concave hillsides and in drainageways. The Sonlet soil is on convex hillsides. The Rodrof soil is on dissected foot slopes. The vegetation is dominantly bluebunch wheatgrass, antelope bitterbrush, Idaho fescue, and mountain snowberry on the Bullump soil; black sagebrush, bluebunch wheatgrass, Sandberg bluegrass, and Douglas rabbitbrush on the Sonlet soil; and black sagebrush, bluebunch wheatgrass, Sandberg bluegrass, and Nevada bluegrass on the Rodrof soil. Elevation is 6,200 to 6,700 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 80 to 100 days.

This unit is about 30 percent Bullump loam, 15 to 30 percent slopes; 30 percent Sonlet gravelly loam, 15 to 30 percent slopes; and 25 percent Rodrof gravelly loam, 5 to 15 percent slopes.

Included in this unit are small areas of a deep soil in drainageways; a shallow, rocky soil on convex hillsides; and a moderately deep, rocky soil in convex areas. The

Figure 5.—An area of Bullump loam, 3 to 15 percent slopes, which is in the Upland Loam (Browse) range site, is in the foreground. An area of the Parkay-Bickmore-Broad Canyon families general soil map unit is in the background.

deep soil supports basin big sagebrush, bluebunch wheatgrass, and Idaho fescue. The shallow soil supports low sagebrush and bluegrass. The moderately deep soil supports low sagebrush and bluebunch wheatgrass. Included areas make up about 15 percent of the total acreage.

The Bullump soil is very deep and well drained. It formed in colluvium and alluvium derived dominantly from quartzite and mica schist. Typically, 10 percent of the surface is covered with gravel. The surface layer is very dark grayish brown loam 8 inches thick. The subsurface layer is dark grayish brown loam 8 inches thick. The upper 30 inches of the subsoil is brown and yellowish brown very gravelly clay loam. The lower part to a depth of 60 inches is light yellowish brown very cobbly sandy clay loam.

Permeability is moderately slow in the Bullump soil. Available water capacity is about 8 to 11 inches. The water-supplying capacity is 8 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 3 to 7 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Sonlet soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from limestone and quartzite. Typically, 80 percent of the surface is covered with gravel. The upper part of the surface layer is pale brown very gravelly loam about 3 inches thick. The lower part is very pale brown very gravelly loam about 4 inches thick. The subsoil is light yellowish brown very gravelly loam 8 inches thick. Quartzite bedrock is at a depth of about 15 inches.

Permeability is moderate in the Sonlet soil. Available water capacity is about 0.5 inch to 2.0 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Rodrof soil is shallow and well drained. It formed in alluvium derived dominantly from mixed sedimentary rocks. Typically, 50 percent of the surface is covered with gravel. The upper part of the surface layer is brown gravelly loam about 3 inches thick. The lower part is brown gravelly loam about 5 inches thick. The subsoil is light yellowish brown extremely gravelly loam 10 inches thick. Below this is a continuously indurated, cemented hardpan of carbonates and silica.

Permeability is moderate in the Rodrof soil. Available water is about 1.5 to 2.5 inches. The water-supplying capacity is 3 to 5 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Bullump soil is 50 percent grasses, 15 percent forbs, and 35 percent shrubs. Important plants are antelope bitterbrush, bluebunch wheatgrass, Idaho fescue, and mountain snowberry. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is the slope.

The potential plant community on the Sonlet soil is 50 percent grasses, 15 percent forbs, and 35 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are the shallow depth to bedrock and a low available water capacity.

The potential plant community on the Rodrof soil is 50 percent grasses, 15 percent forbs, and 35 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are the shallow depth to bedrock and a low available water capacity.

The Bullump soil is in capability subclass VIe in nonirrigated areas and is in the Upland Loam (Browse) range site. The Sonlet soil is in capability subclass VIIe in nonirrigated areas and is in the Upland Shallow Loam (Black Sagebrush) range site. The Rodrof soil is in capability subclass VIIs in nonirrigated areas and is in the Upland Shallow Loam (Black Sagebrush) range site.

14—Clavicon-Rock outcrop complex, 30 to 60 percent slopes. This map unit is in the Bovine Mountains at the southern end of the Grouse Creek Mountains and on the north-facing slopes of the Raft River Mountains. The Clavicon soil is on convex and concave hillsides. The Rock outcrop is on ridges. It consists of ledges and exposed rock. The vegetation is dominantly Utah juniper, pinyon pine, bluebunch wheatgrass, and black sagebrush on the Clavicon soil. The Rock outcrop is mostly bare of vegetation. Elevation is 5,400 to 6,500 feet. The average annual precipitation is about 13 to 16 inches, the mean annual air temperature is 40 to 44 degrees F, and the average freeze-free period is 75 to 100 days.

This unit is about 65 percent Clavicon very gravelly loam, 30 to 60 percent slopes, and 15 percent Rock outcrop. The Clavicon soil and Rock outcrop occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of a deep, dark soil in drainageways. This soil supports basin big sagebrush and basin wildrye. Also included, on ridges, are areas that support black sagebrush. Included areas make up about 20 percent of the total acreage.

The Clavicon soil is moderately deep and well drained. It formed in colluvium and residuum derived dominantly from limestone, chert, and dolomite. Typically, 45 percent of the surface is covered with gravel and cobbles. The surface layer is brown very gravelly loam 13 inches thick. The upper 7 inches of the subsoil is pale brown very gravelly loam. The lower 18 inches is very pale brown very gravelly loam. Bedrock is at a depth of about 38 inches. In some areas bedrock is within a depth of 20 inches.

Permeability is moderate in the Clavicon soil. Available water capacity is about 3 to 5 inches. The water-supplying capacity is 6 to 9 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 2 to 4 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Rock outcrop consists of exposed limestone,

chert, and dolomite, including ledges and bedrock on the surface.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Clavicon soil is an overstory of pinyon pine and Utah juniper with a 70 percent canopy cover. The understory vegetation is 40 percent grasses, 10 percent forbs, and 50 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, black sagebrush, and Indian ricegrass. Woodland productivity is medium. Average yields are 3 to 5 cords of wood per acre. The potential for post or Christmas tree production is fair. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The Clavicon soil is in capability subclass VIIe in nonirrigated areas and is in the Upland Stony Loam (Pinyon-Juniper) range site. The Rock outcrop is in capability class VIII and has not been assigned a range site.

15—Cliffdown very gravelly sandy loam, alkali, 3 to 10 percent slopes. This very deep, somewhat excessively drained soil is on lake terraced alluvial fans near Pigeon Mountain. It formed in alluvium derived dominantly from limestone, dolomite, quartzite, and sandstone. Slopes are convex and 10 to 20 feet long. The vegetation is dominantly bud sagebrush, shadscale, Indian ricegrass, and gray molly. Elevation is 4,300 to 6,000 feet. The average annual precipitation is about 6 to 8 inches, the mean annual air temperature is 52 to 54 degrees F, and the average freeze-free period is 130 to 160 days.

Typically, 60 percent of the surface is covered with gravel. The surface layer is pale brown very gravelly sandy loam 13 inches thick. The underlying material to a depth of 60 inches is strongly saline, very pale brown very gravelly sandy loam. In places the soil contains less than 35 percent rock fragments throughout.

Included in this unit are small areas of the sodic Skumpah soils and Lynndyl and Dynal soils. The sodic Skumpah soils do not have gravel and are on lake plains in the lower areas. They support greasewood. The sandy Lynndyl soils are on beach bars and lake terraces. They support spiny hopsage. The sandy Dynal soils are on sand dunes. They support seepweed and greasewood. Also included are small areas of rock outcrop on hillsides and shallow soils in drainageways near the rock outcrop. The shallow soils support black sagebrush. Included areas make up about 15 percent of the total acreage.

Permeability is moderately rapid in the Cliffdown soil. Available water capacity is about 1.5 to 2.5 inches. The water-supplying capacity is 1.5 to 3.0 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is less than 0.5 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community is 30 percent grasses, 10 percent forbs, and 60 percent shrubs. Important plants are bud sagebrush, galleta, and shadscale. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are excess salinity and low annual precipitation.

The capability subclass is VIIs in nonirrigated areas. The range site is Desert Alkali Bench (Bud Sagebrush).

16—Cliffdown very gravelly loam, 3 to 10 percent slopes. This very deep, somewhat excessively drained soil is on alluvial fans near the Newfoundland Mountains and on Red Dome. It formed in alluvium derived dominantly from limestone. Slopes are 25 to 100 feet long, are linear and convex or concave, and face all directions. The vegetation is dominantly gardner saltbush, horsebrush, and cheatgrass. Elevation is 4,200 to 4,500 feet. The average annual precipitation is about 6 to 8 inches, the mean annual air temperature is 52 to 54 degrees F, and the average freeze-free period is 130 to 160 days.

Typically, 35 percent of the surface is covered with gravel and 5 percent is covered with cobbles. The surface layer is light brownish gray very gravelly loam 3 inches thick. The underlying material to a depth of 60 inches is light gray and very pale brown very gravelly sandy loam. In places a layer of carbonate accumulation is in the soil.

Included in this unit are small areas of Amtoft and Skumpah soils. The shallow Amtoft soils are on hillsides and mountainsides. They support salmon wildrye. The salt-affected Skumpah soils are on lake plains. They support black greasewood. Also included are soils that are 20 to 40 inches deep over bedrock and small areas of rock outcrop. Included areas make up about 15 percent of the total acreage.

Permeability is moderately rapid in the Cliffdown soil. Available water capacity is about 3.0 to 4.5 inches. The water-supplying capacity is 2 to 4 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is less than 0.5 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community is 40 percent grasses, 5 percent forbs, and 55 percent shrubs. Important plants are shadscale, galleta, Indian ricegrass, bud sagebrush, and horsebrush. The suitability for livestock grazing is only fair because of reduced forage production. The

suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity and low annual precipitation.

The capability subclass is VIIs in nonirrigated areas. The range site is Desert Gravelly Loam (Shadscale).

17—Cliffdown-Hiko Peak-Okrist, thick surface association, 3 to 12 percent slopes. This map unit is on fan terraces on the eastern side of the Pilot Mountains in the southwestern part of the survey area. The Cliffdown soil is on the lower part of fan terraces and formed in alluvium derived dominantly from limestone. The Hiko Peak soil is on the upper part of fan terraces and also formed in alluvium derived dominantly from limestone. The thick surfaced Okrist soil is on the middle part of fan terraces and formed in sandy alluvium derived dominantly from granite. Slopes face east, are less than 100 feet long, and are linear or slightly convex. The vegetation is dominantly shadscale, bud sagebrush, and bottlebrush squirreltail on the Cliffdown soil; shadscale, Indian ricegrass, and bottlebrush squirreltail on the Hiko Peak soil; and Wyoming big sagebrush, spiny hopsage, and Indian ricegrass on the Okrist soil. Elevation is 4,500 to 5,200 feet. The average annual precipitation is about 6 to 12 inches, the mean annual air temperature is 48 to 54 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 35 percent Cliffdown gravelly sandy loam, 3 to 10 percent slopes; 30 percent Hiko Peak gravelly loam, 3 to 12 percent slopes; and 25 percent Okrist loamy sand, thick surface, 3 to 10 percent slopes.

Included in this unit are small areas of Kunzler, Sheeprock, and Swingler soils. The loamy, salt-affected Kunzler soils are at the head of drainageways. They support Wyoming big sagebrush and greasewood. The sandy Sheeprock soils are on lake terraces. They support horsebrush. The silty Smaug soils are on lake plains. They support shadscale. Included areas make up about 10 percent of the total acreage.

The Cliffdown soil is very deep and somewhat excessively drained. It formed in alluvium derived dominantly from limestone, dolomite, quartzite, and sandstone. Typically, 30 percent of the surface is covered with gravel. The surface layer is pale brown gravelly sandy loam 6 inches thick. The upper 36 inches of the underlying material is very pale brown very gravelly sandy loam. The lower part to a depth of 60 inches is light gray very gravelly loamy sand. In places the soil contains less than 35 percent rock fragments throughout.

Permeability is moderately rapid in the Cliffdown soil. Available water capacity is about 2.5 to 4.0 inches. The water-supplying capacity is 2 to 4 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is less than 0.5 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing also is moderate.

The Hiko Peak soil is very deep and well drained. It formed in alluvium derived dominantly from quartzite and limestone. Typically, 20 percent of the surface is covered with gravel. The surface layer is pale brown gravelly loam 4 inches thick. The upper 17 inches of the subsoil also is pale brown gravelly loam. The lower 9 inches is very pale brown very gravelly sandy loam. The underlying material to a depth of 60 inches also is very pale brown very gravelly sandy loam. In some areas the underlying material is extremely gravelly loamy sand or sand.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is about 4.0 to 7.5 inches. The water-supplying capacity is 4 to 8 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Okrist soil is very deep and well drained. Typically, the surface layer is pale brown and very pale brown loamy sand 22 inches thick. The subsoil is very pale brown loamy sand 11 inches thick. Moist consistence in the subsoil is firm and brittle. The upper 7 inches of the underlying material is very pale brown sand. The lower part to a depth of 60 inches is very pale brown gravelly sand. In some areas the underlying material has layers of sandy loam. In other areas, the brittle subsoil is within a depth of 20 inches and the vegetation is black sagebrush.

Permeability is moderate in the Okrist soil. Available water capacity is about 2.5 to 4.0 inches. The water-supplying capacity is 3.5 to 6.0 inches. Root growth is restricted between depths of 20 and 40 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Cliffdown soil is 40 percent grasses, 10 percent forbs, and 50 percent shrubs. Important plants are Indian ricegrass, shadscale, bud sagebrush, galleta, and horsebrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are low annual precipitation and excess salinity.

The potential plant community on the Hiko Peak soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail, shadscale, and Indian ricegrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is low annual precipitation.

The potential plant community on the Okrist soil is 55 percent grasses, 10 percent forbs, and 35 percent shrubs.

Important plants are Indian ricegrass, needleandthread, Wyoming big sagebrush, winterfat, and fourwing saltbush. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are low annual precipitation, the sandy texture of the surface layer, and excess salinity.

The capability subclass is VIIs in nonirrigated areas. The Cliffdown soil is in the Desert Gravelly Loam (Shadscale) range site. The Hiko Peak soil is in the Semidesert Gravelly Loam (Wyoming Big Sagebrush) North range site. The Okrist soil is in the Semidesert Sandy Loam (Wyoming Big Sagebrush) range site.

18—Cliffdown, alkali-Rock outcrop-Promo complex, 10 to 35 percent slopes. This map unit is on Pigeon Mountain, Lemay Island, Crater Island, and other isolated, dry hills in the southwestern part of the survey area. The alkali Cliffdown soil is on hillsides that are terraced in a step pattern by ancient Lake Bonneville. The Rock outcrop is on ridges, ledges, and steep escarpments. The Promo soil is on dissected hillsides and along drainageways. Slopes are concave, are 10 to 20 feet long, and face all directions. The vegetation is dominantly shadscale, bud sagebrush, and fluffgrass on the Cliffdown soil and black sagebrush, shadscale, and Sandberg bluegrass on the Promo soil. The Rock outcrop is mostly bare of vegetation. Elevation is 4,300 to 5,200 feet. The average annual precipitation is about 6 to 12 inches, the mean annual air temperature is 46 to 54 degrees F, and the average freeze-free period is 120 to 160 days.

This unit generally is about 45 percent Cliffdown very gravelly sandy loam, alkali, 10 to 15 percent slopes; 25 percent Rock outcrop; and 20 percent Promo very gravelly loam, 10 to 35 percent slopes. The unit is 35 to 40 percent Rock outcrop on Crater Island in the southwest corner of the survey area. The two soils and Rock outcrop occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of the shallow Amtoft soils, which have a highly calcareous subsoil, are on hillsides, and support salmon wildrye and black sagebrush. Also included, on the lower, steeper foot slopes, are small areas of soils that have bedrock within a depth of 40 inches and support shadscale. Included areas make up about 10 percent of the total acreage.

The Cliffdown soil is very deep and somewhat excessively drained. It formed in colluvium derived dominantly from limestone and sandstone. Typically, 65 percent of the surface is covered with gravel. The surface layer is pale brown very gravelly sandy loam 13 inches thick. The underlying material to a depth of 60 inches is strongly saline, very pale brown very gravelly sandy loam.

Permeability is moderately rapid in the Cliffdown soil. Available water capacity is about 1.5 to 2.5 inches. The water-supplying capacity is 1.5 to 3.0 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is less than 0.5 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Rock outcrop consists of steep, limestone and sandstone cliffs, rocky ridges, and ledges.

The Promo soil is shallow and well drained. It formed in colluvium derived dominantly from limestone and chert. Typically, 60 percent of the surface is covered with gravel. The surface layer is light gray very gravelly loam 8 inches thick. The underlying material, which extends to a depth of 13 inches, is very pale brown very gravelly loam. Fractured chert is at a depth of about 13 inches. In some areas bedrock is at a depth of 20 to 40 inches.

Permeability is moderately rapid in the Promo soil. Available water capacity is about 1.0 to 1.5 inches. The water-supplying capacity is 1 to 2 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Cliffdown soil is 30 percent grasses, 10 percent forbs, and 60 percent shrubs. Important plants are bud sagebrush, galleta, and shadscale. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are excess salinity and low annual precipitation.

The potential plant community on the Promo soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, horsebrush, and Indian ricegrass. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are a low available water capacity and low annual precipitation.

The Cliffdown and Promo soils are in capability subclass VIIs in nonirrigated areas. The Cliffdown soil is in the Desert Alkali Bench (Bud Sagebrush) range site. The Promo soil is in the Semidesert Shallow Loam (Black Sagebrush) range site. The Rock outcrop is in capability class VIII and has not been assigned a range site.

19—Collard, moist-Hupp complex, 2 to 10 percent slopes. This map unit is on fan terraces west of Rosette in the northern part of the survey area. The moist Collard soil is on the slightly convex parts of the terraces. The Hupp soil is on the lower, nearly level parts of the terraces. Slopes face south by southwest. They are convex and linear in areas of the Collard soil and linear

and concave in areas of the Hupp soil. The vegetation is dominantly Utah juniper on the Collard soil and Wyoming big sagebrush on the Hupp soil. Elevation is 5,800 to 6,400 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 45 to 49 degrees F, and the average freeze-free period is 80 to 120 days.

This unit is about 50 percent Collard gravelly loam, moist, 2 to 10 percent slopes, and 35 percent Hupp loam, 2 to 6 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Bullump and Ridd soils. Bullump soils have a dark surface layer that is more than 20 inches thick and are in drainageways. They support antelope bitterbrush and bluebunch wheatgrass. Ridd soils are moderately deep over bedrock and are on ridges and the side slopes of drainageways. They support black sagebrush, bluebunch wheatgrass, and juniper. Included areas make up about 15 percent of the total acreage.

The Collard soil is very deep and well drained. It formed in mixed alluvium derived dominantly from quartzite, sandstone, and mica schist. Typically, 20 percent of the surface is covered with gravel and 5 percent is covered with cobbles. The surface layer is brown gravelly loam 3 inches thick. The subsurface layer is brown gravelly loam 5 inches thick. The upper 6 inches of the subsoil is brown very gravelly sandy clay loam. The lower 24 inches is yellowish brown very gravelly sandy clay loam. The underlying material to a depth of 60 inches is yellowish brown very gravelly sandy loam.

Permeability is moderate in the Collard soil. Available water capacity is about 4.0 to 6.5 inches. The water-supplying capacity is 6 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Hupp soil is very deep and well drained. It formed in mixed alluvium derived dominantly from quartzite, limestone, and mica schist. Typically, the surface layer is dark grayish brown loam 4 inches thick. The subsurface layer is brown gravelly loam 7 inches thick. The upper 15 inches of the subsoil is light yellowish brown very gravelly loam. The lower part to a depth of 60 inches is light yellowish brown extremely gravelly loam.

Permeability is moderately rapid in the Hupp soil. Available water capacity is about 4.5 to 6.5 inches. The water-supplying capacity is 7 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 3 to 5 percent. Runoff is slow, and the hazard of water erosion is slight.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Collard soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, muttongrass, Wyoming big sagebrush, and Nevada bluegrass. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is the content of rock fragments in the surface layer.

The potential plant community on the Hupp soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are western wheatgrass, bluebunch wheatgrass, Nevada bluegrass, and Wyoming big sagebrush. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and range seeding can be used to improve the rangeland vegetation. The suitability for range seeding is good.

The capability subclass is VIs in nonirrigated areas. The range site is Upland Gravelly Loam (Wyoming Big Sagebrush).

20—Cottonthomas-Tomsherry fine sandy loams, 0 to 15 percent slopes. This map unit is on fan terraces in the Goose Creek Basin in the northwest corner of the survey area. Slopes face all directions, are 100 to 300 feet long, and are concave in areas of the Cottonthomas soil and convex in areas of the Tomsherry soil. The vegetation is dominantly crested wheatgrass, Wyoming big sagebrush, Nevada bluegrass, and Utah juniper. Elevation is 5,000 to 6,600 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 80 to 100 days.

This unit is about 45 percent Cottonthomas fine sandy loam, 0 to 15 percent slopes, and 30 percent Tomsherry fine sandy loam, 0 to 15 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Ant Flat, Codquin, and Hades soils. The fine textured Ant Flat soils have slopes of more than 15 percent and are on hillsides. They support juniper. The shallow Codquin soils are on steep hillsides and narrow ridges. They support juniper. The deep Hades soils are on hillsides. They support mountain big sagebrush. Also included are small areas of rock outcrop and a very deep, wet soil in drainageways. The very deep, wet soil supports grasses. Included areas make up about 25 percent of the total acreage.

The Cottonthomas soil is very deep and well drained. It formed in alluvium derived dominantly from volcanic ash. Typically, the surface layer is brown fine sandy loam 13 inches thick. The upper 38 inches of the subsoil is pale brown and very pale brown fine sandy loam. The lower 9 inches is light gray fine sandy loam. In some areas the depth to bedrock is between 40 and 60 inches.

Permeability is moderate in the Cottonthomas soil. Available water capacity is about 7 to 10 inches. The water-supplying capacity is 8 to 12 inches. The effective rooting depth is 60 inches or more. The upper part of the subsoil, however, restricts root growth to a degree. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing also is moderate.

The Tomsherry soil is moderately deep and well drained. It formed in alluvium derived dominantly from volcanic ash. Typically, 10 percent of the surface is covered with gravel and cobbles. The surface layer is grayish brown fine sandy loam 13 inches thick. The subsoil is pale brown fine sandy loam 11 inches thick. An indurated hardpan of silica and carbonates is at a depth of about 24 inches. The underlying material to a depth of 60 inches is light gray loamy fine sand. The soil is calcareous below a depth of 13 inches.

Permeability is moderately rapid in the Tomsherry soil. Available water capacity is about 2.5 to 4.5 inches. The water-supplying capacity is 4 to 7 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing also is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Cottonthomas soil is 70 percent grasses, 10 percent forbs, and 20 percent shrubs. Important plants are bluebunch wheatgrass, Thurber needlegrass, Nevada bluegrass, and Wyoming big sagebrush. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and range seeding can be used to improve the rangeland vegetation. The suitability for range seeding is good.

The potential plant community on the Tomsherry soil is 70 percent grasses, 10 percent forbs, and 20 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, Thurber needlegrass, and Nevada bluegrass. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is a low available water capacity.

The capability subclass is VIs in nonirrigated areas. The range site is Upland Loam (Wyoming Big Sagebrush).

21—Crooked Creek silty clay loam, 0 to 2 percent slopes. This very deep, poorly drained soil is on flood plains and stream terraces along Grouse Creek, Junction Valley, and Goose Creek in the northwestern part of the survey area. It formed in mixed alluvium derived dominantly from quartzite and mica schist. Slopes are linear or slightly concave, are 300 to 800 feet long, and face all directions. The vegetation is dominantly Nevada bluegrass, alpine timothy, and sedges. Elevation is 5,000 to 6,000 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 43 to 45 degrees F, and the average freeze-free period is 50 to 100 days.

Typically, the surface layer is very dark grayish brown silty clay loam 7 inches thick. The subsurface layer is very dark gray silty clay loam and silty clay 13 inches thick. The underlying material to a depth of 60 inches is dark gray and gray silty clay.

Included in this unit are small areas of Birdow soils, which are well drained, are in broad drainageways, and support Wyoming big sagebrush and crested wheatgrass. Also included, along streambanks and in slightly concave areas, are very poorly drained soils that support reeds and sedges and areas where the stream channel has cut deep and allowed adjacent areas to drain. Included areas make up about 25 percent of the total acreage.

Permeability is very slow in the Crooked Creek soil. Available water capacity is about 10 to 12 inches. The water-supplying capacity is 9 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 6 percent. Runoff is slow, and the hazard of water erosion is slight. A seasonal high water table is at a depth of 12 to 24 inches. This soil is subject to occasional, brief periods of flooding from March to June.

This unit is used mainly for grass-hay, pasture, rangeland, or wildlife habitat.

This unit has fair suitability for grass-hay and pasture. The wetness limits the choice of plants and the period of cutting or grazing. The short freeze-free period limits production.

The potential plant community is 80 percent grasses, 15 percent forbs, and 5 percent shrubs. Important plants are bluegrass, sedges, Baltic rush, and basin wildrye. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and range seeding can be used to improve the rangeland vegetation. The suitability for range seeding is good.

The capability subclass is IVw in irrigated and nonirrigated areas. The range site is Semiwet Fresh Meadow (Sedge).

22—Crooked Creek-Hupp complex, 1 to 6 percent slopes. This map unit is on fan terraces and alluvial fans near Park Valley and Rosette in the northern part of the survey area. The Crooked Creek soil is in slightly concave areas and in drainageways. The Hupp soil is on ridges between drainageways and slightly convex areas. Slopes face south by southwest. They are 200 to 800 feet long and linear or slightly concave in areas of the Crooked

Creek soil and are 100 to 400 feet long and convex in areas of the Hupp soil. The vegetation is dominantly reeds and sedges on the Crooked Creek soil and bluebunch wheatgrass and Wyoming big sagebrush on the Hupp soil. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 43 to 48 degrees F, and the average freeze-free period is 80 to 110 days.

This unit is about 55 percent Crooked Creek silt loam, 1 to 3 percent slopes, and 25 percent Hupp loam, 2 to 6 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Koosharem and Vicking soils. Koosharem soils are loamy and well drained and are in old drainageways and slightly convex areas. They support basin big sagebrush and Utah juniper. Vicking soils are well drained, have a layer of clay accumulation beneath the surface layer, and are on ridges. They support Wyoming big sagebrush. Also included are small areas of a deep, moderately well drained soil that has more than 35 percent rock fragments in the upper part and a deep, sandy soil. Both of these soils support Wyoming big sagebrush, dryland sedges, and some Utah juniper. Included areas make up about 20 percent of the total acreage.

The Crooked Creek soil is very deep and poorly drained. It formed in mixed alluvium derived dominantly from quartzite and mica schist. Typically, the surface layer is very dark gray silt loam 5 inches thick. The subsurface layer is very dark gray silt loam 8 inches thick. The next layer is dark grayish brown clay loam 11 inches thick. The upper 9 inches of the substratum is light brownish gray clay, the next 7 inches is a buried layer of black clay, and the lower part to a depth of 60 inches is light brownish gray extremely gravelly clay loam.

Permeability is slow in the Crooked Creek soil. Available water capacity is about 8.5 to 9.5 inches. The water-supplying capacity is 8 to 11 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 6 percent. Runoff is slow, and the hazard of water erosion is slight. A seasonal high water table is at a depth of 12 to 24 inches. This soil is subject to occasional, brief periods of flooding from March to June.

The Hupp soil is very deep and well drained. It formed in mixed alluvium derived dominantly from quartzite, limestone, and mica schist. Typically, the surface layer is dark grayish brown loam 4 inches thick. The subsurface layer is brown gravelly loam 7 inches thick. The upper 15 inches of the subsoil is light yellowish brown very gravelly loam. The lower part to a depth of 60 inches is light yellowish brown extremely gravelly loam.

Permeability is moderately rapid in the Hupp soil. Available water capacity is about 4.5 to 6.5 inches. The water-supplying capacity is 7 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 3 to 5 percent. Runoff is slow, and the hazard of water erosion is slight.

This unit is used mainly for grass-hay, pasture, rangeland, or wildlife habitat.

This unit has fair suitability for grass-hay and pasture. The wetness limits the choice of plants and the period of cutting or grazing. The short freeze-free period limits production.

The potential plant community on the Crooked Creek soil is 80 percent grasses, 15 percent forbs, and 5 percent shrubs. Important plants are bluegrass, sedges, Baltic rush, and basin wildrye. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and range seeding can be used to improve the rangeland vegetation. The suitability for range seeding is good.

The potential plant community on the Hupp soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are western wheatgrass, bluebunch wheatgrass, Wyoming big sagebrush, and Nevada bluegrass. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and range seeding can be used to improve the rangeland vegetation. The suitability for range seeding is good.

The Crooked Creek soil is in capability subclass IVw in irrigated and nonirrigated areas and is in the Semiwet Fresh Meadow (Sedge) range site. The Hupp soil is in capability subclass IVs in irrigated areas and VIs in nonirrigated areas. It is in the Upland Gravelly Loam (Wyoming Big Sagebrush) range site.

23—Dahar-Codquin gravelly sandy loams, 8 to 60 percent slopes. This map unit is north of the town of Grouse Creek in the northwestern part of the survey area. The Dahar soil is on strongly sloping, dissected hillsides. The Codquin soil is on moderately steep and steep, eroded hillsides. Slopes face east, are slightly convex, and are 60 to 100 feet long in areas of the Dahar soil and face south and west, are linear, and are 30 to 50 feet long in areas of the Codquin soil. The vegetation is dominantly Utah juniper, Wyoming big sagebrush, and bluebunch wheatgrass on the Dahar soil and Utah juniper and black sagebrush on the Codquin soil. Elevation is 5,300 to 6,000 feet. The average annual precipitation is about 13 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 80 to 120 days.

This unit is about 70 percent Dahar gravelly sandy loam, 8 to 15 percent slopes, and 20 percent Codquin gravelly sandy loam, 15 to 60 percent slopes. The two

soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Nielson family and Parkay family soils. The shallow Nielson family soils are on windswept ridges and mountainsides. They support low sagebrush. The very deep Parkay family soils are on mountainsides. They support mountain big sagebrush. Also included are small areas of a very deep, dark soil in wide drainageways and a dark moderately deep soil on ridges. The soil in drainageways supports basin big sagebrush, and the soil on ridges supports black sagebrush. Included areas make up about 10 percent of the total acreage.

The Dahar soil is moderately deep and well drained. It formed in alluvium and colluvium derived dominantly from sandstone and limestone. Typically, 20 percent of the surface is covered with gravel. The surface layer is grayish brown gravelly sandy loam about 3 inches thick. The subsurface layer is light brownish gray gravelly loam about 3 inches thick. The upper 6 inches of the subsoil is light brownish gray gravelly loam. The lower 9 inches is light gray sandy loam. The next layer is a strongly cemented hardpan of silica and carbonates 6 inches thick. The upper 16 inches of the underlying material is white very gravelly sandy loam. The lower part to a depth of 60 inches is pale yellow sandy loam.

Permeability is moderately rapid in the Dahar soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 2 to 4 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing also is moderate.

The Codquin soil is shallow and well drained. It formed in colluvium derived dominantly from sandstone and conglomerate. Typically, 50 percent of the surface is covered with gravel. The surface layer is white gravelly sandy loam 4 inches thick. The underlying material, which extends to a depth of 17 inches, is very pale brown extremely gravelly sandy loam. Soft, highly fractured tuff is at a depth of about 17 inches.

Permeability is rapid in the Codquin soil. Available water capacity is about 0.5 inch to 1.5 inches. The water-supplying capacity is 1.5 to 3.0 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is rapid, and the hazard of water erosion is severe. The hazard of soil blowing is moderate.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Dahar soil is an overstory of Utah juniper with a 25 percent canopy cover. The understory vegetation is 45 percent grasses, 20 percent forbs, and 35 percent shrubs. Important plants are bluebunch wheatgrass, Indian ricegrass, antelope bitterbrush, Colombia needlegrass, and Wyoming big sagebrush. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitation affecting range seeding is a low available water capacity.

The potential vegetation on the Codquin soil is an overstory of Utah juniper with a 40 percent canopy cover. The understory vegetation is 45 percent grasses, 10 percent forbs, and 45 percent shrubs. Important plants are bluebunch wheatgrass, antelope bitterbrush, Wyoming big sagebrush, and Indian ricegrass. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is poor because of low forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are the slope and a low available water capacity.

The capability subclass is VIIs in nonirrigated areas. The Dahar soil is in the Upland Juniper Savanna (Utah Juniper) range site. The Codquin soil is in the Upland Shallow Loam (Juniper) range site.

24—Dateman-Bickmore, cool-Nielsen families complex, 20 to 60 percent slopes. This map unit is on the top of the Raft River Mountains and on side slopes. The Dateman family soils are in concave or slightly convex areas. The cool Bickmore family soils are in concave pockets and on gentle slopes. The Nielsen family soils are on convex slopes and steep ridges. Slopes are 300 to 800 feet long in most areas and face all directions. The vegetation is dominantly subalpine fir and Douglas-fir on the Dateman family soils, mountain big sagebrush and Idaho fescue on the Bickmore family soils, and low sagebrush and bluebunch wheatgrass on the Nielsen family soils. Elevation is 8,000 to 9,800 feet. The average annual precipitation is more than 20 inches, the mean annual air temperature is 38 to 42 degrees F, and the average freeze-free period is 40 to 80 days.

This unit is about 60 percent Dateman family gravelly loam, 20 to 60 percent slopes; 20 percent Bickmore family, cool gravelly loam, 30 to 60 percent slopes; and 15 percent Nielsen family very gravelly loam, 20 to 60 percent slopes. The major soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of rock outcrop and a deep soil that has less than 35 percent rock fragments,

is in narrow drainageways, and supports quaking aspen. Included areas make up about 5 percent of the total acreage.

The Dateman family soils are very deep and well drained. They formed in mixed alluvium derived dominantly from quartzite and mica schist. Typically, 15 percent of the surface is covered with gravel. The surface layer is dark grayish brown gravelly loam 12 inches thick. The subsurface layer is brown very gravelly loam 9 inches thick. The subsoil is brown and yellowish brown very gravelly loam 22 inches thick. The underlying material to a depth of 60 inches is pale brown extremely gravelly sandy loam.

Permeability is moderate in the Dateman family soils. Available water capacity is about 5 to 7 inches. The water-supplying capacity is 11 to 15 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Bickmore family soils are moderately deep and well drained. They formed in mixed alluvium derived dominantly from quartzite and mica schist. Typically, the surface layer is very dark grayish brown gravelly loam 12 inches thick. The upper 14 inches of the subsoil is dark brown very gravelly loam. The lower 5 inches is light brownish gray very gravelly loam. Bedrock is at a depth of about 31 inches.

Permeability is moderate in the Bickmore family soils. Available water capacity is about 3 to 5 inches. The water-supplying capacity is 8 to 13 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 5 to 15 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Nielsen family soils are shallow and well drained. They formed in mixed alluvium derived dominantly from quartzite and mica schist. Typically, 75 percent of the surface is covered with gravel, cobbles, and stones. The surface layer is brown very gravelly loam 7 inches thick. The subsoil is light yellowish brown very gravelly clay loam 7 inches thick. Fractured quartzite schist bedrock is at a depth of about 14 inches.

Permeability is moderately slow in the Nielsen family soils. Available water capacity is about 1.0 to 1.5 inches. The water-supplying capacity is 3 to 7 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Dateman family soils generally is an overstory of subalpine fir with a 65 percent canopy cover. The understory vegetation is 20 percent grasses, 15 percent forbs, and 65 percent shrubs. Important plants are mountain snowberry, Oregongrape, Fendler meadowrue, western thimbleberry, and sedges. The vegetation in burned areas is an overstory of quaking aspen with a 50 percent canopy cover. The site index is 40 for subalpine fir and 50 for quaking aspen. The suitability for harvesting wood products in areas where the slope is 30 to 60 percent is poor because of the severe hazard of erosion. The potential for Christmas tree production is fair. The suitability for livestock grazing is poor in areas that support subalpine fir because of reduced forage production and is good in areas that support aspen. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The potential plant community on the Bickmore family soils is 65 percent grasses, 15 percent forbs, and 20 percent shrubs. Important plants are slender wheatgrass, basin wildrye, mountain brome, mountain big sagebrush, and Idaho fescue. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The potential plant community on the Nielsen family soils is 50 percent grasses, 20 percent forbs, and 30 percent shrubs. Important plants are low sagebrush, bluebunch wheatgrass, Idaho fescue, and stemless goldenweed. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitation affecting range seeding is the slope.

The capability subclass is VIIe in nonirrigated areas. The Dateman family soils are in the High Mountain Loam (Subalpine Fir) woodland site. The Bickmore family soils are in the High Mountain Loam (Mountain Big Sagebrush) range site. The Nielsen family soils are in the Mountain Windswept Ridge (Low Sagebrush) range site.

25—Declo loam, 1 to 3 percent slopes. This very deep, well drained soil is on low fan terraces near the town of Yost in the north-central part of the survey area. It formed in alluvium derived dominantly from sandstone and limestone. Slopes are linear and convex and 150 to 300 feet long. The vegetation is dominantly black greasewood, bottlebrush squirreltail, and Wyoming big sagebrush. Elevation is 5,200 to 5,600 feet. The average annual precipitation is about 8 to 11 inches, the mean annual air temperature is 47 to 50 degrees F, and the average freeze-free period is 100 to 130 days.

Typically, 5 percent of the surface is covered with gravel. The surface layer is pale brown loam 4 inches thick. The subsoil is very pale brown loam 56 inches thick. The soil is strongly saline below a depth of 17 inches. In places gravelly loam is at a depth of 20 to 40 inches.

Included in this unit are small areas of Darkbull soils. These soils have more than 35 percent rock fragments and are in drainageways. They support Wyoming big

sagebrush. Included areas make up about 10 percent of the total acreage.

Permeability is moderate in the Declo soil. Available water capacity is about 6 to 11 inches. The water-supplying capacity is 5 to 7 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

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

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control soil blowing and helps to maintain tilth and the organic matter content. Intensive management is required to reduce the salinity and maintain productivity.

The potential plant community is 30 percent grasses, 15 percent forbs, and 55 percent shrubs. Important plants are Indian ricegrass, shadscale, bud sagebrush, winterfat, and bottlebrush squirreltail. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity and low annual precipitation.

The capability subclass is IVs in irrigated areas and VIIs in nonirrigated areas. The range site is Desert Loam (Shadscale).

26—Declo-Darkbull association, 1 to 10 percent slopes. This map unit is on fan terraces on the north side of the Raft River Range in the northern part of the survey area. The Declo soil is on the convex and linear parts of fan terraces. The Darkbull soil is in concave areas and shallow drainageways on fan terraces. Slopes face north, are linear and convex, and are 150 to 300 feet long in areas of the Declo soil and are concave, are 50 to 150 feet long, and face all directions in areas of the Darkbull soil. The vegetation is dominantly shadscale, bottlebrush squirreltail, and crested wheatgrass on the Declo soil and Wyoming big sagebrush, bluebunch wheatgrass, and cheatgrass on the Darkbull soil. Elevation is 5,200 to 6,000 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 49 degrees F, and the average freeze-free period is 100 to 130 days.

This unit is about 60 percent Declo silt loam, 1 to 3 percent slopes, and 20 percent Darkbull loam, 3 to 10 percent slopes.

Included in this unit are small areas of Mellor and Solak soils. Mellor soils have a very strongly alkaline subsoil and are on the linear parts of fan terraces. They support black greasewood. The shallow Solak soils are on hillsides. They support Utah juniper and pinyon pine. Also included are small areas of eroded Declo soils that have a strongly saline subsoil exposed at the surface and support trident saltbush. Included areas make up about 20 percent of the total acreage.

The Declo soil is very deep and well drained. It formed in mixed alluvium derived dominantly from sandstone and limestone. Typically, 5 percent of the surface is covered with gravel. The surface layer is pale brown loam 4 inches thick. The subsoil is very pale brown loam 56 inches thick. The soil is strongly saline below a depth of 17 inches. In places it is gravelly between depths of 20 and 40 inches.

Permeability is moderate in the Declo soil. Available water capacity is about 6 to 11 inches. The water-supplying capacity is 5 to 7 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Darkbull soil is very deep and well drained. It formed in mixed alluvium derived dominantly from quartzite, mica schist, and limestone. Typically, the surface layer is pale brown loam 5 inches thick. The subsoil is light yellowish brown and very pale brown loam 15 inches thick. The upper 13 inches of the underlying material is very pale brown very gravelly loamy sand. The lower part to a depth of 60 inches is light yellowish brown extremely gravelly loamy sand. In some areas the surface layer is gravelly loam or silt loam.

Permeability is moderate in the upper part of the Darkbull soil and very rapid in the lower part. Available water capacity is about 3 to 5 inches. The water-supplying capacity is 4 to 7 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing also is moderate.

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

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control soil blowing and water erosion and helps to maintain tilth and the organic matter content. Intensive management is required to reduce the salinity and maintain productivity.

The potential plant community on the Declo soil is 30 percent grasses, 15 percent forbs, and 55 percent shrubs. Important plants are Indian ricegrass, shadscale, bud sagebrush, bottlebrush squirreltail, and winterfat. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity and low annual precipitation.

The potential plant community on the Darkbull soil is 55 percent grasses, 5 percent forbs, and 40 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch

wheatgrass, Indian ricegrass, and bottlebrush squirreltail. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is low annual precipitation.

The Declo soil is in capability subclasses IVs in irrigated areas and VIIs in nonirrigated areas. It is in the Desert Loam (Shadscale) range site. The Darkbull soil is in capability subclass VIe in nonirrigated areas and is in the Semidesert Gravelly Loam (Wyoming Big Sagebrush) North range site.

27—Declo-Lembos-Tarnach association, 1 to 6 percent slopes. This map unit is in the area of the Dove Creek Hills and Matlin Mountains. The Declo and Lembos soils are on fan terraces. The Tarnach soil is on pediments and hillsides. Slopes face all directions. They are 100 to 300 feet long and linear and convex in areas of the Declo soil, 150 to 300 feet long and convex to concave in areas of the Lembos soil, and 100 to 200 feet long and linear and convex in areas of the Tarnach soil. The vegetation is dominantly shadscale and bottlebrush squirreltail on the Declo soil, Wyoming big sagebrush and bottlebrush squirreltail on the Lembos soil, and black sagebrush on the Tarnach soil. Elevation is 4,800 to 5,400 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 47 to 51 degrees F, and the average freeze-free period is 110 to 160 days.

This unit is about 35 percent Declo loam, 1 to 3 percent slopes; 30 percent Lembos loam, 1 to 5 percent slopes; and 20 percent Tarnach very gravelly loam, 1 to 6 percent slopes.

Included in this unit are small areas of Kunzler, Puett, and Skumpah soils. The very deep Kunzler soils are on the lower part of fan terraces. They support Wyoming big sagebrush and black greasewood. The shallow Puett soils are on ridges and pediments. They support Utah juniper. Skumpah soils have zones of sodium and gypsum accumulation and are in depressions. They support shadscale and bottlebrush squirreltail. Also included are small areas of a soil that is shallow to a hardpan. This soil supports Wyoming big sagebrush. Included areas make up about 15 percent of the total acreage.

The Declo soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone and limestone. Typically, 5 percent of the surface is covered with gravel. The surface layer is pale brown loam 4 inches thick. The subsoil is very pale brown loam 56 inches thick. The soil is strongly saline below a depth of 17 inches. In some areas the layer of carbonate accumulation is at a depth of more than 15 inches.

Permeability is moderate in the Declo soil. Available water capacity is about 6 to 11 inches. The water-supplying capacity is 5 to 7 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Lembos soil is moderately deep and well drained. It formed in alluvium derived dominantly from sandstone and limestone. Typically, 10 percent of the surface is covered with gravel. The surface layer is pale brown loam 3 inches thick. The upper 9 inches of the subsoil is pale brown and very pale brown loam. The lower 17 inches is strongly saline, very pale brown gravelly loam. An indurated hardpan of silica and carbonates is at a depth of about 29 inches.

Permeability is moderate in the Lembos soil. Available water capacity is about 3.0 to 4.5 inches. The water-supplying capacity is 4 to 6 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Tarnach soil is shallow and well drained. It formed in alluvium derived dominantly from limestone and sandstone. Typically, 20 percent of the surface is covered with gravel. The surface layer is pale brown very gravelly loam 4 inches thick. The subsoil is pale brown very gravelly loam 11 inches thick. Limestone bedrock is at a depth of about 15 inches. In some areas the depth to bedrock is more than 20 inches. In other areas a duripan is between depths of 10 and 20 inches.

Permeability is moderate in the Tarnach soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

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

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control soil blowing and water erosion and helps to maintain tilth and the organic matter content. Intensive management is required to reduce the salinity and maintain productivity.

The potential plant community on the Declo soil is 30 percent grasses, 15 percent forbs, and 55 percent shrubs. Important plants are Indian ricegrass, shadscale, bud sagebrush, bottlebrush squirreltail, and winterfat. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity and low annual precipitation.

The potential plant community on the Lembos soil is 55 percent grasses, 5 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big

sagebrush, Indian ricegrass, and bottlebrush squirreltail. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity and low annual precipitation.

The potential plant community on the Tarnach soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and horsebrush. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are a low available water capacity and low annual precipitation.

The capability subclass is VIIs in nonirrigated areas. The Declo soil is in the Desert Loam (Shadscale) range site. The Lembos soil is in the Semidesert Loam (Wyoming Big Sagebrush) range site. The Tarnach soil is in the Semidesert Shallow Loam (Black Sagebrush) range site.

28—Donnardo gravelly loam, 2 to 8 percent slopes. This very deep, well drained soil is on alluvial fans in the area of Clear Creek in the northern part of the survey area. It formed in mixed alluvium derived dominantly from limestone and sandstone. Slopes are linear and convex and face north and northeast. The vegetation is dominantly alfalfa and includes some Wyoming big sagebrush. Elevation is 5,800 to 6,100 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 45 to 47 degrees F, and the average freeze-free period is 100 to 120 days.

Typically, the surface layer is grayish brown gravelly loam 11 inches thick. The upper 4 inches of the subsoil is light brownish gray very cobbly loam. The lower 12 inches is pale brown very cobbly sandy loam. The underlying material to a depth of 60 inches is light gray very cobbly sandy loam.

Included in this unit are small areas of Birdow, Declo, and Fontreen soils. Birdow soils have less than 15 percent rock fragments and are in wide drainageways. They support basin big sagebrush and basin wildrye. Declo soils do not have a dark surface layer, average less than 35 percent rock fragments, and are on the steeper side slopes. They support Wyoming big sagebrush and bluebunch wheatgrass. Fontreen soils have more than 40 percent carbonates and are on wide ridges and the upper parts of alluvial fans. They support black sagebrush and bluebunch wheatgrass. Included areas make up about 20 percent of the total acreage.

Permeability is moderate in the Donnardo soil. Available water capacity is about 4.5 to 6.5 inches. The water-supplying capacity is 7 to 8 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for irrigated cropland, pasture, rangeland, or wildlife habitat.

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control water erosion and helps to maintain tilth and the organic matter content.

The potential plant community is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, bluegrass, and antelope bitterbrush. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is the content of rock fragments in the surface layer.

The capability subclass is IVs in irrigated areas and VIs in nonirrigated areas. The range site is Upland Gravelly Loam (Wyoming Big Sagebrush).

29—Donnardo-Birdow complex, 1 to 8 percent slopes. This map unit is on alluvial fans and in drainageways in the Park Valley area, which is in the north-central part of the survey area. The Donnardo soil is on linear and slightly convex ridges. The Birdow soil is in linear and concave areas in drainageways and on toe slopes. Slopes dominantly face south. The vegetation is dominantly alfalfa and mixed pasture grasses and includes some Wyoming big sagebrush and bluebunch wheatgrass. Elevation is 5,400 to 6,000 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 45 to 47 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 45 percent Donnardo gravelly loam, 2 to 8 percent slopes, and 35 percent Birdow loam, 1 to 3 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Amtoft, Crooked Creek, and Taylorsflat soils. The shallow Amtoft soils are in the southern part of individual areas on nearly level terraces. They support black sagebrush. Crooked Creek soils are poorly drained and are in drainageways and concave areas. They support reeds and sedges. Taylorsflat soils are on nearly level alluvial fans and in old drainageways. Included areas make up about 20 percent of the total acreage.

The Donnardo soil is very deep and well drained. It formed in mixed alluvium derived dominantly from limestone, quartzite, and sandstone. Typically, the surface layer is grayish brown gravelly loam 11 inches thick. The upper 4 inches of the subsoil is light brownish gray very

cobbly loam. The lower 12 inches is pale brown very cobbly sandy loam. The underlying material to a depth of 60 inches is light gray very cobbly sandy loam.

Permeability is moderate in the Donnardo soil. Available water capacity is about 4.5 to 6.5 inches. The water-supplying capacity is 7 to 8 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Birdow soil is very deep and well drained. It formed in mixed alluvium derived dominantly from quartzite, limestone, and mica schist. Typically, the surface layer is dark grayish brown loam 9 inches thick. The subsurface layer is brown loam 18 inches thick. The upper 9 inches of the underlying material is light brownish gray clay loam. The lower part to a depth of 60 inches is light yellowish brown loam.

Permeability is moderate in the Birdow soil. Available water capacity is about 8.0 to 10.5 inches. The water-supplying capacity is 8 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 3 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used mainly for irrigated cropland, pasture, rangeland, or wildlife habitat.

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control water erosion and helps to maintain tilth and the organic matter content.

The potential plant community on the Donnardo soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, bluegrass, and antelope bitterbrush. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is the content of rock fragments in the surface layer.

The potential plant community on the Birdow soil is 65 percent grasses, 15 percent forbs, and 20 percent shrubs. Important plants are bluebunch wheatgrass, western wheatgrass, and basin big sagebrush. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and range seeding can be used to improve the rangeland vegetation. The suitability for range seeding is good.

The capability subclass is IVs in irrigated areas and VIs in nonirrigated areas. The Donnardo soil is in the Upland Gravelly Loam (Wyoming Big Sagebrush) range site. The Birdow soil is in the Upland Loam (Basin Big Sagebrush) range site.

30—Dynal-Playas association, 0 to 15 percent slopes. This map unit is mainly east of Little Pigeon Island and at the north end of the Newfoundland Mountains. The Dynal soil is on stable eolian sand dunes on lake plains. The Playas are on undrained flats on lake plains. Slopes are convex, are less than 10 feet long, and face all directions in areas of the Dynal soil. The Playas are nearly level. The vegetation is dominantly shadscale, black greasewood, Torrey seepweed, and bud sagebrush on the Dynal soil. The Playas are mostly bare of vegetation. Elevation is 4,200 to 4,300 feet. The average annual precipitation is about 6 to 8 inches, the mean annual air temperature is 48 to 52 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 65 percent Dynal sand, 3 to 15 percent slopes, and 25 percent Playas.

Included in this unit are small areas of Saltair soils and the sodic Skumpah soils, both of which are on lake plains. The silty, poorly drained Saltair soils support pickleweed and inland saltgrass. The silty, well drained, sodic Skumpah soils support black greasewood. Included areas make up about 10 percent of the total acreage.

The Dynal soil is very deep and somewhat excessively drained. It formed in eolian deposits of oolitic sands. Typically, the surface layer is very pale brown sand 5 inches thick. The upper 3 inches of the underlying material is light gray fine sand. The lower part to a depth of 60 inches is very pale brown sand. The soil is affected by sodium below a depth of 30 inches and is calcareous throughout.

Permeability is rapid in the Dynal soil. Available water capacity is about 2.0 to 4.5 inches. The water-supplying capacity is 3.0 to 4.5 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is less than 0.5 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe.

The Playas consist of barren flats in areas of strongly saline lacustrine sediments in undrained basins.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Dynal soil is 45 percent grasses, 10 percent forbs, and 45 percent shrubs. Important plants are black greasewood, fourwing saltbush, and shadscale. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity, the sandy texture of the surface layer, and low annual precipitation.

The Dynal soil is in capability subclass VIIs in nonirrigated areas and is in the Desert Oolitic Dunes (Black Greasewood) range site. The Playas are in capability class VIII and have not been assigned a range site.

31—Fontreen-Borvant gravelly loams, 5 to 20 percent slopes. This map unit is on the north side of the Raft River Mountains. The Fontreen soil is on the ridges and hillsides of dissected fan terraces. The Borvant soil is on the ridges and shoulders of dissected fan terraces. Slopes are convex and concave, are 100 to 300 feet long, and face all directions in areas of the Fontreen soil and are linear and slightly convex, are 20 to 150 feet long, and face north and west in areas of the Borvant soil. The vegetation is dominantly Utah juniper, pinyon pine, and black sagebrush. Elevation is 5,200 to 6,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 43 to 47 degrees F, and the average freeze-free period is 90 to 130 days.

This unit is about 55 percent Fontreen gravelly loam, 8 to 20 percent slopes, and 35 percent Borvant gravelly loam, 5 to 15 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Hupp and Plegomir soils. The very deep Hupp soils are in drainageways. They support Wyoming big sagebrush. Plegomir soils are shallow to a duripan and are on ridges. They support black sagebrush. Also included are small areas of rock outcrop. Included areas make up about 10 percent of the total acreage.

The Fontreen soil is very deep and well drained. It formed in alluvium and colluvium derived dominantly from limestone and quartzite. Typically, 20 percent of the surface is covered with rock fragments. The surface layer is grayish brown gravelly loam 8 inches thick. The subsoil is very pale brown very gravelly loam 23 inches thick. The underlying material to a depth of 60 inches also is very pale brown very gravelly loam. In some areas the surface layer is very cobbly loam.

Permeability is moderately rapid in the Fontreen soil. Available water capacity is about 4.0 to 6.5 inches. The water-supplying capacity is 7 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 5 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Borvant soil is shallow and well drained. It formed in alluvium derived dominantly from limestone and influenced by quartzite. Typically, 35 percent of the surface is covered with rock fragments. The surface layer is grayish brown gravelly loam 4 inches thick. The subsurface layer is brown very gravelly loam 4 inches thick. The subsoil is white very gravelly loam 4 inches thick. An indurated, cemented hardpan of carbonates is at a depth of about 12 inches. In places the surface layer is pale brown.

Permeability is moderate in the Borvant soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 2 to 5 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Fontreen soil is an overstory of pinyon pine and Utah juniper with a 70 percent canopy cover. The understory vegetation is 40 percent grasses, 10 percent forbs, and 50 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, black sagebrush, and Indian ricegrass. Woodland productivity is medium. Yields are 3 to 5 cords of wood per acre. The potential for post or Christmas tree production is fair. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitations affecting range seeding are the content of rock fragments in the surface layer and the slope.

The potential vegetation on the Borvant soil is an overstory of pinyon pine and Utah juniper with a 40 percent canopy cover. The understory vegetation is 40 percent grasses, 10 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, antelope bitterbrush, and Indian ricegrass. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is a low available water capacity.

The capability subclass is VIe in nonirrigated areas. The Fontreen soil is in the Upland Stony Loam (Pinyon-Juniper) range site. The Borvant soil is in the Upland Shallow Hardpan (Pinyon-Juniper) range site.

32—Fontreen-Bullump complex, 3 to 15 percent slopes. This map unit is on fan terraces at the base of the Raft River Mountains. The Fontreen soil is on broad ridges. The Bullump soil is on narrow, concave slopes adjacent to drainageways. Slopes face north or south and are 100 to 300 feet long in areas of the Fontreen soil and face east or west and are 50 to 75 feet long in areas of the Bullump soil. The vegetation is dominantly black sagebrush and bluebunch wheatgrass on the Fontreen soil and mountain big sagebrush, snowberry, and bluebunch wheatgrass on the Bullump soil. Elevation is 5,800 to 6,200 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 80 to 100 days.

This unit is about 55 percent Fontreen gravelly loam, 3 to 8 percent slopes, and 20 percent Bullump loam, 3 to 15 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Borvant, Declo, and Donnardo soils. Borvant soils are shallow to a cemented hardpan of carbonates and are on ridges. They support black sagebrush. Declo soils contain less than 15 percent rock fragments throughout and are in broad drainageways. They support Wyoming big sagebrush. Donnardo soils are cobbly throughout and are in broad drainageways. They support big sagebrush. Also included are small areas of rock outcrop. Included areas make up about 25 percent of the total acreage.

The Fontreen soil is very deep and well drained. It formed in alluvium and colluvium derived dominantly from limestone and quartzite. Typically, 30 percent of the surface is covered with rock fragments. The surface layer is grayish brown gravelly loam 7 inches thick. The upper 9 inches of the subsoil is pale brown very gravelly loam. The lower 8 inches is white very gravelly loam. The underlying material to a depth of 60 inches is very pale brown very gravelly loam.

Permeability is moderately rapid in the Fontreen soil. Available water capacity is about 4.0 to 6.5 inches. The water-supplying capacity is 7 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 5 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Bullump soil is very deep and well drained. It formed in alluvium and colluvium derived dominantly from quartzite and mica schist. Typically, 15 percent of the surface is covered with gravel. The surface layer is grayish brown loam 15 inches thick. The upper 9 inches of the subsoil is brown very gravelly clay loam. The lower part to a depth of 60 inches is light brown very gravelly clay loam.

Permeability is moderately slow in the Bullump soil. Available water capacity is about 8 to 11 inches. The water-supplying capacity is 8 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 3 to 7 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Fontreen soil is 45 percent grasses, 10 percent forbs, and 45 percent shrubs. Important plants are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, needleandthread, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding also is fair. The main limitation affecting range seeding is the content of rock fragments in the surface layer.

The potential plant community on the Bullump soil is 50 percent grasses, 15 percent forbs, and 35 percent shrubs. Important plants are antelope bitterbrush, bluebunch wheatgrass, Idaho fescue, and mountain snowberry. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and reseeding may be used to improve the rangeland vegetation. The suitability for range seeding is good.

The capability subclass is VIe in nonirrigated areas. The Fontreen soil is in the Upland Stony Loam (Black Sagebrush) range site. The Bullump soil is in the Upland Loam (Browse) range site.

33—Fontreen-Phage association, 15 to 40 percent slopes. This map unit is on deeply dissected hillsides and fan terraces near Park Valley in the northern part of the survey area. The Fontreen soil is on the northeast-facing side slopes of deep drainageways that are cut in the fan terraces. The Phage soil is on the southwest-facing side slopes of the same deep drainageways. Slopes are convex and 50 to 100 feet long. The vegetation is dominantly Utah juniper, pinyon pine, and black sagebrush. Elevation is 5,300 to 6,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 43 to 47 degrees F, and the average freeze-free period is 80 to 120 days.

This unit is about 45 percent Fontreen gravelly loam, 20 to 30 percent slopes, and 40 percent Phage gravelly loam, 15 to 40 percent slopes.

Included in this unit are small areas of the shallow Borvant soils on ridges. These soils support Utah juniper, pinyon pine, and black sagebrush. Also included is a very deep, nongravelly soil on the lower slopes and in drainageways. This soil supports Wyoming big sagebrush and bluebunch wheatgrass. Included areas make up about 15 percent of the total acreage.

The Fontreen soil is very deep and well drained. It formed in alluvium and colluvium derived dominantly from limestone and quartzite. Typically, 20 percent of the surface is covered with rock fragments. The surface layer is grayish brown gravelly loam 8 inches thick. The subsoil is very pale brown very gravelly loam 23 inches thick. The underlying material to a depth of 60 inches also is very pale brown very gravelly loam. In some areas the surface layer is very cobbly loam.

Permeability is moderately rapid in the Fontreen soil. Available water capacity is about 4.0 to 6.5 inches. The water-supplying capacity is 7 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 5 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Phage soil is very deep and somewhat excessively drained. It formed in alluvium and colluvium derived dominantly from limestone and quartzite. Typically, 60 percent of the surface is covered with rock fragments. The surface layer is grayish brown gravelly loam 4 inches thick. The upper 6 inches of the subsoil is pale brown gravelly loam, the next 6 inches is very pale brown very

gravelly loam, and the lower part to a depth of 60 inches is very pale brown very gravelly sandy loam. In some areas the surface layer is very cobbly loam.

Permeability is moderately rapid in the Phage soil. Available water capacity is about 3 to 5 inches. The water-supplying capacity is 5 to 7 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Fontreen soil is an overstory of pinyon pine and Utah juniper with a 70 percent canopy cover. The understory vegetation is 40 percent grasses, 10 percent forbs, and 50 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, black sagebrush, and Indian ricegrass. Woodland productivity is medium. Yields are 3 to 5 cords of wood per acre. The potential for post or Christmas tree production is fair. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The potential vegetation on the Phage soil is an overstory of pinyon pine and Utah juniper with a 70 percent canopy cover. The understory vegetation is 40 percent grasses, 10 percent forbs, and 50 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, black sagebrush, and Indian ricegrass. Woodland productivity is medium. Yields are 3 to 5 cords of wood per acre. The potential for post or Christmas tree production is fair. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The capability subclass is VIe in nonirrigated areas. The range site is Upland Stony Loam (Pinyon-Juniper).

34—Hades-Bearskin-Rock outcrop association, 5 to 30 percent slopes. This map unit is on the western flank of the Goose Creek Mountains, directly north of Hardesty Creek. The Hades soil generally is on nonrocky hillsides. The Bearskin soil is on rocky hillsides and ridges. The Rock outcrop is on hillsides, ridges, and cliffs. Slopes are 100 to 300 feet long, face all directions, and are linear and convex to concave. The vegetation is dominantly Idaho fescue, mountain big sagebrush, and bluebunch wheatgrass on the Hades soil and low sagebrush, Idaho fescue, and bluebunch wheatgrass on the Bearskin soil. The Rock outcrop is mostly bare of vegetation. Elevation is 6,200 to 7,200 feet. The average annual precipitation is about 16 to 18 inches, the mean annual air temperature is 39 to 42 degrees F, and the average freeze-free period is 60 to 80 days.

This unit is about 45 percent Hades loam, 5 to 30 percent slopes; 30 percent Bearskin loam, 5 to 30 percent slopes; and 15 percent Rock outcrop.

Included in this unit are small areas of Acord and Eyre family soils. The very deep Acord soils have a dark surface layer that is less than 20 inches thick and are on hillsides. They support Utah juniper. The shallow Eyre family soils have more than 35 percent rock fragments. They support mountainmahogany in thickets. Also included are small areas of a deep, loamy soil that supports Nevada bluegrass, sedges, and silver sage in dry meadows. Included areas make up about 10 percent of the total acreage.

The Hades soil is deep and well drained. It formed in alluvium and colluvium of varying composition and derived dominantly from sandstone and siltstone. Typically, 10 percent of the surface is covered with gravel. The surface layer is dark grayish brown and grayish brown loam 25 inches thick. The upper 15 inches of the subsoil is light yellowish brown sandy clay loam. The lower 17 inches is light yellowish brown sandy loam. Below this is soft, consolidated sandstone bedrock. In places the subsoil contains more than 35 percent clay.

Permeability is moderately slow in the Hades soil. Available water capacity is about 6.5 to 9.0 inches. The water-supplying capacity is 10 to 13 inches. The effective rooting depth is more than 40 inches. The organic matter content in the surface layer is about 5 to 15 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Bearskin soil is shallow and well drained. It formed in colluvium, alluvium, and residuum derived dominantly from extrusive igneous rock. Typically, 40 percent of the surface is covered with rock fragments. The surface layer is brown loam 3 inches thick. The subsoil is brown sandy clay loam 11 inches thick. Hard, extrusive igneous bedrock is at a depth of about 14 inches. In places the soil is less than 10 inches deep over bedrock.

Permeability is moderate in the Bearskin soil. Available water capacity is about 2 to 3 inches. The water-supplying capacity is 5 to 7 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Rock outcrop consists of exposed bedrock on ridges, hillsides, and cliffs and irregularly shaped projections of extrusive igneous rock.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Hades soil is 65 percent grasses, 15 percent forbs, and 20 percent shrubs. Important plants are Idaho fescue, basin wildrye, mountain big sagebrush, bluebunch wheatgrass, and slender wheatgrass. The suitability for livestock grazing is good. If the desirable forage plants become almost

depleted, brush management and reseeding may be used to improve the rangeland vegetation. The suitability for range seeding is good.

The potential plant community on the Bearskin soil is 25 percent grasses, 15 percent forbs, and 60 percent shrubs. Important plants are low sagebrush, Idaho fescue, and bluebunch wheatgrass. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is fair. The main limitation affecting range seeding is a low available water capacity.

The Hades soil is in capability subclass VIe in nonirrigated areas and is in the Mountain Gravelly Loam (Mountain Big Sagebrush) range site. The Bearskin soil is in capability subclass VIIe in nonirrigated areas and is in the Mountain Shallow Loam (Low Sagebrush) range site. The Rock outcrop is in capability class VIII and has not been assigned a range site.

35—Hiko Peak gravelly loam, 3 to 12 percent slopes. This very deep, well drained soil is on lake terraced alluvial fans and hillsides. It is in areas north and west of Peplin Mountain. It formed in alluvium derived dominantly from limestone. Slopes are convex and linear, are less than 200 feet long, and face all directions. The vegetation is dominantly Wyoming big sagebrush, bottlebrush squirreltail, shadscale, and Indian ricegrass. Elevation is 4,400 to 5,300 feet. The average annual precipitation is about 8 to 10 inches, the mean annual air temperature is 46 to 50 degrees F, and the average freeze-free period is 115 to 140 days.

Typically, 20 percent of the surface is covered with gravel. The surface layer is pale brown gravelly loam 4 inches thick. The upper 17 inches of the subsoil also is pale brown gravelly loam. The lower 9 inches is very pale brown very gravelly sandy loam. The underlying material to a depth of 60 inches also is very pale brown very gravelly sandy loam. In some areas the underlying material is extremely gravelly loamy sand or sand.

Included in this unit are small areas of Sitar, Smaug, Taylorsflat, and Tarnach soils. The very gravelly Sitar soils are on lake terraced fans. They support black sagebrush and shadscale. The silty Smaug soils are on ancient lake terraces. They support shadscale and bud sagebrush. The silty Taylorsflat soils are on lake terraced fans. They support Wyoming big sagebrush and Indian ricegrass. The shallow Tarnach soils are on ridges. They support black sagebrush. Included areas make up about 15 percent of the total acreage.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is about 4.0 to 7.5 inches. The water-supplying capacity is 4.0 to 6.5 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, Indian ricegrass, bottlebrush squirreltail, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is low annual precipitation.

The capability subclass is VIIs in nonirrigated areas. The range site is Semidesert Gravelly Loam (Wyoming Big Sagebrush) North range site.

36—Hiko Peak-Kunzler association, 3 to 12 percent slopes. This map unit is on an east-facing fan terrace in the Pilot Range in the western part of the survey area. The Hiko Peak soil is on the higher, steeper parts of the terrace. The Kunzler soil is in the lower, flatter areas of the terrace. Slopes face east, are convex, and are 100 to 120 feet long in areas of the Hiko Peak soil and face east, are linear, and are 50 to 100 feet long in areas of the Kunzler soil. The vegetation is dominantly Wyoming big sagebrush, spiny hopsage, and Indian ricegrass on the Hiko Peak soil and Wyoming big sagebrush and greasewood on the Kunzler soil. Elevation is 4,800 to 5,200 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 46 to 51 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 55 percent Hiko Peak gravelly loam, 3 to 12 percent slopes, and 30 percent Kunzler loamy sand, 3 to 5 percent slopes.

Included in this unit are small areas of Okrist and Stucky soils. The sandy Okrist soils are in drainageways. They support Wyoming big sagebrush and needleandthread. The very deep, stony Stucky soils are on dissected pediments above the high Bonneville lake terrace. They support black sagebrush, Utah juniper, and pinyon pine. Included areas make up about 15 percent of the total acreage.

The Hiko Peak soil is very deep and well drained. It formed in alluvium derived dominantly from quartzite and limestone. Typically, 20 percent of the surface is covered with gravel. The surface layer is pale brown gravelly loam 4 inches thick. The upper 17 inches of the subsoil also is pale brown gravelly loam. The lower 9 inches is very pale brown very gravelly sandy loam. The underlying material to a depth of 60 inches also is very pale brown very gravelly sandy loam. In some areas the underlying material is extremely gravelly loamy sand or sand.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is about 4.0 to 7.5 inches. The water-supplying capacity is 4.0 to 6.5 inches. The

effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Kunzler soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone and limestone. Typically, 10 percent of the surface is covered with gravel and 2 percent is covered with stones. The surface layer is brown loamy sand 4 inches thick. The upper 34 inches of the subsoil is pale brown sandy loam. The lower part to a depth of 60 inches is white sandy loam. The 38- to 60-inch layer is about 35 percent silica concretions, about 20 percent of which are strongly cemented.

Permeability is moderately slow in the Kunzler soil. Available water capacity is about 6 to 8 inches. The water-supplying capacity is 6 to 8 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Hiko Peak soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, Indian ricegrass, bottlebrush squirreltail, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is low annual precipitation.

The potential plant community on the Kunzler soil is 30 percent grasses, 10 percent forbs, and 60 percent shrubs. Important plants are black greasewood, Wyoming big sagebrush, bottlebrush squirreltail, and Indian ricegrass. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity, the sandy texture of the surface layer, and low annual precipitation.

The Hiko Peak soil is in capability subclass VIIs in nonirrigated areas and is in the Semidesert Gravelly Loam (Wyoming Big Sagebrush) North range site. The Kunzler soil is in capability subclass VIIc in nonirrigated areas and is in the Semidesert Alkali Loam (Black Greasewood) range site.

37—Hiko Peak-Sheeprock-Rock outcrop association, 3 to 25 percent slopes. This map unit is on the Wildcat Hills in the northeastern part of the survey area. The Hiko Peak soil is on hillsides and fan terraces. The Sheeprock soil is on strongly sloping and moderately steep hillsides and foot slopes. The Rock outcrop is on ledges and shoulders. Slopes are convex, are 100 to 200 feet long, and face all directions in areas of the Hiko Peak soil and are convex, are 100 to 200 feet long, and generally face southwest in areas of the Sheeprock soil. The vegetation is dominantly Wyoming big sagebrush, Douglas rabbitbrush, and cheatgrass on the Hiko Peak soil and basin big sagebrush, Douglas rabbitbrush, spiny hopsage, and Nuttall horsebrush on the Sheeprock soil. The Rock outcrop is mostly bare of vegetation. Elevation is 4,550 to 4,800 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 47 to 50 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 40 percent Hiko Peak gravelly loam, 3 to 12 percent slopes; 30 percent Sheeprock loamy fine sand, 8 to 25 percent slopes; and 15 percent Rock outcrop.

Included in this unit are small areas of Saxby, Tosser, and Okrist soils. Saxby soils are shallow over bedrock and are adjacent to areas of the Rock outcrop. The very deep, coarse textured Tosser soils are on hillsides. They support black sagebrush and Indian ricegrass. The sandy Okrist soils are on gently sloping hillsides. They support Wyoming big sagebrush and spiny hopsage. Also included are small areas of gullied land on moderately steep hillsides. These areas are bare of vegetation, except for scattered Utah juniper. Included areas make up about 15 percent of the total acreage.

The Hiko Peak soil is very deep and well drained. It formed in colluvium derived dominantly from limestone and quartzite. Typically, 30 percent of the surface is covered with gravel and 15 percent is covered with cobbles. The surface layer is pale brown gravelly loam 4 inches thick. The upper 17 inches of the subsoil also is pale brown gravelly loam. The lower 9 inches is very pale brown very gravelly sandy loam. The underlying material to a depth of 60 inches also is very pale brown very gravelly sandy loam.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is about 4.0 to 7.5 inches. The water-supplying capacity is 4.0 to 6.5 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Sheeprock soil is very deep and somewhat excessively drained. It formed in coarse textured alluvium derived dominantly from igneous rocks. Typically, 15 percent of the surface is covered with gravel. The surface layer is pale brown loamy fine sand 3 inches thick. The upper 9 inches of the underlying material is pale brown gravelly sandy loam, the next 12 inches is pale brown very cobbly loamy sand, the next 15 inches is pale brown very gravelly fine sand, and the lower part to a depth of

The main limitation affecting range seeding is low annual precipitation.

The potential plant community on the Taylorsflat soil is 55 percent grasses, 5 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is low annual precipitation.

The capability subclass is VIIs in nonirrigated areas. The Hiko Peak soil is in the Semidesert Gravelly Loam (Wyoming Big Sagebrush) North range site. The Taylorsflat soil is in the Semidesert Loam (Wyoming Big Sagebrush) range site.

39—Hiko Peak-Taylorsflat-Skumpah association, 1 to 12 percent slopes. This map unit is near Curlew Junction in the eastern part of the survey area. The Hiko Peak soil is on lake terraced alluvial fans. The Taylorsflat soil is on terraced lake plains. The Skumpah soil is in depressions on terraced lake plains. Slopes face southeast. They are convex or linear and 150 to 250 feet long in areas of the Hiko Peak soil, concave to convex and 150 to 250 feet long in areas of the Taylorsflat soil, and concave and 100 to 200 feet long in areas of the Skumpah soil. The vegetation is dominantly Wyoming big sagebrush and bottlebrush squirreltail on the Hiko Peak and the Taylorsflat soils and shadscale, gray molly, and halogeton on the Skumpah soil. Elevation is 4,500 to 5,800 feet. The average annual precipitation is about 6 to 12 inches, the mean annual air temperature is 47 to 51 degrees F, and the average freeze-free period is 110 to 140 days.

This unit is about 45 percent Hiko Peak gravelly loam, 3 to 12 percent slopes; 35 percent Taylorsflat silt loam, 1 to 6 percent slopes; and 15 percent Skumpah silt loam, 1 to 3 percent slopes.

Included in this unit are small areas of Mellor and Okrist soils. The silty, salt-affected Mellor soils are on lake plains. They support black greasewood. The sandy Okrist soils are on gently sloping hillsides in the Wildcat Hills area. They support black sagebrush. Included areas make up about 5 percent of the unit.

The Hiko Peak soil is very deep and well drained. It formed in alluvium derived dominantly from quartzite and limestone. Typically, 20 percent of the surface is covered with gravel. The surface layer is pale brown gravelly loam 4 inches thick. The upper 17 inches of the subsoil also is pale brown gravelly loam. The lower 9 inches is very pale brown very gravelly sandy loam. The underlying material to a depth of 60 inches also is very pale brown very gravelly sandy loam. In some areas the underlying material is extremely gravelly loamy sand or sand.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is about 4.0 to 7.5 inches. The water-supplying capacity is 4.0 to 6.5 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The average annual precipitation is 8 to 12 inches.

The Taylorsflat soil is very deep and well drained. It formed in mixed alluvium derived dominantly from quartzite and limestone. Typically, the surface layer is pale brown silt loam 5 inches thick. The subsoil is pale brown and very pale brown loam 20 inches thick. The underlying material to a depth of 60 inches is very pale brown loam. In some areas the subsoil is fine sandy loam.

Permeability is moderately slow in the Taylorsflat soil. Available water capacity is about 8.0 to 9.5 inches. The water-supplying capacity is 6 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The average annual precipitation is 8 to 12 inches.

The Skumpah soil is very deep and well drained. It formed in mixed lacustrine sediments and alluvium derived dominantly from limestone and quartzite. Typically, the surface layer is light gray silt loam 3 inches thick. The subsoil is light yellowish brown silty clay loam 6 inches thick. The underlying material to a depth of 60 inches is light gray silty clay loam and silt loam. This soil is affected by salt and sodium throughout. In some areas the subsoil does not have a layer of clay accumulation.

Permeability is moderately slow in the Skumpah soil. Available water capacity is about 1.5 to 6.0 inches. The water-supplying capacity is 2 to 4 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. The average annual precipitation is 6 to 8 inches.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Hiko Peak soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail, Indian ricegrass, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is low annual precipitation.

The potential plant community on the Taylorsflat soil is 55 percent grasses, 5 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail. The suitability for livestock grazing is good.

60 inches is pale brown very gravelly sand. In some areas the soil contains less than 35 percent rock fragments throughout.

Permeability is rapid in the Sheeprock soil. Available water capacity is about 2.0 to 3.5 inches. The water-supplying capacity is 3 to 6 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is severe.

The Rock outcrop consists of projections, knobs, and ledges of igneous rock.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Hiko Peak soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, Indian ricegrass, bottlebrush squirreltail, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is low annual precipitation.

The potential plant community on the Sheeprock soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Indian ricegrass, needleandthread, fourwing saltbush, Wyoming big sagebrush, and winterfat. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are low annual precipitation and the sandy texture of the surface layer.

The Hiko Peak soil is in capability subclass VIIs in nonirrigated areas and is in the Semidesert Gravelly Loam (Wyoming Big Sagebrush) North range site. The Sheeprock soil is in capability subclass VIIs in nonirrigated areas and is in the Semidesert Sandy Loam (Wyoming Big Sagebrush) range site. The Rock outcrop is in capability class VIII and has not been assigned a range site.

38—Hiko Peak-Taylorsflat complex, 1 to 12 percent slopes. This map unit is on lake terraced alluvial fans in the Curlew Junction area. It is in the northeastern part of the survey area. The Hiko Peak soil is on ridges and the steeper terrace breaks. The Taylorsflat soil is in concave areas on fans and in drainageways. Slopes dominantly face east and southeast. They are 50 to 100 feet long in areas of the Hiko Peak soil and generally more than 100 feet long in areas of the Taylorsflat soil. The vegetation is dominantly Wyoming big sagebrush, bluebunch wheatgrass, and bottlebrush squirreltail. Elevation is 4,800 to 5,200 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 51 degrees F, and the average freeze-free period is 110 to 140 days.

This unit is about 55 percent Hiko Peak loam, 1 to 12 percent slopes, and 30 percent Taylorsflat silt loam, 1 to 6 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Hiko Springs and Skumpah soils. Hiko Springs soils have less than 18 percent clay, have less than 35 percent rock fragments, and are on the higher part of fans and in drainageways. They support Wyoming big sagebrush and bluebunch wheatgrass. Skumpah soils have a layer of salt accumulation and are in low basins and drainageways. They support shadscale, gray molly, and winterfat. Included areas make up about 15 percent of the total acreage.

The Hiko Peak soil is very deep and well drained. It formed in alluvium derived dominantly from limestone, quartzite, and chert. Typically, the surface layer is brown loam 4 inches thick. The upper 6 inches of the subsoil is pale brown loam, the next 11 inches is light yellowish brown very gravelly loam, and the lower 13 inches is light yellowish brown very gravelly sandy loam. The underlying material to a depth of 60 inches is light yellowish brown very gravelly sandy loam. In some areas the subsoil is very cobbly loam.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is about 4.5 to 8.0 inches. The water-supplying capacity is 5.0 to 6.5 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing also is moderate.

The Taylorsflat soil is very deep and well drained. It formed in mixed alluvium derived dominantly from limestone and quartzite. Typically, the surface layer is pale brown silt loam 5 inches thick. The subsoil is pale brown and very pale brown loam 20 inches thick. The underlying material to a depth of 60 inches is very pale brown loam. In some areas the subsoil is fine sandy loam.

Permeability is moderately slow in the Taylorsflat soil. Available water capacity is about 8.0 to 9.5 inches. The water-supplying capacity is 6 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Hiko Peak soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, Indian ricegrass, bottlebrush squirreltail, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is poor.

The suitability for range seeding is poor, mainly beacuse of low annual precipitation.

The potential plant community on the Skumpah soil is 10 percent grasses, 5 percent forbs, and 85 percent shrubs. Important plants are shadscale, winterfat, bottlebrush squirreltail, bud sagebrush, and gray molly. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity, excess sodium, and low annual precipitation.

The Hiko Peak soil is in capability subclass VIIs in nonirrigated areas and is in the Semidesert Gravelly Loam (Wyoming Big Sagebrush) North range site. The Taylorsflat soil is in capability subclass VIs in nonirrigated areas and is in the Semidesert Loam (Wyoming Big Sagebrush) range site. The Skumpah soil is in capability subclass VIIs in nonirrigated areas and is in the Desert Flat (Shadscale) range site.

40—Hiko Springs-Okrist association, 1 to 8 percent slopes. This map unit is on lake terraced alluvial fans east of Highway 30 and south of the Horse Hills, Matlin Mountains, and Red Dome. Slopes are linear and convex to concave and mostly face south. The vegetation is dominantly shadscale and cheatgrass on the Hiko Springs soil and black sagebrush and Nuttall horsebrush on the Okrist soil. Elevation is 4,500 to 5,200 feet. The average annual precipitation is about 6 to 10 inches, the mean annual air temperature is 47 to 50 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 65 percent Hiko Springs sandy loam, 1 to 6 percent slopes, and 25 percent Okrist gravelly sandy loam, 1 to 8 percent slopes.

Included in this unit are small areas of Hiko Peak, Skumpah, and Tarnach soils. The gravelly Hiko Peak soils are along narrow drainageways. They support Wyoming big sagebrush. Skumpah soils are on lake plains. They support shadscale. The shallow Tarnach soils are on hillsides on the southeast-facing slopes of Red Dome and south of the Horse Hills. They support black sagebrush. Also included are small areas of rock outcrop on hilltops and ridges. Included areas make up about 10 percent of the total acreage.

The Hiko Springs soil is very deep and well drained. It formed in alluvium derived dominantly from limestone and calcareous sandstone. Typically, 20 percent of the surface is covered with gravel. The surface layer is 13 inches of light gray sandy loam and gravelly sandy loam. The upper 37 inches of the subsoil is very pale brown gravelly sandy loam. The lower 10 inches is very pale brown gravelly loamy sand.

Permeability is moderately rapid in the Hiko Springs soil. Available water capacity is about 4 to 6 inches. The water-supplying capacity is 3 to 5 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Okrist soil is very deep and well drained. It formed in ancient beach deposits derived dominantly from granite, sandstone, and rhyolite. Typically, 15 percent of the surface is covered with gravel. The upper 3 inches of the surface layer is yellowish brown gravelly sandy loam. The lower 5 inches is light yellowish brown sandy loam. The upper 11 inches of the subsoil is light yellowish brown loamy sand. The lower 11 inches is very pale brown loamy sand. Moist consistence in the subsoil is firm and very firm. The underlying material to a depth of 60 inches is light yellowish brown sand. In some areas the underlying material has layers of sandy loam and gravelly loamy sand.

Permeability is moderate in the Okrist soil. Available water capacity is about 2.5 to 3.5 inches. The water-supplying capacity is 3 to 5 inches. Root growth is restricted within a depth of 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Hiko Springs soil is 30 percent grasses, 15 percent forbs, and 55 percent shrubs. Important plants are Indian ricegrass, shadscale, bud sagebrush, bottlebrush squirreltail, and winterfat. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitation affecting range seeding is low annual precipitation.

The potential plant community on the Okrist soil is 45 percent grasses, 15 percent forbs, and 40 percent shrubs. Important plants are Indian ricegrass, black sagebrush, needleandthread, and Nevada bluegrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is low annual precipitation.

The Hiko Springs soil is in capability subclass VIIe in nonirrigated areas and is in the Desert Loam (Shadscale) range site. The Okrist soil is in capability subclass VIIs in nonirrigated areas and is in Semidesert Gravelly Sandy Loam (Black Sagebrush) range site.

41—Jericho-Amtoft complex, 20 to 50 percent slopes. This map unit is in an area 8 miles northwest of Lucin in the western part of the survey area. The Jericho soil is on the side slopes of fan terraces. The Amtoft soil is on ridges and hillsides. Slopes mostly face east and north, are linear, and are 10 to 35 feet long in areas of the Jericho soil and mostly face west and south, are convex,

and are 20 to 100 feet long in areas of the Amtoft soil. The vegetation is dominantly Utah juniper, black sagebrush, and bluebunch wheatgrass on the Jericho soil and black sagebrush and Nevada bluegrass on the Amtoft soil. Elevation is 5,200 to 6,100 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 47 to 50 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 50 percent Jericho gravelly loam, 20 to 40 percent slopes, and 40 percent Amtoft very gravelly loam, 20 to 50 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Plegomir soils. These soils average less than 30 percent rock fragments and are on foot slopes. They support black sagebrush, bluebunch wheatgrass, and bottlebrush squirreltail. Also included are small areas of rock outcrop on very steep hillsides and areas of a soil that is less than 10 inches deep over bedrock and supports black sagebrush. Included areas make up about 10 percent of the total acreage.

The Jericho soil is shallow and well drained. It formed in alluvium and colluvium derived dominantly from limestone, rhyolite, and chert. Typically, 65 percent of the surface is covered with gravel. The surface layer is light gray gravelly loam 3 inches thick. The upper 5 inches of the subsoil is very pale brown gravelly fine sandy loam. The lower 9 inches is white very gravelly fine sandy loam. An indurated hardpan of silica and carbonates is at a depth of about 17 inches. In some areas the hardpan is at a depth of more than 20 inches.

Permeability is moderately rapid in the Jericho soil. Available water capacity is about 1.0 to 2.5 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 14 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Amtoft soil is shallow and well drained. It formed in colluvium derived dominantly from limestone and chert. Typically, 65 percent of the surface is covered with gravel. The surface layer is light gray very gravelly loam 9 inches thick. The subsoil is very pale brown very gravelly loam 10 inches thick. Fractured bedrock of limestone and chert is at a depth of about 19 inches.

Permeability is moderately rapid in the Amtoft soil. Available water capacity is about 1.5 to 2.5 inches. The water-supplying capacity is 2 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 0.5 to 2.0 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Jericho soil is an overstory of Utah juniper with a 30 percent canopy cover. The understory vegetation is 45 percent grasses, 10 percent forbs, and 45 percent shrubs. Important plants are black sagebrush, Indian ricegrass, bluebunch wheatgrass, and winterfat. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, low annual precipitation, and the slope.

The potential plant community on the Amtoft soil is 50 percent grasses, 5 percent forbs, and 45 percent shrubs. Important plants are salmon wildrye and black sagebrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and the slope.

The capability subclass is VIIs in nonirrigated areas. The Jericho soil is in the Semidesert Shallow Hardpan (Juniper) range site. The Amtoft soil is in the Semidesert Shallow Loam (Salmon Wildrye) range site.

42—Jughandle-Parkay families complex, 15 to 45 percent slopes. This map unit is on the northwest side of the Raft River Mountains in the northwestern part of the survey area. Both the Jughandle and Parkay family soils are on mountainsides. Slopes dominantly face north and east. The vegetation is dominantly Douglas-fir, subalpine fir, quaking aspen, snowberry, and Oregongrape. Elevation is 6,600 to 8,000 feet. The average annual precipitation is about 16 to 22 inches, the mean annual air temperature is 40 to 45 degrees F, and the average freeze-free period is 60 to 80 days.

This unit is about 70 percent Jughandle family gravelly sandy loam, 15 to 45 percent slopes, and 15 percent Parkay family gravelly loam, 15 to 20 percent slopes. The major soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of rock outcrop and a soil that is shallow over bedrock, is on ridges, and supports grasses and forbs. Also included are small areas of deep, wet soils around springs and seeps. These soils support sedges. Included areas make up about 15 percent of the total acreage.

The Jughandle family soils are very deep and well drained. They formed in colluvium derived dominantly from quartzite and mica schist. Typically, the surface is covered with about 3 inches of needles and twigs. The surface layer is grayish brown gravelly sandy loam 5 inches thick. The subsoil is pale brown and light yellowish brown gravelly sandy loam 37 inches thick. The

underlying material to a depth of 60 inches is light gray gravelly sandy loam.

Permeability is moderately rapid in the Jughandle family soils. Available water capacity is about 4.5 to 5.5 inches. The water-supplying capacity is 8 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is rapid, and the hazard of water erosion is severe. The hazard of soil blowing is moderate.

The Parkay family soils are very deep and well drained. They formed in mixed alluvium derived dominantly from quartzite and mica schist. Typically, 5 percent of the surface is covered with gravel. The surface layer is dark grayish brown gravelly and very gravelly loam 19 inches thick. The subsoil to a depth of 60 inches is yellowish brown very gravelly loam and extremely gravelly clay loam.

Permeability is moderate in the Parkay family soils. Available water capacity is about 4.5 to 6.5 inches. The water-supplying capacity is 9 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Jughandle family soils generally is an overstory of subalpine fir with a 65 percent canopy cover. The understory vegetation is 5 percent grasses, 3 percent forbs, and 92 percent shrubs. Important plants are mountain snowberry, Oregongrape, Fendler meadowrue, and western thimbleberry. The vegetation in burned areas is an overstory of quaking aspen with a 50 percent canopy cover. The site index is 40 for subalpine fir and 50 for quaking aspen. The suitability for harvesting wood products in areas where the slope is 30 to 45 percent is poor because of the severe hazard of erosion. The potential for Christmas tree production is fair. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitation affecting range seeding is the slope.

The potential plant community on the Parkay family soils is 65 percent grasses, 15 percent forbs, and 20 percent shrubs. Important plants are Idaho fescue, basin wildrye, mountain big sagebrush, bluebunch wheatgrass, and slender wheatgrass. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is the slope.

The capability subclass is VIIe in nonirrigated areas. The Jughandle family soils are in the High Mountain Loam (Subalpine Fir) woodland site. The Parkay family soils are in the Mountain Gravelly Loam (Mountain Big Sagebrush) range site.

43—Kapod-Donnardo complex, 2 to 10 percent slopes. This map unit is on a fan terrace between Park Valley and Rosette in the north-central part of the survey area. The Kapod soil is on linear and convex ridges and the side slopes of drainageways. The Donnardo soil is on convex and concave ridges and in drainageways. Slopes dominantly face south and southwest. The vegetation is dominantly black sagebrush and bluebunch wheatgrass on the Kapod soil and Wyoming big sagebrush, bluebunch wheatgrass, and Utah juniper on the Donnardo soil. Elevation is 5,400 to 6,200 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 45 to 49 degrees F, and the average freeze-free period is 100 to 120 days.

This unit is about 45 percent Kapod cobbly loam, 6 to 10 percent slopes, and 35 percent Donnardo gravelly loam, 2 to 8 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Borvant soils. These soils are shallow to a hardpan and are on nearly level toe slopes. They support black sagebrush. Also included are small areas of a deep soil that has less than 35 percent rock fragments, is on ridges, and supports Wyoming big sagebrush and a deep, sandy soil that has more than 35 percent rock fragments, is on level to convex toe slopes, and supports Wyoming big sagebrush. Included areas make up about 20 percent of the total acreage.

The Kapod soil is very deep and well drained. It formed in mixed alluvium derived dominantly from quartzite, limestone, and mica schist. Typically, 10 percent of the surface is covered with gravel and 5 percent is covered with cobbles. The surface layer is dark brown cobbly loam 6 inches thick. The subsurface layer is brown very cobbly loam 10 inches thick. The upper 18 inches of the subsoil is light brownish gray and pale brown very cobbly loam. The lower 7 inches is very pale brown extremely gravelly loam. The underlying material to a depth of 60 inches also is very pale brown extremely gravelly loam.

Permeability is moderate in the Kapod soil. Available water capacity is about 3.5 to 6.0 inches. The water-supplying capacity is 6 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 5 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Donnardo soil is very deep and well drained. It formed in mixed alluvium derived dominantly from limestone, quartzite, and sandstone. Typically, the surface layer is grayish brown gravelly loam 11 inches thick. The upper 4 inches of the subsoil is light brownish gray very cobbly loam. The lower 12 inches is pale brown very cobbly sandy loam. The underlying material to a depth of 60 inches is light gray very cobbly sandy loam.

Permeability is moderate in the Donnardo soil. Available water capacity is about 4.5 to 6.5 inches. The water-supplying capacity is 6 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for irrigated cropland, pasture, rangeland, or wildlife habitat.

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control water erosion and helps to maintain tilth and the organic matter content.

The potential plant community on the Kapod soil is 45 percent grasses, 10 percent forbs, and 45 percent shrubs. Important plants are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, needleandthread, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is fair. The main limitation affecting range seeding is the content of rock fragments in the surface layer.

The potential plant community on the Donnardo soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Nevada bluegrass, muttongrass, and big sagebrush. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is the content of rock fragments in the surface layer.

The capability subclass is VIs in nonirrigated areas. The Kapod soil is in the Upland Stony Loam (Black Sagebrush) range site. The Donnardo soil is in the Upland Gravelly Loam (Wyoming Big Sagebrush) range site.

44—Koosharem silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on valley bottoms and low alluvial terraces in Junction Valley in the northwestern part of the survey area. It formed in mixed alluvium derived dominantly from quartzite and mica schist. Slopes are linear and concave, face northeast, and are 200 to 300 feet long. The vegetation is dominantly basin big sagebrush and basin wildrye or irrigated crops. Elevation is 5,600 to 6,200 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 80 to 90 days.

Typically, the surface layer is dark grayish brown silt loam 24 inches thick. The upper 6 inches of the underlying material is brown silt loam, the next 18 inches is light yellowish brown loam, and the lower part to a depth of 60 inches is light brownish gray silt loam. In some areas close to a creek, a seasonal high water table is between depths of 40 and 72 inches.

Included in this unit are small areas of Raftriver soils. These moderately deep soils are on the higher fan terraces. They support Wyoming big sagebrush. Also included are deep, cobbly soils on escarpments between terraces and very deep, medium textured soils that have a water table at or near the surface. The soils on escarpments support Wyoming big sagebrush. Included areas make up about 15 percent of the total acreage.

Permeability is moderate in the Koosharem soil. Available water capacity is about 8.5 to 11.0 inches. The water-supplying capacity is 9 to 11 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 5 percent. Runoff is very slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is subject to rare, brief periods of flooding.

This unit is used mainly for irrigated cropland, pasture, rangeland, or wildlife habitat.

This unit has fair suitability for cropland and pasture. The short freeze-free period limits production.

The potential plant community is 60 percent grasses, 15 percent forbs, and 25 percent shrubs. Important plants are basin wildrye, western wheatgrass, and basin big sagebrush. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and range seeding can be used to improve the rangeland vegetation. The suitability for range seeding is good.

The capability subclass is IIIc in irrigated areas and IVc in nonirrigated areas. The range site is Loamy Bottom (Basin Wildrye).

45—Kunzler-Lembos association, 1 to 5 percent slopes. This map unit is on fan terraces east of the Grouse Creek Mountains. The Kunzler soil is on the lower parts of the fan terraces, and the Lembos soil is on the upper parts. Slopes are 75 to 150 feet long and face all directions. They are linear and concave in areas of the Kunzler soil and linear and convex in areas of the Lembos soil. The vegetation is dominantly black greasewood and Wyoming big sagebrush on the Kunzler soil and Wyoming big sagebrush on the Lembos soil. Elevation is 4,800 to 5,300 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 48 to 51 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 40 percent Kunzler loam, 1 to 5 percent slopes, and 40 percent Lembos loam, 1 to 5 percent slopes.

Included in this unit are small areas of Acana, Declo, Mellor, and Puett soils. The shallow Acana soils and the very deep Declo soils are on fan terraces. Acana soils support black sagebrush. Declo soils support shadscale. The very deep, silty Mellor soils are on flood plains along ephemeral streams. They support black greasewood. The

shallow Puett soils are on hills. They support Utah juniper. Also included are small areas of Playas and somewhat poorly drained soils on drainage bottoms. The somewhat poorly drained soils support black greasewood and alkali sacaton. Included areas make up about 20 percent of the total acreage.

The Kunzler soil is very deep and well drained. It formed in alluvium derived dominantly from sandstone and limestone. Typically, 5 percent of the surface is covered with gravel. The surface layer is pale brown loam 11 inches thick. The upper 5 inches of the subsoil is light gray loam, the next 16 inches is very pale brown sandy loam and fine sandy loam, the next 9 inches is pink sandy loam, and the lower part to a depth of 60 inches is strongly saline, light gray loam. The amount of sodium in the soil increases with increasing depth.

Permeability is moderately slow in the Kunzler soil. Available water capacity is about 6.0 to 9.5 inches. The water-supplying capacity is 6 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Lembos soil is moderately deep and well drained. It formed in alluvium derived dominantly from sandstone and limestone. Typically, 10 percent of the surface is covered with gravel. The surface layer is pale brown loam 4 inches thick. The upper 6 inches of the subsoil is pale brown silt loam, the next 8 inches is very pale brown loam, and the lower 5 inches is strongly saline, very pale brown cobbly loam. An indurated, cemented hardpan of silica and carbonates is at a depth of about 23 inches.

Permeability is moderate in the Lembos soil. Available water capacity is about 2.5 to 4.0 inches. The water-supplying capacity is 3 to 6 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

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

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control soil blowing and water erosion and helps to maintain tilth and the organic matter content. Intensive management is required to reduce the salinity and maintain productivity.

The potential plant community on the Kunzler soil is 30 percent grasses, 10 percent forbs, and 60 percent shrubs. Important plants are black greasewood, Wyoming big sagebrush, bottlebrush squirreltail, and Indian ricegrass. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity and low annual precipitation.

The potential plant community on the Lembos soil is 55 percent grasses, 5 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity and low annual precipitation.

The Kunzler soil is in capability subclass VIIc in nonirrigated areas and is in the Semidesert Alkali Loam (Black Greasewood) range site. The Lembos soil is in capability subclass VIIs in nonirrigated areas and is in the Semidesert Loam (Wyoming Big Sagebrush) range site.

46—Lembos-Jericho-Scalade complex, 1 to 30 percent slopes. This map unit is on fan terraces and hillsides east of Rocky Pass in the central part of the survey area. The Lembos soil is on convex fan terraces. The Jericho and Scalade soils are on hillsides. Slopes are 25 to 100 feet long and face all directions. They are convex in areas of the Lembos soil and concave to convex in areas of the Jericho and Scalade soils. The vegetation is dominantly Wyoming big sagebrush, cheatgrass, and sixweeks fescue on the Lembos soil; Utah juniper and black sagebrush on the Jericho soil; and black sagebrush, Douglas rabbitbrush, and Nevada bluegrass on the Scalade soil. Elevation is 4,800 to 5,400 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 46 to 50 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 30 percent Lembos loam, 1 to 5 percent slopes; 25 percent Jericho gravelly loam, 5 to 10 percent slopes; and 25 percent Scalade gravelly sandy loam, 10 to 30 percent slopes. The three soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of the shallow, very gravelly Tarnach soils on steep hillsides and areas of rock outcrop. The Tarnach soils support black sagebrush. Also included are deep, loamy soils in drainageways. These soils support Wyoming big sagebrush. Included areas make up about 20 percent of the total acreage.

The Lembos soil is moderately deep and well drained. It formed in alluvium derived dominantly from sandstone and limestone. Typically, 10 percent of the surface is covered with gravel. The surface layer is pale brown loam 4 inches thick. The upper 6 inches of the subsoil is pale brown silt loam, the next 8 inches is very pale brown loam, and the lower 5 inches is strongly saline, very pale brown cobbly loam. An indurated, cemented hardpan of

silica and carbonates is at a depth of about 23 inches. In many areas granitic bedrock is below the hardpan. In places depth to the hardpan is more than 60 inches.

Permeability is moderate in the Lembos soil. Available water capacity is about 2.5 to 4.0 inches. The water-supplying capacity is 3 to 6 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Jericho soil is shallow and well drained. It formed in alluvium derived dominantly from limestone. Typically, 40 percent of the surface is covered with gravel. The surface layer is light gray gravelly loam 3 inches thick. The upper 5 inches of the subsoil is very pale brown gravelly fine sandy loam, and the lower 9 inches is white very gravelly fine sandy loam. An indurated duripan is at a depth of about 17 inches. In some places, the soil does not have a hardpan and granitic bedrock is at a shallow depth. In other places the hardpan is at a depth of more than 20 inches.

Permeability is moderately rapid in the Jericho soil. Available water capacity is about 1.0 to 2.5 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 14 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Scalade soil is shallow and well drained. It formed in alluvium and colluvium derived dominantly from granite, limestone, and quartzite. Typically, 30 percent of the surface is covered with gravel. The surface layer is brown gravelly sandy loam 8 inches thick. The upper part of the subsoil is pale brown loam 10 inches thick. The next part is a strongly cemented duripan about 5 inches thick. The lower part to a depth of 60 inches or more is very pale brown gravelly sand.

Permeability is moderate in the Scalade soil. Available water capacity is about 1.5 to 2.5 inches. The water-supplying capacity is 2 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential plant community on the Lembos soil is 55 percent grasses, 5 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity and low annual precipitation.

The potential vegetation on the Jericho soil is an overstory of Utah juniper with a 30 percent canopy cover. The understory vegetation is 45 percent grasses, 10 percent forbs, and 45 percent shrubs. Important plants are black sagebrush, Indian ricegrass, bluebunch wheatgrass, and winterfat. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and low annual precipitation.

The potential plant community on the Scalade soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, winterfat, bluebunch wheatgrass, Indian ricegrass, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and low annual precipitation.

The capability subclass is VIIs in nonirrigated areas. The Lembos soil is in the Semidesert Loam (Wyoming Big Sagebrush) range site. The Jericho soil is in the Semidesert Shallow Hardpan (Juniper) range site. The Scalade soil is in the Semidesert Shallow Hardpan (Black Sagebrush) range site.

47—Lembos-Taylorsflat complex, 1 to 6 percent slopes. This map unit is on a large fan terrace near Park Valley and Rosette in the north-central part of the survey area. The Lembos soil is in broad, level, slightly convex areas. The Taylorsflat soil is in concave areas and broad drainageways. Slopes dominantly face south and southwest and are more than 100 feet long. The vegetation is dominantly Wyoming big sagebrush and bluebunch wheatgrass. Elevation is 5,000 to 5,500 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 48 to 51 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 65 percent Lembos loam, 1 to 5 percent slopes, and 20 percent Taylorsflat silt loam, 1 to 6 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Acana, Hiko Peak, Kunzler, and Tarnach soils. The shallow Acana soils are on convex shoulder slopes. They support black sagebrush and Indian ricegrass. The very deep Hiko Peak soils average more than 35 percent rock fragments throughout and are on the side slopes of swales and drainageways. They support Wyoming big sagebrush and bluebunch wheatgrass. Kunzler soils average less than 18 percent clay throughout. They support Wyoming big sagebrush and black greasewood. The shallow Tarnach soils average more than 35 percent rock fragments

throughout and are on low hills. They support Utah juniper and black sagebrush. Included areas make up about 15 percent of the total acreage.

The Lembos soil is moderately deep and well drained. It formed in alluvium derived dominantly from sandstone and limestone. Typically, 10 percent of the surface is covered with gravel. The surface layer is pale brown loam 4 inches thick. The upper 6 inches of the subsoil is pale brown silt loam, the next 8 inches is very pale brown loam, and the lower 5 inches is strongly saline, very pale brown cobbly loam. An indurated, cemented hardpan of silica and carbonates is at a depth of about 23 inches.

Permeability is moderate in the Lembos soil. Available water capacity is about 2.5 to 4.0 inches. The water-supplying capacity is 3 to 6 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Taylorsflat soil is very deep and well drained. It formed in mixed alluvium derived dominantly from limestone and quartzite. Typically, the surface layer is pale brown silt loam 5 inches thick. The subsoil is pale brown and very pale brown loam 20 inches thick. The underlying material to a depth of 60 inches is very pale brown loam. In some areas the subsoil is fine sandy loam.

Permeability is moderately slow in the Taylorsflat soil. Available water capacity is about 8.0 to 9.5 inches. The water-supplying capacity is 5 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

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

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control soil blowing and water erosion and helps to maintain tilth and the organic matter content. Intensive management is required to reduce the salinity and maintain productivity.

The potential plant community on the Lembos soil is 55 percent grasses, 5 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are low annual precipitation and excess salinity.

The potential plant community on the Taylorsflat soil is 55 percent grasses, 5 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is low annual precipitation.

The capability subclass is VIIs in nonirrigated areas and VIs in irrigated areas. The range site is Semidesert Loam (Wyoming Big Sagebrush).

48—Lundy-Sonlet-Lodar very gravelly loams, 15 to 50 percent slopes. This map unit is on the Pilot Range in the western part of the survey area. The Lundy soil is on north-facing hillsides and mountainsides. The Sonlet soil is on ridges and hillsides. The Lodar soil is on ridges and south-facing hillsides. Slopes are 10 to 100 feet long and face all directions. The vegetation is dominantly Utah juniper, pinyon pine, and black sagebrush on the Lundy soil; black sagebrush, bluebunch wheatgrass, and Nevada bluegrass on the Sonlet soil; and Utah juniper and pinyon pine on the Lodar soil. Elevation is 5,200 to 7,000 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 41 to 47 degrees F, and the average freeze-free period is 80 to 110 days.

This unit is about 30 percent Lundy very gravelly loam, 20 to 50 percent slopes; 30 percent Sonlet very gravelly loam, 15 to 30 percent slopes; and 25 percent Lodar very gravelly loam, 25 to 40 percent slopes. The three soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Nielsen family and Stucky soils. Nielsen family soils have a layer of clay accumulation and are on mountainsides. They support mountainmahogany. The very deep Stucky soils are on dissected fan terraces and mountain toe slopes. They support black sagebrush. Also included are small areas of Rubble land, rock outcrop, and a moderately deep soil on dissected fan terraces. This soil supports black sagebrush. Included areas make up about 15 percent of the total acreage.

The Lundy soil is shallow and somewhat excessively drained. It formed in colluvium derived dominantly from limestone and chert. Typically, 55 percent of the surface is covered with cobbles and gravel. The surface layer is brown very gravelly loam 3 inches thick. The upper 12 inches of the subsoil also is brown very gravelly loam, and the lower 4 inches is brown very cobbly loam. Fractured bedrock is at a depth of about 19 inches. In some areas the depth to bedrock is 20 to 40 inches.

Permeability is moderate in the Lundy soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 2 to 5 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 2 to 5 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Sonlet soil is shallow and well drained. It formed in colluvium derived dominantly from limestone and chert.

Typically, 50 percent of the surface is covered with rock fragments. The surface layer is brown very gravelly loam 2 inches thick. The upper 8 inches of the subsoil is light yellowish brown very gravelly sandy loam. The lower 9 inches is very pale brown extremely gravelly sandy loam. Fractured bedrock is at a depth of about 19 inches. In some areas the depth to bedrock is 20 to 40 inches.

Permeability is moderate in the Sonlet soil. Available water capacity is about 1.0 to 2.5 inches. The water-supplying capacity is 2 to 5 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Lodar soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from limestone and chert. Typically, 40 percent of the surface is covered with rock fragments. The surface layer is brown very gravelly loam 8 inches thick. The subsoil is brown very gravelly loam 7 inches thick. Fractured bedrock is at a depth of about 15 inches.

Permeability is moderate in the Lodar soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 2 to 5 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 4 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Lundy soil is an overstory of pinyon pine and Utah juniper with a 65 percent canopy cover. The understory vegetation is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, antelope bitterbrush, and bluegrass. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The potential plant community on the Sonlet soil is 45 percent grasses, 10 percent forbs, and 45 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Thurber needlegrass, Nevada bluegrass, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The potential vegetation on the Lodar soil is an overstory of pinyon pine and Utah juniper with a 65 percent canopy cover. The understory vegetation is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, antelope bitterbrush, and bluegrass. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The capability subclass is VIIs in nonirrigated areas. The Lundy and Lodar soils are in the Upland Shallow Loam (Pinyon-Juniper) range site. The Sonlet soil is in the Upland Shallow Loam (Black Sagebrush) range site.

49—Lynndyl loamy sand, 1 to 5 percent slopes. This very deep, somewhat excessively drained soil is on the beach bars and lake terraces of ancient Lake Bonneville. It is in areas east of Lucin in the western part of the survey area. It formed in alluvium derived dominantly from mixed igneous sedimentary rocks. Slopes are concave and convex. The vegetation is dominantly shadscale, spiny hopsage, fourwing saltbush, and Indian ricegrass. Elevation is 4,200 to 4,400 feet. The average annual precipitation is about 4 to 8 inches, the mean annual air temperature is 45 to 51 degrees F, and the average freeze-free period is 100 to 140 days.

Typically, 35 percent of the surface is covered with gravel. The surface layer is light gray loamy sand 5 inches thick. The subsoil is light gray loamy sand 9 inches thick. The underlying material to a depth of 60 inches is stratified loamy sand and sandy loam.

Included in this unit are small areas of Cliffdown and Skumpah soils. The gravelly Cliffdown soils are on lake terraced fans. They support shadscale and bud sagebrush. The silty Skumpah soils are in areas of lacustrine sediments on lake plains. They support halogeton and pepperweed. Also included are small areas of Playas. Included areas make up about 20 percent of the total acreage.

Permeability is rapid in the Lynndyl soil. Available water capacity is about 3.5 to 6.0 inches. The water-supplying capacity is 2 to 4 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community is 40 percent grasses, 10 percent forbs, and 50 percent shrubs. Important plants are Indian ricegrass, fourwing saltbush, winterfat, bottlebrush squirreltail, and spiny hopsage. The suitability for livestock grazing is only fair because of reduced

forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are low annual precipitation and the sandy texture of the surface layer.

The capability subclass is VIIs in nonirrigated areas. The range site is Desert Sand (Fourwing Saltbush).

50—Mellor silt loam, 0 to 2 percent slopes. This very deep, well drained soil is on the upper parts of flood plains along ephemeral streams in the central and eastern parts of the survey area. It formed in alluvium derived dominantly from limestone and lacustrine deposits. Slopes are linear, are 20 to 80 feet long, and face all directions. The vegetation is dominantly black greasewood, gardner saltbush, and gray molly. Elevation is 4,800 to 5,200 feet. The average annual precipitation is about 8 to 10 inches, the mean annual air temperature is 47 to 50 degrees F, and the average freeze-free period is 120 to 140 days.

Typically, the surface layer is light brownish gray silt loam 5 inches thick. The upper 8 inches of the subsoil is moderately saline, pale brown silty clay loam. The lower 25 inches is strongly saline, very pale brown silt loam. The underlying material to a depth of 60 inches is strongly saline, light gray silt loam. This soil is affected by sodium throughout. In some areas, particularly north of the Dove Creek Hills near Warm Springs Wash, soil blowing and water erosion have removed the surface layer, exposing the strongly saline and alkali subsoil. These areas are nearly bare of vegetation, except for black greasewood in scattered areas on pedestals where the surface layer has been retained.

Included in this unit are small areas of Dynal and Kunzler soils. The sandy Dynal soils are affected by sodium and are on sandy hummocks southeast of Russian Knoll. They support black greasewood. The loamy Kunzler soils are on the lower parts of fan terraces. They support black greasewood and Wyoming big sagebrush. Also included are small areas of deep, silty soils on the lower parts of flood plains along ephemeral streams. These soils support basin wildrye and basin big sagebrush. Included areas make up about 15 percent of the total acreage.

Permeability is slow in the Mellor soil. Available water capacity is about 1.5 to 5.5 inches. The water-supplying capacity is 2 to 6 inches. The effective rooting depth generally is 10 to 20 inches. It can be more than 20 inches, however, in areas where the soil is leached. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community is 20 percent grasses, 10 percent forbs, and 70 percent shrubs. Important plants are black greasewood, bottlebrush squirreltail, alkali sacaton, and shadscale. The suitability for livestock grazing is only fair because of reduced forage production and the relative unpalatability of the dominant plants. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity, excess sodium, and low annual precipitation.

The capability subclass is VIIs in nonirrigated areas. The range site is Alkali Flat (Black Greasewood).

51—Mellor silt loam, 2 to 6 percent slopes. This very deep, well drained soil is on fan terraces in the area of Naf and Stanrod in the northeastern part of the survey area. It formed in mixed alluvium derived dominantly from limestone and lacustrine sediments. Slopes are linear, dominantly face north and northwest, and are more than 100 feet long. The vegetation is dominantly Wyoming big sagebrush and bottlebrush squirreltail. Elevation is 4,500 to 5,500 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 51 degrees F, and the average freeze-free period is 100 to 120 days.

Typically, the surface layer is light brownish gray silt loam 4 inches thick. The upper 14 inches of the subsoil is moderately saline, pale brown silty clay loam. The next 9 inches is strongly saline, very pale brown silty clay loam. The lower 16 inches is strongly saline, pale brown silt loam. The underlying material to a depth of 60 inches also is strongly saline, pale brown silt loam. The soil is strongly affected by sodium below a depth of about 4 inches.

Included in this unit are small areas of Darkbull, Declo, and Donnardo soils. Darkbull soils have more than 35 percent rock fragments throughout and are on the steeper side slopes and in drainageways. Declo soils have less than 18 percent clay throughout and are in drainageways. Donnardo soils have more than 35 percent rock fragments; have a thick, dark surface layer; and are in drainageways. They support Wyoming big sagebrush. Included areas make up about 20 percent of the total acreage.

Permeability is slow in the Mellor soil. Available water capacity is about 1.0 to 5.5 inches. The water-supplying capacity is 2 to 6 inches. The effective rooting depth generally is 10 to 20 inches. It can be more than 20 inches, however, in areas where the soil is leached. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

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

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control soil blowing and water erosion and helps to

maintain tilth and the organic matter content. Intensive management is required to reduce the salinity and maintain productivity.

The potential plant community is 30 percent grasses, 10 percent forbs, and 60 percent shrubs. Important plants are black greasewood, Wyoming big sagebrush, bottlebrush squirreltail, and Indian ricegrass. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity, excess sodium, and low annual precipitation.

The capability subclass is IVs in irrigated areas and VIIs in nonirrigated areas. The range site is Semidesert Alkali Loam (Black Greasewood).

52—Mellor-Declo silt loams, 2 to 12 percent slopes. This map unit is on fan terraces near Kelton Pass in the northeastern part of the survey area. The Mellor soil is on nearly level to slightly concave slopes. The Declo soil is on the slightly convex and steeper side slopes of drainageways. Slopes dominantly face north and northwest and are 50 to 100 feet long. The vegetation is dominantly Wyoming big sagebrush, black greasewood, and crested wheatgrass. The crested wheatgrass has been planted in large areas. Elevation is 5,200 to 5,500 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 47 to 49 degrees F, and the average freeze-free period is 100 to 120 days.

This unit is about 55 percent Mellor silt loam, 2 to 6 percent slopes, and 30 percent Declo silt loam, 3 to 12 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Darkbull and Donnardo soils. Darkbull soils have more than 35 percent rock fragments throughout and are on eroded knobs and the steeper side slopes next to drainageways. They support Wyoming big sagebrush and Utah juniper. Donnardo soils are cobbly throughout and are lower on the landscape than the major soils. They support Wyoming big sagebrush. Included areas make up about 15 percent of the total acreage.

The Mellor soil is very deep and well drained. It formed in alluvium derived dominantly from limestone and lacustrine sediments. Typically, the surface layer is light brownish gray silt loam 4 inches thick. The upper 14 inches of the subsoil is moderately saline, pale brown silty clay loam; the next 9 inches is strongly saline, very pale brown silty clay loam; and the lower 16 inches is strongly saline, pale brown silt loam. The underlying material to a depth of 60 inches also is strongly saline, pale brown silt loam. This soil is strongly affected by sodium below a depth of 8 inches. In places the underlying material is very fine sandy loam.

Permeability is slow in the Mellor soil. Available water capacity is about 1.0 to 5.5 inches. The water-supplying capacity is 2 to 6 inches. The effective rooting depth generally is 10 to 20 inches. It can be more than 20 inches, however, in areas where the soil is leached. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Declo soil is very deep and well drained. It formed in mixed alluvium derived dominantly from quartzite, limestone, and lacustrine sediments. Typically, 5 percent of the surface is covered with gravel. The surface layer is grayish brown silt loam 5 inches thick. The subsurface layer is light brownish gray silt loam 4 inches thick. The upper 29 inches of the subsoil is light gray silt loam. The lower 10 inches is very pale brown loam. The underlying material to a depth of 60 inches is very pale brown gravelly sandy loam. In places the soil is gravelly between depths of 20 and 40 inches.

Permeability is moderate in the Declo soil. Available water capacity is about 8.5 to 10.5 inches. The water-supplying capacity is 5 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing also is moderate.

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

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control soil blowing and water erosion and helps to maintain tilth and the organic matter content. Intensive management is required to reduce the salinity and maintain productivity.

The potential plant community on the Mellor soil is 30 percent grasses, 10 percent forbs, and 60 percent shrubs. Important plants are black greasewood, Wyoming big sagebrush, bottlebrush squirreltail, and Indian ricegrass. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity, excess sodium, and low annual precipitation.

The potential plant community on the Declo soil is 55 percent grasses, 5 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, Indian ricegrass, and bottlebrush squirreltail. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is low annual precipitation.

The capability subclass is VIIs in nonirrigated areas and IVs in irrigated areas. The Mellor soil is in the

Semidesert Alkali Loam (Black Greasewood) range site. The Declo soil is in the Semidesert Loam (Wyoming Big Sagebrush) range site.

53—Mellor-Pomat association, 0 to 3 percent slopes. This map unit is on terraced lake plains southeast of Curlew Junction in the eastern part of the survey area. Slopes face southeast, are linear and slightly concave, and are 150 to 250 feet long. The vegetation is dominantly greasewood and gray molly on the Mellor soil and basin big sagebrush and Douglas rabbitbrush on the Pomat soil. Elevation is 4,400 to 4,600 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 46 to 51 degrees F, and the average freeze-free period is 100 to 140 days.

This unit is about 50 percent Mellor silt loam, 0 to 2 percent slopes, and 45 percent Pomat silt loam, 1 to 3 percent slopes.

Included in this unit are small areas of Sitar and Skumpah soils. The very gravelly Sitar soils are on fan terraces. They support Wyoming big sagebrush. The salt-affected Skumpah soils are on terraced lake plains. They support shadscale and bottlebrush squirreltail. Included areas make up about 5 percent of the total acreage.

The Mellor soil is very deep and well drained. It formed in lacustrine sediments and alluvium derived dominantly from limestone and quartzite. Typically, the surface layer is light brownish gray silt loam 5 inches thick. The upper 8 inches of the subsoil is moderately saline, pale brown silty clay loam. The lower 25 inches is strongly saline, very pale brown silt loam. The underlying material to a depth of 60 inches is strongly saline, light gray silt loam. This soil is affected by sodium throughout. In some areas the surface layer is silty clay loam.

Permeability is slow in the Mellor soil. Available water capacity is about 1.5 to 5.5 inches. The water-supplying capacity is 2 to 6 inches. The effective rooting depth generally is 10 to 20 inches. It can be more than 20 inches, however, in areas where the soil is leached. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Pomat soil is very deep and well drained. It formed in lacustrine sediments derived dominantly from limestone and quartzite. Typically, the surface layer is pale brown silt loam 5 inches thick. The subsurface layer is pale brown silt loam 5 inches thick. The underlying material to a depth of 60 inches is light gray and very pale brown silt loam.

Permeability is moderately slow in the Pomat soil. Available water capacity is about 9 to 11 inches. The water-supplying capacity is 5 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Mellor soil is 20 percent grasses, 10 percent forbs, and 70 percent shrubs. Important plants are black greasewood, bottlebrush squirreltail, alkali sacaton, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity, excess sodium, and low annual precipitation.

The potential plant community on the Pomat soil is 40 percent grasses, 10 percent forbs, and 50 percent shrubs. Important plants are basin big sagebrush, bottlebrush squirreltail, winterfat, and Nevada bluegrass. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is low annual precipitation.

The Mellor soil is in capability subclass VIIs in nonirrigated areas and is in the Alkali Flat (Black Greasewood) range site. The Pomat soil is in capability subclass VIe in nonirrigated areas and is in the Semidesert Loam (Basin Big Sagebrush) range site.

54—Nielsen-Bickmore families-Rock outcrop association, 20 to 60 percent slopes. This map unit is on the west face of the Grouse Creek Mountains and the south face of the Raft River Mountains in the northern part of the survey area. The Nielsen family soils are on ridges and mountainsides. The Bickmore family soils are on mountainsides. The Rock outcrop is on ridges and steep escarpments. Slopes are 100 to 300 feet long and face all directions. The vegetation is dominantly low sagebrush, Idaho fescue, and bluebunch wheatgrass on the Nielsen family soils and mountain big sagebrush, snowberry, and slender wheatgrass on the Bickmore family soils. Elevation is 7,200 to 8,500 feet. The average annual precipitation is about 16 to 22 inches, the mean annual air temperature is 38 to 43 degrees F, and the average freeze-free period is 60 to 80 days.

This unit is about 40 percent Nielsen family very gravelly loam, 20 to 60 percent slopes; 25 percent Bickmore family gravelly loam, 30 to 60 percent slopes; and 20 percent Rock outcrop.

Included in this unit are small areas of Eyre family and Shalper soils. The shallow Eyre family soils do not have a layer of clay accumulation and are on ridges and mountainsides. They support mountainmahogany and bluebunch wheatgrass. The shallow Shalper soils are on mountainsides. They support black sagebrush and bluebunch wheatgrass. Also included are small areas of shallow, cobbly soils that are dominantly on mountainsides on the south side of the Raft River

Mountains and support Utah juniper. Included areas make up about 15 percent of the total acreage.

The Nielsen family soils are shallow and well drained. They formed in colluvium derived dominantly from quartzite and mica schist. Typically, 75 percent of the surface is covered with gravel, cobbles, and stones. The surface layer is brown very gravelly loam 7 inches thick. The subsoil is light yellowish brown very gravelly clay loam 7 inches thick. Fractured bedrock is at a depth of about 14 inches.

Permeability is moderately slow in the Nielsen family soils. Available water capacity is about 1.0 to 1.5 inches. The water-supplying capacity is 2 to 6 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Bickmore family soils are moderately deep and well drained. They formed in colluvium derived dominantly from chert, quartzite, and dolomite. Typically, 20 percent of the surface is covered with gravel. The surface layer is dark grayish brown gravelly loam 3 inches thick. The subsurface layer is brown very gravelly loam 17 inches thick. The subsoil is pale brown and very pale brown very gravelly loam 17 inches thick. Fractured quartzite bedrock is at a depth of about 37 inches.

Permeability is moderate in the Bickmore family soils. Available water capacity is about 3.0 to 4.5 inches. The water-supplying capacity is 7 to 10 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 5 to 15 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Rock outcrop consists of exposed quartzite, mica schist, and chert on ridges and steep mountainsides.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Nielsen family soils is 50 percent grasses, 20 percent forbs, and 30 percent shrubs. Important plants are low sagebrush, bluebunch wheatgrass, Idaho fescue, and stemless goldenweed. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are a low available water capacity and the slope.

The potential plant community on the Bickmore family soils is 65 percent grasses, 15 percent forbs, and 20 percent shrubs. Important plants are Idaho fescue, basin wildrye, mountain big sagebrush, bluebunch wheatgrass, and slender wheatgrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The Nielsen family soils are in capability subclass VIIe in nonirrigated areas and are in the Mountain Windswept Ridge (Low Sagebrush) range site. The Bickmore family soils are in capability subclass VIIe in nonirrigated areas and are in the Mountain Gravelly Loam (Mountain Big Sagebrush) range site. The Rock outcrop is in capability class VIII and has not been assigned a range site.

55—Okrist-Okrist, thick surface complex, 1 to 10 percent slopes. This map unit is on lake terraced alluvial fans in the Pilot Range and west of the Grouse Creek Range in the western part of the survey area. Slopes are slightly convex and linear, are 50 to 100 feet long, and face all directions. The vegetation is dominantly black sagebrush, spiny horsebrush, and Indian ricegrass on the Okrist soil and Wyoming big sagebrush, spiny hopsage, and Indian ricegrass on the thick surfaced Okrist soil. Elevation is 4,800 to 5,200 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 47 to 51 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 45 percent Okrist gravelly sandy loam, 1 to 8 percent slopes, and 35 percent Okrist loamy sand, thick surface, 3 to 10 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Hiko Peak, Lynndyl, Sheeprock, and Smaug soils. The very gravelly Hiko Peak soils are on the upper parts of fan terraces and lake built gravel bars. They support Wyoming big sagebrush and shadscale. The sandy Lynndyl and Sheeprock soils are in wide, low, concave areas bordering drainageways on lake terraced fans. Lynndyl soils support spiny hopsage and spiny horsebrush. Sheeprock soils support fourwing saltbush and scattered Utah juniper. The silty Smaug soils are in small, closed basins surrounded by gravel bars on lake terraces. They support shadscale. Also included are small areas of Playas in the closed basins associated with the Smaug soils. Included areas make up about 20 percent of the total acreage.

The Okrist soil is very deep and well drained. It formed in beach deposits derived dominantly from granite, sandstone, and rhyolite. Typically, 15 percent of the surface is covered with gravel. The upper 3 inches of the surface layer is yellowish brown gravelly sandy loam. The lower 5 inches is light yellowish brown sandy loam. The upper 11 inches of the subsoil is light yellowish brown loamy sand. The lower 11 inches is very pale brown loamy sand that is firm and brittle when moist. The underlying material to a depth of 60 inches is light yellowish brown sand. In some areas the underlying material has layers of sandy loam.

Permeability is moderate in the Okrist soil. Available water capacity is about 2.5 to 3.5 inches. The water-supplying capacity is 3 to 6 inches. Root growth is restricted within a depth of 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff

is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The thick surfaced Okrist soil is very deep and well drained. It formed in beach deposits and sandy alluvium derived dominantly from granite and rhyolite. Typically, 5 percent of the surface is covered with gravel. The surface layer is pale brown and very pale brown loamy sand 22 inches thick. The subsoil is weakly cemented very pale brown loamy sand 11 inches thick. The upper 7 inches of the underlying material is very pale brown sand. The lower part to a depth of 60 inches is very pale brown gravelly sand. In some areas the underlying material has layers of sandy loam.

Permeability is moderate in the thick surfaced Okrist soil. Available water capacity is about 2.5 to 4.0 inches. The water-supplying capacity is 3 to 6 inches. Root growth is restricted between depths of 20 and 40 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Okrist soil is 45 percent grasses, 15 percent forbs, and 40 percent shrubs. Important plants are Indian ricegrass, black sagebrush, needleandthread, and Nevada bluegrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are low annual precipitation and a low available water capacity.

The potential plant community on the thick surfaced Okrist soil is 55 percent grasses, 10 percent forbs, and 35 percent shrubs. Important plants are Indian ricegrass, needleandthread, Wyoming big sagebrush, fourwing saltbush, and winterfat. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitations affecting range seeding are low annual precipitation and a low available water capacity.

The capability subclass is VIIs in nonirrigated areas. The Okrist soil is in the Semidesert Gravelly Sandy Loam (Black Sagebrush) range site. The thick surfaced Okrist soil is in the Semidesert Sandy Loam (Wyoming Big Sagebrush) range site.

56—Overland-Sonlet complex, 15 to 40 percent slopes. This map unit is on hillsides and mountain shoulder slopes near Stanrod in the north-central part of the survey area. The Overland soil is in moderately steep and steep, slightly concave areas on hillsides. The Sonlet soil is on moderately steep hillsides, ridges, and shoulder slopes. Slopes are dominantly less than 200 feet long and face all directions. The vegetation is dominantly Utah juniper and bluebunch wheatgrass on the Overland soil and black sagebrush and bluebunch wheatgrass on the Sonlet soil. Elevation is 5,600 to 7,000 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 42 to 45 degrees F, and the average freeze-free period is 80 to 100 days.

This unit is about 55 percent Overland gravelly loam, 15 to 40 percent slopes, and 20 percent Sonlet very gravelly loam, 15 to 30 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Declo and Fontreen soils. The very deep Declo soils are in concave areas and in wide drainageways. They support basin big sagebrush and basin wildrye. The very deep, rocky Fontreen soils are on concave side slopes and convex shoulder slopes. They support Wyoming big sagebrush. Also included are small areas of rock outcrop. Included areas make up about 25 percent of the total acreage.

The Overland soil is moderately deep and well drained. It formed in colluvium and residuum derived dominantly from limestone. Typically, 65 percent of the surface is covered with rock fragments. The surface layer is dark brown and light brownish gray gravelly loam 10 inches thick. The subsoil is pale brown and light gray very gravelly loam 18 inches thick. Limestone bedrock is at a depth of about 28 inches.

Permeability is moderate in the Overland soil. Available water capacity is about 2.0 to 3.5 inches. The water-supplying capacity is 3 to 6 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Sonlet soil is shallow and well drained. It formed in colluvium derived dominantly from limestone, chert, and quartzite. Typically, 50 percent of the surface is covered with rock fragments. The surface layer is brown very gravelly loam 2 inches thick. The upper 8 inches of the subsoil is light yellowish brown very gravelly sandy loam, and the lower 9 inches is very pale brown extremely gravelly sandy loam. Fractured bedrock is at a depth of about 19 inches.

Permeability is moderate in the Sonlet soil. Available water capacity is about 1.0 to 2.5 inches. The water-supplying capacity is 2 to 5 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Overland soil is an overstory of Utah juniper with a 40 percent canopy cover. The understory vegetation is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, basin wildrye, and antelope bitterbrush. Woodland productivity is low. Yields are 1 to 2 cords of wood per

acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The potential plant community on the Sonlet soil is 50 percent grasses, 15 percent forbs, and 35 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The capability subclass is VIIs in nonirrigated areas. The Overland soil is in the Upland Shallow Stony Loam (Juniper) range site. The Sonlet soil is in the Upland Shallow Loam (Black Sagebrush) range site.

57—Parkay family gravelly loam, moist, 5 to 35 percent slopes. This very deep, well drained soil is on mountainsides in the Raft River Range. It formed in colluvium derived dominantly from mica schist and quartzite. Slopes are concave, mostly face north, and are less than 100 feet long. The vegetation is dominantly quaking aspen, grasses, and forbs. Elevation is 6,000 to 7,600 feet. The average annual precipitation is about 16 to 22 inches, the mean annual air temperature is 38 to 42 degrees F, and the average freeze-free period is 60 to 80 days.

Typically, the surface is covered with about 5 inches of needles, twigs, and leaves. The surface layer is very dark grayish brown gravelly loam 6 inches thick. The upper 14 inches of the subsoil is dark brown very gravelly loam. The lower part to a depth of 60 inches is brown extremely gravelly clay loam.

Included in this unit are small areas of the shallow Nielsen family soils and deep, poorly drained soils along toe slopes associated with subsurface flows. Nielsen family soils support low sagebrush. Also included are small areas of a soil that is 20 to 40 inches deep over bedrock. Included areas make up about 10 percent of the total acreage.

Permeability is moderate in the Parkay family soils. Available water capacity is about 4.5 to 6.0 inches. The water-supplying capacity is 8 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation is an overstory of quaking aspen with a 65 percent canopy cover. The understory vegetation is 30 percent grasses, 40 percent forbs, and 30 percent shrubs. Important plants are mountain snowberry, mountain brome, blue wildrye, and common chokecherry. The site index is 50. The suitability for harvesting wood products is fair. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitations affecting range seeding are the content of rock fragments in the surface layer and the slope.

The capability subclass is VIIe in nonirrigated areas. The woodland site is High Mountain Loam (Aspen).

58—Parkay-Dateman families association, 20 to 60 percent slopes. This map unit is in the area of Twin Peaks, the Grouse Creek Mountains, and the Raft River Mountains in the north and northwestern parts of the survey area. The Parkay family soils are on mountain back slopes. The Dateman family soils are on mountainsides. Slopes are dominantly concave, are 100 to 300 feet long, and face all directions. The vegetation is dominantly mountain big sagebrush and spike fescue on the Parkay family soils and subalpine fir, Oregongrape, and snowberry on the Dateman family soils. Elevation is 6,500 to 8,400 feet. The average annual precipitation is about 16 to 30 inches, the mean annual air temperature is 39 to 44 degrees F, and the average freeze-free period is 50 to 80 days.

This unit is about 55 percent Parkay family gravelly loam, 20 to 60 percent slopes, and 20 percent Dateman family gravelly loam, 20 to 60 percent slopes.

Included in this unit are small areas of Broad Canyon family, Eyre family, and Nielsen family soils. Broad Canyon family soils are moderately deep over bedrock and are on ridges. They support low sagebrush. Eyre family soils are shallow over bedrock and are on steep mountainsides. They support curlleaf mountainmahogany. The shallow Nielsen family soils are on ridges and shoulder slopes. They support low sagebrush. Also included are small areas of rock outcrop and small areas of a coarse textured soil that has a water table at a depth of about 3 feet. This soil is in areas near streams. It supports basin wildrye and silver sagebrush. Included areas make up about 25 percent of the total acreage.

The Parkay family soils are very deep and well drained. They formed in colluvium and residuum derived dominantly from quartzite and mica schist. Typically, 5 percent of the surface is covered with gravel. The surface layer is 19 inches of dark grayish brown gravelly loam and very gravelly loam. The subsoil to a depth of 60 inches is yellowish brown very gravelly loam and extremely gravelly clay loam.

Permeability is moderate in the Parkay family soils. Available water capacity is about 4.5 to 6.5 inches. The

water-supplying capacity is 8 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Dateman family soils are very deep and well drained. They formed in mixed alluvium derived dominantly from quartzite and mica schist. Typically, 15 percent of the surface is covered with gravel. The surface layer is dark grayish brown gravelly loam 12 inches thick. The subsurface layer is brown very gravelly loam 9 inches thick. The subsoil is brown and yellowish brown very gravelly loam 22 inches thick. The underlying material to a depth of 60 inches is pale brown extremely gravelly sandy loam.

Permeability is moderate in the Dateman family soils. Available water capacity is about 5.5 to 7.0 inches. The water-supplying capacity is 10 to 18 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential plant community on the Parkay family soils is 65 percent grasses, 15 percent forbs, and 20 percent shrubs. Important plants are Idaho fescue, basin wildrye, mountain big sagebrush, bluebunch wheatgrass, and slender wheatgrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The potential vegetation on the Dateman family soils generally is an overstory of subalpine fir with a 65 percent canopy cover. The understory vegetation is 5 percent grasses, 5 percent forbs, and 90 percent shrubs. Important plants are mountain snowberry, Oregongrape, Fendler meadowrue, and western thimbleberry. The vegetation in burned areas is an overstory of quaking aspen with a 50 percent canopy cover. The site index is 40 for subalpine fir and 50 for quaking aspen. The suitability for harvesting wood products in areas where the slope is 30 to 60 percent is poor because of the severe hazard of erosion. The potential for Christmas tree production is fair. The suitability for livestock grazing is only fair because of low forage production. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The capability subclass is VIIe in nonirrigated areas. The Parkay family soils are in the Mountain Gravelly Loam (Mountain Big Sagebrush) range site. The Dateman family soils are in the High Mountain Loam (Subalpine Fir) woodland site.

59—Parkay-Broad Canyon families association, 20 to 60 percent slopes. This map unit is in the area of Twin Peaks and along the Grouse Creek Mountains. The Parkay family soils are on leeward mountainsides. The Broad Canyon family soils are on windward mountainsides, summits, and shoulder slopes. Slopes commonly are less than 100 feet long, face all directions, and are concave in areas of the Parkay family soils and convex in areas of the Broad Canyon family soils. The vegetation is dominantly mountain big sagebrush, spike fescue, basin wildrye, Nevada bluegrass, and slender wheatgrass on the Parkay family soils and low sagebrush, bottlebrush squirreltail, tapertip hawksbeard, and milkvetch on the Broad Canyon family soils. Elevation is 6,400 to 8,600 feet. The average annual precipitation is about 16 to 22 inches, the mean annual air temperature is 38 to 42 degrees F, and the average freeze-free period is 60 to 80 days.

This unit is about 55 percent Parkay family gravelly loam, 20 to 60 percent slopes, and 30 percent Broad Canyon family very gravelly loam, 20 to 60 percent slopes.

Included in this unit are small areas of Eyre family soils and the moist Parkay family soils. The shallow Eyre family soils are associated with rock outcrop on ridges and steep mountainsides. These soils support curlleaf mountainmahogany. The moist Parkay family soils are in sheltered pockets, which receive extra water from thick snowdrifts. These soils support aspen. Also included are small areas of deep, dark, wet, loamy soils in flat drainageways near springs and perennial streams. These soils support Kentucky bluegrass and yellow willow. Included areas make up about 15 percent of the total acreage.

The Parkay family soils are very deep and well drained. They formed in colluvium derived dominantly from quartzite, schist, and gneiss. Typically, 5 percent of the surface is covered with gravel. The surface layer is dark grayish brown gravelly and very gravelly loam 19 inches thick. The subsoil to a depth of 60 inches is yellowish brown very gravelly loam and extremely gravelly clay loam. In some areas bedrock is at a depth of 40 to 60 inches.

Permeability is moderate in the Parkay family soils. Available water capacity is about 4.5 to 6.5 inches. The water-supplying capacity is 8 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Broad Canyon family soils are deep and well drained. They formed in colluvium derived dominantly from quartzite, schist, and gneiss. Typically, 40 percent of the surface is covered with gravel. The surface layer is brown very gravelly loam 15 inches thick. The subsoil is 35 inches of light yellowish brown extremely gravelly sandy loam and extremely gravelly loamy sand. Highly weathered schist is at a depth of about 50 inches.

Permeability is moderately rapid in the Broad Canyon family soils. Available water capacity is about 2 to 4 inches. The water-supplying capacity is 5 to 9 inches. The effective rooting depth is 40 inches or more. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Parkay family soils is 65 percent grasses, 15 percent forbs, and 20 percent shrubs. Important plants are Idaho fescue, basin wildrye, mountain big sagebrush, bluebunch wheatgrass, and slender wheatgrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The potential plant community on the Broad Canyon family soils is 50 percent grasses, 20 percent forbs, and 30 percent shrubs. Important plants are low sagebrush, bluebunch wheatgrass, Idaho fescue, and stemless goldenweed. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are the content of rock fragments in the surface layer and the slope.

The capability subclass is VIIe in nonirrigated areas. The Parkay family soils are in the Mountain Gravelly Loam (Mountain Big Sagebrush) range site. The Broad Canyon family soils are in the Mountain Windswept Ridge (Low Sagebrush) range site.

60—Pits, gravel. This map unit is at various locations and elevations throughout the survey area, mostly on fan terraces and offshore bars that were associated with ancient Lake Bonneville.

These areas consist of open excavations from which sand and gravel have been removed. Most of the material is used in building construction, for road grades and resurfacing, and for railroad grades. These areas have no value as cropland or rangeland.

The capability class is VIII. This unit has not been assigned a range site.

61—Playas. This map unit is dominantly on the Great Salt Lake Desert. It consists of undrained, nearly level lake plains and basins that were associated with ancient Lake Bonneville. Most of these areas are subject to repeated inundation by water from the Great Salt Lake. Most areas have a smooth surface that is crusted with salt and is patterned by cracks when dry. Some areas are subject to soil blowing when the surface begins to dry. A seasonal high water table is within 20 inches of the surface.

Typically, the Playas consist of strongly calcareous, stratified lake sediments that have a texture of silty clay, silty clay loam, or silt loam. Solar evaporating ponds have been constructed in the area of the Lakeside Mountains. Mineral-heavy water from the lake is pumped into these ponds and allowed to evaporate. The remaining minerals are removed and processed by chemical plants along the shores of the lake. Most areas of the Playas are nearly devoid of vegetation. These areas have no value as cropland or rangeland.

Included in this unit are small areas of Saltair and Skumpah soils. Saltair soils are on lake plains. They support pickleweed and inland saltgrass. Skumpah soils are on lake plains. They support black greasewood. Also included are narrow, elongated dunes made up of oolite, gypsum, or sandy material. Included areas make up about 10 percent of the total acreage.

The capability class is VIII. This unit has not been assigned a range site.

62—Plegomir-Hiko Peak-Bullump association, 3 to 25 percent slopes. This map unit is on the side slopes and fan terraces of the Black Hills in the north-central part of the survey area. The Plegomir soil is on broad and narrow ridges between drainageways. The Hiko Peak soil is on steep side slopes and toe slopes. The Bullump soil is in drainageways. Slopes face south and southwest and are 100 to 300 feet long in areas of the Plegomir and Bullump soils and face east and west and are less than 100 feet long in areas of the Hiko Peak soil. The vegetation is dominantly shadscale and black sagebrush on the Plegomir soil, Wyoming big sagebrush and bluebunch wheatgrass on the Hiko Peak soil, and antelope bitterbrush and snowberry on the Bullump soil. Elevation is 5,800 to 6,200 feet. The average annual precipitation is about 10 to 14 inches, the mean annual air temperature is 43 to 48 degrees F, and the average freeze-free period is 80 to 130 days.

This unit is about 35 percent Plegomir gravelly loam, 3 to 8 percent slopes; 30 percent Hiko Peak gravelly loam, 12 to 25 percent slopes; and 20 percent Bullump loam, 3 to 15 percent slopes.

Included in this unit are small areas of Kapod and Vicking soils. The very deep Kapod soils have more than 35 percent rock fragments, have a layer of carbonate accumulation, and are on ridges and gentle side slopes. They support black sagebrush and Utah juniper. The very deep Vicking soils have a layer of clay accumulation and are on concave side slopes and in small, concave pockets on ridges. They support Wyoming big sagebrush and Utah juniper. Also included are small areas of rock outcrop and areas where the depth to a hardpan is less than 10 inches. Included areas make up about 15 percent of the total acreage.

The Plegomir soil is shallow and well drained. It formed in alluvium derived dominantly from limestone, sandstone,

and quartzite. Typically, 30 percent of the surface is covered with gravel. The surface layer is brown gravelly loam 2 inches thick. The subsurface layer is pale brown loam 3 inches thick. The subsoil is very pale brown gravelly sandy loam 8 inches thick. An indurated hardpan of silica and carbonates is at a depth of about 13 inches. In some areas depth to the hardpan is more than 20 inches.

Permeability is moderate in the Plegomir soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Hiko Peak soil is very deep and well drained. It formed in alluvium derived dominantly from limestone and quartzite. Typically, 20 percent of the surface is covered with gravel. The surface layer is pale brown gravelly loam 4 inches thick. The upper 17 inches of the subsoil also is pale brown gravelly loam. The lower 9 inches is very pale brown very gravelly sandy loam. The underlying material to a depth of 60 inches also is very pale brown very gravelly sandy loam. In some areas the underlying material is extremely gravelly loamy sand or sand.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is about 4.0 to 7.5 inches. The water-supplying capacity is 5 to 8 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Bullump soil is very deep and well drained. It formed in alluvium and colluvium derived dominantly from quartzite and mica schist. Typically, 15 percent of the surface is covered with gravel. The surface layer is grayish brown loam 15 inches thick. The upper 9 inches of the subsoil is brown very gravelly clay loam. The lower part to a depth of 60 inches is light brown very gravelly clay loam.

Permeability is moderately slow in the Bullump soil. Available water capacity is about 8 to 11 inches. The water-supplying capacity is 9 to 11 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 3 to 7 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Plegomir soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, Indian ricegrass, bluebunch wheatgrass, winterfat, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and low annual precipitation.

The potential plant community on the Hiko Peak soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, Indian ricegrass, bottlebrush squirreltail, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is low annual precipitation.

The potential plant community on the Bullump soil is 50 percent grasses, 15 percent forbs, and 35 percent shrubs. Important plants are antelope bitterbrush, bluebunch wheatgrass, Idaho fescue, and mountain snowberry. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and reseeding may be used to improve the rangeland vegetation. The suitability for range seeding is good.

The Plegomir soil is in capability subclass VIIe in nonirrigated areas and is in the Semidesert Shallow Hardpan (Black Sagebrush) range site. The Hiko Peak soil is in capability subclass VIIs in nonirrigated areas and is in the Semidesert Gravelly Loam (Wyoming Big Sagebrush) North range site. The Bullump soil is in capability subclass VIe in nonirrigated areas and is in the Upland Loam (Browse) range site.

63—Promo-Puett complex, 10 to 35 percent slopes. This map unit is on hillsides east of the Grouse Creek Mountains. Slopes are linear and convex to concave and face all directions. They are 50 to 150 feet long in areas of the Promo soil and 25 to 50 feet long in areas of the Puett soil. The vegetation is dominantly black sagebrush on the Promo soil and Utah juniper on the Puett soil. Elevation is 5,200 to 6,000 feet. The average annual precipitation is about 8 to 13 inches, the mean annual air temperature is 45 to 50 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 50 percent Promo very gravelly loam, 10 to 35 percent slopes, and 25 percent Puett gravelly loam, 20 to 35 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Acana, Declo, Jericho, and Lembos soils. Acana soils have a layer of clay accumulation and are on fan terraces. They support black sagebrush and Indian ricegrass. Declo soils have a layer of calcium carbonate accumulation and are on fans. They support shadscale and bottlebrush squirreltail. Jericho soils have a hardpan and are on fans. They support Utah juniper and black sagebrush. Lembos soils have a hardpan at a depth of 20 to 40 inches and are on valley bottoms. They support Wyoming big sagebrush and bluebunch wheatgrass. Also included are small areas of

rock outcrop on hilltops and ridges. Included areas make up about 25 percent of the total acreage.

The Promo soil is shallow and well drained. It formed in colluvium and alluvium derived dominantly from limestone and calcareous sandstone and siltstone. Typically, 45 percent of the surface is covered with gravel and channers. The surface layer is light gray and very pale brown very gravelly loam 8 inches thick. The underlying material, which extends to a depth of 13 inches, is very pale brown very gravelly loam. Slightly fractured, hard, calcareous siltstone bedrock is at a depth of about 13 inches. This soil is calcareous throughout.

Permeability is moderately rapid in the Promo soil. Available water capacity is about 1.0 to 1.5 inches. The water-supplying capacity is 1 to 3 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Puett soil is shallow and well drained. It formed in colluvium and alluvium derived dominantly from weakly consolidated limestone and calcareous sandstone. Typically, 30 percent of the surface is covered with gravel. The surface layer is light brownish gray gravelly loam 2 inches thick. The subsurface layer is pale brown sandy loam 3 inches thick. The underlying material, which extends to a depth of 12 inches, is light gray sandy loam. Soft, fractured, calcareous sandstone bedrock is at a depth of 12 inches. This soil is calcareous throughout. In places the depth to bedrock is more than 20 inches.

Permeability is moderately rapid in the Puett soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is mainly used for woodland, rangeland, or wildlife habitat.

The potential plant community on the Promo soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and horsebrush. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are a low available water capacity and rock fragments in the surface layer.

The potential vegetation on the Puett soil is an overstory of Utah juniper with a 50 percent canopy cover. The understory vegetation is 55 percent grasses, 10 percent forbs, and 35 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and shadscale. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitation affecting range seeding is a low available water capacity.

The capability subclass is VIIe in nonirrigated areas. The Promo soil is in the Semidesert Shallow Loam (Black Sagebrush) range site. The Puett soil is in the Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass) range site.

64—Puett-Plegomir gravelly loams, 3 to 15 percent slopes. This map unit is on dissected hills south of the town of Grouse Creek. The Puett soil is on eroded side slopes. The Plegomir soil is on ridges. Slopes face all directions, are concave to convex, and are less than 100 feet long in areas of the Puett soil and face all directions, are linear and convex, and are 100 to 300 feet long in areas of the Plegomir soil. The vegetation is dominantly Utah juniper, Indian ricegrass, bluebunch wheatgrass, Nevada bluegrass, and black sagebrush on the Puett soil and black sagebrush, Douglas rabbitbrush, bluebunch wheatgrass, and Nevada bluegrass on the Plegomir soil. Elevation is 5,500 to 6,000 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 48 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 40 percent Puett gravelly loam, 5 to 15 percent slopes, and 40 percent Plegomir gravelly loam, 3 to 8 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Brobett, Codquin, Dahar, and Taylorsflat soils. The moderately deep Brobett soils and the shallow Codquin soils have more than 35 percent rock fragments and are on the steeper side slopes. The moderately deep Dahar soils have a layer of clay accumulation and are on the higher ridges. They support Utah juniper. The deep Taylorsflat soils are on alluvial fans in slightly concave areas. They support Wyoming big sagebrush and bluebunch wheatgrass. Included areas make up about 20 percent of the total acreage.

The Puett soil is shallow and well drained. It formed in colluvium and alluvium derived dominantly from weakly consolidated limestone and calcareous sandstone. Typically, 30 percent of the surface is covered with gravel. The surface layer is light brownish gray gravelly loam 2 inches thick. The subsurface layer is pale brown sandy loam 3 inches thick. The underlying material, which extends to a depth of 12 inches, is light gray sandy loam. Soft, fractured, calcareous sandstone bedrock is at a depth of 12 inches. This soil is calcareous throughout. In some areas the depth to bedrock is more than 20 inches.

Permeability is moderately rapid in the Puett soil.

Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is rapid, and the hazard of water erosion is moderate.

The Plegomir soil is shallow and well drained. It formed in mixed alluvium derived dominantly from limestone and quartzite. Typically, 30 percent of the surface is covered with gravel. The surface layer is brown gravelly loam 2 inches thick. The subsurface layer is pale brown loam 3 inches thick. The subsoil is very pale brown gravelly sandy loam 8 inches thick. An indurated hardpan of silica and carbonates is at a depth of about 13 inches. In places the hardpan is at a depth of more than 20 inches.

Permeability is moderate in the Plegomir soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Puett soil is an overstory of Utah juniper with a 50 percent canopy cover. The understory vegetation is 55 percent grasses, 10 percent forbs, and 35 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and shadscale. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitation affecting range seeding is a low available water capacity.

The potential plant community on the Plegomir soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, winterfat, bluebunch wheatgrass, Indian ricegrass, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitation affecting range seeding is a low available water capacity.

The capability subclass is VIIe in nonirrigated areas. The Puett soil is in the Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass) range site. The Plegomir soil is in the Semidesert Shallow Hardpan (Black Sagebrush) range site.

65—Raftriver-Duckree complex, 2 to 50 percent slopes. This map unit is on fan terraces in Junction Valley and the Upper Raft River Valley in the northern part of the survey area. The Raftriver soil is on the wide surfaces of the fan terraces. The Duckree soil is on the steep side slopes of deep drainageways and escarpments. Slopes face all directions. They are linear and 100 to 250 feet long in areas of the Raftriver soil and convex and 50 to 100 feet long in areas of the Duckree soil. The vegetation is dominantly Wyoming big sagebrush and bluebunch wheatgrass. Some areas of the Raftriver soil have been cleared and seeded to crested wheatgrass. Elevation is 5,400 to 6,600 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 39 to 45 degrees F, and the average freeze-free period is 80 to 100 days.

This unit is about 70 percent Raftriver loam, 2 to 20 percent slopes, and 20 percent Duckree gravelly sandy loam, 20 to 50 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Acord, Koosharem, and Solak soils. The cobbly Acord soils are on dissected side slopes. They support low sagebrush. Koosharem soils are very deep, have less than 15 percent gravel, and are in wide drainageways. They support basin big sagebrush. Solak soils are shallow over bedrock and are on steep hillsides. They support Utah juniper and pinyon pine. Included areas make up about 10 percent of the total acreage.

The Raftriver soil is moderately deep and well drained. It formed in mixed alluvium derived dominantly from quartzite, mica schist, and sandstone. Typically, 5 percent of the surface is covered with gravel. The surface layer is pale brown loam 3 inches thick. The upper 9 inches of the subsoil also is pale brown loam. The lower 12 inches is very pale brown sandy loam. The next layer is a weakly cemented hardpan of silica 8 inches thick. The underlying material to a depth of 60 inches is very pale brown sandy loam. In some areas the surface layer is brown gravelly loam. In other areas the hardpan is within a depth of 20 inches.

Permeability is moderate in the Raftriver soil. Available water capacity is about 2.0 to 3.5 inches. The water-supplying capacity is 4 to 6 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Duckree soil is very deep and somewhat excessively drained. It formed in mixed alluvium derived dominantly from quartzite and schist. Typically, 20 percent of the surface is covered with rock fragments. The surface layer is brown gravelly sandy loam 4 inches thick. The upper 7 inches of the subsoil is pale brown gravelly sandy loam, the next 10 inches is light gray very gravelly sandy loam, and the lower 10 inches is very pale brown very gravelly sandy loam. The underlying material to a depth of

60 inches is very pale brown very gravelly loamy sand. In some areas the surface layer is cobbly sandy loam or cobbly loam.

Permeability is moderately rapid in the Duckree soil. Available water capacity is about 2.5 to 4.0 inches. The water-supplying capacity is 4 to 8 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Raftriver soil is 70 percent grasses, 10 percent forbs, and 20 percent shrubs. Important plants are bluebunch wheatgrass, Thurber needlegrass, Wyoming big sagebrush, and Nevada bluegrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and excess salinity.

The potential plant community on the Duckree soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, Nevada bluegrass, and muttongrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and the slope.

The Raftriver soil is in capability subclass VIIs in nonirrigated areas and is in the Upland Loam (Wyoming Big Sagebrush) range site. The Duckree soil is in capability subclass VIe and is in the Upland Gravelly Loam (Wyoming Big Sagebrush) range site.

66—Raftriver-Koosharem complex, 2 to 20 percent slopes. This map unit is on dissected, intermediate stream terraces and alluvial fans in Junction Valley in the northwestern part of the survey area. The Raftriver soil is on the linear and convex parts of fan terraces and hillsides. The Koosharem soil is on the concave parts of alluvial fans and drainageways. Slopes face north and west, are linear and convex, and are 75 to 100 feet long in areas of the Raftriver soil and face east and west, are concave, and are 100 to 200 feet long in areas of the Koosharem soil. The vegetation in uncultivated areas is mainly Wyoming big sagebrush and bluebunch wheatgrass on the Raftriver soil and basin big sagebrush and western wheatgrass on the Koosharem soil. Elevation is 5,700 to 6,500 feet. The average annual precipitation is about 12 to 14 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 80 to 100 days.

This unit is about 55 percent Raftriver loam, 2 to 20 percent slopes, and 35 percent Koosharem silt loam, 2 to 5 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Acord soils. These very deep, cobbly soils are on ridges. They support low sagebrush. Also included are areas of very deep soils that have a water table near the surface, are near springs and seeps, and support basin wildrye and sedges and areas of very deep, cobbly soils that are on escarpments between terraces and support Wyoming big sagebrush. Included areas make up about 10 percent of the total acreage.

The Raftriver soil is moderately deep and well drained. It formed in mixed alluvium derived dominantly from quartzite, schist, and siltstone. Typically, 10 percent of the surface is covered with gravel. The surface layer is pale brown loam 3 inches thick. The upper 9 inches of the subsoil also is pale brown loam. The lower 12 inches is very pale brown sandy loam. The next 8 inches is a weakly cemented hardpan of silica. The underlying material to a depth of 60 inches is very pale brown sandy loam. In places the upper part of the soil contains 15 to 35 percent rock fragments.

Permeability is moderate above the hardpan in the Raftriver soil. Available water capacity is about 2.0 to 3.5 inches. The water-supplying capacity is 4 to 6 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Koosharem soil is very deep and well drained. It formed in mixed alluvium derived dominantly from quartzite, mica schist, and siltstone. Typically, the surface layer is brown silt loam 21 inches thick. The underlying material to a depth of 60 inches is pale brown loam. In some areas the dark surface layer is less than 20 inches thick. These areas are mainly in narrow drainageways on the upper parts of alluvial fans. In places a layer of clay accumulation is below the surface.

Permeability is moderate in the Koosharem soil. Available water capacity is about 8.5 to 11.0 inches. The water-supplying capacity is 9 to 11 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 5 percent. Runoff is slow, and the hazard of water erosion is slight.

This unit is used mainly for irrigated cropland, pasture, rangeland, or wildlife habitat.

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control soil blowing and water erosion and helps to maintain tilth and the organic matter content. Intensive management is required to reduce the salinity and maintain productivity. The short freeze-free period limits production. The Raftriver soil is moderately deep to a

hardpan, which limits the available water capacity. If the soil is irrigated, the hardpan softens and becomes more permeable to roots and water.

The potential plant community on the Raftriver soil is 70 percent grasses, 10 percent forbs, and 20 percent shrubs. Important plants are bluebunch wheatgrass, Thurber needlegrass, Wyoming big sagebrush, and Nevada bluegrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and excess salinity.

The potential plant community on the Koosharem soil is 60 percent grasses, 15 percent forbs, and 25 percent shrubs. Important plants are bluebunch wheatgrass,. western wheatgrass, and basin big sagebrush. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and range seeding can be used to improve the rangeland vegetation. The suitability for range seeding is good.

The Raftriver soil is in capability subclasses VIs in irrigated areas and VIIs in nonirrigated areas. It is in the Upland Loam (Wyoming Big Sagebrush) range site. The Koosharem soil is in capability subclass IVe in irrigated and nonirrigated areas. It is in the Upland Loam (Basin Big Sagebrush) range site.

67—Reebok-Puett association, 2 to 35 percent slopes. This map unit is on dissected fan terraces and hillsides near Park Valley in the northern part of the survey area. The Reebok soil is on linear pediment surfaces. The Puett soil is on the steep side slopes of narrow drainageways. Slopes face south, are linear and convex, and are 100 to 250 feet long in areas of the Reebok soil and face east and west, are linear, and are 15 to 50 feet long in areas of the Puett soil. The vegetation is dominantly black sagebrush and bluebunch wheatgrass on the Reebok soil and Utah juniper, cheatgrass, and black sagebrush on the Puett soil. Elevation is 5,200 to 6,000 feet. The average annual precipitation is about 8 to 14 inches, the mean annual air temperature is 45 to 49 degrees F, and the average freeze-free period is 100 to 120 days.

This unit is about 55 percent Reebok gravelly loam, 2 to 20 percent slopes, and 30 percent Puett gravelly loam, 20 to 35 percent slopes.

Included in this unit are small areas of Hiko Peak and Taylorsflat soils. The very deep Hiko Peak soils contain more than 35 percent rock fragments and are in the upper part of drainageways, and the very deep Taylorsflat soils are medium textured and are in the lower part of drainageways. Both of these soils support Wyoming big sagebrush. Also included is a deep, cobbly soil on steep escarpments. This soil supports black sagebrush. Included areas make up about 15 percent of the total acreage.

The Reebok soil is shallow and well drained. It formed in mixed alluvium derived dominantly from limestone and quartzite. Typically, 25 percent of the surface is covered with rock fragments. The surface layer is grayish brown gravelly loam about 7 inches thick. The subsoil is pale brown very gravelly loam about 9 inches thick. An indurated, cemented hardpan of carbonates is at a depth of about 16 inches. In some areas the surface layer is pale brown gravelly loam.

Permeability is moderate in the Reebok soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Puett soil is shallow and well drained. It formed in colluvium and alluvium derived dominantly from limestone and quartzite. Typically, 30 percent of the surface is covered with rock fragments. The surface layer is light brownish gray gravelly loam 2 inches thick. The subsurface layer is pale brown sandy loam 3 inches thick. The underlying material, which extends to a depth of 12 inches, is light gray sandy loam. Soft, fractured tuff is at a depth of about 12 inches. This soil is calcareous throughout. In some areas the underlying material contains 15 to 35 percent gravel and cobbles.

Permeability is moderately rapid in the Puett soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential plant community on the Reebok soil is 50 percent grasses, 15 percent forbs, and 35 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is fair. The main limitation affecting range seeding is a low available water capacity.

The potential vegetation on the Puett soil is an overstory of Utah juniper with a 50 percent canopy cover. The understory vegetation is 55 percent grasses, 10 percent forbs, and 35 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and shadscale. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability

for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are a low available water capacity and the slope.

The Reebok soil is in capability subclass VIIs in nonirrigated areas and is in the Upland Shallow Loam (Black Sagebrush) range site. The Puett soil is in capability subclass VIIe in nonirrigated areas and is in the Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass) range site.

68—Rexmont-Shalper-Rock outcrop complex, 15 to 40 percent slopes. This map unit is on steep, rocky hills south of Etna in the western part of the survey area. Slopes are concave to convex, are 20 to 50 feet long, and face all directions. The vegetation is dominantly Utah juniper on the Rexmont soil and Wyoming big sagebrush and Nevada bluegrass on the Shalper soil. The Rock outcrop is mostly bare of vegetation. Elevation is 5,400 to 7,000 feet. The average annual precipitation is about 10 to 14 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 70 to 100 days.

This unit is about 35 percent Rexmont very stony loam, 25 percent Shalper very gravelly loam, and 20 percent Rock outcrop. The two soils and Rock outcrop occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Broad Canyon family, Dahar, Ramshorn family, and Solak soils. The deep Broad Canyon family soils are on ridges and in concave pockets. They support low sagebrush. Dahar soils are moderately deep to a cemented pan and are on dissected pediments at the northern end of mapped areas. They support Utah juniper and Wyoming big sagebrush. The deep, strongly calcareous Ramshorn family soils are on west-facing hills. They support black sagebrush. The shallow Solak soils are on hillsides. They support black sagebrush. Also included are very deep soils on the bottom of canyons and large drainageways. These soils support basin big sagebrush. Included areas make up about 20 percent of the total acreage.

The Rexmont soil is shallow and somewhat excessively drained. It formed in colluvium derived dominantly from rhyolite and other extrusive igneous rocks. Typically, 40 percent of the surface is covered with gravel, cobbles, and stones. The surface layer is brown very stony loam 6 inches thick. The subsurface layer, which extends to a depth of 12 inches, is brown extremely stony loam. Fractured rhyolite is at a depth of about 12 inches. In some areas the subsoil has a layer of clay accumulation.

Permeability is moderate in the Rexmont soil. Available water capacity is about 0.5 inch to 1.5 inches. The water-supplying capacity is 1 to 3 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 2 to 4 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Shalper soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from rhyolite. Typically, 40 percent of the surface is covered with rock fragments. The surface layer is brown very gravelly loam 2 inches thick. The subsoil is yellowish brown very gravelly loam 5 inches thick. Rhyolite bedrock is at a depth of about 7 inches.

Permeability is moderately slow in the Shalper soil. Available water capacity is about 0.5 to 1.0 inch. The water-supplying capacity is 1 to 2 inches. The effective rooting depth is 4 to 12 inches. The organic matter content in the surface layer is about 2 to 4 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Rock outcrop consists of exposed bedrock on ridges, cliffs, and hillsides and irregularly shaped projections of rhyolite and other extrusive igneous rocks.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Rexmont soil is an overstory of Utah juniper with a 40 percent canopy cover. The understory vegetation is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are bluebunch wheatgrass, Wyoming big sagebrush, basin wildrye, and antelope bitterbrush. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and rock fragments in the surface layer.

The potential plant community on the Shalper soil is 55 percent grasses, 25 percent forbs, and 20 percent shrubs. Important plants are bluebunch wheatgrass, Thurber needlegrass, and Wyoming big sagebrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and rock fragments in the surface layer.

The Rexmont and Shalper soils are in capability subclass VIIs in nonirrigated areas. The Rexmont soil is in the Upland Shallow Stony Loam (Juniper) range site. The Shalper soil is in the Upland Shallow Gravelly Loam (Thurber Needlegrass) range site. The Rock outcrop is in capability class VIII and has not been assigned a range site.

69—Ridd-Bullump complex, 3 to 20 percent slopes. This map unit is on fan terraces on the south side of the Raft River Mountains near Park Valley in the north-central part of the survey area. The Ridd soil is in the convex,

steeper areas. The Bullump soil is in concave areas and in drainageways. Slopes dominantly face south and southwest. The vegetation is dominantly black sagebrush and bluebunch wheatgrass on the Ridd soil and antelope bitterbrush, snowberry, and bluebunch wheatgrass on the Bullump soil. Elevation is 6,000 to 6,400 feet. The average annual precipitation is about 14 to 16 inches, the mean annual air temperature is 43 to 49 degrees F, and the average freeze-free period is 80 to 130 days.

This unit is about 70 percent Ridd very cobbly loam, 5 to 20 percent slopes, and 15 percent Bullump loam, 3 to 15 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Collard and Hupp soils. The very deep Collard soils are on steep toe slopes. They support Utah juniper and bluebunch wheatgrass. The very deep Hupp soils have a zone of carbonate accumulation and are in small, short drainageways. They support low sagebrush and bluebunch wheatgrass. Also included are small areas of rock outcrop and a soil that is less than 20 inches deep, is near the rock outcrop, and supports black sagebrush. Included areas make up about 15 percent of the total acreage.

The Ridd soil is moderately deep and well drained. It formed in mixed alluvium derived dominantly from mica schist and quartzite. Typically, 10 percent of the surface is covered with cobbles and 20 percent is covered with gravel. The surface layer is dark grayish brown very cobbly loam 6 inches thick. The subsurface layer is brown very cobbly loam 7 inches thick. The subsoil is brown and yellowish brown extremely gravelly loam 18 inches thick. The underlying material is brownish yellow extremely gravelly sandy loam 7 inches thick. Below this is soft or hard bedrock.

Permeability is moderate in the Ridd soil. Available water capacity is about 2.5 to 4.5 inches. The water-supplying capacity is 6 to 8 inches. The effective rooting depth is 30 to 40 inches. The organic matter content in the surface layer is about 2 to 4 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Bullump soil is very deep and well drained. It formed in alluvium and colluvium derived dominantly from quartzite and mica schist. Typically, 15 percent of the surface is covered with gravel. The surface layer is grayish brown loam 15 inches thick. The upper 9 inches of the subsoil is brown very gravelly clay loam. The lower part to a depth of 60 inches is light brown very gravelly clay loam.

Permeability is moderately slow in the Bullump soil. Available water capacity is about 8 to 11 inches. The water-supplying capacity is 10 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 3 to 7 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Ridd soil is 45 percent grasses, 10 percent forbs, and 45 percent shrubs. Important plants are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, needleandthread, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitation affecting range seeding is the content of rock fragments in the surface layer.

The potential plant community on the Bullump soil is 50 percent grasses, 15 percent forbs, and 35 percent shrubs. Important plants are antelope bitterbrush, bluebunch wheatgrass, Idaho fescue, and mountain snowberry. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and reseeding may be used to improve the rangeland vegetation. The suitability for range seeding is good.

The capability subclass is VIIs in nonirrigated areas. The Ridd soil is in the Upland Stony Loam (Black Sagebrush) range site. The Bullump soil is in the Upland Loam (Browse) range site.

70—Ridgecrest-Bickmore families association, 30 to 60 percent slopes. This map unit is in the Goose Creek Mountains in the western part of the survey area. The Ridgecrest family soils are on windward mountainsides and on the upper slopes. The Bickmore family soils are in concave pockets downwind of ridges and on the lower mountainsides. Slopes commonly are less than 100 feet long. They face north and west and are linear and convex in areas of the Ridgecrest family soils and face south and east and are concave in areas of the Bickmore family soils. The vegetation is dominantly black sagebrush, bluebunch wheatgrass, Sandberg bluegrass, and Hood phlox on the Ridgecrest family soils and mountain big sagebrush, bluebunch wheatgrass, basin wildrye, and yellowbrush on the Bickmore family soils. Elevation is 6,200 to 7,800 feet. The average annual precipitation is about 16 to 22 inches, the mean annual air temperature is 39 to 45 degrees F, and the average freeze-free period is 60 to 80 days.

This unit is about 55 percent Ridgecrest family very gravelly loam, 30 to 60 percent slopes, and 35 percent Bickmore family gravelly loam, 30 to 60 percent slopes.

Included in this unit are small areas of Eyre family, Rodrof, and Solak soils. Eyre family soils are shallow over bedrock and are on mountainsides. They support mountainmahogany. Rodrof soils have a duripan within a depth of 20 inches and are on shoulder slopes and ridges on the lower hills. They support black sagebrush. Solak

soils are shallow and are at the lower elevations. They support black sagebrush. Also included are small areas of rock outcrop. Included areas make up about 10 percent of the total acreage.

The Ridgecrest family soils are very deep and well drained. They formed in colluvium derived dominantly from chert and limestone. Typically, 60 percent of the surface is covered with gravel and cobbles. The surface layer is brown very gravelly loam 3 inches thick. The upper part of the subsoil is brown extremely gravelly loam 6 inches thick. The lower part to a depth of 60 inches is very pale brown extremely gravelly sandy loam and extremely cobbly sandy loam. In some areas the depth to bedrock is 40 to 60 inches. In other areas the soil contains less than 40 percent calcium carbonate equivalent.

Permeability is moderately rapid in the Ridgecrest family soils. Available water capacity is about 2.5 to 4.5 inches. The water-supplying capacity is 6 to 10 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Bickmore family soils are moderately deep and well drained. They formed in colluvium derived dominantly from chert. Typically, 20 percent of the surface is covered with gravel. The surface layer is dark grayish brown gravelly loam about 3 inches thick. The subsurface layer is brown very gravelly loam 17 inches thick. The subsoil is pale brown and very pale brown very gravelly loam 17 inches thick. Fractured chert bedrock is at a depth of about 37 inches. In some areas the soil does not have a layer of clay accumulation.

Permeability is moderate in the Bickmore family soils. Available water capacity is about 3.0 to 4.5 inches. The water-supplying capacity is 7 to 10 inches. The effective rooting depth is 30 to 40 inches. The organic matter content in the surface layer is about 5 to 15 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Ridgecrest family soils is 50 percent grasses, 20 percent forbs, and 30 percent shrubs. Important plants are black sagebrush, Thurber needlegrass, and bluebunch wheatgrass. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The potential plant community on the Bickmore family soils is 65 percent grasses, 15 percent forbs, and 20 percent shrubs. Important plants are Idaho fescue, basin wildrye, mountain big sagebrush, bluebunch wheatgrass, and slender wheatgrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The capability subclass is VIIe in nonirrigated areas. The Ridgecrest family soils are in the Mountain Shallow Gravelly Ridge (Black Sagebrush) range site. The Bickmore family soils are in the Mountain Gravelly Loam (Mountain Big Sagebrush) range site.

71—Rock outcrop-Amtoft association, 35 to 80 percent slopes. This map unit is in the Newfoundland Mountains and on the west side of the Hogup Mountains in the southwestern part of the survey area. The Rock outcrop is on mountainsides, peaks, ridges, and escarpments. The Amtoft soil is on mountainsides. Slopes are 25 to 150 feet long, are linear and convex to concave, and face all directions. Areas on the west side of the Hogup Mountains are less steep than other areas of the unit. The Rock outcrop is mostly bare of vegetation. The vegetation on the Amtoft soil is dominantly salmon wildrye and black sagebrush. Elevation is 4,400 to 7,000 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 49 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 45 percent Rock outcrop and 30 percent Amtoft extremely cobbly loam, 35 to 80 percent slopes.

Included in this unit are small areas of Cliffdown and Tarnach soils. The very deep Cliffdown soils are on alluvial fans. They support trident saltbush, shadscale, and Indian ricegrass. Tarnach soils do not have a layer of carbonate accumulation. They support Utah juniper, Nevada bluegrass, and bluebunch wheatgrass. Also included is a soil that is less than 10 inches deep over bedrock. This soil supports black sagebrush. Included areas make up about 25 percent of the total acreage.

The Rock outcrop consists exposed bedrock on mountainsides, ridges, and escarpments and irregularly shaped projections of exposed limestone bedrock and smaller amounts of other rocks. Talus slopes of various sizes are at the base of most escarpments and ridges.

The Amtoft soil is shallow and well drained. It formed in colluvium and residuum derived dominantly from limestone. Typically, 75 percent of the surface is covered with gravel, cobbles, and stones. The surface layer is light gray extremely cobbly loam 5 inches thick. The subsoil is very pale brown and light gray very gravelly loam 11 inches thick. Fractured limestone bedrock is at a depth of about 16 inches.

Permeability is moderately rapid in the Amtoft soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter

content in the surface layer is about 0.5 to 2.0 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Amtoft soil is 50 percent grasses, 5 percent forbs, and 45 percent shrubs. Important plants are salmon wildrye and black sagebrush. The suitability for livestock grazing is poor because of the slope. The suitability for range seeding also is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The Rock outcrop is in capability class VIII and has not been assigned a range site. The Amtoft soil is in capability subclass VIIs in nonirrigated areas and is in the Semidesert Shallow Loam (Salmon Wildrye) range site.

72—Rodrof extremely gravelly loam, 10 to 40 percent slopes. This shallow, well drained soil is on hillsides west of Meadow Creek Butte in the northwestern part of the survey area. It formed in alluvium and colluvium derived dominantly from chert and limestone. Slopes are less than 100 feet long, face all directions, and are convex to concave. The vegetation is dominantly black sagebrush, bluebunch wheatgrass, and Sandberg bluegrass. Elevation is 6,000 to 6,600 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 80 to 100 days.

Typically, 40 percent of the surface is covered with gravel. The surface layer is brown extremely gravelly loam 10 inches thick. The subsoil is pale brown extremely gravelly loam 9 inches thick. An indurated hardpan of silica and carbonates is at a depth of about 19 inches. In some areas depth to the duripan or bedrock is more than 20 inches.

Included in this unit are small areas of Ant Flat, Collard, and Koosharem soils. The very deep, clayey Ant Flat soils are on south-facing hillsides. They support Utah juniper. The very deep Collard soils are on north-facing hillsides. They support low sagebrush. The very deep, loamy Koosharem soils are in drainageways and swales. They support basin big sagebrush. Included areas make up about 20 percent of the total acreage.

Permeability is moderate in the Rodrof soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 2 to 5 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community is 50 percent grasses, 15 percent forbs, and 35 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and rock fragments in the surface layer.

The capability subclass is VIIs in nonirrigated areas. The range site is Upland Shallow Loam (Black Sagebrush).

73—Rubble land-Nielsen family complex, 30 to 60 percent slopes. This map unit is on the Pilot Mountains in the southwestern part of the survey area. The Rubble land is on very steep mountainsides. The Nielsen family soils are on steep mountainsides. Slopes are 5 to 15 feet long, are linear, and face all directions. The vegetation is dominantly littleleaf mountainmahogany, low sagebrush, and Idaho fescue on the Nielsen family soils. The Rubble land is mostly bare of vegetation. Elevation is 6,800 to 8,700 feet. The average annual precipitation is about 16 to 22 inches, the mean annual air temperature is 38 to 41 degrees F, and the average freeze-free period is 60 to 80 days.

This unit is about 50 percent Rubble land and 35 percent Nielsen family extremely stony loam, 30 to 60 percent slopes. The Nielsen family soils and Rubble land occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Dateman family and Eyre family soils and small areas of rock outcrop. The very deep Dateman family soils are in small, concave pockets on mountainsides. They support aspen. Eyre family soils do not have a clay increase in the subsoil and are on ridges and mountainsides. They support low sagebrush. The rock outcrop consists of exposed bedrock on the high ridges in the Pilot Mountains. Included areas make up about 15 percent of the total acreage.

The Nielsen family soils are shallow and well drained. They formed in colluvium derived dominantly from quartzite and phyllite. Typically, 35 percent of the surface is covered with stones and cobbles and the rest of the surface between plants is covered with about 6 inches of decaying leaves and twigs. The surface layer is very dark grayish brown extremely stony loam 8 inches thick. The subsoil is light yellowish brown extremely cobbly clay loam 8 inches thick. Fractured bedrock of quartzite and phyllite is at a depth of about 16 inches.

Permeability is moderately slow in the Nielsen family soils. Available water capacity is about 1.0 to 1.5 inches. The water-supplying capacity is 2 to 6 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 5 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Rubble land consists of areas of quartzite stones and boulders on steep mountain slopes, generally below areas of rock outcrop.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Nielsen family soils is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are curlleaf mountainmahogany, bluebunch wheatgrass, salmon wildrye, and fernbush. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The Rubble land is in capability class VIII and has not been assigned a range site. The Nielsen family soils are in capability subclass VIIe in nonirrigated areas and are in the Mountain Shallow Loam (Curlleaf Mountainmahogany) range site.

74—Saltair-Playas association, 0 to 2 percent slopes. This map unit is on lake plains south of Kelton in the eastern part of the survey area. The Saltair soil is on the level parts of lake plains having scattered windblown hummocks 6 to 12 inches high. The Playas are undrained flats on lake plains. Slopes are linear, are 50 to 100 feet long, and face all directions. The vegetation is dominantly pickleweed and inland saltgrass on the Saltair soil. The Playas are mostly bare of vegetation. Elevation is 4,210 to 4,230 feet. The average annual precipitation is about 6 to 8 inches, the mean annual air temperature is 47 to 52 degrees F, and the average freeze-free period is 120 to 140 days.

This unit is about 50 percent Saltair silt loam, 0 to 2 percent slopes, and 35 percent Playas.

Included in this unit are small areas of the sodic Skumpah soils and small areas of Swingler soils. The well drained, sodic Skumpah soils support black greasewood. The well drained Swingler soils support sickle saltbush. Also included are small areas of somewhat poorly drained soils. These soils support black greasewood and alkali sacaton. Included areas make up about 15 percent of the total acreage.

The Saltair soil is very deep and poorly drained. It formed in mixed lacustrine sediments derived dominantly from limestone, shale, and quartzite. Typically, much of the surface is covered with a thin layer of salt crystals. The surface layer is light gray silt loam 6 inches thick. The upper 37 inches of the underlying material is light gray silty clay loam. The lower part to a depth of 60 inches is light brownish gray silty clay loam. Common distinct dark yellowish brown to light yellowish brown mottles are below a depth of 6 inches. The soil is strongly saline throughout. A layer of visible salt accumulation is between depths of 6 and 43 inches. In some areas the surface layer is silty clay loam.

Permeability is slow in the Saltair soil. Available water capacity is about 0.5 inch to 5.0 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is limited by a seasonal high water table, which is at the surface to a depth of 1 foot from March to October. The organic matter content in the surface layer is less than 1 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. This soil is periodically subject to inundation by water when the level of the Great Salt Lake rises.

The Playas consist of barren, undrained flats in areas of highly saline, stratified lacustrine sediments that are periodically inundated by water from the Great Salt Lake and by snowmelt in the spring.

This unit is limited for use as rangeland and wildlife habitat.

The potential plant community on the Saltair soil is 35 percent grasses, 5 percent forbs, and 60 percent shrubs. Important plants are pickleweed and inland saltgrass. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are low annual precipitation, a low available water capacity, and excess salinity.

The Saltair soil is in capability subclass VIIw and is in the Desert Salty Silt (Pickleweed) range site. The Playas are in capability class VIII and have not been assigned a range site.

75—Salt flats. This map unit is in the western part of the Great Salt Lake Desert in the southwestern part of the survey area, west of the Silver Island Mountains. It consists of undrained, closed basins that were associated with ancient Lake Bonneville. Most of these basins are subject to repeated and prolonged inundation by water.

Typically, the Salt flats consist of 4 to 20 inches of crystalline salt over stratified, fine textured, very strongly saline lake sediments. A seasonal high water table commonly is within 6 inches of the surface.

Included in this unit are small areas of Skumpah and Swingler soils and Playas. The well drained Skumpah soils support black greasewood. The well drained Swingler soils support sickle saltbush. The included soils make up about 5 percent of the unit, and Playas make up about 10 percent.

The Salt flats typically are bare of vegetation. They have no value as cropland or rangeland.

The capability class is VIII. This unit has not been assigned a range site.

76—Saxby-Rock outcrop complex, 10 to 50 percent slopes. This map unit is northwest of Kelton in the eastern part of the survey area. The Saxby soil is on hillsides and ridges in areas of basalt flows. The Rock outcrop is on summits, points, and ridges. Slopes are linear and convex, are 20 to 200 feet long, and face all directions in areas of the Saxby soil. The vegetation on the Saxby soil is dominantly Wyoming big sagebrush, spiny hopsage, and Nevada bluegrass. The Rock outcrop is mostly bare of vegetation. Elevation is 4,500 to 5,500 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 47 to 51 degrees F, and the average freeze-free period is 100 to 140 days.

This unit is about 60 percent Saxby bouldery silt loam, 10 to 50 percent slopes, and 20 percent Rock outcrop. The Saxby soil and Rock outcrop occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Hiko Peak and Smaug soils. The very deep Hiko Peak soils are on fan terraces. They support Wyoming big sagebrush and Nevada bluegrass. The very deep Smaug soils are on lake terraces and lake plains. They support shadscale and bud sagebrush. Included areas make up about 20 percent of the total acreage.

The Saxby soil is shallow and well drained. It formed in residuum and colluvium derived dominantly from basalt. Typically, about 60 percent of the surface is covered with stones and boulders. The surface layer is pale brown extremely bouldery silt loam about 3 inches thick. The subsoil is pale brown extremely cobbly loam about 13 inches thick. Fractured basalt is at a depth of about 16 inches. In some areas the depth to bedrock is more than 20 inches.

Permeability is moderate in the Saxby soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Rock outcrop consists of irregularly shaped projections of basalt on ridges, hillsides, and summits.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Saxby soil is 35 percent grasses, 5 percent forbs, and 60 percent shrubs. Important plants are Wyoming big sagebrush, spiny hopsage, Indian ricegrass, and bottlebrush squirreltail. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The Saxby soil is in capability subclass VIIs in nonirrigated areas and is in the Semidesert Bouldery Loam (Wyoming Big Sagebrush) range site. The Rock outcrop is in capability class VIII and has not been assigned a range site.

77—Scalade-Lodar association, 3 to 25 percent slopes. This map unit is on a dissected pediment on the eastern side of the Pilot Range in the western part of the survey area. The Scalade soil is on broad ridges at the lower end of individual areas. The Lodar soil is on north- and south-facing dissected hillsides at the upper end of individual areas. Slopes mostly face east. They are linear in areas of the Scalade soil and convex in areas of the Lodar soil. The vegetation is dominantly black sagebrush and bluebunch wheatgrass on the Scalade soil and Utah juniper, pinyon pine, Wyoming big sagebrush, and bluebunch wheatgrass on the Lodar soil. Elevation is 5,200 to 6,000 feet. The average annual precipitation is about 10 to 14 inches, the mean annual air temperature is 45 to 47 degrees F, and the average freeze-free period is 110 to 140 days.

This unit is about 45 percent Scalade gravelly sandy loam, 3 to 10 percent slopes, and 40 percent Lodar very gravelly loam, 5 to 25 percent slopes.

Included in this unit are small areas of Hiko Peak soils. These very deep, very gravelly soils are on the lower end of the pediment. They support shadscale. Also included, on the upper parts of the pediment, are small areas of rock outcrop and soils that are moderately deep to a cemented hardpan of silica and support Wyoming big sagebrush. Included areas make up about 15 percent of the total acreage.

The Scalade soil is shallow and well drained. It formed in alluvium derived dominantly from granite, limestone, and quartzite. Typically, 30 percent of the surface is covered with gravel. The surface layer is brown gravelly sandy loam 3 inches thick. The upper part of the subsoil is pale brown loam about 8 inches thick. The lower part is light yellowish brown fine sandy loam 7 inches thick. A strongly cemented duripan is at a depth of about 18 inches. It is 5 inches thick. The underlying material to a depth of 60 inches is very pale brown gravelly sandy loam and gravelly sand. In some areas fractured granite is at a depth of 10 to 20 inches.

Permeability is moderate in the Scalade soil. Available water capacity is about 2.0 to 2.5 inches. The water-supplying capacity is 3 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Lodar soil is shallow and somewhat excessively drained. It formed in alluvium derived dominantly from limestone, chert, and dacite. Typically, 40 percent of the surface is covered with gravel. The surface layer is brown

very gravelly loam 8 inches thick. The subsoil is brown very gravelly loam 7 inches thick. Fractured limestone bedrock is at a depth of about 15 inches. In some areas the soil is underlain by granite or siltstone.

Permeability is moderate in the Lodar soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 2 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 4 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential plant community on the Scalade soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, winterfat, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitation affecting range seeding is a low available water capacity.

The potential vegetation on the Lodar soil is an overstory of pinyon pine and Utah juniper with a 65 percent canopy cover. The understory vegetation is 55 percent grasses, 5 percent forbs, and 45 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, antelope bitterbrush, and bluegrass. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and rock fragments in the surface layer.

The capability subclass is VIIs in nonirrigated areas. The Scalade soil is in the Semidesert Shallow Hardpan (Black Sagebrush) range site. The Lodar soil is in the Upland Shallow Loam (Pinyon-Juniper) range site.

78—Skumpah-Playas complex, 1 to 3 percent slopes. This map unit is on lake plains in the southern part of the survey area. Slopes are linear, are 100 to 200 feet long, and face all directions. The vegetation is dominantly shadscale, gray molly, and halogeton on the Skumpah soil. The Playas are mostly bare of vegetation. Elevation is 4,200 to 5,000 feet. The average annual precipitation is about 4 to 8 inches, the mean annual air temperature is 45 to 49 degrees F, and the average freeze-free period is 120 to 150 days.

This unit is about 70 percent Skumpah silt loam, 1 to 3 percent slopes, and 20 percent Playas. The Skumpah soil and Playas occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Dynal, Smaug, and Swingler soils. The sandy Dynal soils are on low, eroded dunes. They support black greasewood. Smaug soils do not have a clay increase in the subsoil. They support shadscale. Swingler soils do not have a clay increase in the subsoil. They support sickle saltbush. Also included are small, gullied areas of a somewhat poorly drained soil that supports black greasewood and basin wildrye and areas of badlands on highly dissected lake terraces near Lion Mountain and Gartney Mountain. Included areas make up about 10 percent of the total acreage.

The Skumpah soil is very deep and well drained. It formed in mixed lacustrine sediments and alluvium derived dominantly from limestone and quartzite. Typically, the surface layer is light gray silt loam 3 inches thick. The subsoil is moderately saline, light yellowish brown silty clay loam 6 inches thick. The underlying material to a depth of 60 inches is strongly saline, light gray silt loam and silty clay loam. A layer of clay and sodium accumulation is between depths of 3 and 9 inches. The soil is affected by salt and sodium throughout. In some areas erosion has removed the surface layer, exposing the highly sodic subsoil.

Permeability is moderately slow in the Skumpah soil. Available water capacity is about 1.5 to 6.0 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Playas consist of barren, undrained flats in areas of highly saline, stratified lacustrine sediments on lake plains. In most mapped areas, the Playas are small, irregularly shaped, and surrounded by the Skumpah soil. In the mapped area in the northern part of the Newfoundland Mountains, the Playas are in 2 to 8 feet wide strips and form an intricate network across the landscape, which is dominated by the Skumpah soil.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Skumpah soil is 10 percent grasses, 5 percent forbs, and 85 percent shrubs. Important plants are shadscale, winterfat, bottlebrush squirreltail, bud sagebrush, and gray molly. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity, excess sodium, and low annual precipitation.

The Skumpah soil is in capability subclass VIIs in nonirrigated areas and is in the Desert Flat (Shadscale) range site. The Playas are in capability class VIII and have not been assigned a range site.

79—Skumpah, sodic-Playas complex, 0 to 3 percent slopes. This map unit is along the margins of the mud flats of the Great Salt Lake Desert. Slopes are linear and 50 to 100 feet long in areas of the sodic Skumpah soil and are flat on the Playas. The vegetation is dominantly black greasewood, littleleaf horsebrush, rabbitbrush, and shadscale on the Skumpah soil. The Playas are mostly bare of vegetation. Elevation is 4,200 to 4,400 feet. The average annual precipitation is about 4 to 8 inches, the mean annual air temperature is 45 to 49 degrees F, and the average freeze-free period is 120 to 150 days.

This unit is about 45 percent Skumpah silt loam, sodic, 1 to 3 percent slopes, and 45 percent Playas. The Skumpah soil and Playas occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Dynal and Saltair soils. The sandy Dynal soils are on small dunes and old lake terraces. They support black greasewood. The poorly drained Saltair soils are on lake plains next to the Playas. They support pickleweed and inland saltgrass. Also included are areas of somewhat poorly drained soils in drainageways and depressions. These soils support black greasewood and basin wildrye. Included areas make up about 10 percent of the total acreage.

The Skumpah soil is very deep and well drained. It formed in mixed lacustrine sediments and alluvium derived dominantly from limestone and quartzite. Typically, the surface layer is light gray silt loam 4 inches thick. The subsoil is moderately saline, very pale brown and light gray silty clay loam 11 inches thick. The underlying material to a depth of 60 inches is strongly saline, light gray silt loam. This soil is affected by sodium throughout. In some areas a seasonal high water table is at a depth of 2.5 to 3.5 feet from December to April.

Permeability is moderately slow in the Skumpah soil. Available water capacity is about 2 to 6 inches. The water-supplying capacity is 2 to 5 inches. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Playas consist of barren, undrained flats in areas of highly saline, stratified lacustrine sediments on lake plains.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Skumpah soil is 20 percent grasses, 10 percent forbs, and 70 percent shrubs. Important plants are black greasewood, bottlebrush squirreltail, alkali sacaton, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity, excess sodium, and low annual precipitation.

The Skumpah soil is in capability subclass VIIs in nonirrigated areas and is in the Alkali Flat (Black Greasewood) range site. The Playas are in capability class VIII and have not been assigned a range site.

80—Skumpah-Skumpah, sodic-Swingler association, 1 to 3 percent slopes. This map unit is on lake plains and low lake terraces north of Kelton Farms and near Peplin Flats in the northeastern part of the survey area. Slopes are linear, are 150 to 300 feet long, and generally face south and east. The vegetation is dominantly shadscale, gray molly, and bottlebrush squirreltail on the Skumpah soil; black greasewood on the sodic Skumpah soil; and sickle saltbush on the Swingler soil. Elevation is 4,200 to 4,800 feet. The average annual precipitation is about 4 to 8 inches, the mean annual air temperature is 45 to 53 degrees F, and the average freeze-free period is 110 to 160 days.

This unit is about 30 percent Skumpah silt loam; 30 percent Skumpah silt loam, sodic; and 25 percent Swingler silt loam.

Included in this unit are small areas of Saltair and Smaug soils and areas of badlands and Playas. The very poorly drained Saltair soils are adjacent to Playas. They support pickleweed. The well drained Smaug soils contain less clay than the major soils and are on terraces. They support shadscale, bud sagebrush, and bottlebrush squirreltail. The badlands are on highly dissected, barren lake terraces composed of saline lacustrine sediments. The Playas are on the lowest parts of the lake plains. Also included are small areas of somewhat poorly drained soils in drainageways and depressions near springs. These soils support black greasewood and basin wildrye. Included areas make up about 15 percent of the total acreage.

The Skumpah soil is very deep and well drained. It formed in mixed lacustrine sediments and alluvium derived dominantly from limestone and quartzite. Typically, the surface layer is light gray silt loam 3 inches thick. The subsoil is moderately saline, light yellowish brown silty clay loam 6 inches thick. The underlying material to a depth of 60 inches is strongly saline, light gray silty clay loam and silt loam. This soil is affected by salt and sodium throughout. In some areas the subsoil does not have a layer of clay accumulation.

Permeability is moderately slow in the Skumpah soil. Available water capacity is about 1.5 to 6.0 inches. The water-supplying capacity is 2 to 5 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The sodic Skumpah soil is very deep and well drained. It formed in mixed lacustrine sediments and alluvium derived dominantly from limestone and quartzite.

Typically, the surface layer is light gray silt loam 4 inches thick. The subsoil is moderately saline, very pale brown and light gray silty clay loam 11 inches thick. The underlying material to a depth of 60 inches is strongly saline, light gray silt loam. This soil is affected by sodium throughout.

Permeability is moderately slow in the sodic Skumpah soil. Available water capacity is about 2 to 6 inches. The water-supplying capacity is 2 to 5 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

The Swingler soil is very deep and moderately well drained. It formed in mixed lacustrine sediments and alluvium derived dominantly from limestone and quartzite. Typically, the surface layer is pale brown silt loam 5 inches thick. The underlying material to a depth of 60 inches is strongly saline, pale brown, very pale brown, and light gray silt loam. In some areas the soil has a layer of clay and sodium accumulation.

Permeability is moderately slow in the Swingler soil. Available water capacity is about 3.0 to 6.5 inches. The water-supplying capacity is 2 to 5 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Skumpah soil is 10 percent grasses, 5 percent forbs, and 85 percent shrubs. Important plants are shadscale, winterfat, bottlebrush squirreltail, bud sagebrush, and gray molly. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are excess salinity, excess sodium, and low annual precipitation.

The potential plant community on the sodic Skumpah soil is 20 percent grasses, 10 percent forbs, and 70 percent shrubs. Important plants are black greasewood, bottlebrush squirreltail, alkali sacaton, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are low annual precipitation, excess salinity, and excess sodium.

The potential plant community on the Swingler soil is 5 percent grasses, 5 percent forbs, and 90 percent shrubs. Important plants are sickle saltbush, gray molly, and bottlebrush squirreltail. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are low annual precipitation and excess salinity.

The capability subclass is VIIs in nonirrigated areas. The Skumpah soil is in the Desert Flat (Shadscale) range site. The sodic Skumpah soil is in the Alkali Flat (Black Greasewood) range site. The Swingler soil is in the Desert Salt Flat (Sickle Saltbush) range site.

81—Skylick-Hoodle association, 15 to 50 percent slopes. This map unit is on mountainsides and hillsides in and around Cotton Thomas Basin. Slopes face all directions. They are concave and 100 to 300 feet long in areas of the Skylick soil and convex and less than 100 feet long in areas of the Hoodle soil. The vegetation is dominantly mountain big sagebrush, Idaho fescue, Douglas rabbitbrush, and basin wildrye on the Skylick soil and low sagebrush, bluebunch wheatgrass, Hood phlox, and Sandberg bluegrass on the Hoodle soil. Elevation is 6,400 to 7,000 feet. The average annual precipitation is about 16 to 22 inches, the mean annual air temperature is 38 to 42 degrees F, and the average freeze-free period is 60 to 80 days.

This unit is about 60 percent Skylick loam, 15 to 40 percent slopes, and 35 percent Hoodle very gravelly loam, 20 to 50 percent slopes.

Included in this unit are small areas of wet, loamy soils on drainage bottoms and on flats. These soils support tufted hairgrass, silver sagebrush, and Rocky Mountain iris. Also included are areas of soils that are shallow over limestone. These soils support black sagebrush. Included areas make up about 5 percent of the total acreage.

The Skylick soil is very deep and well drained. It formed in colluvium derived dominantly from mixed sedimentary rocks. Typically, 5 percent of the surface is covered with gravel. The surface layer is very dark grayish brown and dark grayish brown loam 25 inches thick. The upper 20 inches of the subsoil is brown and light yellowish brown clay loam. The lower 15 inches is pale brown sandy clay loam. In some areas depth to the subsoil is less than 25 inches.

Permeability is moderately slow in the Skylick soil. Available water capacity is about 6.5 to 10.5 inches. The water-supplying capacity is 10 to 16 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 10 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Hoodle soil is very deep and well drained. It formed in colluvium derived dominantly from mixed sedimentary rocks. Typically, 70 percent of the surface is covered with gravel. The surface layer is 12 inches of dark grayish brown very gravelly loam and gravelly loam. The upper 14 inches of the subsoil is brown very gravelly clay loam. The lower 34 inches is very pale brown very gravelly clay loam.

Permeability is moderate in the Hoodle soil. Available water capacity is about 5.5 to 7.5 inches. The water-

supplying capacity is 9 to 13 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 2 to 5 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Skylick soil is 65 percent grasses, 15 percent forbs, and 20 percent shrubs. Important plants are Idaho fescue, basin wildrye, mountain big sagebrush, bluebunch wheatgrass, and slender wheatgrass. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is the slope.

The potential plant community on the Hoodle soil is 50 percent grasses, 20 percent forbs, and 30 percent shrubs. Important plants are low sagebrush, bluebunch wheatgrass, Idaho fescue, and stemless goldenweed. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are the slope and rock fragments in the surface layer.

The capability subclass is VIe in nonirrigated areas. The Skylick soil is in the Mountain Gravelly Loam (Mountain Big Sagebrush) range site. The Hoodle soil is in the Mountain Windswept Ridge (Low Sagebrush) range site.

82—Smaug very fine sandy loam, 0 to 5 percent slopes. This very deep, well drained soil is on lake terraces and lake plains throughout the survey area. It formed in mixed alluvium and lacustrine sediments derived dominantly from limestone and other sedimentary rocks. Slopes are linear, are 50 to 200 feet long, and face all directions. The vegetation is dominantly shadscale, bud sagebrush, and winterfat. Elevation is 4,300 to 4,800 feet. The average annual precipitation is about 6 to 8 inches, the mean annual air temperature is 48 to 52 degrees F, and the average freeze-free period is 100 to 130 days.

Typically, the surface layer is light gray very fine sandy loam 3 inches thick. The upper 32 inches of the underlying material is very pale brown very fine sandy loam. The lower part to a depth of 60 inches is very pale brown silt loam. The soil is calcareous throughout. It is strongly saline below a depth of 21 inches. In some areas the underlying material has strata of gravelly very fine sandy loam.

Included in this unit are small areas of Sitar, Skumpah, and Swingler soils. Sitar soils have more than 35 percent rock fragments throughout and are on lake terraced fans. They support Wyoming big sagebrush. Skumpah soils are affected by salt and sodium, have a clay increase in the subsoil, and support shadscale, gray molly, and black greasewood. The moderately well drained Swingler soils are affected by salt and support sickle saltbush. Included areas make up about 15 percent of the total acreage.

Permeability is moderately slow in the Smaug soil. Available water capacity is about 5.0 to 8.5 inches. The water-supplying capacity is 4 to 5 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

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

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control soil blowing and water erosion and helps to maintain tilth and the organic matter content. Intensive management is required to reduce the salinity and maintain productivity.

The potential plant community is 30 percent grasses, 15 percent forbs, and 55 percent shrubs. Important plants are Indian ricegrass, shadscale, bud sagebrush, bottlebrush squirreltail, and winterfat. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitation affecting range seeding is low annual precipitation.

The capability subclass is VIIc in nonirrigated areas. The range site is Desert Loam (Shadscale).

83—Smaug silt loam, 0 to 3 percent slopes. This very deep, well drained soil is on lake plains near the northern end of the Hogup Mountains and the southern end of the Grouse Creek Valley. It formed in alluvium over lacustrine sediments derived dominantly from mixed sedimentary rocks. Slopes are linear or slightly concave, are 100 to 200 feet long, and face all directions. The vegetation is dominantly winterfat and bottlebrush squirreltail. Elevation is 4,500 to 4,800 feet. The average annual precipitation is about 6 to 8 inches, the mean annual air temperature is 48 to 52 degrees F, and the average freeze-free period is 100 to 130 days.

Typically, the surface layer is light gray silt loam 2 inches thick. The upper 9 inches of the underlying material is light gray silt loam. The next 16 inches is very pale brown silt loam. The lower part to a depth of 60 inches is white silt loam. This soil is calcareous throughout. In some areas the lower part of the soil has thin veins of gypsum.

Included in this unit are small areas of Sitar and Swingler soils. The very gravelly Sitar soils are on lake terraced fans and support Wyoming big sagebrush. The moderately well drained, salt-affected Swingler soils support sickle saltbush. Included areas make up about 10 percent of the total acreage.

Permeability is moderately slow in the Smaug soil.

Available water capacity is about 2.5 to 8.5 inches. The water-supplying capacity is 2 to 5 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community is 15 percent grasses, 5 percent forbs, and 80 percent shrubs. Important plants are winterfat, shadscale, Indian ricegrass, bud sagebrush, and bottlebrush squirreltail. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitation affecting range seeding is low annual precipitation.

The capability subclass is VIIc in nonirrigated areas. The range site is Desert Silt Flat (Winterfat).

84—Solak-Rock outcrop association, 15 to 50 percent slopes. This map unit is on mountainsides and hillsides in the upper Raft River narrows. The Solak soil is on slightly convex side slopes. The Rock outcrop soil is on ledges, talus slopes, and cliffs. Slopes dominantly face east and northeast and are 50 to 200 feet long in areas of the Solak soil. The vegetation is dominantly Utah juniper, pinyon pine, and black sagebrush on the Solak soil. The Rock outcrop is mostly bare of vegetation. Elevation is 5,700 to 7,200 feet. The average annual precipitation is about 10 to 14 inches, the mean annual air temperature is 41 to 44 degrees F, and the average freeze-free period is 80 to 100 days.

This unit is about 70 percent Solak very gravelly loam, 15 to 50 percent slopes, and 10 percent Rock outcrop.

Included in this unit are small areas of Acord soils. These deep, clayey soils are on concave hillsides. They support Utah juniper, pinyon pine, and black sagebrush. Also included are small areas of a deep, loamy soil in drainageways; a soil that is shallow to a duripan and is on convex hillsides; and a soil that is less than 10 inches deep over bedrock. The soil in drainageways supports basin big sagebrush and bluebunch wheatgrass, and the soil on convex hillsides supports black sagebrush and bluebunch wheatgrass. Included areas make up about 20 percent of the total acreage.

The Solak soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from quartzite, limestone, and schist. Typically, 30 percent of the surface is covered with gravel and cobbles. The surface layer is brown very gravelly loam 3 inches thick. The underlying material is pale brown very gravelly loam 7 inches thick. Below this is bedrock.

Permeability is moderate in the Solak soil. Available water capacity is about 0.5 to 1.0 inch. The water-supplying capacity is 1 to 2 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is less than 1 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Rock outcrop consists of quartzite and schist on ridges, hillsides, and summits.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Solak soil is an overstory of pinyon pine and Utah juniper with a 65 percent canopy cover. The understory vegetation is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, antelope bitterbrush, and bluegrass. Woodland productivity is low. Yields are 3 to 4 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The Solak soil is in capability subclass VIIs in nonirrigated areas and is in the Upland Shallow Loam (Pinyon-Juniper) range site. The Rock outcrop is in capability class VIII and has not been assigned a range site.

85—Sonlet-Lodar-Rubble land complex, 40 to 60 percent slopes. This map unit is on the Bovine Mountains in the western part of the survey area. The Sonlet and Lodar soils are on hillsides. The Rubble land is on steep hillsides. Slopes are convex, face west and northwest, and are 10 to 40 feet long in areas of the Sonlet soil and are concave, face south and southeast, and are 10 to 30 feet long in areas of the Lodar soil. The vegetation is dominantly black sagebrush and bluebunch wheatgrass on the Sonlet soil and Utah juniper, pinyon pine, and black sagebrush on the Lodar soil. The Rubble land is mostly bare of vegetation. Elevation is 5,200 to 6,800 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 43 to 47 degrees F, and the average freeze-free period is 80 to 120 days.

This unit is about 40 percent Sonlet very gravelly loam, 40 to 60 percent slopes; 25 percent Lodar very gravelly loam, 40 to 60 percent slopes; and 20 percent Rubble land. The two soils and Rubble land occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Clavicon soils and rock outcrop. The moderately deep Clavicon soils are on north-facing hillsides and support Utah juniper and pinyon pine. The rock outcrop is on hilltops and ridges. Also included are some areas where calcareous

sandstone bedrock is within a depth of 10 inches. Included areas make up about 15 percent of the total acreage.

The Sonlet soil is shallow and well drained. It formed in colluvium derived dominantly from limestone, chert, and dolomite. Typically, 50 percent of the surface is covered with rock fragments. The surface layer is brown very gravelly loam 2 inches thick. The upper 8 inches of the subsoil is light yellowish brown very gravelly sandy loam. The lower 9 inches is very pale brown extremely gravelly sandy loam. Fractured bedrock of limestone and chert is at a depth of about 19 inches. In some areas granitic bedrock is at a depth of 20 to 40 inches.

Permeability is moderate in the Sonlet soil. Available water capacity is about 1.0 to 2.5 inches. The water-supplying capacity is 2 to 5 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Lodar soil is shallow and somewhat excessively drained. It formed in colluvium and residuum derived dominantly from limestone, dolomite, and chert. Typically, 40 percent of the surface is covered with rock fragments. The surface layer is brown very gravelly loam 8 inches thick. The subsoil is brown very gravelly loam 7 inches thick. Fractured bedrock of chert and limestone is at a depth of about 15 inches.

Permeability is moderate in the Lodar soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 2 to 5 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 4 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Rubble land consists of steep hillsides of limestone, dolomite, and chert talus. Individual fragments range from coarse angular gravel to stones.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential plant community on the Sonlet soil is 50 percent grasses, 15 percent forbs, and 35 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, and Thurber needlegrass. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The potential vegetation on the Lodar soil is an overstory of pinyon pine and Utah juniper with a 65 percent canopy cover. The understory vegetation is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, antelope bitterbrush, and bluegrass. Woodland productivity is low. Yields are 3 to 4 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The Sonlet and Lodar soils are in capability subclass VIIe in nonirrigated areas. The Sonlet soil is in the Upland Shallow Loam (Black Sagebrush) range site. The Lodar soil is in the Upland Shallow Loam (Pinyon-Juniper) range site. The Rubble land is in capability class VIII and has not been assigned a range site.

86—Stucky-Hiko Peak association, 8 to 25 percent slopes. This map unit is in the Pilot Mountains in the southwestern part of the survey area. The Stucky soil is on lake terraced fans. The Hiko Peak soil is in slightly concave areas on lake terraced fans. Slopes face east, are linear, and are 50 to 150 feet long. The vegetation is dominantly black sagebrush, shadscale, and Indian ricegrass on the Stucky soil and Wyoming big sagebrush and Indian ricegrass on the Hiko Peak soil. Elevation is 4,400 to 5,200 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 48 to 50 degrees F, and the average freeze-free period is 100 to 140 days.

This unit is about 60 percent Stucky extremely stony sandy loam, 8 to 15 percent slopes, and 25 percent Hiko Peak gravelly loam, 12 to 25 percent slopes.

Included in this unit are small areas of Okrist and Skumpah soils. The sandy Okrist soils are in drainageways and concave areas near the mouth of Birch Canyon. They support Wyoming big sagebrush. The silty Skumpah soils are affected by sodium and are on toe slopes next to lake plains. They support black greasewood. Also included are small areas of barren badlands on clayey lake terraces and small areas of a deep, sandy soil that is on side slopes and supports black greasewood. Included areas make up about 15 percent of the total acreage.

The Stucky soil is very deep and well drained. It formed in alluvium derived dominantly from quartzite and granite. Typically, 65 percent of the surface is covered with gravel, cobbles, and stones. The surface layer is grayish brown extremely stony sandy loam 4 inches thick. The upper 5 inches of the subsoil is brown very cobbly sandy clay loam, and the lower 17 inches is brown extremely cobbly sandy clay loam. The underlying material to a depth of 60 inches is pale brown extremely stony sandy loam. In some areas the lower part of the underlying material is weakly cemented by silica and carbonates.

Permeability is moderately slow in the Stucky soil. Available water capacity is about 3.0 to 4.5 inches. The water-supplying capacity is 4 to 6 inches. The effective

rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 2.0 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Hiko Peak soil is very deep and well drained. It formed in alluvium derived dominantly from quartzite and limestone. Typically, 20 percent of the surface is covered with gravel. The surface layer is pale brown gravelly loam 4 inches thick. The upper 17 inches of the subsoil also is pale brown gravelly loam. The lower 9 inches is very pale brown very gravelly sandy loam. The underlying material to a depth of 60 inches also is very pale brown very gravelly sandy loam. In some areas the underlying material has thin, discontinuous layers of cemented silica and carbonate. In other areas the subsoil contains more clay.

Permeability is moderately rapid in the Hiko Peak soil. Available water capacity is about 4.0 to 7.5 inches. The water-supplying capacity is 4 to 8 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Stucky soil is 35 percent grasses, 5 percent forbs, and 60 percent shrubs. Important plants are black sagebrush, Indian ricegrass, bluebunch wheatgrass, and shadscale. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitation affecting range seeding is the content of rock fragments in the surface layer.

The potential plant community on the Hiko Peak soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, bottlebrush squirreltail, Indian ricegrass, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitation affecting range seeding is low annual precipitation.

The capability subclass is VIIs in nonirrigated areas. The Stucky soil is in the Semidesert Stony Loam (Black Sagebrush) range site. The Hiko Peak soil is in the Semidesert Gravelly Loam (Wyoming Big Sagebrush) North range site.

87—Tarnach gravelly loam, 6 to 15 percent slopes. This shallow, well drained soil is on rolling hills in the area of Rosette and Park Valley. It formed in alluvium and residuum derived dominantly from calcareous sandstone. Slopes are 100 to 200 feet long, are convex and linear, and face all directions. The vegetation is dominantly black sagebrush and bluebunch wheatgrass. Elevation is 5,000 to 5,600 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 49 degrees F, and the average freeze-free period is 120 to 160 days.

Typically, 15 percent of the surface is covered with gravel. The surface layer is pale brown gravelly loam 4 inches thick. The subsoil is pale brown very gravelly loam 11 inches thick. Fractured, platy sandstone bedrock is at a depth of about 15 inches. In some areas the depth to bedrock is more than 20 inches.

Included in this unit are small areas of Hiko Peak, Lembos, and moist Tarnach soils. Hiko Peak soils are very deep and are on fan terraces. They support Wyoming big sagebrush, bluebunch wheatgrass, and shadscale. Lembos soils are moderately deep to a hardpan and are on the nearly level parts of fan terraces. They support Wyoming big sagebrush, bluebunch wheatgrass, and bottlebrush squirreltail. The moist Tarnach soils are on rolling and steep hills. They support Utah juniper, black sagebrush, and bluebunch wheatgrass. Included areas make up about 25 percent of the total acreage.

Permeability is moderate in the Tarnach soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and horsebrush. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are a low available water capacity and low annual precipitation.

The capability subclass is VIIe in nonirrigated areas. The range site is Semidesert Shallow Loam (Black Sagebrush).

88—Tarnach very gravelly loam, 15 to 45 percent slopes. This shallow, well drained soil is on hillsides in the Matlin Mountains, Coyote Hills, Horse Hills, and Baker Hills. It formed in colluvium and residuum derived dominantly from limestone and sandstone. Slopes are 50 to 200 feet long, are convex and linear, and face all directions. The vegetation is dominantly black sagebrush and bluebunch wheatgrass. Elevation is 5,200 to 5,900 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 51 degrees F, and the average freeze-free period is 120 to 160 days.

Typically, 65 percent of the surface is covered with gravel. The surface layer is pale brown very gravelly loam

4 inches thick. The subsoil is pale brown very gravelly loam 11 inches thick. Bedrock of limestone and sandstone is at a depth of about 15 inches. In some areas the soil has a layer of clay accumulation.

Included in this unit are small areas of Declo, Hiko Peak, and moist Tarnach soils. The very deep Declo soils are on fan terraces. They support shadscale, Indian ricegrass, and bottlebrush squirreltail. The very deep Hiko Peak soils are in drainageways. They support Wyoming big sagebrush, bluebunch wheatgrass, and bottlebrush squirreltail. The moist Tarnach soils are on steep hillsides. They support Utah juniper, black sagebrush, and bluebunch wheatgrass. Also included are small areas of rock outcrop on ridges and side slopes. Included areas make up about 25 percent of the total acreage. The proportion of the moist Tarnach soils increases at the higher elevations in the Matlin Mountains.

Permeability is moderate in the Tarnach soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and horsebrush. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are a low available water capacity, low annual precipitation, rock fragments in the surface layer, and the slope.

The capability subclass is VIIe in nonirrigated areas. The range site is Semidesert Shallow Loam (Black Sagebrush).

89—Tarnach-Amtoft very gravelly loams, 15 to 50 percent slopes. This map unit is on hillsides and mountainsides in the Hogup Mountains in the southeastern part of the survey area. Slopes are 25 to 50 feet long, are linear and convex, and face all directions. The vegetation is dominantly black sagebrush on the Tarnach soil and black sagebrush and salmon wildrye on the Amtoft soil. Elevation is 5,000 to 7,000 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 51 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 40 percent Tarnach very gravelly loam, 15 to 45 percent slopes, and 30 percent Amtoft very gravelly loam, 20 to 50 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Sitar soils, moist Tarnach soils, and Tosser soils. The deep Sitar soils are in drainageways. They support Wyoming big sagebrush. The moist Tarnach soils are on mountainsides. They support Utah juniper. The very deep Tosser soils are on fan terraces. They support black sagebrush. Also included are small areas of rock outcrop on ridges and peaks. Included areas make up about 30 percent of the total acreage.

The Tarnach soil is shallow and well drained. It formed in colluvium and residuum derived dominantly from limestone. Typically, 50 percent of the surface is covered with gravel. The surface layer is pale brown very gravelly loam 4 inches thick. The subsoil is pale brown very gravelly loam 11 inches thick. Limestone bedrock is at a depth of about 15 inches. In places the depth to bedrock is more than 20 inches.

Permeability is moderate in the Tarnach soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Amtoft soil is shallow and well drained. It formed in colluvium derived dominantly from limestone. Typically, 70 percent of the surface is covered with gravel. The surface layer is light gray very gravelly loam 9 inches thick. The subsoil is very pale brown very gravelly loam 10 inches thick. Limestone bedrock is at a depth of about 19 inches.

Permeability is moderately rapid in the Amtoft soil. Available water capacity is about 1.0 to 2.5 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 0.5 to 2.0 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Tarnach soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and horsebrush. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are a low available water capacity, low annual precipitation, rock fragments in the surface layer, and the slope.

The potential plant community on the Amtoft soil is 50 percent grasses, 5 percent forbs, and 45 percent shrubs. Important plants are salmon wildrye and black sagebrush. The suitability for livestock grazing is only fair because of low forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The capability subclass is VIIe in nonirrigated areas. The Tarnach soil is in the Semidesert Shallow Loam

(Black Sagebrush) range site. The Amtoft soil is in the Semidesert Shallow Loam (Salmon Wildrye) range site.

90—Tarnach-Promo complex, 10 to 35 percent slopes. This map unit is on hillsides in the area of Warm Springs Hills east of the Grouse Creek Mountains. Slopes are linear and convex to concave, are 25 to 150 feet long, and face all directions. The vegetation is dominantly Utah juniper on the Tarnach soil and black sagebrush on the Promo soil. Elevation is 5,300 to 6,000 feet. The average annual precipitation is about 10 to 13 inches, the mean annual air temperature is 45 to 50 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 45 percent Tarnach gravelly loam, 15 to 30 percent slopes, and 30 percent Promo very gravelly loam, 10 to 35 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Acana, Jericho, and Lembos soils. Acana soils are shallow to a hardpan and are on fan terraces. They support black sagebrush. Jericho soils are shallow to a hardpan and are on side slopes. They support Utah juniper. Lembos soils are moderately deep, average 18 to 35 percent clay, and are on fan terraces and valley bottoms. They support Wyoming big sagebrush, shadscale, Indian ricegrass, and bottlebrush squirreltail. Also included are small areas of rock outcrop on ridges and hillsides. Included areas make up about 25 percent of the total acreage.

The Tarnach soil is shallow and well drained. It formed in colluvium derived dominantly from limestone. Typically, 30 percent of the surface is covered with gravel and 10 percent is covered with cobbles. The surface layer is grayish brown and pale brown gravelly loam 6 inches thick. The subsoil is very pale brown very gravelly loam 7 inches thick. Hard, slightly fractured limestone bedrock is at a depth of about 13 inches. In some areas a layer of clay accumulation is above the bedrock.

Permeability is moderate in the Tarnach soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Promo soil is shallow and well drained. It formed in colluvium derived dominantly from limestone. Typically, 45 percent of the surface is covered with gravel and channers. The surface layer is light gray very gravelly loam 8 inches thick. The underlying material, which extends to a depth of 13 inches, is very pale brown very gravelly loam. Hard, fractured limestone bedrock is at a depth of about 13 inches. This soil is calcareous throughout. In some areas an accumulation of carbonates is above the bedrock or a layer of clay accumulation is above a hardpan.

Permeability is moderately rapid in the Promo soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used for woodland, rangeland, or wildlife habitat.

The potential vegetation on the Tarnach soil is an overstory of Utah juniper with a 50 percent canopy cover. The understory vegetation is 55 percent grasses, 10 percent forbs, and 35 percent shrubs. Important plants are bluebunch wheatgrass, black sagebrush, Indian ricegrass, and shadscale. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are a low available water capacity and the slope.

The potential plant community on the Promo soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and horsebrush. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are a low available water capacity, rock fragments in the surface layer, and the slope.

The capability subclass is VIIe in nonirrigated areas. The Tarnach soil is in the Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass) range site. The Promo soil is in the Semidesert Shallow Loam (Black Sagebrush) range site.

91—Tarnach, moist-Tarnach association, 30 to 70 percent slopes. This map unit is in the Hogup Mountains. The moist Tarnach soil is on mountainsides. The other Tarnach soil is on ridges. Slopes are 25 to 50 feet long, are linear and convex, and face all directions. The vegetation is dominantly Utah juniper, black sagebrush, and bluebunch wheatgrass on the moist Tarnach soil and black sagebrush and bluebunch wheatgrass on the other Tarnach soil. Elevation is 5,200 to 6,000 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 51 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 40 percent Tarnach, moist, gravelly loam, 30 to 70 percent slopes, and 35 percent Tarnach very gravelly loam, 45 to 70 percent slopes.

Included in this unit are small areas of Sitar and Tosser soils. The very deep Sitar soils are in drainageways. They support Wyoming big sagebrush and bluebunch wheatgrass. The very deep Tosser soils are on fan terraces. They support black sagebrush. Also included is a moderately deep, extremely gravelly soil on mountainsides and small areas of rock outcrop on ridges. The moderately deep soil supports salmon wildrye and black sagebrush. Included areas make up about 25 percent of the total acreage.

The moist Tarnach soil is shallow and well drained. It formed in colluvium and residuum derived dominantly from limestone. Typically, 30 percent of the surface is covered with gravel and 10 percent is covered with cobbles. The surface layer is grayish brown and pale brown gravelly loam 6 inches thick. The subsoil is very pale brown very gravelly loam 7 inches thick. Hard, slightly fractured limestone bedrock is at a depth of about 13 inches. In some areas the soil has a layer of clay accumulation.

Permeability is moderate in the moist Tarnach soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Tarnach soil is shallow and well drained. It formed in colluvium and residuum derived dominantly from limestone. Typically, 45 percent of the surface is covered with gravel and 5 percent is covered with cobbles. The surface layer is pale brown very gravelly loam 4 inches thick. The subsoil is pale brown very gravelly loam 11 inches thick. Limestone bedrock is at a depth of about 15 inches. In some areas the bedrock is at a depth of more than 20 inches.

Permeability is moderate in the Tarnach soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential vegetation on the moist Tarnach soil is an overstory of Utah juniper with a 50 percent canopy cover. The understory vegetation is 55 percent grasses, 10 percent forbs, and 35 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and shadscale. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is poor because of reduced forage production and the slope. The suitability for range seeding also is poor. The main limitations affecting range seeding are low annual precipitation, a low available water capacity, and the slope.

The potential plant community on the Tarnach soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and horsebrush. The suitability for livestock grazing is poor because of reduced forage production and the slope. The suitability for range seeding also is poor. The main limitations affecting range seeding are low annual precipitation, a low available water capacity, rock fragments in the surface layer, and the slope.

The capability subclass is VIIe in nonirrigated areas. The moist Tarnach soil is in the Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass) range site. The other Tarnach soil is in the Semidesert Shallow Loam (Black Sagebrush) range site.

92—Tosser very gravelly sandy loam, 3 to 15 percent slopes. This very deep, well drained soil is on dissected fan terraces west of Lucin in the southwestern part of the survey area. It formed in alluvium derived dominantly from limestone, rhyolite, and chert. Slopes are linear or slightly concave. The vegetation is dominantly black sagebrush, shadscale, and bottlebrush squirreltail. Elevation is 4,500 to 5,200 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 46 to 51 degrees F, and the average freeze-free period is 120 to 160 days.

Typically, 45 percent of the surface is covered with gravel. The surface layer is light brownish gray very gravelly sandy loam and gravelly fine sandy loam 10 inches thick. The upper 13 inches of the subsoil is pale brown very gravelly loamy sand. The next 14 inches is grayish brown extremely gravelly sand. The lower part to a depth of 60 inches is pale brown very gravelly loamy sand. In some areas the soil has less than 35 percent rock fragments throughout.

Included in this unit are small areas of Lynndyl and Puett soils. The very deep Lynndyl soils are in wide, shallow drainageways. They support shadscale, spiny hopsage, and Indian ricegrass. Puett soils are less than 20 inches deep over bedrock and are on terraced pediments. They support Utah juniper, black sagebrush, and Indian ricegrass. Also included are small areas of a deep, sandy soil on alluvial fans dissecting ancient lake terraces. This soil supports Wyoming big sagebrush, Indian ricegrass, and bluebunch wheatgrass. Included areas make up about 15 percent of the total acreage.

Permeability is moderately rapid in the Tosser soil. Available water capacity is about 2 to 4 inches. The water-supplying capacity is 3 to 6 inches. The effective

rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community is 35 percent grasses, 5 percent forbs, and 60 percent shrubs. Important plants are black sagebrush, Indian ricegrass, bluebunch wheatgrass, and shadscale. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are low annual precipitation, a low available water capacity, and rock fragments in the surface layer.

The capability subclass is VIIs in nonirrigated areas. The range site is Semidesert Stony Loam (Black Sagebrush).

93—Tosser-Plegomir complex, 3 to 15 percent slopes. This map unit is on dissected fan terraces northwest of Lucin in the western part of the survey area. Slopes are 30 to 75 feet long, are linear or slightly convex, and face all directions. The vegetation is dominantly black sagebrush. Elevation is 4,800 to 5,200 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 46 to 51 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 45 percent Tosser very gravelly sandy loam, 3 to 15 percent slopes, and 30 percent Plegomir gravelly loam, 3 to 8 percent slopes. The two soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Brobett, Kunzler, and Okrist soils. Brobett soils are moderately deep to a hardpan and are in shallow drainageways. They support Wyoming big sagebrush and Indian ricegrass. Kunzler soils have a high level of sodium and are in broad drainageways. They support gardner saltbush, black greasewood, and bottlebrush squirreltail. Okrist soils have less than 15 percent rock fragments and are in narrow drainageways. They support black sagebrush and Indian ricegrass. Also included are small areas of a deep soil that supports winterfat and areas of a deep, sandy soil that is on dunes and supports black greasewood and Wyoming big sagebrush. Included areas make up about 25 percent of the total acreage.

The Tosser soil is very deep and well drained. It formed in alluvium derived dominantly from limestone and rhyolite. Typically, 45 percent of the surface is covered with gravel. The surface layer is 10 inches of light brownish gray very gravelly sandy loam and gravelly fine sandy loam. The upper 13 inches of the subsoil is pale brown very gravelly loamy sand, the next 14 inches is grayish brown extremely gravelly sand, and the lower part to a depth of 60 inches is pale brown very gravelly loamy sand.

Permeability is moderately rapid in the Tosser soil. Available water capacity is about 2 to 4 inches. The water-supplying capacity is 3 to 6 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Plegomir soil is shallow and well drained. It formed in alluvium derived dominantly from rhyolite, limestone, and sandstone. Typically, 30 percent of the surface is covered with gravel. The surface layer is brown gravelly loam 2 inches thick. The subsurface layer is pale brown loam 3 inches thick. The subsoil is very pale brown gravelly sandy loam 8 inches thick. An indurated hardpan of silica and carbonates is at a depth of about 13 inches. In some areas depth to the hardpan is more than 20 inches or less than 10 inches. In places bedrock is at a depth of 10 to 20 inches.

Permeability is moderate in the Plegomir soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Tosser soil is 35 percent grasses, 5 percent forbs, and 60 percent shrubs. Important plants are black sagebrush, Indian ricegrass, bluebunch wheatgrass, and shadscale. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are low annual precipitation, a low available water capacity, and rock fragments in the surface layer.

The potential plant community on the Plegomir soil is 45 percent grasses, 5 percent forbs, and 50 percent shrubs. Important plants are black sagebrush, Indian ricegrass, bluebunch wheatgrass, winterfat, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and low annual precipitation.

The capability subclass is VIIs in nonirrigated areas. The Tosser soil is in the Semidesert Stony Loam (Black Sagebrush) range site. The Plegomir soil is in the Semidesert Shallow Hardpan (Black Sagebrush) range site.

94—Tosser-Puett association, 15 to 30 percent slopes. This map unit is on low hills and deeply dissected pediments on the north side of the Raft River Range and the south side of the Bovine Mountains. The Tosser soil is

on hillsides and ridges. The Puett soil is on hillsides. Slopes face south and east, are convex and linear, and are 50 to 100 feet long in areas of the Tosser soil and face north, are convex, and are 35 to 75 feet long in areas of the Puett soil. The vegetation is dominantly black sagebrush and bluebunch wheatgrass on the Tosser soil and Utah juniper, bluebunch wheatgrass, and Sandberg bluegrass on the Puett soil. Elevation is 5,800 to 6,200 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 46 to 50 degrees F, and the average freeze-free period is 100 to 140 days.

This unit is about 70 percent Tosser very gravelly sandy loam, 15 to 30 percent slopes, and 15 percent Puett gravelly loam, 15 to 20 percent slopes.

Included in this unit are small areas of Declo soils. These soils are very deep, have less than 15 percent rock fragments, and are in wide drainageways. They support black sagebrush and Wyoming big sagebrush. Also included are small areas of rock outcrop on ridges and very steep, barren hillsides. Included areas make up about 15 percent of the total acreage.

The Tosser soil is very deep and well drained. It formed in mixed alluvium derived dominantly from chert and limestone. Typically, 45 percent of the surface is covered with gravel. The surface layer is 10 inches of light brownish gray very gravelly sandy loam and gravelly fine sandy loam. The upper 13 inches of the subsoil is pale brown very gravelly loamy sand. The next 14 inches is grayish brown extremely gravelly sand. The lower part to a depth of 60 inches is pale brown very gravelly loamy sand. In some places the soil has less than 35 percent rock fragments throughout. In other places the lower part of the subsoil is weakly cemented by carbonates and silica.

Permeability is moderately rapid in the Tosser soil. Available water capacity is about 2 to 4 inches. The water-supplying capacity is 3 to 6 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is rapid, and the hazard of water erosion is severe.

The Puett soil is shallow and well drained. It formed in colluvium and alluvium derived dominantly from limestone. Typically, 30 percent of the surface is covered with gravel. The surface layer is light brownish gray gravelly loam 2 inches thick. The subsurface layer is pale brown sandy loam 3 inches thick. The underlying material, which extends to a depth of 12 inches, is light gray sandy loam. Soft, fractured limestone is at a depth of about 12 inches. This soil is calcareous throughout. In some areas it has a layer of calcium carbonate accumulation.

Permeability is moderately rapid in the Puett soil. Available water capacity is about 1 to 2 inches. The water-supplying capacity is 1 to 4 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is rapid, and the hazard of water erosion is severe.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential plant community on the Tosser soil is 35 percent grasses, 5 percent forbs, and 60 percent shrubs. Important plants are black sagebrush, Indian ricegrass, bluebunch wheatgrass, and shadscale. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and rock fragments in the surface layer.

The potential vegetation on the Puett soil is an overstory of Utah juniper with a 50 percent canopy cover. The understory vegetation is 55 percent grasses, 10 percent forbs, and 35 percent shrubs. Important plants are black sagebrush, bluebunch wheatgrass, Indian ricegrass, and shadscale. Woodland productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitation affecting range seeding is a low available water capacity.

The Tosser soil is in capability subclass VIIs in nonirrigated areas and is in the Semidesert Stony Loam (Black Sagebrush) range site. The Puett soil is in capability subclass VIIe in nonirrigated areas and is in the Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass) range site.

95—Tosser-Sitar association, 3 to 15 percent slopes. This map unit is on fan terraces. Slopes are linear or convex, are 40 to 200 feet long, and face all directions. The vegetation is dominantly black sagebrush, Douglas rabbitbrush, and shadscale on the Tosser soil and Wyoming big sagebrush on the Sitar soil. Elevation is 4,300 to 5,200 feet. The average annual precipitation is about 8 to 12 inches, the mean annual air temperature is 45 to 51 degrees F, and the average freeze-free period is 120 to 160 days.

This unit is about 45 percent Tosser very gravelly sandy loam, 3 to 15 percent slopes, and 30 percent Sitar silt loam, 3 to 15 percent slopes.

Included in this unit are small areas of Skumpah, Smaug, and Tarnach soils. Skumpah soils have a layer of sodium accumulation and are on terraces. They support shadscale. Smaug soils have less than 15 percent rock fragments and are on terraces. They support shadscale and bud sagebrush. Tarnach soils are shallow over bedrock and are on dissected slopes. They support Utah juniper and black sagebrush. Also included are small

areas of rock outcrop on ridges and steep escarpments. Included areas make up about 25 percent of the total acreage.

The Tosser soil is very deep and well drained. It formed in alluvium derived dominantly from limestone. Typically, 45 percent of the surface is covered with gravel. The surface layer is 10 inches of light brownish gray very gravelly sandy loam and gravelly fine sandy loam. The upper 13 inches of the subsoil is pale brown very gravelly loamy sand. The next 14 inches is grayish brown extremely gravelly sand. The lower part to a depth of 60 inches is pale brown very gravelly loamy sand.

Permeability is moderately rapid in the Tosser soil. Available water capacity is about 2 to 4 inches. The water-supplying capacity is 3 to 6 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 2 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Sitar soil is very deep and well drained. It formed in alluvium derived dominantly from limestone. Typically, 45 percent of the surface is covered with gravel. The surface layer is light gray silt loam 3 inches thick. The upper 5 inches of the subsoil also is light gray silt loam. The lower 21 inches is pale brown and very pale brown very gravelly silt loam. The underlying material to a depth of 60 inches is pale brown very gravelly very fine sandy loam.

Permeability is moderate in the Sitar soil. Available water capacity is about 5 to 9 inches. The water-supplying capacity also is 5 to 9 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 0.5 to 2.0 percent. Runoff is medium, and the hazard of water erosion is moderate. The hazard of soil blowing also is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Tosser soil is 35 percent grasses, 5 percent forbs, and 60 percent shrubs. Important plants are black sagebrush, Indian ricegrass, bluebunch wheatgrass, and shadscale. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and rock fragments in the surface layer.

The potential plant community on the Sitar soil is 50 percent grasses, 10 percent forbs, and 40 percent shrubs. Important plants are Wyoming big sagebrush, bluebunch wheatgrass, Indian ricegrass, bottlebrush squirreltail, and shadscale. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitations affecting range seeding are low annual precipitation and rock fragments in the surface layer.

The Tosser soil is in capability subclass VIIs in nonirrigated areas and is in the Semidesert Stony Loam (Black Sagebrush) range site. The Sitar soil is in capability subclass VIs in nonirrigated areas and is in the Semidesert Gravelly Loam (Wyoming Big Sagebrush) North range site.

96—Vicking silt loam, 3 to 8 percent slopes. This very deep, well drained soil is on dissected fan terraces and hillsides in the valleys of Grouse Creek and Goose Creek in the northern part of the survey area. It formed in mixed alluvium derived dominantly from limestone and minor amounts of sandstone. Slopes are convex to slightly concave, face all directions, and are less than 100 feet long. The vegetation is dominantly Wyoming big sagebrush and bluebunch wheatgrass. Elevation is 5,400 to 5,600 feet. The average annual precipitation is about 13 to 16 inches, the mean annual air temperature is 41 to 44 degrees F, and the average freeze-free period is 80 to 100 days.

Typically, the surface layer is very dark grayish brown and brown silt loam 11 inches thick. The upper 12 inches of the subsoil is dark yellowish brown clay loam. The next 8 inches is light brownish gray clay loam. The lower part to a depth of 60 inches is light gray and light yellowish brown loam.

Included in this unit are small areas of Birdow and Crooked Creek soils. Birdow soils do not have a layer of clay or carbonate accumulation and are next to drainageways. They support basin big sagebrush and basin wildrye. Crooked Creek soils have a water table within 3 feet of the surface and are in drainageways. They support sedges and reeds. Included areas make up about 15 percent of the total acreage.

Permeability is moderately slow in the Vicking soil. Available water capacity is about 9 to 11 inches. The water-supplying capacity is 9 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

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

This unit has fair suitability for cropland and pasture. Maintaining crop residue on or in the surface layer helps to control water erosion and helps to maintain tilth and the organic matter content. The short freeze-free period limits production.

The potential plant community is 70 percent grasses, 10 percent forbs, and 20 percent shrubs. Important plants are bluebunch wheatgrass, Thurber needlegrass, Wyoming big sagebrush, and Nevada bluegrass. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and range seeding can be used to improve the rangeland vegetation. The suitability for range seeding is good.

The capability subclass is VIe in nonirrigated areas. The range site is Upland Loam (Wyoming Big Sagebrush).

97—Vicking-Raftriver-Codquin complex, 2 to 60 percent slopes. This map unit is on west-facing fan terraces and hillsides in the Dove Creek Mountains in the northern part of the survey area. The Vicking soil is on convex to slightly concave foot slopes. The Raftriver soil is on nearly level to slightly convex ridges. The Codquin soil is on steep, convex hillsides. Slopes dominantly face north and northwest in areas of the Vicking and Raftriver soils and face south-southwest in areas of the Codquin soil. The vegetation is dominantly Wyoming big sagebrush, bluebunch wheatgrass, and Indian ricegrass on the Vicking and Raftriver soils and Utah juniper and Indian ricegrass on the Codquin soil. Elevation is 5,600 to 7,400 feet. The average annual precipitation is about 12 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 80 to 100 days.

This unit is about 40 percent Vicking silt loam, 8 to 30 percent slopes; 30 percent Raftriver loam, 2 to 20 percent slopes; and 20 percent Codquin gravelly sandy loam, 15 to 60 percent slopes. The three soils occur as areas so intricately intermingled that mapping them separately was not practical at the selected scale.

Included in this unit are small areas of Bullump soils. These very deep soils have more than 35 percent rock fragments and are on north-facing side slopes, at the lower end of individual areas, and in drainageways. They support antelope bitterbrush, snowberry, and Idaho fescue. Also included are small areas of rock outcrop and a deep, loamy soil that is in concave pockets and on slightly concave side slopes and supports Wyoming big sagebrush and bluebunch wheatgrass. Included areas make up about 10 percent of the total acreage.

The Vicking soil is very deep and well drained. It formed in mixed alluvium derived dominantly from limestone and small amounts of sandstone. Typically, the surface layer is very dark grayish brown and brown silt loam 11 inches thick. The upper 12 inches of the subsoil is dark yellowish brown clay loam, the next 8 inches is light brownish gray clay loam, and the lower part to a depth of 60 inches is light gray and light yellowish brown loam.

Permeability is moderately slow in the Vicking soil. Available water capacity is about 9 to 11 inches. The water-supplying capacity is 9 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium or rapid, and the hazard of water erosion is moderate.

The Raftriver soil is moderately deep and well drained. It formed in mixed alluvium derived dominantly from quartzite and mica schist. Typically, 5 percent of the surface is covered with gravel. The surface layer is pale brown loam 3 inches thick. The upper 9 inches of the subsoil also is pale brown loam. The lower 12 inches is moderately saline, very pale brown sandy loam. The next layer is a weakly cemented hardpan of silica 8 inches thick. The underlying material to a depth of 60 inches is moderately saline, very pale brown sandy loam. In some areas the surface layer is brown gravelly loam.

Permeability is moderate in the Raftriver soil. Available water capacity is about 2.0 to 3.5 inches. The water-supplying capacity is 4 to 6 inches. The effective rooting depth is 20 to 40 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Codquin soil is shallow and well drained. It formed in colluvium derived dominantly from sandstone and conglomerate. Typically, 50 percent of the surface is covered with gravel. The surface layer is white gravelly sandy loam 4 inches thick. The underlying material is very pale brown extremely gravelly sandy loam 13 inches thick. Fractured sandstone bedrock is at a depth of about 17 inches.

Permeability is rapid in the Codquin soil. Available water capacity is about 0.5 inch to 2.0 inches. The water-supplying capacity is 1 to 5 inches. The effective rooting depth is 10 to 20 inches. The organic matter content in the surface layer is about 0.5 to 1.0 percent. Runoff is rapid, and the hazard of water erosion is severe. The hazard of soil blowing is moderate.

This unit is used mainly for woodland, rangeland, or wildlife habitat.

The potential plant community on the Vicking soil is 70 percent grasses, 10 percent forbs, and 20 percent shrubs. Important plants are bluebunch wheatgrass, Thurber needlegrass, Wyoming big sagebrush, and Nevada bluegrass. The suitability for livestock grazing is good. The suitability for range seeding is fair. The main limitation affecting range seeding is the slope.

The potential plant community on the Raftriver soil is 70 percent grasses, 10 percent forbs, and 20 percent shrubs. Important plants are bluebunch wheatgrass, Thurber needlegrass, Nevada bluegrass, and Wyoming big sagebrush. The suitability for livestock grazing is good. The suitability for range seeding is poor. The main limitations affecting range seeding are a low available water capacity and excess salinity.

The potential vegetation on the Codquin soil is an overstory of Utah juniper with a 40 percent canopy cover. The understory vegetation is 45 percent grasses, 10 percent forbs, and 45 percent shrubs. Important plants are bluebunch wheatgrass, antelope bitterbrush, Wyoming big sagebrush, and Indian ricegrass. Woodland

productivity is low. Yields are 1 to 2 cords of wood per acre. The potential for post or Christmas tree production is poor. The suitability for livestock grazing is poor because of reduced forage production. The suitability for range seeding also is poor. The main limitations affecting range seeding are a low available water capacity and the slope.

The capability subclass is VIe in nonirrigated areas. The Vicking and Raftriver soils are in the Upland Loam (Wyoming Big Sagebrush) range site. The Codquin soil is in the Upland Shallow Loam (Juniper) range site.

98—Vicking-Ramshorn family association, 3 to 25 percent slopes. This map unit is in areas south and east of Meadow Creek Butte. The Vicking soil is on low, gently sloping hillsides. The Ramshorn family soils are on the eroded summits and shoulder slopes of low, rolling hills. Slopes are less than 100 feet long and face all directions. They are slightly concave in areas of the Vicking soil and convex in areas of the Ramshorn family soils. The vegetation is dominantly western wheatgrass and basin big sagebrush on the Vicking soil and bluebunch wheatgrass and black sagebrush on the Ramshorn family soils. Elevation is 5,600 to 6,500 feet. The average annual precipitation is about 13 to 16 inches, the mean annual air temperature is 41 to 45 degrees F, and the average freeze-free period is 80 to 120 days.

This unit is about 45 percent Vicking loam, 3 to 15 percent slopes, and 35 percent Ramshorn family very gravelly loam, 8 to 25 percent slopes.

Included in this unit are small areas of Codquin and Dahar soils. The shallow Codquin soils are on convex, eroded hillsides. They support Utah juniper. Dahar soils are moderately deep to a hardpan and are on hillsides. They support Wyoming big sagebrush. Also included are small areas of rock outcrop. Included areas make up about 20 percent of the total acreage.

The Vicking soil is very deep and well drained. It formed in mixed alluvium derived dominantly from siltstone and limestone. Typically, the surface layer is grayish brown loam 11 inches thick. The upper 11 inches of the subsoil is pale brown clay loam, the next 8 inches is light brownish gray clay loam, and the lower part to a depth of 60 inches is light gray loam.

Permeability is moderately slow in the Vicking soil. Available water capacity is about 9 to 11 inches. The water-supplying capacity is 9 to 12 inches. The effective rooting depth is 60 inches or more. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

The Ramshorn family soils are deep and well drained. They formed in alluvium and residuum derived dominantly from siltstone or limestone. Typically, 25 percent of the surface is covered with gravel. The surface layer is light gray very gravelly loam 3 inches thick. The upper 11 inches of the underlying material is very pale brown very channery silt loam. The lower 27 inches is light gray extremely channery silt loam. Fractured siltstone bedrock is at a depth of about 41 inches.

Permeability is moderately rapid in the Ramshorn family soils. Available water capacity is about 3 to 5 inches. The water-supplying capacity is 6 to 8 inches. The effective rooting depth is 40 to 60 inches. The organic matter content in the surface layer is about 1 to 3 percent. Runoff is medium, and the hazard of water erosion is moderate.

This unit is used mainly for rangeland or wildlife habitat.

The potential plant community on the Vicking soil is 60 percent grasses, 15 percent forbs, and 25 percent shrubs. Important plants are bluebunch wheatgrass, western wheatgrass, and basin big sagebrush. The suitability for livestock grazing is good. If the desirable forage plants become almost depleted, brush management and range seeding can be used to improve the rangeland vegetation. The suitability for range seeding is good.

The potential plant community on the Ramshorn family soils is 45 percent grasses, 10 percent forbs, and 45 percent shrubs. Important plants are bluebunch wheatgrass, black sagebrush, Nevada bluegrass, needleandthread, and Douglas rabbitbrush. The suitability for livestock grazing is only fair because of reduced forage production. The suitability for range seeding is poor. The main limitation affecting range seeding is the content of rock fragments in the surface layer.

The capability subclass is VIe in nonirrigated areas. The Vicking soil is in the Upland Loam (Basin Big Sagebrush) range site. The Ramshorn family soils are in the Upland Stony Loam (Black Sagebrush) range site.

Prime Farmland

In this section, prime farmland is defined and the soils in Box Elder County, Western Part, that are considered prime farmland soils are listed.

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, State, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, seed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. An adequate moisture supply and a sufficiently long growing season are required. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources, and farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland or for other purposes. They either are used for food and fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Prime farmland soils commonly receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and length of growing season are favorable, and the level of acidity or alkalinity is acceptable. The soils have few, if any, rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not frequently flooded during the growing season. The slope ranges mainly from 0 to 6 percent.

Soils that have a high water table, are subject to flooding, or are droughty may qualify as prime farmland where these limitations are overcome by drainage systems, flood control, or irrigation. Onsite evaluation is necessary to determine the effectiveness of corrective measures. More information about the criteria for prime farmland can be obtained at the local office of the Natural Resources Conservation Service.

A recent trend in land use has been the conversion of prime farmland to urban and industrial uses. The loss of prime farmland to other uses puts pressure on lands that are less productive than prime farmland.

About 5,500 acres, or less than 1 percent of the survey area, would meet the requirements for prime farmland if an adequate and dependable supply of irrigation water were available.

Map unit 8 (Birdow silt loam, 0 to 2 percent slopes) and map unit 44 (Koosharem silt loam, 0 to 2 percent slopes) meet the requirements for prime farmland when irrigated. The location of these map units is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." Identification of these units as prime farmland does not constitute a recommendation for a particular land use.

Use and Management of the Soils

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

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

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

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 that is in harmony with nature.

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

This section describes the general management needed for crops and pasture in the survey area and explains the system of land capability classification used by the Natural Resources Conservation Service.

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

Approximately 20,000 acres in the survey area is used for crops or pasture. Nearly all of this acreage is irrigated. The main limitation affecting crop production is an inadequate supply of water for irrigation. The low rainfall in the survey area limits the development of dry cropland, and the limited supply of water for irrigation controls further development of irrigated cropland.

Many areas of irrigated soils, such as Declo, Kunzler, Lembos, Mellor, and Smaug soils, are affected by concentrations of salts. The salts limit the selection of crops that can be grown. If high-quality irrigation water is applied, these soils have good potential for reclamation because of leaching of the salts.

Organic matter is an important source of nitrogen for crops. It also increases the water intake rate, minimizes surface crusting and erosion, and promotes good tilth. Most of the soils in the survey area that are used for crops have a surface layer of silt loam or loam. Many of these soils have a low content of organic matter in the surface layer and generally have weak structure. A system of crop residue management and regular additions of manure and other organic material improve soil structure and minimize crusting.

Erosion-control practices provide a protective surface cover, help to control runoff, and increase the infiltration rate. A cropping system that keeps a plant cover on the soil for extended periods reduces the hazard of erosion and preserves the productive capacity of the soils. Including legumes and grass forage crops in the cropping system helps to control erosion in sloping areas, provides nitrogen to plants, and improves tilth for the following crop. Conservation tillage, which includes such practices as no-till, reduced tillage, stubble mulching, and chiseling, leaves maximum amounts of crop residue on the surface. It helps to control soil blowing and water erosion and conserves water.

Efficient water management is a major concern in irrigated areas. Poorly drained soils, such as Crooked Creek soils, should not be overirrigated.

Additional information concerning crops and conservation practices can be obtained at the local offices

of the Cooperative Extension Service and the Natural Resources Conservation Service.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland (USDA, 1961). Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by 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 few 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 they 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 hazard is the risk of erosion unless a close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

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 capability classification of each map unit is given in the section "Detailed Soil Map Units."

Rangeland and Woodland Understory

Range is the most important agricultural resource in the survey area. Approximately 1,400,000 acres, or about 69 percent of the total land acreage, is used as rangeland. The dominant vegetative types include perennial grasses, forbs, and shrubs. Some areas support stands of juniper and to a lesser extent pinyon pine. Rocky ridges have stands of curlleaf mountainmahogany. The higher mountainous areas support coniferous trees on north and northeast aspects and aspen thickets in depressions where snow accumulates. Numerous small, wet meadow sites are in the mountainous areas.

Range forage is utilized primarily by cattle, sheep, big game, and upland game animals. Limited numbers of some species of waterfowl inhabit small wet areas and ponds during spring and summer. Most of the grazing land is in areas that have slopes of less than 30 percent. Some areas that are much steeper, however, also are grazed. Livestock graze the higher mountain ranges from June through September. They winter on bottom haylands and in the lower Semidesert and Desert ranges with some supplemental feeding. Achieving a proper distribution of livestock and maintaining high forage production require watering facilities and pasture fences throughout the area.

Brush management is needed to control juniper invasion and sagebrush on approximately 35 percent of the rangeland. Range seeding is needed on approximately 35 percent of the rangeland (fig. 6). The risk of seeding failure is high in the Desert climatic zone, where annual precipitation is less than 8 inches. About 60 percent of the rangeland in the survey area could produce more forage if proper management practices and grazing systems were applied.

Plants are affected by differences in soils and climate. Six distinct climatic zones are recognized in the survey area. The zones are Desert, Semidesert, Upland, Mountain, High Mountain, and Subalpine. They differ in amount of moisture received, average annual temperature, and length of growing season.

The Desert climatic zone is at elevations of 4,200 to 5,000 feet. The average annual precipitation ranges from

Figure 6.—Crested wheat from range seeding on Acana gravelly loam, 1 to 3 percent slopes, near the Warm Springs area.

4 to 8 inches, and 70 percent of this occurs as rain from March through October. Summer precipitation contributes very little to plant growth because of high rates of evapotranspiration. The average growing season is from about March 15th to October 15th, which is when plants mature or soil moisture is depleted. Some regrowth occurs in late September and in October if additional moisture is available. The mean annual air temperature is 45 to 55 degrees F, and the average freeze-free period is 100 to 160 days.

The Semidesert climatic zone is at elevations of 5,000 to 6,000 feet. The average annual precipitation ranges

from 8 to 12 inches, and 70 percent of this occurs as rain from March through October. Summer precipitation contributes very little to plant growth because of high rates of evapotranspiration. The average growing season is from about March 15th to October 15th, which is when plants mature or available soil moisture is depleted. Some regrowth occurs in late September and in October. The mean annual air temperature is 45 to 55 degrees F, and the average freeze-free period is 90 to 160 days.

The Upland climatic zone is at elevations of 5,000 to 7,000 feet. The average annual precipitation ranges from 12 to 16 inches and occurs mostly as snow in the winter. Summer precipitation does not promote a substantial amount of plant growth. The growing season extends from the beginning of May through the end of September, which is when plants reach maturity or soil moisture is depleted. Some regrowth occurs in late summer or early fall if sufficient moisture is available. The mean annual air temperature is 43 to 49 degrees F, and the average freeze-free period is 80 to 120 days.

The Mountain climatic zone is at elevations of 6,200 to 9,000 feet. The average annual precipitation ranges from 16 to 22 inches, and about 70 percent of this occurs as snow in the winter. Summer precipitation can have a minimal influence on plant growth. The growing season extends from the beginning of June through the end of September, which is when plants mature or available soil moisture is depleted. Some regrowth occurs in late summer or early fall if sufficient moisture is available. Mountain range sites are on all exposures and slopes. The mean annual air temperature is 36 to 44 degrees F, and the freeze-free period is 60 to 80 days.

The High Mountain climatic zone is at elevations of 6,800 to 9,000 feet. The average annual precipitation ranges from 22 to more than 35 inches and occurs mostly as snow in the winter. The growing season extends from about June 15th to September 20th or until the first killing frost in fall. High Mountain range sites are on northern aspects. The mean annual temperature is 35 to 42 degrees F, and the freeze-free period is less than 60 days.

The Subalpine climatic zone is at elevations of 9,000 to 10,000 feet. The average annual precipitation ranges from 25 to more than 35 inches and occurs mostly as snow in the winter. The growing season extends from about June 15th to September 20th or until the first killing frost in fall. Subalpine range sites are on all aspects. The mean annual temperature is 35 to 42 degrees F, and the freeze-free period is 40 days or less.

Low depressional areas that receive additional moisture in the form of runoff from adjoining soils are at all elevations and in all of the climatic zones. The soils in these areas are moist throughout most of the growing season.

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil (USDA, 1982). Effective management is based on an understanding of the relationship between the soils and vegetation and water.

Table 5 shows, for nearly all of the soils, the range or woodland site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. Explanation of the column headings in table 5 follows.

A *site* is a distinctive kind of rangeland or grazeable woodland that produces a characteristic natural plant community that differs from natural plant communities on other sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was ascertained during this survey; thus, 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 fruit of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the 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 of air-dry vegetation. Yields are adjusted to a common percent of air-dry moisture content. The relationship of green weight to air-dry weight varies according to such factors as exposure, amount of shade, recent rains, and unseasonable dry periods.

Characteristic vegetation—the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil—is listed by common name. Under *composition*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular 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 optimal production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Woodland Management and Productivity

Rich Jennings, district silviculturist, U.S. Forest Service, prepared this section.

About 200,000 acres, or 9 percent of the survey area, is woodland. Wood products are harvested from only a small amount of this acreage. Commercial tree species in the survey area include Douglas-fir, Engelmann spruce, subalpine fir, Utah juniper, and singleleaf pinyon pine. Utah juniper is used for fence posts, and singleleaf pinyon pine is used as Christmas trees.

Woodland productivity is influenced by soil properties, such as pH, drainage, texture, depth, and infiltration rate. Climate, slope, and aspect also directly affect productivity.

Large stands of pinyon pine and juniper are on the northern side of the Raft River Mountain Range at the lower elevations. The proportion of pinyon pine increases as elevation increases. Douglas-fir, Engelmann spruce, and subalpine fir forest types are restricted to the cooler, more moist areas in eastern half of the Raft River Mountains.

Zonal differences are characterized by differences in kinds of tree species and composition of stands. The pinyon and juniper zone extends to an elevation of about 5,400 feet. Above the pinyon and juniper zone, the Douglas-fir zone is on north and northwest aspects. The 50-year site index for Douglas-fir is approximately 34.

At elevations near 7,000 feet, subalpine fir and Engelmann spruce are mixed with the Douglas-fir. The 50-year site index ranges from 42 to 46.

Above 9,000 feet the dominant species is subalpine fir. The 50-year site index is 53.

Very little logging has occurred on the Raft River Division because of the relative inaccessibility of the small timber stands and the difficulty in logging on steep terrain. Although some accessible stands of Douglas-fir have been high graded, extensive logging has not occurred.

Infestations of spruce budworm are a management concern in stands of Douglas-fir and Engelmann spruce.

Recreation

Hunting is the most important recreational activity in the survey area. Big and small game, including mule deer, sage grouse, and rabbits, live in the area. Other recreational activities include stream fishing, camping, and snowmobiling. The stream fishing is on the Raft River, Goose Creek, Clear Creek, and other smaller creeks. The north slope of the Raft River Mountains at Clear Creek has the only established U.S. Forest Service campground in the survey area.

The soils in the survey area are rated in table 6 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 6, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties generally are favorable and that limitations are minor and easily overcome. *Moderate* means that 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 a combination of these measures.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils are

gently sloping 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 campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for 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 increase the cost of shaping sites or of building access roads and parking areas.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Table 6 also shows ratings for urban uses, which are described under the heading "Engineering."

Wildlife Habitat

Robert F. Sennett, State wildlife biologist, Natural Resources Conservation Service, helped prepare this section.

Many of the soils in the survey area support vegetation that is used by wildlife to some extent. Most wildlife species are not confined to areas of a particular soil or group of soils. The ability of soils to provide food, water, and cover and the relationships among these factors determine the relative abundance of wildlife species in an area. The mountainous parts of the survey area provide summer habitat for mule deer and elk. Other important species include coyote, blue grouse, ruffed grouse, snowshoe hare, and some black bear. The uplands in the survey area provide habitat for these species and also for sage grouses, badgers, bobcats, antelope, and ground squirrel.

Wetlands and adjacent areas provide a diverse habitat. A variety of animals, including mammals, reptiles, amphibians, songbirds, raptors, and waterfowl, use this habitat. Representative animals include coyote, skunk, cottontails, frogs, skinks, hawks, ducks, and geese.

Semidesert areas provide habitat for several unique species, including Hungarian (gray) partridge, chukar partridge, rattlesnakes, scorpions, and kangaroo rats.

Natural streams and constructed lakes in the survey area provide opportunities for fishing and other recreational activities. They are used by local residents and tourists. Some streams provide year-round fishing. Small reservoirs provide limited opportunities for fishing. Important fish species include rainbow trout and cutthroat trout. The water bodies and associated vegetation provide important habitat for beavers, muskrat, and mink.

The bald eagle and Peregrine falcon, which are endangered species, frequent the survey area. The bald eagle is more prevalent during winter months. The falcon is present during the summer. The entire survey area has potential for aeries. The threatened Lahontan cutthroat trout is in streams at the extreme western edge of the survey area. No known threatened or endangered plant species are in the area.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 7, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are wheatgrass, orchardgrass, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features 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 flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are globe mallow, Indian ricegrass, wheatgrass, and balsamroot.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, and juniper.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are mountainmahogany, aspen, willow, bitterbrush, serviceberry, snowberry, and big sagebrush.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife 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. Wildlife attracted to these areas include pheasant, meadowlarks, song sparrows, mountain cottontails, and coyote.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants, or both, and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include ruffed grouse, thrushes, hairy woodpeckers, red squirrels, kit fox, mule deer, and black bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, heron, shore birds, muskrat, mink, and beavers.

Habitat for rangeland wildlife consists of areas of shrubs and wild herbaceous plants. Wildlife attracted to rangeland include pronghorn antelope, mule deer, sage grouse, meadowlarks, and Brewer's sparrows. Sage grouse are locally important and are throughout most of the survey area, except in areas of the Playas-Saltair general soil map unit.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for urban development, 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 should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil

wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Urban Development

Table 6 shows the degree and kind of soil limitations that affect dwellings without basements, local roads and streets, and septic tank absorption fields. 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.

Dwellings 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 dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. Depth to 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 or 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, depth to 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, potential for frost action, and depth to a high water table affect the traffic-supporting capacity.

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, depth to 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 filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Construction Materials

Table 8 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low

embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 8, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the taxonomic unit descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant nutrients as it decomposes.

Water Management

Table 9 gives information on the soil properties and site features that affect water management (fig. 7). The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect drainage, irrigation, and terraces and diversions.

Figure 7.—A water-quality control structure on Fisher Creek north of Park Valley.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones,

slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of soil blowing or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

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 compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 10 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Taxonomic Units and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 1993) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1986).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, 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 ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are 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 11 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, or component, 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 the shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. 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 and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

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 classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more than 9 percent, is sometimes used.

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. Losses are expressed in tons per acre per year. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on

soil structure and permeability. Values of K range from 0.02 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 over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to soil blowing in cultivated areas. The groups indicate the susceptibility to soil blowing. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to reestablish after cultivation.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control soil blowing are used.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control soil blowing are used.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams. These soils are erodible. Crops can be grown if intensive measures to control soil blowing are used.

4. Clays, silty clays, noncalcareous 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 soil blowing are used.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils are slightly erodible. Crops can be grown if measures to control soil blowing are used.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can be grown if ordinary measures to control soil blowing are used.
8. Soils that are not subject to soil blowing because of rock fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 11, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 12 gives 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 are assigned to one of four groups. They are grouped according to the infiltration 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 covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 12 gives the frequency of flooding and the time of year when flooding is most likely.

Frequency and probable dates of occurrence are estimated. Frequency is expressed as none, rare,

occasional, or frequent. *None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 12 is depth to the seasonal high water table. A water table that is seasonally high for less than 1 month is not indicated in table 12.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

A *cemented pan* is a cemented or indurated subsurface layer within a depth of 5 feet. Such a pan causes difficulty in excavation. Pans are classified as thin or thick. A thin pan is less than 3 inches thick if continuously indurated, or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A thick pan is more than 3 inches thick if continuously indurated, or more than 18 inches thick if discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that 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 and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel 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 the 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 (USDA, 1975). 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 on laboratory measurements. Table 13 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

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

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

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; 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 Xerorthents (*Xer*, meaning dry, plus *orthent*, the suborder of the Entisols that is most common).

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 Xerorthents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is loamy-skeletal, mixed (calcareous), frigid, shallow Typic Xerorthents.

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. There can be some variation in the texture of the surface layer or of the underlying material within a series.

Taxonomic Units and Their Morphology

In this section, each soil series or family recognized in the survey area 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 or family. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (USDA, 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (USDA, 1975). Unless otherwise stated, matrix colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series or family.

The map units of each soil series or family are described in the section "Detailed Soil Map Units."

Acana Series

The Acana series consists of shallow, well drained, moderately slowly permeable soils on fan terraces and dissected terraces. These soils formed in alluvium derived dominantly from limestone and sandstone. Slopes are 1

to 8 percent. Elevation is 4,900 to 6,400 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 46 to 50 degrees F.

These soils are loamy, mixed, mesic, shallow Xerollic Durargids.

Typical pedon of Acana gravelly loam, 1 to 3 percent slopes, about 3.8 miles southwest of the Kunzler Ranch, about 1,100 feet north and 100 feet east of the southwest corner of sec. 35, T. 12 N., R. 15 W.

A—0 to 3 inches; light brownish gray (10YR 6/2) gravelly loam, dark brown (10YR 3/3) moist; moderate very thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine and few fine vesicular pores; very slightly effervescent; about 15 percent gravel; moderately alkaline (pH 8.0); clear wavy boundary.

Bt—3 to 13 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium and few coarse roots; few very fine tubular pores; common thin clay films on faces of peds and many thin clay films in pores; about 5 percent gravel; slightly effervescent; disseminated carbonates; strongly alkaline (pH 9.0); clear wavy boundary.

Bkq—13 to 17 inches; very pale brown (10YR 7/3) sandy loam, brown (10YR 5/3) moist; weak medium platy structure; discontinuously weakly cemented, hard, firm, slightly sticky and slightly plastic; few very fine, fine, and medium roots; few very fine interstitial pores; strongly effervescent; disseminated carbonates; very strongly alkaline (pH 9.4); clear wavy boundary.

Bkqm1—17 to 24 inches; continuously weakly cemented duripan; laminar silica coatings on the upper surfaces of some plates; about 30 percent strongly cemented durinodes; gradual wavy boundary.

Bkqm2—24 inches; indurated duripan; laminar silica coatings on the upper surfaces of plates.

Range in Characteristics

The duripan is at a depth of 10 to 20 inches. The particle-size control section averages 18 to 25 percent clay and 0 to 30 percent gravel. The depth to an argillic horizon is 2 to 4 inches. Reaction is moderately alkaline to very strongly alkaline. The electrical conductivity is less than 2 millimhos per centimeter in the A horizon and is 8 to 16 millimhos per centimeter in the B horizon.

Bt horizon: Chroma is 2 to 4. The texture is loam or gravelly loam.

Bkqm horizon: The upper part of the duripan is weakly cemented to strongly cemented.

Acord Series

The Acord series consists of very deep, well drained, moderately slowly permeable soils on mountain ridgetops, mountain shoulder slopes, and fan terraces and in other convex areas. These soils formed in alluvium and colluvium derived dominantly from mixed sedimentary rocks. Slopes are 5 to 30 percent. Elevation is 5,000 to 6,500 feet. The average annual precipitation is 13 to 16 inches, and the mean annual air temperature is 40 to 44 degrees F.

These soils are clayey-skeletal, montmorillonitic, frigid Calcic Argixerolls.

Typical pedon of Acord very cobbly loam, in an area of Ant Flat-Acord association, 10 to 30 percent slopes, about 3 miles southwest of Cotton Thomas Basin, about 2,640 feet east and 1,860 feet south of the northwest corner of sec. 20, T. 13 N., R. 17 W.

A1—0 to 4 inches; dark brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to weak very fine granular; slightly hard, friable, sticky and plastic; many very fine and fine and few medium roots; many very fine and fine tubular pores; about 20 percent gravel and 30 percent cobbles; mildly alkaline (pH 7.4); clear smooth boundary.

A2—4 to 11 inches; dark brown (10YR 4/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure parting to weak very fine granular; hard, firm, sticky and plastic; many very fine, fine, and medium and few coarse roots; few very fine and fine tubular pores; about 15 percent gravel and 30 percent cobbles; mildly alkaline (pH 7.4); gradual wavy boundary.

Bt1—11 to 21 inches; brown (7.5YR 5/4) very gravelly clay loam, dark brown (7.5YR 4/4) moist; strong medium and coarse angular blocky structure; extremely hard, firm, sticky and very plastic; common very fine, fine, and medium roots; few fine tubular pores; many moderately thick clay films on faces of peds and lining pores; about 30 percent gravel and 5 percent cobbles; moderately alkaline (pH 7.9); gradual wavy boundary.

Bt2—21 to 36 inches; brown (10YR 5/4) very gravelly clay, dark brown (10YR 4/4) moist; strong medium and coarse angular blocky structure; extremely hard, firm, sticky and very plastic; common very fine, fine, and medium roots; few fine tubular pores; many moderately thick clay films on faces of peds and lining pores; about 30 percent gravel and 5 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary.

Btk—36 to 44 inches; light yellowish brown (10YR 6/4)

very gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate fine angular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; few very fine tubular pores; about 40 percent gravel; slightly effervescent; disseminated carbonates and fine filaments of carbonates; moderately alkaline (pH 8.4); clear irregular boundary.

Ck—44 to 60 inches; white (10YR 8/2) very gravelly clay loam, very pale brown (10YR 7/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common fine tubular pores; about 40 percent gravel; violently effervescent; strongly alkaline (pH 8.9).

Range in Characteristics

The mollic epipedon is 10 to 15 inches thick. The particle-size control section averages 35 to 50 percent clay and 35 to 60 percent rock fragments.

A horizon: Chroma is 2 or 3. Reaction is neutral or mildly alkaline. The content of cobbles ranges from 25 to 35 percent.

Bt and Btk horizons: Hue is 7.5YR or 10YR. Value is 5 or 6 dry and 4 or 5 moist. Chroma is 3 or 4. The texture is very gravelly clay loam, very gravelly clay, or very cobbly clay loam. Reaction is mildly alkaline to strongly alkaline.

Ck horizon: Value is 6 to 8 dry and 4 to 7 moist. Chroma is 2 to 4. The texture is very gravelly clay loam or very gravelly sandy loam.

Amtoft Series

The Amtoft series consists of shallow, well drained, moderately rapidly permeable soils on hillsides, mountainsides, and ridgetops. These soils formed in colluvium and residuum derived dominantly from limestone and chert. Slopes are 20 to 80 percent. Elevation is 4,400 to 7,000 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 45 to 49 degrees F.

These soils are loamy-skeletal, carbonatic, mesic Lithic Xerollic Calciorthids.

Typical pedon of Amtoft very gravelly loam, in an area of Tarnach-Amtoft very gravelly loams, 15 to 50 percent slopes, about 9 miles north of Hogup siding, about 2,500 feet south and 100 feet west of the northeast corner of sec. 30, T. 8 N., R. 11 W.

A1—0 to 3 inches; light gray (10YR 7/2) very gravelly loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable, sticky and plastic; many very fine roots; many very fine and fine tubular pores; about 50 percent gravel; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

A2—3 to 9 inches; light gray (10YR 7/2) very gravelly loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine roots; common very fine tubular pores; about 40 percent gravel; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

Bk1—9 to 15 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; about 50 percent gravel; violently effervescent; disseminated carbonates and coatings of carbonates on the bottom of rock fragments; strongly alkaline (pH 8.6); clear smooth boundary.

Bk2—15 to 19 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; about 55 percent gravel; violently effervescent; disseminated carbonates and coatings of carbonates on the bottom of rock fragments; strongly alkaline (pH 8.8); abrupt irregular boundary.

R—19 inches; limestone bedrock.

Range in Characteristics

The particle-size control section averages 18 to 27 percent clay and 35 to 60 percent rock fragments. Bedrock is at a depth of 10 to 20 inches.

A horizon: Value is 6 or 7 dry and 4 or 5 moist. Chroma is 2 or 3. The texture is very gravelly loam or extremely cobbly loam.

Bk horizon: Value is 5 or 6 moist. Chroma is 2 to 4.

Ant Flat Series

The Ant Flat series consists of very deep, well drained, slowly permeable soils on rolling foot slopes and mountainsides. These soils formed in alluvium and colluvium derived dominantly from mixed sedimentary rocks. Slopes are 10 to 30 percent. Elevation is 5,300 to 6,500 feet. The average annual precipitation is 14 to 16 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are fine, montmorillonitic, frigid Calcic Argixerolls.

Typical pedon of Ant Flat gravelly loam, in an area of Ant Flat-Acord association, 10 to 30 percent slopes, about 3 miles southwest of Cotton Thomas Basin, about 500 feet north and 900 feet west of the southeast corner of sec. 18, T. 13 N., R. 17 W.

A—0 to 10 inches; dark brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; soft, very friable,

slightly sticky and plastic; many very fine and fine roots; few fine vesicular pores; about 20 percent gravel; neutral (pH 7.2); gradual smooth boundary.

Bw—10 to 18 inches; dark brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; soft, very friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; about 10 percent gravel; neutral (pH 7.2); abrupt smooth boundary.

Bt1—18 to 27 inches; light yellowish brown (7.5YR 6/4) clay, dark brown (7.5YR 4/3) moist; strong medium prismatic structure parting to moderate fine and medium angular blocky; hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine tubular pores; many moderately thick clay films on faces of peds; about 10 percent gravel; mildly alkaline (pH 7.4); clear wavy boundary.

Bt2—27 to 31 inches; light yellowish brown (7.5YR 6/4) clay, brown (7.5YR 5/4) moist; strong medium prismatic structure parting to moderate very fine and fine angular blocky; hard, firm, very sticky and very plastic; few very fine roots; few very fine pores; common moderately thick clay films on faces of peds; about 10 percent gravel; slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.6); clear wavy boundary.

Ck—31 to 60 inches; very pale brown (7.5YR 8/4) clay loam, pink (7.5YR 7/4) moist; massive; hard, firm, sticky and plastic; few very fine roots; few very fine pores; about 10 percent gravel; strongly effervescent; massive carbonates and common fine and medium veins of carbonates; moderately alkaline (pH 8.2).

Range in Characteristics

The mollic epipedon is 10 to 19 inches thick. The particle-size control section averages 0 to 15 percent rock fragments and 35 to 50 percent clay.

A horizon: Chroma is 2 or 3.

Bt horizon: Value is 4 or 5 moist. Chroma is 3 or 4. The horizon is noneffervescent or slightly effervescent.

Bearskin Series

The Bearskin series consists of shallow, well drained, moderately permeable soils on rocky hillsides and ridges. These soils formed in colluvium, alluvium, and residuum derived dominantly from extrusive igneous rocks. Slopes are 5 to 30 percent. Elevation is 6,200 to 7,200 feet. The average annual precipitation is 16 to 18 inches, and the mean annual air temperature is 39 to 42 degrees F.

These soils are loamy, mixed, frigid Lithic Argixerolls.

Typical pedon of Bearskin loam, in an area of Hades-Bearskin-Rock outcrop association, 5 to 30 percent slopes, about 3.2 miles west-southwest of Twin Peaks, about 500 feet west and 900 feet south of the northeast corner of sec. 28, T. 14 N., R. 18 W.

A—0 to 3 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and few fine and medium roots; many very fine interstitial pores; about 5 percent gravel; slightly acid (pH 6.1); clear smooth boundary.

Bt—3 to 14 inches; brown (7.5YR 5/3) sandy clay loam, dark brown (7.5YR 3/2) moist; weak fine and medium subangular blocky structure parting to weak very fine and fine granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine interstitial and few fine tubular pores; very few thin clay films on faces of peds and common thin clay films in pores; about 5 percent gravel; slightly acid (pH 6.3); clear wavy boundary.

R—14 inches; hard, extrusive igneous bedrock.

Range in Characteristics

The depth to bedrock is 10 to 20 inches. The mollic epipedon is 10 to 20 inches thick. The particle-size control section averages 20 to 30 percent clay and 0 to 15 percent rock fragments.

A and Bt horizons: Chroma is 2 or 3.

Bickmore Family

The Bickmore family consists of moderately deep, well drained, moderately permeable soils on mountainsides. These soils formed in mixed colluvium derived dominantly from limestone, chert, and dolomite. Slopes are 5 to 60 percent. Elevation is 6,200 to 9,500 feet. The average annual precipitation is 16 to 30 inches, and the mean annual air temperature is 39 to 43 degrees F.

These soils are loamy-skeletal, mixed Argic Pachic Cryoborolls.

Reference profile of Bickmore family gravelly loam, in an area of Ridgecrest-Bickmore families association, 30 to 60 percent slopes, about 5 miles north of Etna Reservoir, about 4,200 feet west and 700 feet north of the southeast corner of sec. 5, T. 12 N., R. 18 W.

A1—0 to 3 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark gray (10YR 3/1) moist; moderate very fine and fine granular structure; soft, very friable, slightly plastic; about 20 percent gravel; many very fine and common fine roots; common very fine and fine tubular pores; mildly alkaline (pH 7.6); clear wavy boundary.

A2—3 to 10 inches; brown (10YR 4/3) very gravelly loam,

very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure parting to moderate very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; common very fine and fine tubular pores; about 35 percent gravel; mildly alkaline (pH 7.6); gradual wavy boundary.

A3—10 to 20 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure parting to moderate very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine tubular pores; about 35 percent gravel; mildly alkaline (pH 7.6); clear wavy boundary.

BA—20 to 24 inches; pale brown (10YR 6/3) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure parting to moderate very fine granular; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine tubular pores; about 40 percent gravel; mildly alkaline (pH 7.6); abrupt wavy boundary.

Bt—24 to 37 inches; very pale brown (10YR 7/4) very gravelly loam, yellowish brown (10YR 5/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine and fine pores; few thin clay films lining tubular pores; about 55 percent gravel; mildly alkaline (pH 7.6); abrupt wavy boundary.

R—37 inches; fractured bedrock.

Range in Characteristics

Bedrock is at a depth of 20 to 40 inches. The mollic epipedon is 17 to 30 inches thick. The particle-size control section averages 17 to 27 percent clay and 35 to 60 percent rock fragments. Some pedons do not have a BA horizon.

A horizon: Value is 2 to 4 dry and 2 or 3 moist. Chroma is 2 or 3.

Bt horizon: Value is 3 to 7 dry and 2 to 6 moist. Chroma is 2 to 4.

Birdow Series

The Birdow series consists of very deep, well drained, moderately permeable soils on valley bottoms, on toe slopes, and in wide drainageways. These soils formed in mixed alluvium derived dominantly from quartzite and limestone. Slopes are 0 to 3 percent. Elevation is 5,200 to 6,000 feet. The average annual precipitation is 12 to 16 inches, and the mean annual air temperature is 45 to 47 degrees F.

These soils are fine-loamy, mixed, mesic Cumulic Haploxerolls.

Typical pedon of Birdow silt loam, 0 to 2 percent slopes, about ½ mile west of Standrod, about 400 feet north and 100 feet east of the southwest corner of sec. 26, T. 15 N., R. 14 W.

A1—0 to 10 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure parting to strong very fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, many fine, and few medium and coarse roots; many very fine interstitial and many very fine and fine tubular pores; slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.6); clear smooth boundary.

A2—10 to 22 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine angular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine, many fine, and few medium and coarse roots; common very fine and fine tubular pores; slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.6); clear smooth boundary.

A3—22 to 30 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine and fine and few medium and coarse roots; common very fine and fine tubular pores; strongly effervescent; disseminated carbonates; mildly alkaline (pH 7.8); clear smooth boundary.

C1—30 to 42 inches; pale brown (10YR 6/3) loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, firm, sticky and plastic; common fine roots; common fine tubular pores; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.0); clear wavy boundary.

C2—42 to 60 inches; light gray (10YR 7/2) loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few fine tubular pores; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.0).

Range in Characteristics

The mollic epipedon is 20 to 40 inches thick. The particle-size control section averages 18 to 27 percent clay and more than 15 percent sand coarser than very fine sand.

A horizon: Chroma is 2 or 3. Reaction is mildly alkaline or moderately alkaline.

C horizon: Value is 6 or 7 dry and 4 or 5 moist. Chroma is 2 to 4. The texture is clay loam or loam. The horizon is

slightly effervescent or strongly effervescent. Reaction is mildly alkaline or moderately alkaline.

Bluehill Series

The Bluehill series consists of moderately deep, somewhat excessively drained, moderately rapidly permeable soils on hillsides and the side slopes of mesas. These soils formed in alluvium and residuum derived dominantly from volcanic ash. Slopes are 20 to 60 percent. Elevation is 5,100 to 5,700 feet. The average annual precipitation is 12 to 16 inches, and the mean annual air temperature is 45 to 48 degrees F.

These soils are ashy, mesic Typic Vitrandepts.

Typical pedon of Bluehill fine sandy loam, in an area of Bluehill-Coalbank association, 20 to 60 percent slopes, about 1,900 feet north and 1,100 feet west of the southeast corner of sec. 27, T. 15 N., R. 19 W.

A—0 to 4 inches; light brownish gray (10YR 6/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine and very fine granular structure; soft, very friable; common very fine roots; many very fine interstitial pores; about 5 percent gravel; mildly alkaline (pH 7.7); clear smooth boundary.

AB—4 to 10 inches; pale brown (10YR 6/3) very fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable; common very fine and few fine roots; many very fine interstitial pores; about 10 percent gravel; moderately alkaline (pH 8.0); clear smooth boundary.

Bw—10 to 15 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable; few very fine roots; about 5 percent gravel; strongly alkaline (pH 8.5); clear wavy boundary.

Bk—15 to 32 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; weak medium prismatic structure; soft, very friable; few very fine roots; slightly effervescent; strongly alkaline (pH 8.7); abrupt wavy boundary.

Cr—32 inches; weakly consolidated volcanic ash.

Range in Characteristics

Paralithic contact is at a depth of 20 to 40 inches. The content of rock fragments in the particle-size control section averages 0 to 15 percent.

Borvant Series

The Borvant series consists of shallow, well drained, moderately permeable soils on fan terraces. These soils formed in alluvium derived dominantly from limestone and locally influenced by quartzite. Slopes are 5 to 15 percent. Elevation is 5,200 to 6,000 feet. The average annual precipitation is 12 to 14 inches, and the mean annual air temperature is 45 to 47 degrees F.

These soils are loamy-skeletal, carbonatic, mesic, shallow Aridic Petrocalcic Palexerolls.

Typical pedon of Borvant gravelly loam, 5 to 15 percent slopes, about 1 mile north and 4 miles east of Park Valley, about 200 feet south and 100 feet west of the northeast corner of sec. 30, T. 13 N., R. 12 W.

A1—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; moderate very fine and fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, medium, and coarse roots; common very fine and fine tubular pores; about 15 percent gravel; strongly effervescent (32 percent calcium carbonate); disseminated carbonates; mildly alkaline (pH 7.6); clear smooth boundary.

A2—4 to 8 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; very weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine, many medium, and few coarse roots; many very fine and fine tubular pores; about 35 percent gravel; strongly effervescent (35 percent calcium carbonate); disseminated carbonates and carbonates on small hardpan fragments; moderately alkaline (pH 7.9); clear smooth boundary.

Bkq—8 to 12 inches; white (10YR 8/2) very gravelly loam, very pale brown (10YR 7/4) moist; massive; slightly hard, firm, slightly sticky and slightly plastic; many very fine, fine, and medium roots; few very fine tubular pores; about 40 percent gravel; violently effervescent (61 percent calcium carbonate); moderately thick coatings of carbonates and silica on all sides of rock fragments; moderately alkaline (pH 7.9); abrupt smooth boundary.

Bkqm—12 inches; carbonate indurated hardpan.

Range in Characteristics

The hardpan is at a depth of 10 to 20 inches. The mollic epipedon is 7 to 14 inches thick. The particle-size control section averages 35 to 80 percent rock fragments and 10 to 18 percent clay.

A horizon: Chroma is 2 or 3.

Bkq horizon: Chroma is 2 to 4.

Broad Canyon Family

The Broad Canyon family consists of deep, well drained, moderately rapidly permeable soils on summits, mountainsides, and shoulder slopes. These soils formed in colluvium derived dominantly from quartzite, schist, and gneiss. Slopes are 20 to 60 percent. Elevation is 6,400 to

8,600 feet. The average annual precipitation is 16 to 22 inches, and the mean annual air temperature is 38 to 41 degrees F.

These soils are loamy-skeletal, mixed Typic Cryoborolls.

Reference profile of Broad Canyon family very gravelly loam, in an area of Parkay-Broad Canyon families association, 20 to 60 percent slopes, about 2 miles south-southeast of Devil's Gate, about 1,500 feet west and 400 feet south of the northeast corner of sec. 25, T. 13 N., R. 18 W.

A—0 to 15 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine and fine tubular pores; about 40 percent gravel; very slightly effervescent; disseminated carbonates; neutral (pH 6.8); gradual smooth boundary.

Bk1—15 to 27 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable; common fine roots; about 80 percent gravel; slightly effervescent; disseminated carbonates and many medium sized, segregated soft masses of carbonates under rock fragments; mildly alkaline (pH 7.8); diffuse smooth boundary.

Bk2—27 to 50 inches; light yellowish brown (10YR 6/4) extremely gravelly loamy sand, dark yellowish brown (10YR 4/6) moist; massive; soft, very friable; common fine roots; about 85 percent gravel; slightly effervescent; disseminated carbonates and many medium sized, segregated soft masses of carbonates under rock fragments; moderately alkaline (pH 8.0); diffuse smooth boundary.

Cr—50 inches; highly weathered schist.

Range in Characteristics

Bedrock is at a depth of 40 to 60 inches. The mollic epipedon is 7 to 15 inches thick. The particle-size control section averages 35 to 85 percent rock fragments and 8 to 18 percent clay. The increase in content of carbonates from the A horizon to the Bk horizon is less than 5 percent.

Bk horizon: Value is 5 to 7 dry and 3 to 6 moist. Chroma is 3 to 6. Reaction is mildly alkaline or moderately alkaline.

Brobett Series

The Brobett series consists of moderately deep, well drained, moderately permeable soils on dissected fan terraces. These soils formed in mixed alluvium derived dominantly from rhyolite and quartzite. Slopes are 3 to 8 percent. Elevation is 5,000 to 5,400 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 47 to 49 degrees F.

These soils are loamy-skeletal, mixed, mesic Haploxerollic Duragids.

Typical pedon of Brobett loam, in an area of Brobett-Plegomir association, 3 to 8 percent slopes, about 2 miles south of Death Creek, about 1,700 feet north and 1,200 feet west of the southeast corner of sec. 1, T. 10 N., R. 19 W.

A—0 to 3 inches; brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine vesicular and tubular pores; about 10 percent gravel; very slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.8); clear smooth boundary.

Bt—3 to 8 inches; pale brown (10YR 6/3) gravelly loam, yellowish brown (10YR 5/4) moist; moderate medium platy structure; slightly hard, friable, sticky and plastic; many very fine and common fine and medium roots; many very fine and fine and common medium tubular pores; few thin clay films on faces of peds; about 20 percent gravel; very slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.2); clear wavy boundary.

Bkq1—8 to 17 inches; very pale brown (10YR 7/4) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; strong medium platy structure; hard, very firm, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine and fine tubular pores; about 55 percent gravel, about one-fourth of which is pan fragments; common coarse irregular silica nodules; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); clear wavy boundary.

Bkq2—17 to 30 inches; very pale brown (10YR 7/3) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; very hard, very firm; few very fine, fine, and medium roots; few very fine tubular pores; about 50 percent gravel, about one-fourth of which is pan fragments; common coarse irregular silica nodules; strongly effervescent; massive carbonates; moderately alkaline (pH 8.4); clear wavy boundary.

Bkqm—30 inches; strongly cemented, fractured duripan having fractures more than 4 inches apart; strongly cemented laminar cap 1/8 to 1/4 inch thick; strongly effervescent; massive carbonates; moderately alkaline (pH 8.4).

Range in Characteristics

The particle-size control section contains 12 to 17 percent clay and 35 to 60 percent gravel. Depth to an

argillic horizon is 2 to 5 inches. The duripan is at a depth of 20 to 40 inches.

A horizon: Value is 4 to 7 dry and 3 or 4 moist.

Bt horizon: Value is 4 or 5 moist. Chroma is 3 or 4.

Bkq horizon: Value is 7 or 8 dry and 5 or 6 moist. Chroma is 3 or 4. Reaction is moderately alkaline or strongly alkaline.

Bkqm horizon: Duripan is continuously weakly cemented or strongly cemented.

Bullump Series

The Bullump series consists of very deep, well drained, moderately slowly permeable soils on hillsides, in drainageways, and on valley bottoms. These soils formed in alluvium and colluvium derived dominantly from quartzite and mica schist. Slopes are 3 to 30 percent. Elevation is 6,000 to 6,800 feet. The average annual precipitation is 12 to 16 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, mixed, frigid Pachic Argixerolls.

Typical pedon of Bullump loam, 3 to 15 percent slopes, about 6 miles south and 2 miles east of Lynn Reservoir, about 300 feet east and 100 feet south of the northwest corner of sec. 16, T. 12 N., R. 16 W.

A1—0 to 8 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine tubular pores; about 5 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—8 to 16 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few very fine and medium roots; common very fine tubular pores; about 5 percent gravel; mildly alkaline (pH 7.4); clear smooth boundary.

Bt1—16 to 30 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, very firm, sticky and plastic; few very fine and medium roots; common very fine tubular pores; common thin clay films on faces of peds and in pores; about 45 percent gravel and 5 percent cobbles; mildly alkaline (pH 7.4); abrupt wavy boundary.

Bt2—30 to 46 inches; yellowish brown (10YR 5/6) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium and coarse angular blocky structure; very hard, very firm, sticky and plastic; few very fine and fine roots; few very fine tubular pores; many thin clay films on faces of peds and in pores; about 35 percent gravel and 5 percent cobbles; mildly alkaline (pH 7.4); clear smooth boundary.

Bt3—46 to 60 inches; light yellowish brown (10YR 6/4) very cobbly sandy clay loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine tubular pores; about 25 percent gravel and 15 percent cobbles; mildly alkaline (pH 7.6).

Range in Characteristics

The mollic epipedon is 20 to 30 inches thick. The particle-size control section averages 27 to 35 percent clay and 35 to 55 percent rock fragments. Reaction is neutral or mildly alkaline. Some pedons have a C horizon.

A horizon: Value is 3 to 5 dry and 2 or 3 moist. Chroma is 2 or 3.

Bt horizon: Hue is 7.5YR or 10YR. Value is 4 to 6 dry and 3 to 5 moist. Chroma is 3 to 6.

Clavicon Series

The Clavicon series consists of moderately deep, well drained, moderately permeable soils on hillsides. These soils formed in colluvium and residuum derived dominantly from limestone, chert, and dolomite. Slopes are 30 to 60 percent. Elevation is 5,400 to 6,500 feet. The average annual precipitation is 13 to 16 inches, and the mean annual air temperature is 40 to 44 degrees F.

These soils are loamy-skeletal, mixed, frigid Typic Calcixerolls.

Typical pedon of Clavicon very gravelly loam, in an area of Clavicon-Rock outcrop complex, 30 to 60 percent slopes, about 1/2 mile south of Emigration Pass, about 100 feet east and 200 feet north of the southwest corner of sec. 7, T. 9 N., R. 16 W.

A1—0 to 5 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; soft, very friable, sticky and plastic; many very fine and fine and common medium roots; about 30 percent gravel and 5 percent cobbles; slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.6); gradual smooth boundary.

A2—5 to 13 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure parting to weak fine granular; soft, very friable, sticky and plastic; many fine and medium and common coarse roots; many very fine and fine and common medium pores; about 35 percent gravel and 10 percent cobbles; slightly effervescent; mildly alkaline (pH 7.6); diffuse smooth boundary.

Bk1—13 to 20 inches; pale brown (10YR 6/3) very gravelly loam, dark yellowish brown (10YR 4/4) moist;

moderate medium subangular blocky structure; soft, very friable, sticky and plastic; many very fine and medium and common coarse roots; many very fine and fine and few medium pores; about 35 percent gravel and 10 percent cobbles; strongly effervescent; moderately alkaline (pH 7.9); clear smooth boundary.

Bk2—20 to 30 inches; very pale brown (10YR 7/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, sticky and plastic; few fine and common medium roots; common very fine and fine pores; about 30 percent gravel and 5 percent cobbles; strongly effervescent; strongly alkaline (pH 9.0); diffuse smooth boundary.

Bk3—30 to 38 inches; very pale brown (10YR 7/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, slightly sticky and plastic; few fine and common medium roots; common very fine and fine pores; about 30 percent gravel and 5 percent cobbles; strongly effervescent; very strongly alkaline (pH 9.4); abrupt smooth boundary.

R—38 inches; fractured, weathered limestone.

Range in Characteristics

Bedrock is at a depth of 20 to 40 inches. The mollic epipedon is 7 to 18 inches thick. The particle-size control section averages 12 to 18 percent clay, 15 to 40 percent calcium carbonate, and 35 to 60 percent rock fragments.

A horizon: Value is 4 or 5 dry and 2 or 3 moist. Chroma is 2 or 3. The horizon is very slightly effervescent or slightly effervescent. Reaction is mildly alkaline or moderately alkaline.

Bk horizon: Value is 6 or 7 dry and 4 to 6 moist. Chroma is 3 or 4. The horizon is slightly effervescent to violently effervescent. Reaction is moderately alkaline to very strongly alkaline.

Cliffdown Series

The Cliffdown series consists of very deep, somewhat excessively drained, moderately rapidly permeable soils on lake terraced alluvial fans, fan terraces, and hillsides. These soils formed in alluvium derived dominantly from limestone, dolomite, quartzite, and sandstone. Slopes are 3 to 15 percent. Elevation is 4,200 to 6,000 feet. The average annual precipitation is 6 to 8 inches, and the mean annual air temperature is 52 to 54 degrees F.

These soils are loamy-skeletal, mixed (calcareous), mesic Typic Torriorthents.

Typical pedon of Cliffdown gravelly sandy loam, moist, in an area of Cliffdown-Hiko Peak-Okrist, thick surface association, 3 to 12 percent slopes, about 2,200 feet west and 1,100 feet south of the northeast corner of sec. 20, T. 6 N., R. 18 W.

A—0 to 6 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 5/3) moist; weak thick platy structure; soft, very friable; common very fine, many fine, and few medium roots; many very fine and few fine vesicular pores; about 20 percent gravel; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

C1—6 to 22 inches; very pale brown (10YR 7/3) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable; many very fine and fine and few medium roots; few very fine tubular pores; about 35 percent gravel; slightly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rocks; strongly alkaline (pH 9.0); clear wavy boundary.

C2—22 to 42 inches; very pale brown (10YR 7/3) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable; few very fine and fine roots; common very fine pores; about 40 percent gravel; slightly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rocks; strongly alkaline (pH 8.8); clear irregular boundary.

C3—42 to 60 inches; light gray (10YR 7/2) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; soft, very friable; few very fine roots; about 40 percent gravel; slightly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rocks; moderately alkaline (pH 8.0).

Range in Characteristics

The particle-size control section averages 8 to 18 percent clay and 35 to 70 percent rock fragments. The soils are slightly effervescent or strongly effervescent. Reaction is moderately alkaline or strongly alkaline. The electrical conductivity is less than 2 millimhos per centimeter in the A horizon and is 2 to 16 millimhos per centimeter in the C horizon.

A horizon: Value is 4 or 5 moist. Chroma is 2 or 3.

C horizon: Value is 5 or 6 moist. Chroma is 2 to 4. The texture is very gravelly sandy loam or very gravelly loamy sand.

Coalbank Series

The Coalbank series consists of deep, well drained, moderately rapidly permeable soils on north-facing hillsides. These soils formed in colluvium and residuum derived dominantly from volcanic ash and sandstone. Slopes are 20 to 60 percent. Elevation is 5,100 to 5,700 feet. The average annual precipitation is 13 to 16 inches, and the mean annual air temperature is 42 to 45 degrees F.

These soils are ashy, frigid Mollic Vitrandepts.

Typical pedon of Coalbank fine sandy loam, in an area

of Bluehill-Coalbank association, 20 to 60 percent slopes, about 1.5 miles southwest of the junction of Goose Creek and the Idaho State line, about 1,500 feet east and 1,400 feet south of the northwest corner of sec. 34, T. 15 N., R. 19 W.

A1—0 to 4 inches; grayish brown (10YR 5/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium and thick platy structure; soft, very friable; many very fine and few fine roots; common very fine interstitial pores; mildly alkaline (pH 7.5); clear smooth boundary.

A2—4 to 18 inches; grayish brown (10YR 5/2) fine sandy loam, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable; few fine and medium and common very fine roots; common very fine interstitial and few tubular pores; about 5 percent gravel; mildly alkaline (pH 7.7); gradual smooth boundary.

Bw—18 to 32 inches; light brownish gray (10YR 6/2) fine sandy loam, dark brown (10YR 3/3) moist; weak coarse subangular blocky structure; soft, very friable; common very fine and few fine roots; common very fine interstitial and few fine tubular pores; about 10 percent gravel; mildly alkaline (pH 7.8); gradual smooth boundary.

C—32 to 45 inches; light gray (10YR 6/1) fine sandy loam, dark grayish brown (10YR 4/2) moist; single grain; soft, very friable; common very fine and fine roots; moderately alkaline (pH 8.4); clear smooth boundary.

Cr—45 inches; highly fractured tuff; about 5 percent soil material in interstices.

Range in Characteristics

Paralithic contact is at a depth of 40 to 60 inches. The mollic epipedon is 10 to 20 inches thick.

A horizon: Chroma is 2 or 3.

Codquin Series

The Codquin series consists of shallow, well drained, rapidly permeable soils on hillsides. These soils formed in colluvium derived dominantly from sandstone and conglomerate. Slopes are 15 to 60 percent. Elevation is 5,300 to 6,500 feet. The average annual precipitation is 13 to 16 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, mixed (calcareous), frigid, shallow Typic Xerorthents.

Typical pedon of Codquin gravelly sandy loam, in an area of Dahar-Codquin gravelly sandy loams, 8 to 60 percent slopes, about 2 miles north of the town of Grouse Creek, about 1,500 feet south and 2,400 feet west of the northeast corner of sec. 15, T. 12 N., R. 18 W.

A—0 to 4 inches; white (2.5Y 8/2) gravelly sandy loam, light brownish gray (2.5Y 6/2) moist; single grain; soft, very friable, slightly plastic; few very fine, fine, and medium roots; about 20 percent gravel; very slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.0); clear smooth boundary.

C—4 to 17 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; single grain; soft, very friable; common very fine, fine, and medium and few coarse roots; about 85 percent gravel in a platy rock structure; slightly effervescent; disseminated carbonates; strongly alkaline (pH 9.0); clear irregular boundary.

Cr—17 inches; highly fractured sandstone.

Range in Characteristics

The particle-size control section averages more than 60 percent rock fragments and 6 to 18 percent clay. Paralithic contact is at a depth of 10 to 20 inches.

A horizon: Hue is 10YR or 2.5Y. Value is 6 to 8 dry and 4 to 6 moist. Chroma is 2 or 3. Reaction is mildly alkaline or moderately alkaline. The horizon is very slightly effervescent or slightly effervescent.

C horizon: Hue is 10YR or 2.5Y. Value is 7 or 8 dry and 5 or 6 moist. Chroma is 2 or 3. Reaction is mildly alkaline to strongly alkaline. The horizon is very slightly effervescent to strongly effervescent.

Collard Series

The Collard series consists of very deep, well drained, moderately permeable soils on fan terraces. These soils formed in alluvium derived dominantly from quartzite and phyllite. Slopes are 2 to 10 percent. Elevation is 5,400 to 6,400 feet. The average annual precipitation is 10 to 14 inches, and the mean annual air temperature is 45 to 47 degrees F.

These soils are loamy-skeletal, mixed, mesic Aridic Argixerolls.

Typical pedon of Collard gravelly loam, in an area of Acana-Collard gravelly loams, 3 to 8 percent slopes, about 7 miles northeast of Rosebud Springs, about 1,800 feet east and 200 feet south of the northwest corner of sec. 35, T. 12 N., R. 16 W.

A—0 to 5 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak thick platy structure parting to moderate very fine and fine granular; soft, very friable, slightly sticky; many very fine and fine

and few medium roots; many very fine and common fine tubular pores; about 30 percent gravel; neutral (pH 7.3); clear smooth boundary.

Bt1—5 to 10 inches; brown (10YR 4/3) gravelly sandy clay loam, dark brown (10YR 3/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium and few coarse roots; many very fine and fine tubular pores; common thin clay films on faces of peds and lining pores; about 20 percent gravel; neutral (pH 7.3); gradual wavy boundary.

Bt2—10 to 18 inches; dark yellowish brown (10YR 4/4) very gravelly sandy clay loam, brown (10YR 4/3) moist; moderate medium and fine angular blocky structure; hard, firm, sticky and plastic; common very fine, fine, and medium roots; many very fine and fine tubular pores; common thin clay films on faces of peds and lining pores; about 40 percent gravel and 5 percent cobbles; neutral (pH 7.3); clear wavy boundary.

C—18 to 60 inches; yellowish brown (10YR 5/4) extremely gravelly loamy sand, brown (10YR 4/3) moist; massive; loose; few very fine and fine roots; many very fine interstitial pores; about 50 percent gravel, 20 percent cobbles, and 5 percent stones; mildly alkaline (pH 7.6).

Range in Characteristics

The mollic epipedon is 10 to 16 inches thick. The particle-size control section averages 35 to 50 percent rock fragments and 20 to 35 percent clay.

A horizon: Chroma is 2 or 3.

Bt horizon: Value is 4 or 5 dry and 3 or 4 moist. Chroma is 3 or 4.

C horizon: Value is 4 or 5 moist. Chroma is 3 or 4. The texture is very gravelly sandy loam or extremely gravelly loamy sand.

Cottonthomas Series

The Cottonthomas series consists of very deep, well drained, moderately permeable soils on fan terraces. These soils formed in alluvium derived dominantly from volcanic ash. Slopes are 0 to 15 percent. Elevation is 5,000 to 6,600 feet. The average annual precipitation is 12 to 16 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are ashy, frigid Mollic Vitrandepts.

Typical pedon of Cottonthomas fine sandy loam, in an area of Cottonthomas-Tomsherry fine sandy loams, 0 to 15 percent slopes, about 2.2 miles south of the junction of Goose Creek and the Idaho State line, about 900 feet west and 1,700 feet south of the northeast corner of sec. 15, T. 14 N., R. 19 W.

A1—0 to 3 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable; many very fine, common fine, and few medium roots; many very fine interstitial pores; mildly alkaline (pH 7.4); clear smooth boundary.

A2—3 to 13 inches; brown (10YR 5/3) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure parting to weak very fine granular; slightly hard, very friable; common very fine and few fine and medium roots; common very fine interstitial pores; mildly alkaline (pH 7.5); clear smooth boundary.

Bw1—13 to 32 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; hard, firm; about 5 percent gravel; about 10 percent very hard durinodes; mildly alkaline (pH 7.8); gradual smooth boundary.

Bw2—32 to 51 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; soft, friable; few very fine and fine roots; few fine tubular pores; about 14 percent gravel; about 10 percent hard durinodes; mildly alkaline (pH 7.8); gradual smooth boundary.

Bk—51 to 60 inches; light gray (10YR 7/2) fine sandy loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; hard, firm; few very fine and fine roots; fractured surfaces coated with moderately thick, slightly effervescent material; moderately alkaline (pH 8.4).

Range in Characteristics

The mollic epipedon is 10 to 16 inches thick. The content of gravel in the particle-size control section averages 0 to 15 percent.

A horizon: Chroma is 2 or 3.

Bw horizon: Value is 6 or 7 dry and 4 or 5 moist. The content of durinodes is 0 to 10 percent.

Crooked Creek Series

The Crooked Creek series consists of very deep, poorly drained, slowly permeable and very slowly permeable soils on alluvial fans, stream terraces, and flood plains. These soils formed in alluvium derived dominantly from quartzite and mixed sedimentary rocks. Slopes are 0 to 3 percent. Elevation is 5,000 to 6,000 feet. The average annual precipitation is 12 to 16 inches, and the mean annual air temperature is 43 to 45 degrees F.

These soils are fine, montmorillonitic, frigid Cumulic Haplaquolls.

Typical pedon of Crooked Creek silty clay loam, 0 to 2 percent slopes, about 4 miles east and 4 miles south of Meadow Creek Butte, about 300 feet west and 2,300 feet north of the southeast corner of sec. 12, T. 12 N., R. 18 W.

A1—0 to 7 inches; very dark grayish brown (10YR 3/2) silty clay loam, very dark brown (10YR 2/2) moist; moderate fine and very fine granular structure; hard, firm, sticky and plastic; many fine and very fine roots; common very fine tubular pores; mildly alkaline (pH 7.6); clear smooth boundary.

A2—7 to 13 inches; very dark gray (10YR 3/1) silty clay loam, black (10YR 2/1) moist; moderate fine granular structure; hard, firm, sticky and plastic; many very fine and fine roots; common very fine tubular pores; mildly alkaline (pH 7.8); clear smooth boundary.

A3—13 to 20 inches; very dark gray (10YR 3/1) silty clay, black (10YR 2/1) moist; moderate fine granular structure; very hard, very firm, sticky and plastic; many very fine and fine and few medium roots; few very fine tubular pores; mildly alkaline (pH 7.8); clear smooth boundary.

C—20 to 37 inches; dark gray (10YR 4/1) silty clay, black (10YR 2/1) moist; many fine faint dark yellowish brown (10YR 4/6) mottles; massive; very hard, very firm, sticky and plastic; few very fine, fine, and medium roots; very slightly effervescent; mildly alkaline (pH 7.8); clear smooth boundary.

Ck—37 to 60 inches; gray (10YR 5/1) silty clay, very dark gray (10YR 3/1) moist; many moderate distinct dark yellowish brown (10YR 4/6) mottles; massive; very hard, very firm, sticky and plastic; few very fine roots; very slightly effervescent; common fine veins of carbonates; mildly alkaline (pH 7.8).

Range in Characteristics

The mollic epipedon is 20 to 60 inches thick. The particle-size control section averages 35 to 50 percent clay and 0 to 5 percent rock fragments. Some pedons have a buried A horizon or an AC horizon.

A horizon: Value is 2 to 4. Chroma is 1 or 2. The texture is silty clay loam, silt loam, or silty clay.

C horizon: Hue is 2.5Y or 10YR. Value is 4 to 6 dry and 2 to 5 moist. Chroma is 1 or 2. The horizon is noneffervescent or very slightly effervescent. The content of rock fragments is 0 to 65 percent in the lower part. The texture is silty clay, clay loam, clay, or extremely gravelly clay loam.

Dahar Series

The Dahar series consists of moderately deep, well drained, moderately rapidly permeable soils on dissected hillsides. These soils formed in alluvium and colluvium derived dominantly from sandstone and limestone. Slopes are 8 to 15 percent. Elevation is 5,300 to 6,000 feet. The average annual precipitation is 13 to 16 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are coarse-loamy, mixed, frigid Haploxerollic Durorthids.

Typical pedon of Dahar gravelly sandy loam, in an area of Dahar-Codquin gravelly sandy loams, 8 to 60 percent slopes, about 2.5 miles north of the town of Grouse Creek, about 1,200 feet east and 1,200 feet south of the northwest corner of sec. 15, T. 12 N., R. 18 W.

A—0 to 3 inches; grayish brown (10YR 5/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium and coarse roots; many very fine and fine interstitial and common very fine and fine tubular pores; about 30 percent gravel; mildly alkaline (pH 7.8); clear smooth boundary.

ABk—3 to 6 inches; brown (10YR 5/3) gravelly loam, dark grayish brown (10YR 4/2) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine and medium, and few coarse roots; many very fine and fine tubular pores; thin coatings of carbonates on the undersides of rocks; slightly effervescent; disseminated carbonates; about 20 percent gravel; moderately alkaline (pH 7.9); clear wavy boundary.

Bkq1—6 to 12 inches; light brownish gray (10YR 6/2) gravelly loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, friable, sticky and slightly plastic; common very fine, fine, and medium and few coarse roots; many very fine and fine and common medium tubular pores; thin coatings of carbonates and silica on the undersides of rocks; slightly effervescent; disseminated carbonates; about 20 percent gravel; moderately alkaline (pH 8.0); clear wavy boundary.

Bkq2—12 to 21 inches; light gray (10YR 7/2) sandy loam,

pale brown (10YR 6/3) moist; moderate medium and thick platy structure; hard, extremely firm, slightly sticky and slightly plastic; many fine and common medium roots in fractures; common very fine and few fine tubular pores; discontinuously weakly silica cemented; strongly effervescent; visible soft powdery carbonates in the matrix; about 10 percent gravel; moderately alkaline (pH 8.4); clear irregular boundary.

Bkqm—21 to 27 inches; white (10YR 8/2) strongly cemented duripan, very pale brown (10YR 7/3) moist; strong medium and thick platy structure; extremely hard, extremely firm; many fine and common medium roots in fractures; strongly effervescent; visible soft powdery carbonates in the matrix; moderately alkaline (pH 8.4); clear irregular boundary.

B′kq—27 to 43 inches; white (10YR 8/2) very gravelly sandy loam, very pale brown (10YR 7/3) moist; massive; soft, friable, slightly sticky and slightly plastic; many fine and common medium roots in pockets; about 40 percent weakly cemented with silica; strongly effervescent; visible soft powdery carbonates in the matrix; strongly alkaline (pH 8.6); gradual wavy boundary.

2Ck—43 to 60 inches; pale yellow (2.5Y 7/4) sandy loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; strongly effervescent; visible soft powdery carbonates in the matrix; moderately alkaline (pH 8.4).

Range in Characteristics

The particle-size control section averages 10 to 18 percent clay and 15 to 35 percent rock fragments. The duripan is at a depth of 20 to 40 inches.

A horizon: Value is 4 or 5 dry and 3 or 4 moist. Chroma is 2 or 3. The horizon is noneffervescent or slightly effervescent. Reaction is mildly alkaline or moderately alkaline.

Bk horizon: Value is 6 or 7 dry and 4 or 5 moist. Chroma is 2 or 3. The horizon is slightly effervescent or strongly effervescent.

Bkqm horizon: Value is 7 or 8 dry and 6 or 7 moist. Chroma is 2 to 4.

C horizon: Value is 7 or 8 dry and 6 or 7 moist. Chroma is 3 or 4. The horizon is strongly effervescent or violently effervescent. Reaction is moderately alkaline or strongly alkaline.

Darkbull Series

The Darkbull series consists of very deep, well drained soils on fan terraces. Permeability is moderate in the upper part of the profile and very rapid in the lower part. These soils formed in mixed alluvium derived dominantly from quartzite, schist, and limestone. Slopes are 3 to 10 percent. Elevation is 5,200 to 6,000 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 45 to 48 degrees F.

These soils are loamy-skeletal, mixed, mesic Xerollic Calciorthids.

Typical pedon of Darkbull loam, in an area of Declo-Darkbull association, 1 to 10 percent slopes, about 3 miles west of Yost, about 1,800 feet south and 1,900 feet west of the northeast corner of sec. 6, T. 14 N., R. 15 W.

A—0 to 5 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine and medium roots; common very fine vesicular pores; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

Bw—5 to 13 inches; light yellowish brown (10YR 6/4) loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, common fine and medium, and few coarse roots; few very fine interstitial pores; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.7); gradual wavy boundary.

Bk—13 to 20 inches; very pale brown (10YR 7/4) loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; few very fine tubular pores; about 5 percent gravel; strongly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rock fragments; strongly alkaline (pH 8.6); gradual wavy boundary.

2C1—20 to 33 inches; very pale brown (10YR 7/4) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; hard, firm; few very fine roots; about 60 percent gravel; strongly effervescent; disseminated carbonates and thick coatings of carbonates on the undersides of rock fragments; strongly alkaline (pH 8.7); gradual wavy boundary.

2C2—33 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, firm; few very fine roots; few very fine interstitial pores; weakly cemented in parts; about 50 percent gravel and 15 percent cobbles and stones; slightly effervescent; disseminated carbonates and thick coatings of carbonates on the undersides of rock fragments; moderately alkaline (pH 8.2).

Range in Characteristics

Depth to the calcic horizon is 7 to 13 inches. The particle-size control section averages 6 to 15 percent clay and 35 to 65 percent rock fragments.

2C horizon: Value is 6 or 7 dry. Reaction is moderately alkaline or strongly alkaline. The texture is very gravelly, extremely gravelly, or very cobbly loamy sand.

Dateman Family

The Dateman family consists of very deep, well drained, moderately permeable soils on mountainsides and hillsides. These soils formed in mixed alluvium derived dominantly from quartzite and mica schist. Slopes are 20 to 60 percent. Elevation is 6,500 to 9,000 feet. The average annual precipitation is 22 to 30 inches, and the mean annual air temperature is 39 to 44 degrees F.

These soils are loamy-skeletal, mixed Pachic Cryoborolls.

Reference profile of Dateman family gravelly loam, in an area of Dateman-Bickmore, cool-Nielsen families complex, 20 to 60 percent slopes, about 1 1/4 miles west of Bull Lake, about 50 feet south and 2,540 feet east of the northwest corner of sec. 30, T. 14 N., R. 13 W.

A1—0 to 12 inches; dark grayish brown (10YR 4/2) gravelly loam, black (10YR 2/1) moist; weak medium and fine subangular blocky structure parting to moderate fine granular; soft, friable, slightly sticky and slightly plastic; many very fine and fine and common medium and coarse roots; about 20 percent gravel; slightly acid (pH 6.1); clear smooth boundary.

A2—12 to 21 inches; brown (10YR 4/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium angular blocky structure; slightly hard, firm, slightly sticky and plastic; many very fine and fine and common medium and coarse roots; about 35 percent gravel; slightly acid (pH 6.1); clear smooth boundary.

Bw1—21 to 31 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; slightly hard, firm, slightly sticky and plastic; common very fine, fine, and medium roots; about 35 percent gravel; slightly acid (pH 6.1); clear smooth boundary.

Bw2—31 to 43 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; slightly hard, firm, slightly sticky and slightly plastic; few very fine, fine, medium, and coarse roots; about 45 percent gravel; slightly acid (pH 6.1); clear wavy boundary.

C—43 to 60 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine, medium, and coarse roots; about 70 percent gravel; slightly acid (pH 6.1).

Range in Characteristics

The mollic epipedon is 16 to 35 inches thick. The particle-size control section averages 18 to 27 percent clay and 35 to 70 percent rock fragments. Some pedons have an O horizon, which is 1/2 inch to 4 inches thick.

A horizon: Value is 2 or 3 moist. Chroma is 1 to 3.

B horizon: Value is 4 or 5 dry. Chroma is 3 or 4.

Declo Series

The Declo series consists of very deep, well drained, moderately permeable soils on fan terraces. These soils formed in lacustrine sediments and alluvium derived dominantly from sandstone and limestone. Slopes are 1 to 12 percent. Elevation is 4,800 to 5,800 feet. The average annual precipitation is 8 to 11 inches, and the mean annual air temperature is 47 to 50 degrees F.

These soils are coarse-loamy, mixed, mesic Xerollic Calciorthids.

Typical pedon of Declo loam, in an area of Declo-Lembos-Tarnach association, 1 to 6 percent slopes, about 1.7 miles east-southeast of the north peak (elevation 5,826 feet) of the Dove Creek Hills, about 1,300 feet west and 600 feet north of the southeast corner of sec. 21, T. 11 N., R. 14 W.

A—0 to 4 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, very friable; common very fine and fine roots; many very fine vesicular pores; about 5 percent gravel; very slightly saline; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); clear wavy boundary.

Bk1—4 to 17 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, very friable; common very fine and fine and few medium roots; many very fine and few fine tubular pores; about 10 percent gravel; very slightly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 9.0); gradual smooth boundary.

Bk2—17 to 30 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly plastic; common very fine and fine and few medium roots; common very fine and few fine tubular pores; about 5 percent gravel; strongly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 9.0); gradual smooth boundary.

Bk3—30 to 48 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly plastic; common very fine

and few fine roots; common very fine and few fine tubular pores; strongly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 9.0); gradual smooth boundary.

Bkq—48 to 60 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable; few very fine roots; few fine tubular pores; about 5 percent gravel; about 10 percent weakly cemented and 5 percent strongly cemented durinodes; strongly saline; strongly effervescent; disseminated carbonates and common veins and filaments of carbonates; moderately alkaline (pH 8.2).

Range in Characteristics

The particle-size control section averages 10 to 17 percent clay and 0 to 15 percent rock fragments. The depth to a calcic horizon is 3 to 15 inches. Some pedons do not have a Bkq horizon. Some pedons have a C horizon of gravelly sandy loam below a depth of 40 inches. The electrical conductivity is 8 to more than 16 millimhos per centimeter throughout the profile.

A horizon: Value is 5 or 6 dry and 3 or 4 moist. Chroma is 2 or 3. The texture is loam or silt loam.

Bk horizon: Value is 7 or 8 dry and 5 or 6 moist. Chroma is 2 to 4. The texture is loam or silt loam. Reaction is moderately alkaline or strongly alkaline.

Donnardo Series

The Donnardo series consists of very deep, well drained, moderately permeable soils on alluvial fans and fan terraces. These soils formed in mixed alluvium derived dominantly from limestone and sandstone. Slopes are 2 to 8 percent. Elevation is 5,200 to 6,200 feet. The average annual precipitation is 12 to 14 inches, and the mean annual air temperature is 45 to 47 degrees F.

These soils are loamy-skeletal, mixed, mesic Aridic Calcixerolls.

Typical pedon of Donnardo gravelly loam, 2 to 8 percent slopes, about 1 mile north of Naf, about 1,400 feet west and 1,300 feet south of the northeast corner of sec. 36, T. 15 N., R. 13 W.

Ap—0 to 3 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine, fine, and medium and few coarse roots; many very fine tubular pores; about 20 percent gravel; very slightly effervescent; moderately alkaline (pH 8.0); clear smooth boundary.

A—3 to 11 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine tubular pores; about 15 percent gravel; very slightly effervescent; moderately alkaline (pH 8.2); clear smooth boundary.

Bk1—11 to 15 inches; light brownish gray (10YR 6/2) very cobbly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and fine tubular pores; about 25 percent gravel and 15 percent cobbles; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

Bk2—15 to 27 inches; pale brown (10YR 6/3) very cobbly sandy loam, dark brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; common very fine and fine tubular pores; about 40 percent cobbles and 20 percent gravel; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C—27 to 60 inches; light gray (10YR 7/2) very cobbly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable; few very fine and fine roots; few very fine tubular pores; about 25 percent gravel, 30 percent cobbles, and 3 percent stones; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.4).

Range in Characteristics

The particle-size control section averages 15 to 25 percent clay and 35 to 70 percent rock fragments.

Bk horizon: Chroma is 2 or 3. The texture is very cobbly loam or very cobbly sandy loam.

C horizon: Chroma is 2 or 3.

Duckree Series

The Duckree series consists of very deep, somewhat excessively drained, moderately rapidly permeable soils on the steep side slopes of deep drainageways and the escarpments of fan terraces. These soils formed in alluvium derived dominantly from quartzite and schist. Slopes are 20 to 50 percent. Elevation is 5,800 to 6,600 feet. The average annual precipitation is 12 to 14 inches, and the mean annual air temperature is 39 to 42 degrees F.

These soils are loamy-skeletal, mixed, frigid Xerollic Calciorthids.

Typical pedon of Duckree gravelly sandy loam, in an area of Raftriver-Duckree complex, 2 to 50 percent

slopes, about 6.5 miles north of Lynn, about 100 feet south and 800 feet west of the northeast corner of sec. 1, T. 14 N., R. 17 W.

A—0 to 4 inches; brown (10YR 5/3) gravelly sandy loam, dark brown (10YR 3/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; many very fine interstitial pores; about 15 percent gravel; very slightly effervescent; disseminated carbonates; moderately alkaline (pH 7.9); clear wavy boundary.

Bw—4 to 11 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure parting to weak very fine and fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; common very fine interstitial pores; about 20 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.2); gradual wavy boundary.

Bk1—11 to 21 inches; light gray (10YR 7/2) very gravelly sandy loam, pale brown (10YR 6/3) moist; weak medium platy structure; hard, firm, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; about 35 percent gravel and cobbles; strongly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rock fragments; strongly alkaline (pH 8.9); gradual wavy boundary.

Bk2—21 to 31 inches; very pale brown (10YR 7/3) very gravelly sandy loam, yellowish brown (10YR 5/1) moist; massive; hard, very firm, slightly sticky and slightly plastic; few very fine, fine, and medium roots; about 40 percent gravel and cobbles; strongly effervescent; disseminated carbonates and thin coatings of carbonates on rock fragments; very strongly alkaline (pH 9.2); gradual wavy boundary.

C—31 to 60 inches; very pale brown (10YR 7/3) very gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable; about 50 percent gravel and cobbles; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.1).

Range in Characteristics

The particle-size control section averages 11 to 18 percent clay and 40 to 60 percent rock fragments. The electrical conductivity is less than 2 millimhos per centimeter in the A horizon and is 2 to 16 millimhos per centimeter in the B horizon.

A horizon: Value is 3 or 4 moist. Chroma is 2 or 3. The horizon is very slightly effervescent or slightly effervescent.

Bw horizon: Value is 4 or 5 moist. Chroma is 3 or 4. The horizon is slightly effervescent or strongly effervescent.

Bk horizon: Value is 6 or 7 dry and 5 or 6 moist. Chroma is 2 to 4. Reaction is moderately alkaline to very strongly alkaline.

C horizon: Value is 6 or 7 dry and 4 or 5 moist. Chroma is 2 to 4. Reaction is moderately alkaline or strongly alkaline.

Dynal Series

The Dynal series consists of very deep, somewhat excessively drained, rapidly permeable soils on stable eolian dunes. These soils formed in eolian dunes composed mostly of oolitic sand. Slopes are 3 to 15 percent. Elevation is 4,200 to 4,300 feet. The average annual precipitation is 6 to 8 inches, and the mean annual air temperature is 48 to 52 degrees F.

These soils are carbonatic, mesic Typic Torripsamments.

Typical pedon of Dynal sand, in an area of Dynal-Playas association, 0 to 15 percent slopes, about 1.5 miles east of Little Pigeon Mountain, about 2,500 feet east and 500 feet north of the southwest corner of sec. 1, T. 6 N., R. 16 W.

A—0 to 5 inches; very pale brown (10YR 7/3) sand, pale brown (10YR 6/3) moist; single grain; loose; many very fine and few fine roots; violently effervescent; disseminated carbonates; strongly alkaline (pH 8.6); abrupt smooth boundary.

C1—5 to 8 inches; light gray (10YR 7/2) fine sand, pale brown (10YR 6/3) moist; single grain; loose; many very fine, few fine, and few medium roots; violently effervescent; disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

C2—8 to 17 inches; very pale brown (10YR 7/3) sand, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; slightly hard, very friable; many very fine and fine and common medium roots; common very fine and fine tubular pores; violently effervescent; disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.

C3—17 to 36 inches; very pale brown (10YR 7/3) sand, pale brown (10YR 6/3) moist; massive; soft, very friable; many very fine and fine and few medium roots; few very fine and fine tubular pores; violently effervescent; disseminated carbonates; strongly alkaline (pH 9.6); gradual smooth boundary.

C4—36 to 60 inches; very pale brown (10YR 7/3) sand, pale brown (10YR 6/3) moist; massive; loose; common very fine and fine roots; violently effervescent; disseminated carbonates; very strongly alkaline (pH 9.6).

Range in Characteristics

The particle-size control section averages 0 to 2 percent clay and 40 to 90 percent calcium carbonate equivalent. Oolitic sand is throughout the profile. The soils are sodium affected below a depth of 30 inches. The electrical conductivity is 2 to 8 millimhos per centimeter throughout the profile.

C horizon: Chroma is 2 or 3. The texture is sand or fine sand. Reaction is strongly alkaline or very strongly alkaline.

Eyre Family

The Eyre family consists of shallow, well drained, rapidly permeable soils on mountainsides and ridgetops. These soils formed in colluvium and residuum derived dominantly from quartzite. Slopes are 30 to 60 percent. Elevation is 6,300 to 8,300 feet. The average annual precipitation is 16 to 22 inches, and the mean annual air temperature is 38 to 42 degrees F.

These soils are loamy-skeletal, mixed Lithic Cryoborolls.

Reference profile of Eyre family very gravelly sandy loam, in an area of Bickmore-Eyre families-Rock outcrop association, 30 to 60 percent slopes, about 2,500 feet east and 1,000 feet south of the northwest corner of sec. 13, T. 11 N., R. 17 W.

A1—0 to 4 inches; brown (10YR 4/3) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine and very fine granular structure; soft, friable; many fine and very fine roots; many fine and very fine interstitial pores; about 50 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—4 to 8 inches; brown (10YR 4/3) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to weak fine granular; soft, friable; many fine and very fine roots; many fine and very fine interstitial pores; about 50 percent gravel; neutral (pH 7.2); clear smooth boundary.

C—8 to 10 inches; brown (10YR 4/3) extremely gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; single grain; loose; few fine and very fine roots; few fine and very fine interstitial pores; about 85 percent gravel; neutral (pH 7.3); abrupt wavy boundary.

R—10 inches; quartzite bedrock.

Range in Characteristics

Bedrock is at a depth of 10 to 20 inches. The mollic epipedon is 7 to 20 inches thick. The particle-size control section averages 5 to 15 percent clay and 35 to 85 percent rock fragments.

A and C horizons: Chroma is 2 or 3.

Fontreen Series

The Fontreen series consists of very deep, well drained, moderately rapidly permeable soils on hillsides and fan terraces. These soils formed in alluvium and colluvium derived dominantly from limestone and quartzite. Slopes are 3 to 30 percent. Elevation is 5,200 to 6,200 feet. The average annual precipitation is 12 to 14 inches, and the mean annual air temperature is 43 to 45 degrees F.

These soils are loamy-skeletal, carbonatic, frigid Aridic Calcixerolls.

Typical pedon of Fontreen gravelly loam, in an area of Fontreen-Phage association, 15 to 40 percent slopes, about 1 mile south of Ten Mile Creek, about 2,200 feet east and 1,900 feet north of the southwest corner of sec. 3, T. 13 N., R. 12 W.

A—0 to 8 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; few very fine interstitial pores; strongly effervescent (35 percent calcium carbonate); about 25 percent gravel and 5 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary.

Bk1—8 to 19 inches; very pale brown (10YR 8/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium and few coarse roots; many very fine and fine tubular pores; violently effervescent (45 percent calcium carbonate); about 40 percent gravel and 5 percent cobbles; moderately alkaline (pH 8.4); clear smooth boundary.

Bk2—19 to 31 inches; very pale brown (10YR 8/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, firm; few very fine, common fine and medium, and few coarse roots; violently effervescent (57 percent calcium carbonate); about 45 percent gravel and 5 percent cobbles; moderately alkaline (pH 8.4); clear smooth boundary.

C—31 to 60 inches; very pale brown (10YR 8/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and common fine roots; strongly effervescent (35 percent calcium carbonate);

about 40 percent gravel and 5 percent cobbles; moderately alkaline (pH 8.4).

Range in Characteristics

The mollic epipedon is 7 to 15 inches thick. The particle-size control section averages 35 to 60 percent rock fragments and 40 to 60 percent calcium carbonate equivalent. The content of clay ranges from 18 to 27 percent.

A horizon: The horizon is slightly effervescent or strongly effervescent.

Bk horizon: Value is 6 to 8 dry and 5 or 6 moist. Chroma is 2 to 4. Reaction is moderately alkaline or strongly alkaline.

Hades Series

The Hades series consists of deep, well drained, moderately slowly permeable soils on hillsides. These soils formed in alluvium and colluvium of varying composition and derived dominantly from extrusive igneous rocks and from sandstone and siltstone. Slopes are 5 to 30 percent. Elevation is 6,200 to 7,200 feet. The average annual precipitation is 16 to 18 inches, and the mean annual air temperature is 39 to 42 degrees F.

These soils are fine-loamy, mixed, frigid Pachic Argixerolls.

Typical pedon of Hades loam, in an area of Hades-Bearskin-Rock outcrop association, 5 to 30 percent slopes, about 3.3 miles west-southwest of Twin Peaks, about 1,400 feet west and 400 feet south of the northeast corner of sec. 28, T. 14 N., R. 18 W.

A1—0 to 3 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak thin and medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine and medium roots; common very fine interstitial pores; slightly acid (pH 6.2); clear smooth boundary.

A2—3 to 22 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure parting to weak very fine granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; common very fine interstitial and few fine tubular pores; slightly acid (pH 6.4); clear smooth boundary.

A3—22 to 25 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to weak very fine granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine interstitial and few fine tubular pores; very few thin clay films on faces of peds and few thin clay films in pores; few small mammal burrows; neutral (pH 7.0); gradual wavy boundary.

Bt—25 to 40 inches; light yellowish brown (10YR 6/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; common very fine tubular pores; common thin clay films on faces of peds and many thin clay films in pores; about 5 percent gravel and 5 percent cobbles; neutral (pH 7.2); gradual wavy boundary.

BC—40 to 57 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) massive; slightly hard, very friable; few very fine and fine roots; few very fine tubular pores; about 5 percent gravel; neutral (pH 7.3); gradual irregular boundary.

Cr—57 inches; weathered, finely bedded sandstone.

Range in Characteristics

The mollic epipedon is 20 to 36 inches thick. The particle-size control section averages 25 to 35 percent clay and 0 to 15 percent rock fragments. Some pedons do not have a BC horizon.

A horizon: Value is 4 or 5 dry and 2 or 3 moist. Chroma is 2 or 3. Reaction is neutral or slightly acid.

Hiko Peak Series

The Hiko Peak series consists of very deep, well drained, moderately rapidly permeable soils on lake terraced alluvial fans, hillsides, and fan terraces. These soils formed in alluvium derived dominantly from limestone, quartzite, and chert. Slopes are 1 to 25 percent. Elevation is 4,400 to 6,200 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 46 to 50 degrees F.

These soils are loamy-skeletal, mixed, mesic Xerollic Calciorthids.

Typical pedon of Hiko Peak gravelly loam, in an area of Hiko Peak-Taylorsflat-Skumpah association, 1 to 12 percent slopes, about 8 miles south of Curlew Junction, about 1,800 feet west and 400 feet north of the southeast corner of sec. 8, T. 13 N., R. 11 W.

A—0 to 4 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine vesicular pores; about 20 percent gravel; very slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bw—4 to 8 inches; pale brown (10YR 6/3) gravelly loam,

brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common very fine tubular pores; about 15 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

Bk1—8 to 21 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common very fine tubular pores; about 25 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bk2—21 to 30 inches; very pale brown (10YR 6/3) very gravelly sandy loam, brown (10YR 5/3) moist; single grain; loose; common very fine and fine roots; about 40 percent gravel and 15 percent cobbles; strongly effervescent; disseminated carbonates and coatings of carbonates on rock fragments; strongly alkaline (pH 8.6); clear smooth boundary.

Bk3—30 to 60 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; single grain; loose; few very fine and fine roots; about 40 percent gravel and 15 percent cobbles; strongly effervescent; disseminated carbonates and coatings of carbonates on rock fragments; moderately alkaline (pH 8.4).

Range in Characteristics

The particle-size control section averages 10 to 18 percent clay and 35 to 60 percent rock fragments. The depth to a calcic horizon is 7 to 15 inches. Some pedons do not have a Bw horizon.

A horizon: Value is 5 or 6 dry. Chroma is 2 or 3. The texture is gravelly loam or loam. The horizon is very slightly effervescent to strongly effervescent.

Bk horizon: Value is 6 or 7 dry and 4 or 5 moist. Chroma is 3 or 4. The texture is very gravelly sandy loam, gravelly loam, or loam. The horizon is slightly effervescent to violently effervescent. Reaction is moderately alkaline or strongly alkaline.

Hiko Springs Series

The Hiko Springs series consists of very deep, well drained, moderately rapidly permeable soils on lake terraced alluvial fans. These soils formed in alluvium derived dominantly from limestone and calcareous sandstone. Slopes are 1 to 6 percent. Elevation is 4,500 to 5,200 feet. The average annual precipitation is 6 to 8 inches, and the mean annual air temperature is 48 to 50 degrees F.

These soils are coarse-loamy, mixed, mesic Typic Calciorthids.

Typical pedon of Hiko Springs sandy loam, in an area of Hiko Springs-Okrist association, 1 to 8 percent slopes, about 2 miles east-northeast of the central high point (elevation 5,065 feet) of Red Dome, about 400 feet east and 2,100 feet north of the southwest corner of sec. 25, T. 10 N., R. 14 W.

A1—0 to 3 inches; light gray (10YR 7/2) sandy loam, brown (10YR 5/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine vesicular pores; about 10 percent gravel; slightly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rock fragments; strongly alkaline (pH 8.5); clear smooth boundary.

A2—3 to 13 inches; light gray (10YR 7/2) gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; common very fine interstitial pores; about 25 percent gravel; strongly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rock fragments; strongly alkaline (pH 8.8); gradual smooth boundary.

Bk1—13 to 35 inches; very pale brown (10YR 7/3) gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable; common very fine and fine and few medium roots; few very fine interstitial pores; about 25 percent gravel; strongly effervescent; disseminated carbonates and coatings of carbonates on all sides of rock fragments; strongly alkaline (pH 9.0); gradual smooth boundary.

Bk2—35 to 50 inches; very pale brown (10YR 7/3) gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable; common very fine and few fine roots; few very fine interstitial pores; about 25 percent gravel; strongly effervescent; disseminated carbonates and coatings of carbonates on all sides of rock fragments; strongly alkaline (pH 8.9); gradual smooth boundary.

Bk3—50 to 60 inches; very pale brown (10YR 7/3) gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; loose; few very fine roots; common very fine interstitial pores; about 25 percent gravel; strongly effervescent; disseminated carbonates and

coatings of carbonates on all sides of rock fragments; strongly alkaline (pH 8.8).

Range in Characteristics

The particle-size control section averages 10 to 18 percent clay and 15 to 35 percent rock fragments.

A horizon: Chroma is 2 to 4. The horizon is slightly effervescent or strongly effervescent.

Hoodle Series

The Hoodle series consists of very deep, well drained, moderately permeable soils on mountainsides. These soils formed in colluvium derived dominantly from mixed sedimentary rocks. Slopes are 20 to 50 percent. Elevation is 6,500 to 7,000 feet. The average annual precipitation is 18 to 22 inches, and the mean annual air temperature is 40 to 42 degrees F.

These soils are loamy-skeletal, mixed Argic Cryoborolls.

Typical pedon of Hoodle very gravelly loam, in an area of Skylick-Hoodle association, 15 to 50 percent slopes, about 3 miles south of Twin Peaks in Cotton Thomas Basin, about 2,400 feet east and 4,300 feet south of the northwest corner of sec. 33, T. 13 N., R. 17 W.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine and fine tubular pores; about 45 percent gravel; mildly alkaline (pH 7.6); gradual smooth boundary.

A2—5 to 12 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to moderate very fine and fine granular; soft, very friable, slightly sticky and plastic; common very fine and fine roots; common very fine tubular pores; about 20 percent gravel; very slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.8); abrupt smooth boundary.

Btk—12 to 26 inches; brown (10YR 5/3) very gravelly clay loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine roots; few very fine and fine pores; common moderately thick and thin clay films on faces of peds; about 40 percent gravel; very slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.0); gradual smooth boundary.

Bk—26 to 60 inches; very pale brown (10YR 7/3) very gravelly clay loam, pale brown (10YR 6/3) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; hard, friable, sticky and plastic; common very fine and fine tubular pores; about 45 percent gravel; strongly effervescent; thin coatings of carbonates around rocks and common medium irregularly shaped soft masses of carbonates; moderately alkaline (pH 8.4).

Range in Characteristics

The mollic epipedon is 10 to 15 inches thick. The particle-size control section averages 27 to 35 percent clay and 35 to 50 percent rock fragments.

A horizon: The horizon is noneffervescent or very slightly effervescent.

Hupp Series

The Hupp series consists of very deep, well drained, moderately rapidly permeable soils on fan terraces. These soils formed in mixed alluvium derived dominantly from quartzite, limestone, and mica schist. Slopes are 2 to 6 percent. Elevation is 5,500 to 6,000 feet. The average annual precipitation is 12 to 16 inches, and the mean annual air temperature is 45 to 49 degrees F.

These soils are loamy-skeletal, mixed, mesic Calcic Haploxerolls.

Typical pedon of Hupp loam, in an area of Collard, moist-Hupp complex, 2 to 10 percent slopes, about ½ mile west and 1 mile north of Rosette, about 120 feet west and 2,450 feet south of the northeast corner of sec. 22, T. 13 N., R. 14 W.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; 10 percent gravel; mildly alkaline (pH 7.6); clear wavy boundary.

A2—4 to 11 inches; brown (10YR 5/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; about 20 percent gravel and 1 percent cobbles; mildly alkaline (pH 7.6); clear wavy boundary.

Bw—11 to 26 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium angular blocky structure; slightly hard, firm, sticky and plastic; common very fine and fine roots; few very fine and fine tubular pores; about 35 percent gravel and 5 percent cobbles; slightly effervescent; disseminated carbonates; moderately alkaline (pH 7.9); clear wavy boundary.

Bk1—26 to 36 inches; light yellowish brown (10YR 6/4) extremely gravelly loam, grayish brown (10YR 5/2)

moist; moderate fine and medium subangular blocky structure; slightly hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; about 60 percent gravel and 10 percent cobbles; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.0); clear wavy boundary.

Bk2—36 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly loam, grayish brown (10YR 5/2) moist; massive; slightly hard, firm, slightly sticky and plastic; about 60 percent gravel and 10 percent cobbles; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.4).

Range in Characteristics

The particle-size control section averages 18 to 25 percent clay and 35 to 80 percent rock fragments.

A horizon: Value is 4 or 5 dry. Chroma is 2 or 3.

Bw and Bk horizons: Value is 4 or 5 moist. Chroma is 2 to 4. The horizons are slightly effervescent or strongly effervescent. The texture is very gravelly or extremely gravelly loam.

Jericho Series

The Jericho series consists of shallow, well drained, moderately rapidly permeable soils on the side slopes of dissected fan terraces. These soils formed in mixed alluvium derived dominantly from limestone, quartzite, and schist. Slopes are 5 to 40 percent. Elevation is 4,800 to 6,100 feet. The average annual precipitation is 6 to 12 inches, and the mean annual air temperature is 46 to 50 degrees F.

These soils are loamy-skeletal, mixed, mesic, shallow Xerollic Durorthids.

Typical pedon of Jericho gravelly loam, in an area of Acana-Jericho association, 3 to 10 percent slopes, about 3 miles northeast of Muddy Ranch, about 1,400 feet west and 50 feet north of the southeast corner of sec. 33, T. 12 N., R. 15 W.

A1—0 to 3 inches; light gray (10YR 7/2) gravelly loam, brown (10YR 5/3) moist; moderate very thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine and fine tubular pores; slightly effervescent; disseminated carbonates; about 25 percent gravel; moderately alkaline (pH 8.4); clear smooth boundary.

Bw—3 to 8 inches; very pale brown (10YR 7/3) gravelly fine sandy loam, yellowish brown (10YR 5/3) moist; moderate fine subangular blocky structure parting to weak very fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium and coarse roots; many very fine tubular pores; slightly effervescent; disseminated carbonates; about 25 percent gravel; moderately alkaline (pH 8.4); clear wavy boundary.

Bk—8 to 13 inches; white (10YR 8/2) very gravelly fine sandy loam, pale brown (10YR 6/3) moist; weak fine and medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common very fine and fine and few medium and coarse roots; common very fine tubular pores; slightly effervescent; disseminated carbonates; about 50 percent gravel and pan fragments; moderately alkaline (pH 8.4); gradual wavy boundary.

Bkq—13 to 17 inches; white (10YR 8/2) very gravelly fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, firm; common very fine and fine and few medium and coarse roots; few very fine tubular pores; slightly effervescent; coatings of carbonates and silica on the undersides of rock fragments and disseminated carbonates; about 50 percent gravel and pan fragments; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bkqm—17 inches; silica and carbonate indurated duripan.

Range in Characteristics

The duripan is at a depth of 14 to 20 inches. The particle-size control section averages 35 to 60 percent rock fragments and 10 to 18 percent clay.

Jughandle Family

The Jughandle family consists of very deep, well drained, moderately rapidly permeable soils on mountainsides. These soils formed in colluvium derived dominantly from mica schist and quartzite. Slopes are 15 to 45 percent. Elevation is 6,600 to 8,000 feet. The average annual precipitation is 16 to 22 inches, and the mean annual air temperature is 40 to 45 degrees F.

These soils are coarse-loamy, mixed Typic Cryochrepts.

Reference profile of Jughandle family gravelly sandy loam, in an area of Jughandle-Parkay families complex, 15 to 45 percent slopes, about 4 miles east and 1 mile north of Junction Valley School, in the southeast quarter of sec. 34, T. 14 N., R. 16 W.

A—0 to 5 inches; grayish brown (10YR 5/2) gravelly sandy loam, dark brown (10YR 3/3) moist; moderate very fine subangular blocky structure; slightly hard, friable; many very fine and fine roots; few very fine tubular pores; about 20 percent gravel; neutral (pH 7.1); clear smooth boundary.

B1—5 to 12 inches; pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to weak fine

granular; slightly hard, friable; many very fine and fine roots; few very fine tubular pores; about 20 percent gravel; neutral (pH 7.1); clear smooth boundary.

B2—12 to 28 inches; pale brown (10YR 6/3) gravelly sandy loam, light yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable; few very fine and fine roots; few very fine tubular pores; about 20 percent gravel; mildly alkaline (pH 7.4); gradual smooth boundary.

B3—28 to 42 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak coarse subangular blocky structure; slightly hard, friable; few very fine and fine roots; few very fine tubular pores; about 20 percent gravel; mildly alkaline (pH 7.4); gradual smooth boundary.

C—42 to 60 inches; light gray (10YR 7/2) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable; few very fine and fine roots; few very fine tubular pores; about 20 percent gravel; mildly alkaline (pH 7.5).

Range in Characteristics

The particle-size control section averages 10 to 18 percent clay and 0 to 35 percent rock fragments. Reaction is slightly acid to mildly alkaline.

B horizon: Chroma is 3 or 4.

Kapod Series

The Kapod series consists of very deep, well drained, moderately permeable soils on fan terraces. These soils formed in mixed alluvium derived dominantly from quartzite, sandstone, and limestone. Slopes are 6 to 10 percent. Elevation is 5,200 to 6,400 feet. The average annual precipitation is 14 to 16 inches, and the mean annual air temperature is 47 to 49 degrees F.

These soils are loamy-skeletal, mixed, mesic Calcic Argixerolls.

Typical pedon of Kapod cobbly loam, in an area of Kapod-Donnardo complex, 2 to 10 percent slopes, about 3 miles west and 1 mile north of Park Valley, about 800 feet east and 200 feet north of the southwest corner of sec. 19, T. 13 N., R. 13 W.

A1—0 to 6 inches; dark brown (10YR 3/3) cobbly loam, very dark brown (10YR 2/2) moist; moderate very fine and fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine tubular pores; about 20 percent cobbles and 10 percent gravel; neutral (pH 7.2); clear wavy boundary.

A2—6 to 16 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium and fine granular structure; soft, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; common very fine tubular pores; about 15 percent cobbles and 30 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bt1—16 to 24 inches; light brownish gray (10YR 6/2) very cobbly loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium angular blocky structure; slightly hard, firm, sticky and plastic; few very fine, fine, medium, and coarse roots; common very fine and fine tubular pores; few thin clay films on faces of peds and in pores; about 25 percent cobbles and 30 percent gravel; very slightly effervescent; disseminated carbonates; neutral (pH 7.2); clear smooth boundary.

Bt2—24 to 34 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 4/3) moist; moderate medium angular blocky structure; slightly hard, firm, sticky and plastic; few medium and coarse roots; common fine tubular pores; common thin clay films on faces of peds and in pores; about 20 percent cobbles and 35 percent gravel; slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.8); clear smooth boundary.

Bk—34 to 41 inches; very pale brown (10YR 7/3) extremely gravelly loam, light yellowish brown (10YR 6/4) moist; moderate medium angular blocky structure; slightly hard, firm, sticky and plastic; few medium roots; few fine and very fine tubular pores; about 20 percent cobbles and 50 percent gravel; strongly effervescent; veins of carbonates; moderately alkaline (pH 8.2); clear wavy boundary.

C—41 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, firm, slightly sticky and plastic; about 20 percent cobbles and 60 percent gravel; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.4).

Range in Characteristics

The particle-size control section averages 20 to 27 percent clay and 50 to 60 percent rock fragments. The mollic epipedon is 13 to 20 inches thick.

A horizon: Value is 3 to 5 dry and 2 or 3 moist. Chroma is 2 or 3.

Bt horizon: Chroma is 2 or 3. The horizon is very slightly effervescent or slightly effervescent. Reaction is neutral or mildly alkaline.

Bk and C horizons: The content of rock fragments is 60 to 80 percent.

Koosharem Series

The Koosharem series consists of very deep, well drained, moderately permeable soils on valley bottoms, alluvial fans, and low stream terraces. These soils formed in alluvium derived dominantly from quartzite, mica schist, and siltstone. Slopes are 0 to 5 percent. Elevation is 5,600 to 6,500 feet. The average annual precipitation is 12 to 14 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are fine-loamy, mixed, frigid Cumulic Haploxerolls.

Typical pedon of Koosharem silt loam, 0 to 2 percent slopes, about 1/8 mile north of Lynn Reservoir, about 2,000 feet south and 2,500 feet east of the northwest corner of sec. 18, T. 13 N., R. 16 W.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; very slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.4); clear smooth boundary.

A—5 to 24 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; strong very fine, fine, and medium granular structure; slightly hard, very friable, sticky and plastic; many very fine, common fine, and few medium roots; many very fine, common fine, and few medium and coarse tubular pores; very slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.6); clear wavy boundary.

C1—24 to 30 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure parting to weak fine subangular blocky; slightly hard, friable, sticky and plastic; common very fine and fine roots; many very fine and common fine tubular pores; very slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.8); clear wavy boundary.

C2—30 to 48 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; very slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.4); clear wavy boundary.

C3—48 to 60 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; very slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.4).

Range in Characteristics

The mollic epipedon is 20 to 35 inches thick. The content of clay in the particle-size control section averages 18 to 27 percent.

A horizon: Value is 4 or 5 dry and 2 or 3 moist. Chroma is 2 or 3. The horizon is noneffervescent or very slightly effervescent.

C horizon: Value is 5 or 6 dry and 3 or 4 moist. Chroma is 2 to 4. The texture is silt loam or loam.

Kunzler Series

The Kunzler series consists of very deep, well drained, moderately slowly permeable soils on the linear and concave parts of fan terraces. These soils formed in alluvium derived dominantly from sandstone and limestone. Slopes are 1 to 5 percent. Elevation is 4,800 to 5,300 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 48 to 51 degrees F.

These soils are coarse-loamy, mixed, mesic Durixerollic Calciorthids.

Typical pedon of Kunzler loam, in an area of Kunzler-Lembos association, 1 to 5 percent slopes, about 3 miles south of the Kunzler Ranch, about 900 feet west and 1,300 feet north of the southeast corner of sec. 31, T. 12 N., R. 14 W.

A1—0 to 4 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; many very fine vesicular pores; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

A2—4 to 11 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium and coarse roots; few very fine tubular pores; slightly effervescent; disseminated carbonates; strongly alkaline (pH 9.0); gradual smooth boundary.

Bq—11 to 16 inches; light gray (10YR 7/2) loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable; common very fine and fine and few medium and coarse roots; few very fine tubular pores; about 5 percent durinodes; slightly effervescent; disseminated carbonates; very strongly alkaline (pH 9.4); gradual smooth boundary.

Bkq1—16 to 25 inches; very pale brown (10YR 7/3) sandy loam, yellowish brown (10YR 5/4) moist; weak coarse subangular blocky structure; slightly hard, very friable;

common very fine and fine and few medium and coarse roots; few very fine tubular pores; about 15 percent durinodes; slightly effervescent; disseminated carbonates; very strongly alkaline (pH 9.4); gradual smooth boundary.

Bkq2—25 to 32 inches; very pale brown (10YR 7/3) fine sandy loam, yellowish brown (10YR 5/4) moist; weak medium and coarse subangular blocky structure; slightly hard, very friable; common very fine and fine roots; about 25 percent durinodes; slightly effervescent; strongly alkaline (pH 8.7); clear wavy boundary.

Bkq3—32 to 41 inches; pink (7.5YR 7/4) sandy loam, brown (7.5YR 5/4) moist; moderate thin platy structure; about 30 percent discontinuously cemented by silica; slightly hard, very friable; few very fine and fine roots; common very fine interstitial pores; slightly effervescent; common, soft to hard, medium cylindrical filaments of carbonates; moderately alkaline (pH 8.2); clear wavy boundary.

Bkq4—41 to 60 inches; light gray (10YR 7/2) loam, pale brown (10YR 6/3) moist; weak medium platy structure; about 30 percent discontinuously cemented by silica; slightly hard, very friable; few very fine and fine roots; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.1).

Range in Characteristics

The particle-size control section averages 10 to 18 percent clay and 0 to 15 percent rock fragments. The depth to a calcic horizon is 15 to 35 inches. The electrical conductivity is 1 to 4 millimhos per centimeter in the A horizon and is 4 to 16 millimhos per centimeter in the B horizon.

A horizon: Value is 5 or 6 dry. Chroma is 2 to 3. Reaction is moderately alkaline or strongly alkaline. The texture is loam or loamy sand.

B horizon: Hue is 7.5YR or 10YR. Value is 6 to 8 dry and 4 to 6 moist. Chroma is 2 to 4. The texture is loam, fine sandy loam, or sandy loam. The content of durinodes ranges from 0 to 30 percent and is 20 percent or more in some part of the horizon within a depth of 40 inches. About half of the durinodes are strongly cemented. Consistence ranges from very friable to firm. The exchangeable sodium percentage increases with increasing depth and is more than 40 in some part of the horizon.

Lembos Series

The Lembos series consists of moderately deep, well drained, moderately permeable soils on the linear and slightly convex parts of fan terraces. These soils formed in alluvium derived dominantly from sandstone and limestone. Slopes are 1 to 5 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 47 to 51 degrees F.

These soils are fine-loamy, mixed, mesic Xerollic Durargids.

Typical pedon of Lembos loam, in a area on Lembos-Taylorsflat complex, 1 to 6 percent slopes, about 2.5 miles south of Rosette, about 1,600 feet west and 1,700 feet north of the southeast corner of sec. 10, T. 12 N., R. 14 W.

A—0 to 4 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak thin platy structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine vesicular pores; very slightly effervescent; disseminated carbonates; about 5 percent gravel; moderately alkaline (pH 8.2); abrupt smooth boundary.

Bt—4 to 10 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common very fine tubular pores; common thin clay films on faces of peds; very slightly effervescent; disseminated carbonates; about 5 percent gravel; moderately alkaline (pH 8.4); clear smooth boundary.

Bkn—10 to 18 inches; very pale brown (10YR 7/3) loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores; slightly effervescent; visible soft powdery carbonates in the matrix; about 5 percent gravel; strongly alkaline (pH 8.6); abrupt smooth boundary.

Bkqn—18 to 23 inches; very pale brown (10YR 7/3) cobbly loam, pale brown (10YR 6/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; strongly effervescent; visible soft powdery carbonates in the matrix; common moderately thick silica coatings on the undersides of rock fragments; about 20 percent cobbles, 5 percent gravel, and 5 percent pan fragments; strongly alkaline (pH 8.8); abrupt wavy boundary.

Bkqm—23 inches; indurated duripan; laminar caps 1/4 to 1/2 inch thick; extremely hard; some root penetration from fractures more than 4 inches apart; strongly effervescent.

Range in Characteristics

The duripan is at a depth of 20 to 40 inches. The content of clay in the particle-size control section averages 18 to 27 percent. The exchangeable sodium percentage increases with increasing depth and is more

than 40 in some parts of the Bk or Bkq horizon. The electrical conductivity is 2 to 4 millimhos per centimeter in the A horizon and is 8 to 16 millimhos per centimeter in the B horizon.

A horizon: Value is 5 or 6 dry and 3 or 4 moist. Chroma is 2 or 3. The horizon is very slightly effervescent or slightly effervescent. Reaction is moderately alkaline or strongly alkaline.

Bt horizon: Value is 5 to 7 dry and 4 to 6 moist. Chroma is 3 or 4. The texture is loam or silt loam. The horizon is very slightly effervescent to strongly effervescent. Reaction is mildly alkaline to strongly alkaline.

Bkqn horizon: Value is 5 or 6 moist. Chroma is 3 or 4. The texture is cobbly or gravelly loam. The horizon contains 0 to 20 percent cobbles, 5 to 10 percent gravel, and 0 to 15 percent pan fragments. The combined content of rock fragments does not exceed 35 percent. Reaction is moderately alkaline to very strongly alkaline.

Lodar Series

The Lodar series consists of shallow, somewhat excessively drained, moderately permeable soils on hillsides and ridges. These soils formed in colluvium and alluvium derived dominantly from limestone and chert. Slopes are 5 to 60 percent. Elevation is 5,200 to 6,500 feet. The average annual precipitation is 12 to 14 inches, and the mean annual air temperature is 45 to 47 degrees F.

These soils are loamy-skeletal, carbonatic, mesic Lithic Calcixerolls.

Typical pedon of Lodar very gravelly loam, in an area of Lundy-Sonlet-Lodar very gravelly loams, 15 to 50 percent slopes, about 800 feet north and 1,200 feet west of the southeast corner of sec. 27, T. 7 N., R. 19 W.

A—0 to 8 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine and fine tubular pores; about 45 percent gravel; slightly effervescent (13 percent calcium carbonate); mildly alkaline (pH 7.6); clear smooth boundary.

Bk—8 to 15 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few coarse roots; many very fine and fine tubular pores; about 30 percent gravel and 10 percent cobbles; violently effervescent (50 percent calcium carbonate); moderately alkaline (pH 7.9); clear wavy boundary.

R—15 inches; fractured chert bedrock.

Range in Characteristics

The mollic epipedon is 7 to 10 inches thick. The particle-size control section averages 35 to 60 percent rock fragments and 40 to 65 percent calcium carbonate. The content of clay ranges from 18 to 27 percent. Bedrock is at a depth of 10 to 20 inches.

A horizon: Value is 2 or 3.

Lundy Series

The Lundy series consists of shallow, somewhat excessively drained, moderately permeable soils on hillsides and mountainsides. These soils formed in colluvium derived dominantly from limestone and chert. Slopes are 20 to 50 percent. Elevation is 6,000 to 7,000 feet. The average annual precipitation is 12 to 16 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, carbonatic, frigid Lithic Calcixerolls.

Typical pedon of Lundy very gravelly loam, in an area of Lundy-Sonlet-Lodar very gravelly loams, 15 to 50 percent slopes, about ½ mile north of Patterson Pass, about 100 feet south and 2,400 feet east of the northwest corner of sec. 34, T. 6 N., R. 19 W.

A—0 to 3 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine and fine interstitial pores; about 40 percent gravel; strongly effervescent (29 percent calcium carbonate); disseminated carbonates; mildly alkaline (pH 7.6); clear smooth boundary.

Bk1—3 to 15 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak medium and fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium and few coarse roots; many very fine and fine tubular pores; about 40 percent gravel and 10 percent cobbles; violently effervescent (45 percent calcium carbonate); disseminated carbonates; mildly alkaline (pH 7.6); clear wavy boundary.

Bk2—15 to 19 inches; brown (10YR 5/3) very cobbly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few medium and coarse roots; many very fine and fine tubular pores; about 50 percent cobbles; moderately thick silica coatings on rock fragments; violently effervescent (49 percent calcium carbonate); disseminated carbonates and moderately thick coatings of carbonates on rock fragments; mildly alkaline (pH 7.8); abrupt irregular boundary.

R—19 inches; fractured chert.

Range in Characteristics

The mollic epipedon is 8 to 15 inches thick. The particle-size control section averages 18 to 27 percent clay and 35 to 50 percent gravel and cobbles. Bedrock is at a depth of 10 to 20 inches. The calcium carbonate equivalent ranges from 40 to 60 percent in the particle-size control section.

A horizon: The horizon is slightly effervescent or strongly effervescent.

Bk horizon: Value is 3 or 4 moist. The texture is very gravelly or very cobbly loam.

Lynndyl Series

The Lynndyl series consists of very deep, somewhat excessively drained, rapidly permeable soils on the beach bars and lake terraces of ancient Lake Bonneville. These soils formed in mixed alluvium derived dominantly from sedimentary and igneous rocks. Slopes are 1 to 5 percent. Elevation is 4,200 to 4,400 feet. The average annual precipitation is 4 to 8 inches, and the mean annual air temperature is 45 to 51 degrees F.

These soils are sandy, mixed, mesic Typic Calciorthids.

Typical pedon of Lynndyl loamy sand, 1 to 5 percent slopes, about 1.5 miles east of Lucin, about 1,500 feet west and 500 feet north of the southeast corner of sec. 1, T. 7 N., R. 18 W.

A—0 to 5 inches; light gray (10YR 7/2) loamy sand, grayish brown (10YR 5/2) moist; weak thin platy structure; soft, very friable; many very fine and fine roots; many very fine vesicular pores; about 5 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

Bk—5 to 14 inches; light gray (10YR 7/2) loamy sand, brown (10YR 5/3) moist; weak coarse subangular blocky structure; soft, very friable; many very fine and fine and few coarse roots; many very fine and fine tubular pores; about 5 percent gravel; strongly effervescent; visible soft powdery accumulations of carbonates in the matrix and few fine veins of carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.

C—14 to 36 inches; light gray (10YR 7/2) loamy sand, brown (10YR 5/3) moist; massive; loose; common very fine roots; many very fine irregular pores; about 5 percent gravel; slightly effervescent; disseminated carbonates; very strongly alkaline (pH 9.4); abrupt smooth boundary.

2C— 36 to 40 inches; white (10YR 8/2) sandy loam, pale brown (10YR 6/3) moist; massive; soft, friable, slightly sticky and slightly plastic; slightly effervescent; disseminated carbonates; very strongly alkaline (pH 9.6); abrupt smooth boundary.

3Cy—40 to 60 inches; light gray (10YR 7/1) loamy sand, grayish brown (10YR 5/2) moist; single grain; loose; few very fine roots; common very fine interstitial pores; common fine filaments of gypsum; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.2).

Range in Characteristics

The depth to a calcic horizon is 3 to 6 inches. The content of clay in the particle-size control section averages 2 to 10 percent.

C and Cy horizons: Value is 7 or 8 dry and 5 or 6 moist. Chroma is 1 to 3. Reaction is moderately alkaline to very strongly alkaline.

Mellor Series

The Mellor series consists of very deep, well drained, slowly permeable soils on lake plains, fan terraces, and flood plains along ephemeral streams. These soils formed in alluvium derived dominantly from limestone and lacustrine sediments. Slopes are 0 to 6 percent. Elevation is 4,400 to 5,500 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 45 to 51 degrees F.

These soils are fine-silty, mixed, mesic Xerollic Natrargids.

Typical pedon of Mellor silt loam, in an area of Mellor-Pomat association, 0 to 3 percent slopes, about 3 miles south of Pilot Spring, about 2,500 feet south and 250 feet west of the northeast corner of sec. 36, T. 14 N., R. 11 W.

A—0 to 5 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine vesicular pores; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.8); abrupt smooth boundary.

Btn—5 to 13 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 5/3) moist; weak fine prismatic structure parting to moderate medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common very fine tubular pores; few thin clay films on faces of peds; slightly effervescent; disseminated carbonates; very strongly alkaline (pH 9.2); gradual smooth boundary.

Bk1—13 to 26 inches; very pale brown (10YR 7/3) silt

loam, pale brown (10YR 6/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; common very fine tubular pores; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

Bk2—26 to 38 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; few fine faint brown (7.5YR 5/4) mottles; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

Bk3—38 to 51 inches; light gray (10YR 7/2) silt loam, light brownish gray (10YR 6/2) moist; few fine faint brown (7.5YR 5/4) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.5); clear smooth boundary.

C—51 to 60 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/2) moist; massive; hard, firm, slightly sticky and slightly plastic; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.5).

Range in Characteristics

The content of clay in the particle-size control section averages 27 to 35 percent. Depth to a natric horizon is 4 to 9 inches. The electrical conductivity is 2 to more than 16 millimhos per centimeter throughout the profile.

A horizon: Value is 6 or 7 dry and 4 or 5 moist. Chroma is 2 or 3.

Btn horizon: Few or common, thin or moderately thick clay films are on faces of peds and lining pores.

Bk horizon: Chroma is 2 or 3. The texture is silty clay loam or silt loam. Reaction is strongly alkaline or very strongly alkaline.

C horizon: Value is 5 or 6 moist. Chroma is 2 or 3.

Nielsen Family

The Nielsen family consists of shallow, well drained, moderately slowly permeable soils on ridges and mountain shoulder slopes and in other convex mountainous areas. These soils formed in colluvium derived dominantly from quartzite and schist. Slopes are 5 to 60 percent. Elevation is 7,200 to 10,000 feet. The average annual precipitation is 16 to 22 inches, and the mean annual air temperature is 38 to 41 degrees F.

These soils are loamy-skeletal, mixed Argic Lithic Cryoborolls.

Reference profile of Nielsen family very gravelly loam, in an area of Nielsen-Bickmore families-Rock outcrop association, 20 to 60 percent slopes, about 3 miles southwest of Lynn Reservoir, about 1,100 feet east and 2,400 feet north of the southwest corner of sec. 2, T. 12 N., R. 17 W.

A1—0 to 2 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium platy structure; soft, friable, slightly sticky and plastic; common very fine and fine roots; many very fine and common fine vesicular pores; about 40 percent gravel and 15 percent cobbles; neutral (pH 6.6); abrupt smooth boundary.

A2—2 to 7 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; many very fine and fine tubular pores; about 30 percent gravel and 5 percent cobbles; neutral (pH 6.6); abrupt wavy boundary.

Bt—7 to 14 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate very fine angular blocky structure; slightly hard, firm, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; common thin clay films on faces of peds and in pores; about 35 percent gravel, 15 percent flagstones, and 2 percent stones; neutral (pH 6.8); abrupt wavy boundary.

R—14 inches; quartzite and schist bedrock.

Range in Characteristics

The depth to bedrock is 10 to 20 inches. The particle-size control section averages 35 to 65 percent rock fragments and 28 to 35 percent clay. The depth to an argillic horizon is 5 to 16 inches.

A horizon: Value is 3 to 5 dry and 2 or 3 moist. Chroma is 1 to 3. The texture is very gravelly loam, extremely stony loam, or loam.

Bt horizon: Value is 4 to 6 dry and 4 or 5 moist. Chroma is 4 to 6. The texture is extremely cobbly or very gravelly clay loam.

Okrist Series

The Okrist series consists of very deep, well drained, moderately permeable soils on lake terraced alluvial fans and fan terraces. These soils formed in sandy ancient beach deposits derived dominantly from mixed sedimentary rocks and granite. Slopes are 1 to 10 percent. Elevation is 4,500 to 5,200 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 47 to 51 degrees F.

These soils are sandy, mixed, mesic Durixerollic Calciorthids.

Typical pedon of Okrist gravelly sandy loam, in an area of Okrist-Okrist, thick surface complex, 1 to 10 percent slopes, about 1 mile northeast of Birch Canyon, about 700 feet north and 2,600 feet east of the southwest corner of sec. 31, T. 6 N., R. 18 W.

A1—0 to 3 inches; yellowish brown (10YR 5/4) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure; soft, very friable; common very fine and fine roots; common very fine and fine tubular pores; about 15 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.0); clear smooth boundary.

A2—3 to 8 inches; light yellowish brown (10YR 6/4) sandy loam, dark brown (10YR 4/3) moist; weak medium platy structure; soft, very friable; common very fine and fine roots; many very fine and fine tubular pores; about 10 percent gravel; moderately alkaline (pH 8.2); clear wavy boundary.

Bkq1—8 to 19 inches; light yellowish brown (10YR 6/4) loamy sand, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, firm; common very fine and fine roots; many very fine and common fine tubular pores; about 5 percent gravel and 5 percent durinodes; common thin silica coatings on faces of peds and the undersides of rock fragments; strongly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rock fragments; strongly alkaline (pH 8.6); clear wavy boundary.

Bkq2—19 to 30 inches; very pale brown (10YR 7/4) loamy sand, yellowish brown (10YR 5/4) moist; massive; hard, very firm; few very fine roots; common very fine and fine tubular pores; about 5 percent gravel; common thin silica coatings on the undersides of rocks; brittle matrix; strongly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rock fragments; strongly alkaline (pH 8.6); clear wavy boundary.

Bk—30 to 55 inches; light yellowish brown (10YR 6/4) sand, yellowish brown (10YR 5/4) moist; massive; soft, friable; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); gradual wavy boundary.

C—55 to 60 inches; very pale brown (10YR 7/3) sand, pale brown (10YR 6/3) moist; single grain; loose; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.8).

Range in Characteristics

The particle-size control section averages 2 to 10 percent clay and 0 to 30 percent rock fragments. The depth to a brittle layer is 10 to 24 inches.

A horizon: Value is 5 to 7 dry and 3 to 5 moist. Chroma is 2 to 4. The texture is gravelly sandy loam, sandy loam, or loamy sand. Reaction is mildly alkaline to strongly alkaline.

B horizon: Value is 6 or 7 dry. The texture is loamy sand, gravelly sand, or sand. The content of durinodes is 5 to 30 percent. About half of the durinodes are strongly cemented. Consistence ranges from friable to very firm and is firm and brittle in some part of the horizon where the content of durinodes is less than 20 percent. The horizon is slightly effervescent or strongly effervescent. Reaction is moderately alkaline or strongly alkaline.

C horizon: Value is 5 to 7 dry and moist. Chroma is 3 or 4. The texture is sand or gravelly sand. The horizon is slightly effervescent or strongly effervescent. Reaction is strongly alkaline or very strongly alkaline.

Overland Series

The Overland series consists of moderately deep, well drained, moderately permeable soils on hillsides and mountain shoulder slopes. These soils formed in colluvium and residuum derived dominantly from limestone. Slopes are 15 to 40 percent. Elevation is 6,000 to 7,000 feet. The average annual precipitation is 12 to 14 inches, and the mean annual air temperature is 43 to 45 degrees F.

These soils are loamy-skeletal, carbonatic, frigid Xerollic Calciorthids.

Typical pedon of Overland gravelly loam, in an area of Overland-Sonlet complex, 15 to 40 percent slopes, about 1.5 miles east of Standrod, about 1,800 feet south and 200 feet east of the northwest corner of sec. 31, T. 15 N., R. 13 W.

A1—0 to 4 inches; dark brown (10YR 3/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine and fine tubular pores; about 20 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

A2—4 to 10 inches; light brownish gray (10YR 6/2) gravelly loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure parting to weak fine granular; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine and fine tubular pores; about 20 percent gravel; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

Bk1—10 to 22 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; weak coarse prismatic structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots;

few very fine tubular pores; about 40 percent gravel; violently effervescent; disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

Bk2—22 to 28 inches; light gray (10YR 7/2) very gravelly loam, brown (10YR 5/3) moist; massive; slightly hard; friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; about 55 percent gravel; violently effervescent; disseminated carbonates; strongly alkaline (pH 8.8); abrupt wavy boundary.

R—28 inches; limestone bedrock.

Range in Characteristics

Bedrock is at a depth of 20 to 40 inches. The particle-size control section averages 18 to 25 percent clay, 40 to 65 percent rock fragments, and more than 40 percent calcium carbonate.

A horizon: Value is 3 to 6 dry and 3 or 4 moist. Chroma is 2 or 3. Reaction is moderately alkaline or strongly alkaline.

Bk horizon: Value is 6 or 7 dry. Chroma is 2 or 3.

Parkay Family

The Parkay family consists of very deep, well drained, moderately permeable soils on mountainsides. These soils formed in colluvium derived dominantly from quartzite, schist, and gneiss. Slopes are 5 to 60 percent. Elevation is 6,000 to 8,600 feet. The average annual precipitation is 16 to 22 inches, and the mean annual air temperature is 38 to 42 degrees F.

These soils are loamy-skeletal, mixed Argic Pachic Cryoborolls.

Reference profile of Parkay family gravelly loam, in an area of Parkay-Broad Canyon families association, 20 to 60 percent slopes, about 2 miles southeast of Devils Gate, about 1,700 feet west and 800 feet south of the northeast corner of sec. 25, T. 13 N., R. 18 W.

A1—0 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; about 25 percent gravel; slightly acid (pH 6.4); clear smooth boundary.

A2—4 to 19 inches; dark grayish brown (10YR 4/2) very gravelly loam, dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure parting to moderate very fine granular; soft, friable, slightly sticky and plastic; many very fine and fine and few medium roots; many very fine and fine and few medium pores; about 40 percent gravel; neutral (pH 6.8); diffuse smooth boundary.

Bt1—19 to 34 inches; yellowish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to moderate fine angular blocky; slightly hard, friable, sticky and plastic; common very fine and fine roots; many very fine and fine and few medium tubular pores; common thin and moderately thick clay films on faces of peds and in tubular pores; about 55 percent gravel; neutral (pH 6.8); gradual smooth boundary.

Bt2—34 to 60 inches; yellowish brown (10YR 5/4) extremely gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few fine roots; many very fine and fine and few medium pores; common moderately thick clay films on faces of peds and in pores; about 65 percent gravel; neutral (pH 7.0).

Range in Characteristics

The mollic epipedon is 17 to 47 inches thick. The particle-size control section averages 35 to 70 percent rock fragments and 18 to 35 percent clay. The depth to an argillic horizon is 9 to 24 inches.

A horizon: Value is 2 to 4 dry and 2 or 3 moist. Chroma is 1 to 3. Reaction is slightly acid or neutral.

Bt horizon: Hue is 7.5YR or 10YR. Value is 3 to 5 dry and 2 to 4 moist. Chroma is 2 to 4. The texture is very gravelly loam or extremely gravelly clay loam. The horizon is noneffervescent or slightly effervescent.

Phage Series

The Phage series consists of very deep, somewhat excessively drained, moderately rapidly permeable soils on fan terraces. These soils formed in alluvium and colluvium derived dominantly from limestone and quartzite. Slopes are 15 to 40 percent. Elevation is 5,300 to 6,000 feet. The average annual precipitation is 12 to 14 inches, and the mean annual air temperature is 45 to 47 degrees F.

These soils are loamy-skeletal, carbonatic, mesic Xerollic Calciorthids.

Typical pedon of Phage gravelly loam, in an area of Fontreen-Phage association, 15 to 40 percent slopes, about 1.5 miles south of Ten Mile Creek, about 1,700 feet west and 800 feet south of the northeast corner of sec. 10, T. 13 N., R. 12 W.

A—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and many fine roots; many very fine and fine interstitial pores; slightly effervescent (14 percent calcium carbonate); about 32 percent

gravel; moderately alkaline (pH 7.9); clear smooth boundary.

Bk1—4 to 10 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common coarse roots; many very fine and fine tubular pores; strongly effervescent (25 percent calcium carbonate); about 25 percent gravel; moderately alkaline (pH 8.2); clear smooth boundary.

Bk2—10 to 16 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium and few coarse roots; many very fine tubular pores; violently effervescent (50 percent calcium carbonate); about 55 percent gravel; moderately alkaline (pH 8.2); clear wavy boundary.

Bk3—16 to 23 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine tubular pores; violently effervescent (45 percent calcium carbonate); about 55 percent gravel; moderately alkaline (pH 8.2); gradual wavy boundary.

Bk4—23 to 60 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; strongly effervescent (35 percent calcium carbonate); about 60 percent gravel; moderately alkaline (pH 8.4).

Range in Characteristics

The particle-size control section averages 10 to 18 percent clay, 50 to 60 percent rock fragments, and 40 to 50 percent calcium carbonate equivalent.

Bk horizon: Value is 6 or 7 dry and 4 or 5 moist. The texture is gravelly loam, very gravelly loam, or very gravelly sandy loam.

Plegomir Series

The Plegomir series consists of shallow, well drained, moderately permeable soils on dissected hills and fan terraces. These soils formed in alluvium derived dominantly from limestone and sandstone and locally influenced by rhyolite and quartzite. Slopes are 3 to 8 percent. Elevation is 4,800 to 6,000 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 45 to 51 degrees F.

These soils are loamy, mixed, mesic, shallow Xerollic Durorthids.

Typical pedon of Plegomir gravelly loam, in an area of Tosser-Plegomir complex, 3 to 15 percent slopes, about 3 miles north of Highway 30, about 2 miles east of the Nevada State line, about 2,400 feet south and 1,900 feet west of the northeast corner of sec. 11, T. 9 N., R. 19 W.

A1—0 to 2 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium and thick platy structure; slightly hard, friable, sticky and plastic; common very fine and few fine roots; many very fine and fine vesicular and tubular pores; slightly effervescent; disseminated carbonates; about 15 percent gravel; moderately alkaline (pH 8.2); clear smooth boundary.

A2—2 to 5 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; moderate very fine, fine, and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine and fine tubular and interstitial pores; slightly effervescent; disseminated carbonates; about 10 percent gravel; moderately alkaline (pH 8.0); clear wavy boundary.

Bkq—5 to 13 inches; very pale brown (10YR 7/4) gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak medium and coarse subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; strongly effervescent; disseminated carbonates; about 20 percent gravel; coatings of silica and carbonates on all sides of rock fragments; some discontinuous weak silica and carbonate cementation; strongly alkaline (pH 8.6); clear irregular boundary.

Bkqm—13 inches; continuously indurated duripan; very thin discontinuous laminar cap; fractures more than 4 inches apart.

Range in Characteristics

The duripan is at a depth of 10 to 20 inches. The particle-size control section averages 12 to 25 percent clay and 5 to 30 percent gravel. Some pedons do not have a Bkq horizon.

A horizon: Value is 5 to 7 dry and 3 to 5 moist. Chroma is 2 or 3. The horizon is slightly effervescent or strongly effervescent.

Bkq horizon: Value is 4 to 6 moist. Chroma is 3 or 4. The texture is gravelly loam or gravelly sandy loam.

Bkqm horizon: The horizon is a weakly cemented to indurated duripan.

Pomat Series

The Pomat series consists of very deep, well drained, moderately slowly permeable soils on terraced lake

plains. These soils formed in mixed lacustrine sediments and alluvium derived dominantly from limestone and quartzite. Slopes are 1 to 3 percent. Elevation is 4,400 to 4,600 feet. The average annual precipitation is 10 to 12 inches, and the mean annual air temperature is 46 to 47 degrees F.

These soils are coarse-silty, mixed (calcareous), mesic Xeric Torriorthents.

Typical pedon of Pomat silt loam, in an area of Mellor-Pomat association, 0 to 3 percent slopes, about 5 miles south of Curlew Junction, about 1,200 feet north and 800 feet west of the southeast corner of sec. 35, T. 14 N., R. 11 W.

A1—0 to 5 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; few very fine vesicular pores; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); abrupt smooth boundary.

A2—5 to 10 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; common very fine tubular pores; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.

C1—10 to 22 inches; light gray (10YR 7/2) silt loam, pale brown (10YR 6/3) moist; moderate medium and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; strongly effervescent; disseminated carbonates; strongly alkaline (pH 9.0); abrupt smooth boundary.

C2—22 to 40 inches; light gray (10YR 7/2) silt loam, light brownish gray (10YR 6/2) moist; weak medium and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.9); gradual smooth boundary.

C3—40 to 52 inches; light gray (2.5Y 7/2) silt loam, light brownish gray (2.5Y 6/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); abrupt smooth boundary.

C4—52 to 60 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; few faint mottles; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; few fine sodium filaments; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.5).

Range in Characteristics

The content of clay in the particle-size control section averages 12 to 17 percent.

C horizon: Hue is 10YR or 2.5Y. Chroma is 2 or 3.

Promo Series

The Promo series consists of shallow, well drained, moderately rapidly permeable soils on hillsides. These soils formed in colluvium, alluvium, and residuum derived dominantly from limestone, calcareous sandstone, and siltstone. Slopes are 10 to 35 percent. Elevation is 5,000 to 6,000 feet. The average annual precipitation is 10 to 13 inches, and the mean annual air temperature is 45 to 48 degrees F.

These soils are loamy-skeletal, mixed (calcareous), mesic Lithic Xeric Torriorthents.

Typical pedon of Promo very gravelly loam, in an area of Promo-Puett complex, 10 to 35 percent slopes, about 2.3 miles southeast of the junction of Highway 30 and the road to Muddy Ranch, about 1,200 feet north and 100 feet west of the southeast corner of sec. 24, T. 11 N., R. 15 W.

A1—0 to 2 inches; light gray (10YR 7/2) very gravelly loam, brown (10YR 5/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine interstitial pores; about 45 percent gravel and 10 percent channers; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.1); clear smooth boundary.

A2—2 to 8 inches; very pale brown (10YR 7/3) very gravelly loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure parting to weak very fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; few very fine and fine tubular pores; about 40 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.2); clear wavy boundary.

C—8 to 13 inches; very pale brown (10YR 7/3) very gravelly loam, light yellowish brown (10YR 6/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; about 45 percent gravel; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); clear wavy boundary.

R—13 inches; somewhat fractured, hard, calcareous siltstone bedrock.

Range in Characteristics

Bedrock is at a depth of 10 to 20 inches. The particle-size control section averages 18 to 25 percent clay and 35 to 60 percent rock fragments.

A horizon: Chroma is 2 to 4.

Puett Series

The Puett series consists of shallow, well drained, moderately rapidly permeable soils on hillsides. These soils formed in colluvium and alluvium derived dominantly from weakly consolidated limestone and calcareous sandstone. Slopes are 5 to 35 percent. Elevation is 5,200 to 6,000 feet. The average annual precipitation is 8 to 10 inches, and the mean annual air temperature is 46 to 50 degrees F.

These soils are loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents.

Typical pedon of Puett gravelly loam, in an area of Promo-Puett complex, 10 to 35 percent slopes, north of Dove Creek Hills, 400 feet east of the northwest corner of sec. 30, T. 11 N., R. 14 W.

A1—0 to 2 inches; light brownish gray (10YR 6/2) gravelly loam, dark brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine interstitial pores; about 15 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

A2—2 to 5 inches; pale brown (10YR 6/3) sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure parting to weak very fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine and medium, and few coarse roots; common very fine interstitial pores; about 5 percent gravel; slightly effervescent; disseminated carbonates and coatings of carbonates on the undersides of rock fragments; strongly alkaline (pH 8.6); gradual smooth boundary.

C—5 to 12 inches; light gray (10YR 7/2) sandy loam, brown (10YR 5/3) moist; weak medium subangular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine and medium roots; about 12 percent gravel; strongly effervescent; disseminated carbonates and coatings of carbonates on the undersides of rock fragments; strongly alkaline (pH 8.7); gradual smooth boundary.

Cr—12 inches; soft fractured bedrock; few very fine and fine roots in fractures.

Range in Characteristics

Paralithic contact is at a depth of 10 to 20 inches. The content of rock fragments in the particle-size control section averages 5 to 15 percent.

A horizon: Chroma is 2 to 4. Reaction is moderately alkaline or strongly alkaline.

Bk horizon: Chroma is 2 or 3.

Raftriver Series

The Raftriver series consists of moderately deep, well drained, moderately permeable soils on fan terraces. These soils formed in alluvium and colluvium derived dominantly from quartzite, schist, and volcanic ash. Slopes are 2 to 20 percent. Elevation is 5,400 to 6,200 feet. The average annual precipitation is 12 to 16 inches, and the mean annual air temperature is 42 to 45 degrees F.

These soils are coarse-loamy, mixed, frigid Haploxerollic Durorthids.

Typical pedon of Raftriver loam, in an area of Raftriver-Duckree complex, 2 to 50 percent slopes, about 7 miles north of Lynn, about 1,600 feet north and 2,400 feet east of the southwest corner of sec. 36, T. 15 N., R. 17 W.

A—0 to 3 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; weak thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and few fine vesicular pores; about 5 percent gravel; mildly alkaline (pH 7.6); clear smooth boundary.

Bw—3 to 12 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to weak fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; few very fine interstitial and few very fine tubular pores; about 5 percent gravel; moderately alkaline (pH 8.0); gradual wavy boundary.

Bkq—12 to 24 inches; very pale brown (10YR 7/3) sandy loam, yellowish brown (10YR 5/4) moist; moderate thick platy structure parting to moderate fine angular blocky; very hard, very firm; few very fine and fine tubular pores; weakly cemented; slightly effervescent; disseminated carbonates and soft powdery masses of carbonates; moderately alkaline (pH 8.3); abrupt smooth boundary.

Bkqm—24 to 32 inches; very pale brown (10YR 7/3) weakly cemented duripan, yellowish brown (10YR 5/4) moist; massive; extremely hard, very firm; thin laminar cap; strongly effervescent; disseminated carbonates and visible masses of carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.

B′kq—32 to 60 inches; very pale brown (10YR 7/3) sandy

loam, yellowish brown (10YR 5/4) moist; massive; hard, firm and brittle; about 5 percent durinodes; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.6).

Range in Characteristics

The duripan is at a depth of 20 to 40 inches. The particle-size control section averages 10 to 18 percent clay and less than 15 percent rock fragments. Some pedons do not have a Bw horizon. Parts of the Bkq horizon are weakly cemented by silica and carbonates.

Bkqm horizon: The duripan is weakly cemented to strongly cemented, commonly has a thin laminar cap, and is massive or platy.

Ramshorn Family

The Ramshorn family consists of deep, well drained, moderately rapidly permeable soils on the eroded summits and shoulder slopes of low, rolling hills. These soils formed in residuum and alluvium derived dominantly from siltstone and limestone. Slopes are 8 to 25 percent. Elevation is 5,600 to 6,500 feet. The average annual precipitation is 13 to 16 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, carbonatic, frigid Xeric Torriorthents.

Reference profile of Ramshorn family very gravelly loam, in an area of Vicking-Ramshorn family association, 3 to 25 percent slopes, about 6 miles southeast of Meadow Creek Butte, about 700 feet north and 300 feet west of the southeast corner of sec. 33, T. 12 N., R. 18 W.

A—0 to 3 inches; light gray (5YR 7/2) very gravelly loam, pale olive (5YR 6/3) moist; moderate very thin platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine and common medium vesicular pores; about 40 percent gravel; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.2); abrupt smooth boundary.

C1—3 to 14 inches; very pale brown (10YR 7/3) very channery silt loam, very pale brown (10YR 7/3) moist; massive soil material between plates of platy rock structure; loose, slightly sticky and slightly plastic; many very fine and fine and few medium roots; about 50 percent siltstone channers; violently effervescent; disseminated carbonates; moderately alkaline (pH 8.2); abrupt wavy boundary.

C2—14 to 41 inches; light gray (5YR 7/2) extremely channery silt loam, light gray (5YR 7/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; about 80 percent siltstone channers; violently effervescent; disseminated carbonates; moderately alkaline (pH 8.2); clear wavy boundary.

Cr—41 inches; fractured siltstone bedrock.

Range in Characteristics

The soils are very slightly effervescent to violently effervescent throughout. The particle-size control section averages 60 to 80 percent channers and 18 to 27 percent clay. Paralithic contact is at a depth of 40 to 60 inches.

A horizon: Chroma is 2 or 3.

C horizon: Hue is 10YR to 5Y. Chroma is 2 or 3. The texture is very channery or extremely channery silt loam.

Reebok Series

The Reebok series consists of shallow, well drained, moderately permeable soils on fan terraces and hillsides. These soils formed in mixed alluvium derived dominantly from quartzite and limestone. Slopes are 2 to 20 percent. Elevation is 5,200 to 6,000 feet. The average annual precipitation is 12 to 14 inches, and the mean annual air temperature is 45 to 49 degrees F.

These soils are loamy-skeletal, mixed, mesic, shallow Aridic Petrocalcic Palexerolls.

Typical pedon of Reebok gravelly loam, in an area of Reebok-Puett association, 2 to 35 percent slopes, about 4 miles east and 1 mile north of the Park Valley cemetery, about 200 feet south and 1,200 feet east of the northwest corner of sec. 28, T. 13 N., R. 12 W.

A—0 to 7 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; about 15 percent gravel; slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.8); clear smooth boundary.

Bt—7 to 12 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; many very fine tubular pores; common thin clay films in pores; about 35 percent gravel; slightly effervescent; carbonates covering most rock fragments; moderately alkaline (pH 8.2); clear wavy boundary.

Btkq—12 to 16 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and medium and common fine roots; common fine and very fine tubular pores; few thin clay films in pores; about 45 percent gravel and 5 percent cobbles; strongly effervescent; carbonates covering all rock fragments; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bkqm—16 inches; indurated petrocalcic hardpan.

Range in Characteristics

Depth to the hardpan is 10 to 20 inches. The particle-size control section averages 18 to 27 percent clay and 35 to 60 percent rock fragments. The mollic epipedon is 7 to 11 inches thick.

Rexmont Series

The Rexmont series consists of shallow, somewhat excessively drained, moderately permeable soils on steep hillsides. These soils formed in colluvium derived dominantly from rhyolite and other extrusive igneous rocks. Slopes are 15 to 40 percent. Elevation is 5,400 to 7,000 feet. The average annual precipitation is 12 to 14 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, mixed, frigid Lithic Haploxerolls.

Typical pedon of Rexmont very stony loam, in an area of Rexmont-Shalper-Rock outcrop complex, 15 to 40 percent slopes, about 4.5 miles north of Toms Cabin Spring, about 200 feet south and 2,200 feet east of the northwest corner of sec. 14, T. 10 N., R. 19 W.

A1—0 to 2 inches; brown (10YR 4/3) very stony loam, dark brown (10YR 3/3) moist; weak medium and thin platy structure; soft, very friable, slightly plastic; common very fine and fine and few medium roots; many very fine and fine vesicular and common very fine and fine tubular pores; about 20 percent gravel, 8 percent cobbles, and 12 percent stones; mildly alkaline (pH 7.6); clear smooth boundary.

A2—2 to 6 inches; brown (10YR 4/3) very stony loam, dark brown (10YR 3/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine and few medium roots; many very fine and fine and common medium tubular pores; about 20 percent gravel, 15 percent stones, and 5 percent cobbles; mildly alkaline (pH 7.6); clear smooth boundary.

A3—6 to 12 inches; brown (10YR 4/3) extremely stony loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; few very fine and fine tubular pores; about 75 percent stones; mildly alkaline (pH 7.8); abrupt irregular boundary.

R—12 inches; fractured rhyolite.

Range in Characteristics

The mollic epipedon is 8 to 20 inches thick. The particle-size control section averages 12 to 22 percent clay and 35 to 80 percent rock fragments. Bedrock is at a depth of 10 to 20 inches.

Ridd Series

The Ridd series consists of moderately deep, well drained, moderately permeable soils on fan terraces. These soils formed in residuum, alluvium, and colluvium derived dominantly from quartzite and mica schist. Slopes are 5 to 20 percent. Elevation is 6,000 to 6,400 feet. The average annual precipitation is 14 to 16 inches, and the mean annual air temperature is 45 to 49 degrees F.

These soils are loamy-skeletal, mixed, mesic Typic Argixerolls.

Typical pedon of Ridd very cobbly loam, in an area of Ridd-Bullump complex, 3 to 20 percent slopes, about 2.5 miles west and 2.5 miles north of Rosette, about 2,500 feet south and 80 feet east of the northwest corner of sec. 16, T. 13 N., R. 14 W.

A1—0 to 6 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; about 25 percent cobbles and 15 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—6 to 13 inches; brown (10YR 4/3) very cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and plastic; few very fine and fine roots; few very fine tubular pores; about 10 percent cobbles and 25 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bt1—13 to 25 inches; brown (10YR 5/3) extremely gravelly loam, dark grayish brown (10YR 4/2) moist; moderate medium and fine subangular blocky structure; slightly hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; common thin clay films on faces of peds; about 20 percent cobbles and 50 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bt2—25 to 31 inches; yellowish brown (10YR 5/4) extremely gravelly loam, dark brown (10YR 4/3) moist; moderate medium angular blocky structure; slightly hard, firm, slightly sticky and plastic; few very fine roots; few very fine tubular pores; common thin clay films on faces of peds and in pores; about 20 percent cobbles and 55 percent gravel; neutral (pH 7.3); gradual wavy boundary.

C—31 to 38 inches; brownish yellow (2.5Y 6/6) extremely gravelly sandy loam, dark yellowish brown (2.5Y 4/6) moist; single grain; loose; about 70 percent gravel; neutral (pH 7.3); abrupt wavy boundary.

R—38 inches; mica schist bedrock.

Range in Characteristics

Bedrock is at a depth of 30 to 40 inches. The mollic epipedon is 10 to 20 inches thick. The particle-size control section averages 8 to 18 percent clay and 35 to 70 percent rock fragments.

A horizon: Chroma is 2 or 3.

Bt horizon: Chroma is 2 to 4.

Ridgecrest Family

The Ridgecrest family consists of very deep, well drained, moderately rapidly permeable soils on mountainsides. These soils formed in colluvium derived dominantly from chert, limestone, and mudstone. Slopes are 30 to 60 percent. Elevation is 6,200 to 7,800 feet. The average annual precipitation is 16 to 22 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, carbonatic, frigid Calcic Haploxerolls.

Reference profile of Ridgecrest family very gravelly loam, in an area of Ridgecrest-Bickmore families association, 30 to 60 percent slopes, about 4 miles north of Etna Reservoir, about 2,500 feet north and 3,800 feet west of the southeast corner of sec. 8, T. 12 N., R. 18 W.

A—0 to 3 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and fine vesicular pores; about 55 percent gravel; very slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.0); clear wavy boundary.

ABk—3 to 9 inches; brown (10YR 5/3) extremely gravelly loam, dark brown (10YR 3/3) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular and interstitial pores; about 65 percent gravel; strongly effervescent; disseminated carbonates and thick pendants of carbonates on rock fragments; moderately alkaline (pH 8.4); clear wavy boundary.

Bkq1—9 to 25 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; single grain; slightly hard, very friable, slightly plastic; common fine roots; common very fine and fine interstitial pores; about 70 percent coarse gravel; common silica pendants on the undersides of rocks; strongly effervescent; disseminated carbonates and thick pendants and coatings of carbonates; strongly alkaline (pH 8.8); clear wavy boundary.

Bkq2—25 to 60 inches; very pale brown (10YR 7/4) extremely cobbly sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, slightly plastic; few very fine roots; about 20 percent gravel and 60 percent cobbles; common silica pendants on the undersides of rock fragments; strongly effervescent; disseminated carbonates and thick pendants and coatings of carbonates; strongly alkaline (pH 8.8).

Range in Characteristics

Depth to a calcic horizon is 7 to 9 inches. The mollic epipedon is 7 to 9 inches thick. The particle-size control section averages 12 to 20 percent clay, 65 to 85 percent rock fragments, and more than 40 percent calcium carbonate equivalent.

A horizon: Chroma is 2 or 3. The horizon is very slightly effervescent to strongly effervescent.

Bkq horizon: Hue is 7.5YR or 10YR. Value is 6 or 7 dry and 4 to 7 moist. Chroma is 3 to 6. The texture is extremely gravelly or extremely cobbly sandy loam. Reaction is moderately alkaline or strongly alkaline.

Rodrof Series

The Rodrof series consists of shallow, well drained, moderately permeable soils on hillsides and foot slopes. These soils formed in alluvium and colluvium derived dominantly from chert, limestone, and quartzite. Slopes are 5 to 40 percent. Elevation is 6,000 to 6,600 feet. The average annual precipitation is 12 to 16 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, mixed, frigid, shallow Orthidic Durixerolls.

Typical pedon of Rodrof extremely gravelly loam, 10 to 40 percent slopes, about 2 miles west of Meadow Creek Butte, about 1,500 feet north and 2,000 feet east of the southwest corner of sec. 10, T. 13 N., R. 19 W.

A1—0 to 2 inches; brown (10YR 5/3) extremely gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine vesicular pores; about 70 percent gravel; very slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.0); abrupt smooth boundary.

A2—2 to 10 inches; brown (10YR 5/3) extremely gravelly loam, dark brown 10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; about 70 percent gravel and 10 percent cobbles; very slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.0); clear smooth boundary.

Bk—10 to 19 inches; pale brown (10YR 6/3) extremely gravelly loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly

hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and few fine tubular pores; about 60 percent gravel and 10 percent cobbles; slightly effervescent; disseminated carbonates and very thick coatings of carbonates on the undersides of rock fragments; moderately alkaline (pH 8.0); gradual wavy boundary.

Bkqm—19 inches; indurated duripan; massive; extremely hard, extremely firm; about 70 percent gravel; carbonate and silica cemented hardpan; common moderately thick silica pendants; violently effervescent; disseminated carbonates.

Range in Characteristics

The mollic epipedon is 7 to 15 inches thick. The particle-size control section is 45 to 80 percent gravel and cobbles and 18 to 27 percent clay. The duripan is at a depth of 10 to 20 inches.

A horizon: Value is 3 to 5 dry and 2 or 3 moist. Chroma is 2 or 3. Reaction is mildly alkaline or moderately alkaline. The texture is gravelly or extremely gravelly loam.

Bk horizon: Value is 5 to 8 dry and 3 to 6 moist. Chroma is 2 to 4. Reaction is mildly alkaline or moderately alkaline.

Saltair Series

The Saltair series consists of very deep, poorly drained, slowly permeable soils on lake plains. These soils formed in lacustrine sediments derived dominantly from limestone and quartzite. They are saturated within a depth of 40 inches during most of the year. Slopes are 0 to 2 percent. Elevation is 4,210 to 4,230 feet. The average annual precipitation is 6 to 8 inches, and the mean annual air temperature is 47 to 52 degrees F.

These soils are fine-silty, mixed, mesic Typic Salorthids.

Typical pedon of Saltair silt loam, in an area of Saltair-Playas association, 0 to 2 percent slopes, about 3.5 miles northeast of the Kelton Historical Site, about 1,900 feet south and 40 feet east of the northwest corner of sec. 24, T. 12 N., R. 11 W.

Az—0 to 6 inches; light gray (2.5Y 7/2) silt loam, grayish brown (2.5Y 4/2) moist; moderate fine granular structure; soft, friable, sticky and plastic; many very fine vesicular pores; strongly saline; strongly effervescent; disseminated carbonates; moderately alkaline (pH 7.8); clear smooth boundary.

Cz1—6 to 21 inches; light gray (2.5Y 7/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; few fine distinct dark yellowish brown (10YR 3/4) mottles; strong coarse angular blocky structure; slightly hard, firm, sticky and plastic; few very fine, few medium, and few coarse roots; many very fine tubular pores; strongly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.

Cz2—21 to 31 inches; light gray (2.5Y 7/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; few fine distinct dark yellowish brown (10YR 3/4) mottles; strong coarse angular blocky structure; hard, firm, sticky and plastic; many very fine and common fine tubular pores; strongly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.

Cz3—31 to 43 inches; light gray (2.5Y 7/2) silty clay loam, light brownish gray (2.5Y 6/2) moist; common fine distinct dark yellowish brown (10YR 3/4) mottles; moderate medium platy structure; hard, firm, sticky and plastic; strongly saline; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); gradual smooth boundary.

Cz4—43 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam, grayish brown (2.5Y 5/2) moist; common fine distinct light yellowish brown (10YR 6/4) mottles; massive; hard, firm, sticky and plastic; strongly saline; very slightly effervescent; disseminated carbonates; moderately alkaline (pH 7.9).

Range in Characteristics

In most pedons a thin layer of salt is on the surface. The particle-size control section averages 20 to 35 percent clay and is strongly saline. The electrical conductivity is more than 16 millimhos per centimeter throughout the profile.

C horizon: Value is 6 or 7 dry and 5 or 6 moist. The horizon is very slightly effervescent to strongly effervescent. Reaction is moderately alkaline or strongly alkaline.

Saxby Series

The Saxby series consists of shallow, well drained, moderately permeable soils on hillsides and ridges in areas of ancient basalt flows. These soils formed in colluvium and residuum derived dominantly from basalt. Slopes are 10 to 50 percent. Elevation is 4,500 to 5,500 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 47 to 51 degrees F.

These soils are loamy-skeletal, mixed, mesic Lithic Xerollic Calciorthids.

Typical pedon of Saxby extremely bouldery silt loam, in an area of Saxby-Rock outcrop complex, 10 to 50 percent slopes, about 4 miles northwest of Kelton, about 1,600

feet east and 800 feet south of the northwest corner of sec. 1, T. 12 N., R. 12 W.

A—0 to 3 inches; pale brown (10YR 6/3) extremely bouldery silt loam, brown (10YR 4/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine pores; about 40 percent boulders, 20 percent stones, and 20 percent gravel; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); abrupt irregular boundary.

Bw—3 to 9 inches; pale brown (10YR 6/3) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; common very fine pores; about 40 percent cobbles, 10 percent stones, and 25 percent gravel; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); clear irregular boundary.

Bk—9 to 16 inches; pale brown (10YR 6/3) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; many very fine, common fine, and common medium roots; few very fine pores; about 40 percent cobbles, 20 percent stones, and 20 percent gravel; strongly effervescent; disseminated carbonates and coatings of carbonates on the undersides of rock fragments; strongly alkaline (pH 8.6); abrupt irregular boundary.

R—16 inches; fractured basalt.

Range in Characteristics

The particle-size control section averages 35 to 80 percent rock fragments and 15 to 18 percent clay. Depth to a calcic horizon is 11 to 15 inches. Bedrock is at a depth of 10 to 20 inches.

Bw horizon: Chroma is 3 or 4.

Bk horizon: Chroma is 2 to 4.

Scalade Series

The Scalade series consists of shallow, well drained, moderately permeable soils on dissected pediments and hillsides. These soils formed in alluvium derived dominantly from granite, limestone, and quartzite. Slopes are 3 to 30 percent. Elevation is 4,800 to 5,500 feet. The average annual precipitation is 10 to 12 inches, and the mean annual air temperature is 45 to 47 degrees F.

These soils are loamy, mixed, mesic, shallow Haploxerollic Durorthids.

Typical pedon of Scalade gravelly sandy loam, in an area of Scalade-Lodar association, 3 to 25 percent slopes, about 3 miles north of Birch Canyon, about 1,800 feet north and 1,300 feet west of the southeast corner of sec. 13, T. 6 N., R. 19 W.

A—0 to 3 inches; brown (10YR 5/3) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium and thin platy structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine vesicular and many very fine and fine tubular pores; about 20 percent gravel; very slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.8); clear smooth boundary.

Bw—3 to 11 inches; pale brown (10YR 6/3) loam, dark grayish brown (10YR 4/2) moist; moderate medium and coarse prismatic structure parting to moderate very fine subangular blocky; soft, friable, sticky and slightly plastic; common very fine and fine and common medium and coarse roots; many very fine and fine tubular pores; about 10 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.0); clear wavy boundary.

Bkq—11 to 18 inches; light yellowish brown (10YR 6/4) fine sandy loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, firm, slightly sticky and slightly plastic; few very fine, fine, and medium roots; many very fine and fine tubular pores; weak discontinuous silica cementation; silica coatings on rock fragments; about 10 percent gravel; strongly effervescent; soft masses and coatings of visible carbonates on rock fragments; strongly alkaline (pH 8.6); clear wavy boundary.

Bkqm—18 to 23 inches; strongly cemented duripan; extremely hard; clear smooth boundary.

2Bkq—23 to 45 inches; very pale brown (10YR 7/3) gravelly sandy loam, very pale brown (10YR 7/4) moist; weakly cemented; massive; hard, firm; few very fine and fine roots; common very fine and fine tubular pores; weak continuous silica cementation; silica coatings on rock fragments; about 15 percent strongly cemented durinodes; about 25 percent gravel; strongly effervescent; soft masses and coatings of visible carbonates on rock fragments; strongly alkaline (pH 9.0); clear irregular boundary.

2C—45 to 60 inches; very pale brown (10YR 7/4) gravelly sand, brown (10YR 5/3) moist; massive; slightly hard, very friable; few very fine roots; about 20 percent gravel; very slightly effervescent in the soil matrix; common thin veins and coatings of carbonates on rock fragments; moderately alkaline (pH 8.0).

Range in Characteristics

The particle-size control section averages 0 to 15 percent gravel and 10 to 18 percent clay. The duripan is at a depth of 10 to 20 inches. Reaction is mildly alkaline to

strongly alkaline above the pan and moderately alkaline or strongly alkaline below the pan.

A horizon: Chroma is 2 or 3.

B horizon: Chroma is 2 to 4.

Shalper Series

The Shalper series consists of very shallow and shallow, well drained, moderately slowly permeable soils on hillsides and hilltops. These soils formed in residuum and colluvium derived dominantly from rhyolite. Slopes are 15 to 40 percent. Elevation is 5,400 to 7,000 feet. The average annual precipitation is 10 to 14 inches, and the mean annual air temperature is 43 to 45 degrees F.

These soils are loamy-skeletal, mixed, frigid Lithic Argixerolls.

Typical pedon of Shalper very gravelly loam, in an area of Rexmont-Shalper-Rock outcrop complex, 15 to 40 percent slopes, about 2 miles southwest of Etna, about 100 feet north and 2,400 feet east of the southwest corner of sec. 3, T. 10 N., R. 19 W.

A—0 to 2 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure; soft, very friable, slightly plastic; common very fine roots; many very fine and fine tubular pores; about 55 percent gravel; neutral (pH 7.3); clear smooth boundary.

Bt1—2 to 5 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; weak and moderate fine subangular blocky structure parting to moderate very fine granular; soft, friable, slightly sticky and plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; about 40 percent gravel; neutral (pH 7.3); clear wavy boundary.

Bt2—5 to 7 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure parting to moderate very fine granular; slightly hard, friable, slightly sticky and plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; about 40 percent gravel; neutral (pH 7.3); abrupt irregular boundary.

R—7 inches; fractured rhyolite bedrock.

Range in Characteristics

The mollic epipedon is 4 to 12 inches thick. The particle-size control section averages 18 to 28 percent clay and 35 to 60 percent rock fragments. Bedrock is at a depth of 4 to 12 inches.

A horizon: Chroma is 2 or 3.

Sheeprock Series

The Sheeprock series consists of very deep, somewhat excessively drained, rapidly permeable soils on gently sloping hillsides and foot slopes. These soils formed in coarse textured alluvium derived dominantly from igneous rocks. Slopes are 8 to 25 percent. Elevation is 4,550 to 4,800 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 47 to 50 degrees F.

These soils are sandy-skeletal, mixed, mesic Xeric Torriorthents.

Typical pedon of Sheeprock loamy fine sand, in an area of Hiko Peak-Sheeprock-Rock outcrop association, 3 to 25 percent slopes, about 8.5 miles south of Curlew Junction, about 2,500 feet north and 600 feet east of the southwest corner of sec. 24, T. 13 N., R. 11 W.

A—0 to 3 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable; many very fine and fine roots; weak very fine vesicular pores; about 10 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.2); abrupt smooth boundary.

C1—3 to 12 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 5/3) moist; weak fine granular structure; soft, very friable; many very fine and fine and few medium roots; about 15 percent gravel; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C2—12 to 24 inches; pale brown (10YR 6/3) very cobbly loamy sand, brown (10YR 5/3) moist; massive; loose, very friable; many very fine and fine and few medium roots; about 20 percent gravel and 15 percent cobbles; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

C3—24 to 39 inches; pale brown (10YR 6/3) very gravelly fine sand, brown (10YR 5/3) moist; single grain; loose, very friable; common very fine and fine roots; about 30 percent gravel and 10 percent cobbles; strongly effervescent; disseminated carbonates; strongly alkaline (pH 9.0); clear smooth boundary.

C4—39 to 60 inches; pale brown (10YR 6/3) very gravelly sand, brown (10YR 5/3) moist; single grain; loose; few very fine roots; about 40 percent gravel and 15 percent cobbles; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.6).

Range in Characteristics

The particle-size control section averages 5 to 15 percent clay and 35 to 55 percent gravel and cobbles.

A horizon: Value is 4 or 5 moist. The horizon is slightly effervescent or strongly effervescent.

C horizon: The texture is gravelly sandy loam, very gravelly sand, very gravelly fine sand, or very cobbly loamy sand.

Sitar Series

The Sitar series consists of very deep, well drained, moderately permeable soils on fan terraces. These soils formed in alluvium derived dominantly from limestone. Slopes are 3 to 15 percent. Elevation is 4,300 to 5,200 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 45 to 51 degrees F.

These soils are loamy-skeletal, mixed, mesic Xerollic Calciorthids.

Typical pedon of Sitar silt loam, in an area of Tosser-Sitar association, 3 to 15 percent slopes, about 20 miles southwest of Kelton, about 1,600 feet west and 1,200 feet north of the southeast corner of sec. 30, T. 9 N., R. 11 W.

A—0 to 3 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine vesicular pores; about 10 percent gravel; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.5); abrupt smooth boundary.

Bw—3 to 8 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine and medium roots; many very fine and few fine tubular pores; about 10 percent gravel; strongly effervescent; disseminated carbonates; strongly alkaline (pH 9.0); clear smooth boundary.

Bk1—8 to 14 inches; pale brown (10YR 6/3) very gravelly silt loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine tubular pores; about 40 percent gravel; violently effervescent; moderately thick coatings of carbonates on rock fragments; very strongly alkaline (pH 9.4); clear smooth boundary.

Bk2—14 to 29 inches; very pale brown (10YR 7/3) very gravelly silt loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine and common fine tubular pores; about 40 percent gravel; strongly effervescent; moderately thick coatings of carbonates on rock fragments; very strongly alkaline (pH 9.2); clear wavy boundary.

Ck—29 to 60 inches; pale brown (10YR 6/3) very gravelly very fine sandy loam, pale brown (10YR 6/3) moist; weak fine subangular blocky structure; slightly hard, friable; few very fine roots; few very fine tubular pores; about 50 percent gravel; strongly effervescent; thin coatings of carbonates on rock fragments; strongly alkaline (pH 9.0).

Range in Characteristics

The particle-size control section averages 8 to 18 percent clay and 35 to 60 percent gravel. Depth to a calcic horizon is 2 to 12 inches. Some pedons do not have a Bw horizon.

A horizon: Chroma is 2 or 3. The horizon is very slightly effervescent or slightly effervescent.

Bk horizon: Value is 6 or 7 dry and 4 or 5 moist. Chroma is 2 to 4. The horizon is strongly effervescent or violently effervescent.

C horizon: Value is 6 or 7 dry and 4 to 6 moist. Chroma is 2 to 4.

Skumpah Series

The Skumpah series consists of very deep, well drained, moderately slowly permeable soils on lake plains and low lake terraces. These soils formed in lacustrine sediments and alluvium derived dominantly from limestone and quartzite. Slopes are 1 to 3 percent. Elevation is 4,200 to 5,000 feet. The average annual precipitation is 4 to 8 inches, and the mean annual air temperature is 45 to 49 degrees F.

These soils are fine-silty, mixed, mesic Typic Natrargids.

Typical pedon of Skumpah silt loam, in an area of Skumpah-Skumpah, sodic-Swingler association, 1 to 3 percent slopes, about 3 miles southeast of Peplin Pond, about 1,300 feet west and 1,900 feet north of the southeast corner of sec. 1, T. 10 N., R. 12 W.

A—0 to 3 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, firm, sticky and plastic; few very fine roots; many very fine vesicular pores; very slightly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 9.0); clear smooth boundary.

Btn—3 to 9 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky and plastic; common very fine and few fine roots; many very fine tubular pores; common thin clay films on faces of peds and lining pores; moderately saline; strongly effervescent; disseminated carbonates; very strongly alkaline (pH 9.4); clear smooth boundary.

C1—9 to 23 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 5/3) moist; massive; slightly hard, firm, sticky and plastic; few very fine and fine roots; many very fine tubular pores; strongly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.

C2—23 to 35 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; massive; slightly hard, firm, sticky and plastic; few very fine roots; few very fine tubular pores; strongly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.

Cy1—35 to 51 inches; light gray (10YR 7/2) silty clay loam, brown (10YR 4/3) moist; few fine distinct yellowish red (5YR 4/6) mottles; moderate medium angular blocky structure; hard, very firm, sticky and plastic; common very fine tubular pores; common fine veins of gypsum; about 5 percent gravel; strongly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.

Cy2—51 to 60 inches; light gray (10YR 7/2) silty clay loam, grayish brown (10YR 5/2) moist; few fine distinct yellowish red (5YR 4/6) mottles; moderate medium angular blocky structure; hard, very firm, sticky and plastic; common thin filaments of gypsum; strongly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.8).

Range in Characteristics

The content of clay in the particle-size control section averages 27 to 35 percent. Depth to a natric horizon is 3 to 5 inches.

A horizon: Value is 4 or 5 moist. Chroma is 2 or 3.

Btn horizon: Value is 6 or 7 dry. Chroma is 2 to 4. The electrical conductivity of the saturation extract is 4 to 24 millimhos per centimeter.

C horizon: Hue is 10YR or 2.5Y. Value is 4 or 5 moist. Chroma is 2 or 3. The texture is silt loam or silty clay loam. The electrical conductivity of the saturation extract is 16 to more than 40 millimhos per centimeter.

Skylick Series

The Skylick series consists of very deep, well drained, moderately slowly permeable soils on mountainsides and hillsides. These soils formed in colluvium derived dominantly from mixed sedimentary rocks. Slopes are 15 to 40 percent. Elevation is 6,400 to 7,000 feet. The average annual precipitation is 16 to 22 inches, and the mean annual air temperature is 38 to 42 degrees F.

These soils are fine-loamy, mixed Cryic Pachic Paleborolls.

Typical pedon of Skylick loam, in an area of Skylick-Hoodle association, 15 to 50 percent slopes, about 3 miles southeast of Twin Peaks, about 1,600 feet north and 1,700 feet east of the southwest corner of sec. 32, T. 14 N., R. 17 W.

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and plastic; many very fine and fine roots; common very fine and fine tubular pores; about 5 percent gravel; neutral (pH 7.0); clear smooth boundary.

A2—5 to 19 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate fine, medium, and coarse subangular blocky structure parting to weak fine and medium granular; slightly hard, friable, slightly sticky and plastic; common very fine and fine and few medium roots; many very fine and fine tubular pores; about 5 percent gravel; neutral (pH 7.2); gradual smooth boundary.

A3—19 to 25 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; strong medium and coarse subangular blocky structure parting to weak fine granular; slightly hard, firm, sticky and plastic; common very fine roots; common very fine tubular pores; about 5 percent gravel; mildly alkaline (pH 7.4); clear smooth boundary.

Bt1—25 to 38 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to strong fine and medium subangular blocky; hard, very firm, sticky and plastic; few fine roots; few fine and medium pores; common thin and moderately thick clay films on faces of peds; about 5 percent gravel; mildly alkaline (pH 7.4); clear smooth boundary.

Bt2—38 to 45 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; strong fine and medium prismatic structure parting to moderate fine and medium subangular blocky; hard, very firm, very sticky and very plastic; few fine roots; few fine and medium pores; many moderately thick and thick clay films on faces of peds and in pores; about 5 percent gravel; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bt3—45 to 60 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; massive; slightly hard, firm, slightly sticky and plastic; common very fine tubular pores; few thin clay films in pores; about 10 percent gravel; mildly alkaline (pH 7.4).

Range in Characteristics

The mollic epipedon is 20 to 30 inches thick. The particle-size control section averages 5 to 10 percent rock fragments and 18 to 35 percent clay.

A horizon: Value is 3 or 4 dry and 2 or 3 moist.
Bt horizon: Value is 5 or 6 dry and 4 or 5 moist. Chroma is 3 or 4.

Smaug Series

The Smaug series consists of very deep, well drained, moderately slowly permeable soils on ancient lake terraces and lake plains. These soils formed in mixed alluvium and lacustrine sediments derived dominantly from limestone and other sedimentary rocks. Slopes are 0 to 5 percent. Elevation is 4,300 to 4,800 feet. The average annual precipitation is 6 to 8 inches, and the mean annual air temperature is 48 to 52 degrees F.

These soils are coarse-silty, mixed (calcareous), mesic Typic Torriorthents.

Typical pedon of Smaug very fine sandy loam, 0 to 5 percent slopes, about 2.5 miles east of Peplin Pond, about 800 feet west and 900 feet south of the northeast corner of sec. 24, T. 11 N., R. 12 W.

A—0 to 3 inches; light gray (10YR 7/2) very fine sandy loam, grayish brown (10YR 5/2) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many fine and few fine vesicular pores; strongly effervescent; disseminated carbonates; strongly alkaline (pH 9.0); clear smooth boundary.

C1—3 to 11 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine tubular pores; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.8); gradual smooth boundary.

C2—11 to 21 inches; very pale brown (10YR 7/3) very fine sandy loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine tubular pores; slightly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 9.0); gradual smooth boundary.

C3—21 to 35 inches; very pale brown (10YR 7/3) very fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few very fine tubular pores; strongly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.6); gradual smooth boundary.

C4—35 to 60 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine pores; strongly saline; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.6).

Range in Characteristics

The content of clay in the particle-size control section averages 10 to 18 percent.

A horizon: The texture is silt loam or very fine sandy loam.

C horizon: Hue is 10YR or 2.5Y. Value is 7 or 8 dry and 5 to 7 moist. Chroma is 2 or 3. The texture is silt loam or very fine sandy loam.

Solak Series

The Solak series consists of shallow, somewhat excessively drained, moderately permeable soils on hillsides and mountainsides. These soils formed in colluvium and residuum derived dominantly from quartzite, limestone, and schist. Slopes are 15 to 50 percent. Elevation is 5,700 to 7,200 feet. The average annual precipitation is 10 to 14 inches, and the mean annual air temperature is 41 to 44 degrees F.

These soils are loamy-skeletal, mixed (calcareous), frigid Lithic Xeric Torriorthents.

Typical pedon of Solak very gravelly loam, in an area of Solak-Rock outcrop association, 15 to 50 percent slopes, about 6.5 miles west of Yost, about 1,500 feet north and 500 feet east of the southwest corner of sec. 3, T. 14 N., R. 16 W.

A—0 to 3 inches; brown (10YR 4/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak medium and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium and few coarse roots; many very fine and fine tubular pores; slightly effervescent; thin coatings of carbonates and silica on the undersides of rock fragments; about 35 percent gravel; moderately alkaline (pH 8.4); clear wavy boundary.

Bk—3 to 10 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 4/3) moist; weak medium and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium and few coarse roots; many very fine and fine tubular pores; slightly effervescent; disseminated carbonates; about 50 percent gravel; moderately alkaline (pH 8.4); abrupt irregular boundary.

R—10 inches; fractured schist bedrock.

Range in Characteristics

Bedrock is at a depth of 10 to 20 inches. The particle-size control section averages 12 to 18 percent clay and 35 to 80 percent rock fragments.

A horizon: Chroma is 2 or 3.

Sonlet Series

The Sonlet series consists of shallow, well drained, moderately permeable soils on hillsides, mountainsides, and ridges. These soils formed in colluvium derived dominantly from limestone, quartzite, and chert. Slopes are 15 to 60 percent. Elevation is 5,200 to 7,000 feet. The average annual precipitation is 12 to 16 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are loamy-skeletal, mixed, frigid Lithic Xerollic Calciorthids.

Typical pedon of Sonlet very gravelly loam, in an area of Lundy-Sonlet-Lodar very gravelly loams, 15 to 50 percent slopes, about 1.5 miles east of Rhyolite Butte, about 2,200 feet south and 100 feet east of the northwest corner of sec. 26, T. 7 N., R. 19 W.

A—0 to 2 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak medium platy structure; soft, very friable, sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial and tubular pores; about 35 percent gravel; slightly effervescent; disseminated carbonates; mildly alkaline (pH 7.8); clear smooth boundary.

Bkq1—2 to 10 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, sticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; many very fine and fine discontinuous tubular pores; about 40 percent gravel; strongly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rocks; thin silica coatings on the undersides of rocks; moderately alkaline (pH 8.2); clear wavy boundary.

Bkq2—10 to 19 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, sticky and slightly plastic; common very fine and few fine and medium roots; common very fine discontinuous tubular pores; about 60 percent gravel and 5 percent cobbles; strongly effervescent; disseminated carbonates and thin coatings of carbonates around rocks; thin silica coatings around rocks; moderately alkaline (pH 8.4); abrupt irregular boundary.

R—19 inches; fractured chert and limestone bedrock.

Range in Characteristics

The particle-size control section averages 12 to 18 percent clay and 35 to 65 percent rock fragments. Bedrock is at a depth of 10 to 20 inches.

A horizon: Value is 5 to 7 dry and 3 to 5 moist. Chroma is 2 or 3. The horizon is very slightly effervescent or slightly effervescent. Reaction is mildly alkaline or moderately alkaline.

Bkq horizon: Value is 6 to 8 dry and 4 to 6 moist. Chroma is 3 or 4. The texture is very gravelly sandy loam, extremely gravelly sandy loam, or very gravelly loam. The horizon is slightly effervescent or strongly effervescent. Reaction is mildly alkaline to strongly alkaline.

Stucky Series

The Stucky series consists of very deep, well drained, moderately slowly permeable soils on lake terraced fans. These soils formed in alluvium derived dominantly from quartzite and granite. Slopes are 8 to 15 percent. Elevation is 4,600 to 5,200 feet. The average annual precipitation is 8 to 10 inches, and the mean annual air temperature is 48 to 50 degrees F.

These soils are loamy-skeletal, mixed, mesic Xerollic Haplargids.

Typical pedon of Stucky extremely stony sandy loam, in an area of Stucky-Hiko Peak association, 8 to 25 percent slopes, about 1,500 feet north and 2,000 feet east of the southwest corner of sec. 11, T. 4 N., R. 19 W.

A—0 to 4 inches; grayish brown (10YR 5/2) extremely stony sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium and fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; about 20 percent gravel, 20 percent cobbles, and 35 percent stones; neutral (pH 7.3); clear smooth boundary.

Bt1—4 to 9 inches; brown (10YR 5/3) very cobbly sandy clay loam, brown (10YR 4/3) moist; weak medium and fine angular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine, many medium, and few coarse roots; common very fine and fine tubular pores; about 20 percent gravel and 30 percent cobbles; neutral (pH 7.2); clear smooth boundary.

Bt2—9 to 26 inches; brown (10YR 5/3) extremely cobbly sandy clay loam, brown (10YR 4/3) moist; moderate medium and fine angular blocky structure; hard, friable, sticky and plastic; many very fine and fine roots; many very fine and fine tubular pores; many moderately thick and thin clay films on faces of peds and in pores; about 15 percent gravel, 30 percent cobbles, and 25 percent stones; neutral (pH 7.2); clear smooth boundary.

C—26 to 60 inches; pale brown (10YR 6/3) extremely stony sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable; few very fine and fine roots; few very fine and fine tubular and common very fine interstitial pores; about 30 percent gravel, 25 percent

cobbles, and 30 percent stones; very slightly effervescent; mildly alkaline (pH 7.8).

Range in Characteristics

Depth to an argillic horizon is 3 to 7 inches. The particle-size control section averages 50 to 70 percent rock fragments and 27 to 35 percent clay.

Bt horizon: The texture is very cobbly or extremely cobbly sandy clay loam.

C horizon: The content rock fragments, mainly cobbles and stones, ranges from 60 to 85 percent.

Swingler Series

The Swingler series consists of very deep, moderately well drained, moderately slowly permeable soils on lake plains and low lake terraces. These soils formed in lacustrine sediments and alluvium derived dominantly from limestone and quartzite. Slopes are 1 to 3 percent. Elevation is 4,200 to 4,800 feet. The average annual precipitation is 6 to 8 inches, and the mean annual air temperature is 48 to 53 degrees F.

These soils are fine-silty, mixed (calcareous), mesic Typic Torriorthents.

Typical pedon of Swingler silt loam, in an area of Skumpah-Skumpah, sodic-Swingler association, 1 to 3 percent slopes, about 9 miles south of Curlew Junction, about 900 feet east and 200 feet north of the southwest corner of sec. 27, T. 13 N., R. 11 W.

A—0 to 5 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine vesicular pores; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

C1—5 to 12 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C2—12 to 21 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.8); clear smooth boundary.

C3—21 to 40 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.4); clear smooth boundary.

C4—40 to 60 inches; light gray (2.5Y 7/2) silt loam, grayish brown (2.5Y 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.4).

Range in Characteristics

The content of clay in the particle-size control section averages 18 to 25 percent.

A horizon: Value is 6 or 7 dry. Chroma is 2 or 3. The electrical conductivity of the saturation extract is 2 to 8 millimhos per centimeter.

C horizon: Hue is 10YR or 2.5Y. Value is 6 or 7 dry and 4 or 5 moist. Chroma is 2 or 3. The electrical conductivity of the saturation extract is 16 to 40 millimhos per centimeter. The horizon is slightly effervescent or strongly effervescent. Reaction is moderately alkaline or strongly alkaline.

Tarnach Series

The Tarnach series consists of shallow, well drained, moderately permeable soils on hillsides, ridgetops, mountainsides, and pediments. These soils formed in colluvium, alluvium, and residuum derived dominantly from limestone, calcareous sandstone, and siltstone. Slopes are 1 to 70 percent. Elevation is 4,800 to 6,000 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 45 to 51 degrees F.

These soils are loamy-skeletal, mixed, mesic Lithic Xerollic Calciorthids.

Typical pedon of Tarnach very gravelly loam, 15 to 45 percent slopes, about 1.5 miles south of Trail Pass Reservoir, about 2,000 feet east and 1,800 feet north of the southwest corner of sec. 29, T. 11 N., R. 13 W.

A—0 to 4 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; few very fine vesicular pores; slightly effervescent; disseminated carbonates; about 50 percent gravel; strongly alkaline (pH 8.6); abrupt smooth boundary.

Bk1—4 to 9 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; weak fine subangular blocky structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine and few medium roots; few very fine tubular pores; slightly effervescent; disseminated carbonates and coatings of carbonates on gravel; about 40 percent gravel; strongly alkaline (pH 8.8); clear smooth boundary.

Bk2—9 to 15 inches; pale brown (10YR 6/3) very gravelly

loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; strongly effervescent; disseminated carbonates and coatings of carbonates on gravel; about 45 percent gravel; strongly alkaline (pH 9.0); clear smooth boundary.

R—15 inches; slightly fractured limestone.

Range in Characteristics

Bedrock is at a depth of 10 to 20 inches. The particle-size control section averages 18 to 27 percent clay and 35 to 60 percent rock fragments. The depth to a calcic horizon is 2 to 11 inches. The soils are slightly effervescent or strongly effervescent. Reaction is moderately alkaline or strongly alkaline.

A horizon: Value is 5 to 7 dry and 4 or 5 moist. Chroma is 2 or 3. The texture is gravelly or very gravelly loam.

Bk horizon: Value is 6 or 7 dry and 4 or 5 moist. Chroma is 3 or 4.

Taylorsflat Series

The Taylorsflat series consists of very deep, well drained, moderately slowly permeable soils on alluvial fans, on terraced lake plains, and in drainageways. These soils formed in mixed alluvium derived dominantly from limestone and quartzite. Slopes are 1 to 6 percent. Elevation is 5,000 to 5,800 feet. The average annual precipitation is 9 to 12 inches, and the mean annual air temperature is 45 to 51 degrees F.

These soils are fine-loamy, mixed, mesic Xerollic Calciorthids.

Typical pedon of Taylorsflat silt loam, in an area of Lembos-Taylorsflat complex, 1 to 6 percent slopes, about 3 miles north of Cluster Springs, about 1,600 feet west and 2,300 feet north of the southeast corner of sec. 6, T. 10 N., R. 17 W.

A—0 to 5 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; single grain; loose, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; about 5 percent gravel; slightly effervescent; disseminated carbonates; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bw—5 to 18 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak coarse prismatic structure parting to weak fine subangular blocky; slightly hard, friable, sticky and plastic; common very fine and fine and few coarse roots; many very fine and fine and few medium tubular pores; about 5 percent gravel; very slightly effervescent; carbonates on the undersides of gravel; strongly alkaline (pH 8.8); clear smooth boundary.

Bk—18 to 25 inches; very pale brown (10YR 7/4) loam, yellowish brown (10YR 5/4) moist; moderate coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; about 5 percent gravel; slightly effervescent; carbonates on all sides of gravel; strongly alkaline (pH 8.6); abrupt smooth boundary.

C1—25 to 35 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable; few very fine and fine roots; many very fine and common fine tubular pores; about 5 percent gravel; slightly effervescent; carbonates on all sides of gravel and fine filaments of carbonates; strongly alkaline (pH 8.6); clear smooth boundary.

C2—35 to 60 inches; very pale brown (10YR 7/3) loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and common fine tubular pores; slightly effervescent; disseminated carbonates; strongly alkaline (pH 8.5).

Range in Characteristics

Depth to a calcic horizon is 9 to 20 inches. The particle-size control section averages 0 to 15 percent rock fragments and 18 to 30 percent clay. Reaction is moderately alkaline or strongly alkaline throughout the profile.

C horizon: Value is 4 or 5 moist. Chroma is 3 or 4.

Tomsherry Series

The Tomsherry series consists of moderately deep, well drained, moderately rapidly permeable soils on fan terraces. These soils formed in alluvium derived dominantly from volcanic ash. Slopes are 0 to 15 percent. Elevation is 5,000 to 6,600 feet. The average annual precipitation is 12 to 16 inches, and the mean annual air temperature is 41 to 45 degrees F.

These soils are ashy, frigid Xeric Durandepts.

Typical pedon of Tomsherry fine sandy loam, in an area of Cottonthomas-Tomsherry fine sandy loams, 0 to 15 percent slopes, about 2.5 miles southeast of the junction of Goose Creek and the Nevada State line, about 2,500 feet north and 1,000 feet west of the southeast corner of sec. 15, T. 14 N., R. 19 W.

A1—0 to 4 inches; grayish brown (10YR 5/2) fine sandy loam, dark brown (10YR 3/3) moist; weak medium platy structure; slightly hard, very friable; many very fine roots; many very fine interstitial pores; about 5 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—4 to 13 inches; grayish brown (10YR 5/2) fine sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure parting to weak very fine

granular; slightly hard, very friable; common very fine and fine and few medium roots; many very fine interstitial pores; about 10 percent gravel; neutral (pH 7.3); clear wavy boundary.

Bkq—13 to 24 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable; common very fine and few fine and medium roots; about 15 percent hard durinodes; about 5 percent gravel; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bkqm—24 to 29 inches; light gray (10YR 7/2) indurated duripan, light brownish gray (10YR 6/2) moist; silica and carbonate cemented layer; abrupt wavy boundary.

Bk1—29 to 51 inches; light gray (10YR 7/2) loamy fine sand, grayish brown (10YR 5/2) moist; massive; mainly slightly hard, very friable; about 20 percent hard; few very fine and fine roots; strongly effervescent; disseminated carbonates and common veins of carbonates; moderately alkaline (pH 8.4); clear wavy boundary.

Bk2—51 to 60 inches; light gray (10YR 7/2) loamy fine sand, brown (10YR 5/3) moist; massive; hard, firm; few very fine roots; common veins of carbonates; moderately alkaline (pH 8.0).

Range in Characteristics

The duripan is at a depth of 20 to 40 inches. The epipedon is 10 to 14 inches thick. The particle-size control section averages 8 to 15 percent clay and 0 to 10 percent gravel.

A and Bk horizons: Chroma is 2 or 3.

Tosser Series

The Tosser series consists of very deep, well drained, moderately rapidly permeable soils on dissected fan terraces and pediments. These soils formed in alluvium derived dominantly from limestone, rhyolite, and chert. Slopes are 3 to 30 percent. Elevation is 4,500 to 6,200 feet. The average annual precipitation is 8 to 12 inches, and the mean annual air temperature is 46 to 51 degrees F.

These soils are sandy-skeletal, mixed, mesic Xerollic Calciorthids.

Typical pedon of Tosser very gravelly sandy loam, in an area of Tosser-Plegomir complex, 3 to 15 percent slopes, about 6 miles west of Lucin, about 1,400 feet south and 1,000 feet east of the northwest corner of sec. 14, T. 7 N., R. 19 W.

A1—0 to 4 inches; light brownish gray (10YR 6/2) very gravelly sandy loam, dark grayish brown (10YR 4/2) moist; weak medium and thick platy structure; soft, very friable, slightly plastic; many very fine and fine and common medium roots; many very fine vesicular and common very fine tubular pores; about 35 percent gravel; slightly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rock fragments; moderately alkaline (pH 8.4); clear smooth boundary.

A2—4 to 10 inches; light brownish gray (10YR 6/2) gravelly fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine and common medium roots; many very fine and fine tubular pores; about 25 percent gravel; common thin silica coatings on the undersides of rock fragments; slightly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rock fragments; strongly alkaline (pH 8.6); clear wavy boundary.

Bkq1—10 to 23 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 5/3) moist; weak coarse subangular blocky structure; hard, firm; common very fine and fine and few medium roots; common very fine and fine tubular pores; about 35 percent gravel; common thin silica coatings on the undersides of rock fragments; strongly effervescent; disseminated carbonates and thin coatings of carbonates on the undersides of rocks; strongly alkaline (pH 8.8); gradual irregular boundary.

Bkq2—23 to 37 inches; grayish brown (10YR 5/2) extremely gravelly sand, dark grayish brown (10YR 4/2) moist; massive; loose; few very fine and common fine and medium roots; many very fine and fine interstitial pores; about 75 percent gravel; common thin silica coatings on the undersides of rock fragments; very slightly effervescent; disseminated carbonates and moderately thick coatings of carbonates on the undersides of rock fragments; strongly alkaline (pH 8.4); abrupt wavy boundary.

Bkq3—37 to 60 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 5/3) moist; massive; hard, firm, slightly plastic; common very fine and few fine roots; common very fine tubular pores; about 40 percent gravel; thin silica coatings on the undersides of rock fragments; slightly effervescent; disseminated carbonates and moderately thick coatings of carbonates on the undersides of rock fragments; very strongly alkaline (pH 9.4).

Range in Characteristics

The particle-size control section averages 2 to 8 percent clay and 35 to 75 percent gravel. Depth to a calcic horizon is 7 to 12 inches.

A horizon: Value is 4 or 5 moist. Chroma is 2 or 3. The

horizon is very slightly effervescent or slightly effervescent. Reaction is moderately alkaline or strongly alkaline.

B horizon: Value is 5 or 6 dry and 4 or 5 moist. Chroma is 2 or 3. The texture is extremely gravelly loamy sand, very gravelly loamy sand, or extremely gravelly sand. The horizon is very slightly effervescent to strongly effervescent. Reaction is strongly alkaline or very strongly alkaline.

Vicking Series

The Vicking series consists of very deep, well drained, moderately slowly permeable soils on fan terraces, hillsides, and foot slopes. These soils formed in mixed alluvium derived dominantly from limestone and minor amounts of siltstone. Slopes are 3 to 30 percent. Elevation is 5,400 to 7,400 feet. The average annual precipitation is 13 to 16 inches, and the mean annual air temperature is 41 to 44 degrees F.

These soils are fine-loamy, mixed, frigid Calcic Argixerolls.

Typical pedon of Vicking silt loam, in an area of Vicking-Raftriver-Codquin complex, 2 to 60 percent slopes, about 1.5 miles southeast of Lynn Reservoir, about 700 feet north and 500 feet west of the southeast corner of sec. 20, T. 13 N., R. 16 W.

A1—0 to 3 inches; very dark grayish brown (10YR 3/2) silt loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common fine roots; common fine and medium tubular pores; neutral (pH 7.2); clear smooth boundary.

A2—3 to 11 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few fine and medium tubular pores; mildly alkaline (pH 7.4); clear smooth boundary.

Bt—11 to 23 inches; dark yellowish brown (10YR 4/4) clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; few very fine and fine roots; common thin clay films on faces of peds and lining pores; mildly alkaline (pH 7.6); clear smooth boundary.

Btk—23 to 31 inches; light brownish gray (10YR 6/2) clay loam, grayish brown (10YR 5/2) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; few very fine and fine roots; common thin clay films on faces of peds and lining pores; very slightly effervescent; mildly alkaline (pH 7.8); clear wavy boundary.

Bk1—31 to 48 inches; light gray (10YR 7/2) loam, light yellowish brown (10YR 6/4) moist; weak coarse prismatic structure; hard, firm, sticky and plastic; strongly effervescent; disseminated carbonates; moderately alkaline (pH 8.2); clear smooth boundary.

Bk2—48 to 60 inches; light yellowish brown (10YR 6/4) loam, brown (10YR 5/3) moist; weak coarse prismatic structure; hard, firm, sticky and plastic; strongly effervescent; disseminated carbonates; strongly alkaline (pH 8.8).

Range in Characteristics

The mollic epipedon is 10 to 20 inches thick. The particle-size control section averages 27 to 35 percent clay and 0 to 10 percent gravel.

A horizon: Value is 3 to 5 dry and 2 or 3 moist. Chroma is 2 or 3. Reaction is neutral or mildly alkaline.

Bt and Btk horizons: Value is 4 to 6 dry and 4 or 5 moist. Chroma is 2 to 4.

Bk horizon: Value is 6 or 7 dry and 5 or 6 moist. Chroma is 2 to 4. Reaction is moderately alkaline or strongly alkaline.

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Glossary

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone. The material washed down the sides of mountains and hills by ephemeral streams and deposited at the mouth of gorges in the form of a moderately steep, conical mass descending equally in all directions from the point of issue.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluviated lake plain. A lake plain that has been influenced by the deposition of alluvial sediment.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A diagnostic subsurface horizon characterized by an accumulation of silicate clays.

Arroyo. The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in alluvium.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Back slope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Back slopes in profile are commonly steep, are linear, and may or may not include cliff segments.

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Bajada. A broad alluvial slope extending from the base of a mountain range out into a basin and formed by coalescence of separate alluvial fans.

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Basin. A broad structural lowland, commonly elongated and many miles across, between mountain ranges.

Basin floor. A general term for the nearly level to gently sloping, bottom surface of an intermontane basin.

Beach. The gently sloping shore of ancient Lake Bonneville, which was washed by waves or tides.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bench terrace. A raised, level or nearly level strip of earth constructed on or nearly on the contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte. An isolated small mountain or hill with steep or precipitous sides and a top variously flat, rounded, or pointed that may be a residual mass isolated by erosion or an exposed volcanic neck.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a channer.

Chiseling. Tillage with an implement having one or more soil-penetrating points that loosen the subsoil and bring clods to the surface. A form of emergency tillage used to control soil blowing.

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 plant community. The plant community on a given site that will be established if present environmental conditions continue to prevail and the site is properly managed.

Coarse fragments. Mineral or rock particles larger than 2 millimeters in diameter.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material is 35 to 60 percent of these rock fragments, and extremely cobbly soil material is more than 60 percent.

Colluvium. Soil material, rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conglomerate. A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—Readily deformed by moderate pressure but

can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.
Sticky.—Adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.
Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
Soft.—When dry, breaks into powder or individual grains under very slight pressure.
Cemented.—Hard; little affected by moistening.
Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.
Cropping system. Growing crops according to a planned system of rotation and management practices.
Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.
Cuesta. An asymmetric, homoclinal ridge capped by resistant rock layers of slight or moderate dip.
Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.
Depth to rock (in tables). 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.—These soils have very high and high hydraulic conductivity and a low water-holding capacity. They are not suited to crop production unless irrigated.
Somewhat excessively drained.—These soils have high hydraulic conductivity and a low water-holding capacity. Without irrigation, only a narrow range of crops can be grown and yields are low.
Well drained.—These soils have an intermediate water-holding capacity. They retain optimum amounts of moisture, but they are not wet close enough to the surface or long enough during the growing season to adversely affect yields.
Moderately well drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or yields of some field crops are adversely affected unless a drainage system is installed. Moderately well drained soils commonly have a layer with low hydraulic conductivity, a wet layer relatively high in the profile, additions of water through seepage, or some combination of these.
Somewhat poorly drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or crop growth is markedly restricted unless a drainage system is installed. Somewhat poorly drained soils commonly have a layer with low hydraulic conductivity, a wet layer high in the profile, additions of water through seepage, or a combination of these.
Poorly drained.—These soils commonly are so wet at or near the surface during a considerable part of the year that field crops cannot be grown under natural conditions. Poorly drained conditions are caused by a saturated zone, a layer with low hydraulic conductivity, seepage, or a combination of these.
Very poorly drained.—These soils are wet to the surface most of the time. The wetness prevents the growth of important crops (except for rice) unless a drainage system is installed.
Drainage, surface. Runoff, or surface flow of water, from an area.
Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.
Duripan. A subsurface horizon that is cemented by silica to such a degree that air-dry fragments do not slake during prolonged soaking in water or HCl.
Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.
Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.
Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.
Epipedon. A diagnostic surface horizon. It includes the upper part of the soil that is darkened by organic matter or the upper eluvial horizons, or both.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.
Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.
Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.
Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.
Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.
Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.
Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.
Fast intake (in tables). The rapid movement of water into the soil.
Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.
Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.
Fine textured soil. Sandy clay, silty clay, or clay.
Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.
Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.
Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.
Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.
Foot slope. The inclined surface at the base of a hill.
Forb. Any herbaceous plant not a grass or a sedge.
Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.
Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.
Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.
Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.
Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.
Ground water (geology). Water filling all the unblocked pores of the material below the water table.
Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.
Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.
Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.
Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.
Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.
Horizon, soil. A layer of soil, approximately parallel to

the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-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.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area

and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain. A major landform of some internally drained intermountain basins. It is made up of the nearly level, fine textured, stratified bottom sediments of a Pleistocene lake.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by the wind.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesa. A broad, nearly flat topped and commonly isolated upland mass characterized by summit widths that are more than the heights of bounding erosional scarps.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Millimhos. An expression of electrical conductivity used in measuring salinity in soils.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark surface layer. It is more than 50 percent base saturated, has a narrow ratio of carbon to nitrogen, has strong soil structure, and has relatively soft consistence when dry.

Moraine (geology). An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

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).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding

lowlands, commonly of restricted summit area (relative to a plateau), and generally having steep sides and a surface of considerably bare rock. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Muck. Dark colored, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Oolitic sand. Round, sand-sized grains, generally of calcium carbonate, having concentric internal layering. Oolitic sand precipitates out of shallow water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

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.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pediment. An erosional surface on bedrock adjacent to a receding mountain foot.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water 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 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piedmont slope. The dominantly gentle foot of a mountain, generally in an area of intermontane basin terrain in arid to subhumid regions.

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.

Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressional areas, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff.

Poor filter (in tables). Because of rapid permeability or an impermeable layer near the surface, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. (See Climax plant community.)

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition

is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	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

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

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 the growth of plants. A saline soil does not contain excess exchangeable sodium.

Salt flat. An undrained flat that has surface deposits of crystalline salt overlying stratified, very strongly saline sediments.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer 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 surface runoff.

Shoulder slope. The geomorphic component that forms the uppermost inclined surface at the top of a hill slope. The surface is dominantly convex in profile.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio. The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05

millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey the following slope classes are recognized:

Nearly level	0 to 3 percent
Gently sloping	3 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 30 percent
Steep	30 to 65 percent
Very steep	65 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium absorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are—

Slight	less than 13:1
Moderate	13-30:1
Strong	more than 30:1

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the 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 if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

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."

Talus. Rock fragments of any size or shape, commonly coarse and angular, derived from and lying at the base of a cliff or very steep, rock slope. The accumulated mass of such loose, broken rock formed chiefly by falling, rolling, or sliding.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). A layer of otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

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.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Water-supplying capacity. The available water at the start of the growing season plus water added to soil during the growing season.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1961-90 at Park Valley, Utah)

Month	Temperature						Precipitation				
				2 years in 10 will have--				2 years in 10 will have--			
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	33.7	13.7	23.7	50	-11	1	0.82	0.26	1.28	2	10.6
February----	39.3	19.0	29.2	56	-4	5	.82	.34	1.23	3	6.9
March-------	46.8	25.3	36.1	67	6	30	.88	.35	1.39	3	3.0
April-------	55.8	31.5	43.6	77	15	136	.90	.24	1.43	3	.9
May---------	65.6	39.6	52.6	83	21	359	1.45	.43	2.28	4	.1
June--------	75.2	47.2	61.2	93	31	571	1.29	.32	2.06	3	.0
July--------	85.8	55.2	70.5	96	40	773	1.06	.48	1.71	3	.0
August------	83.6	53.3	68.5	96	35	724	1.05	.24	1.68	3	.0
September---	73.7	44.5	59.1	89	25	464	.70	.16	1.23	2	.0
October-----	61.3	34.6	48.0	79	17	221	.97	.33	1.64	2	.3
November----	46.1	24.8	35.5	64	4	36	.91	.42	1.39	3	3.7
December----	35.9	16.1	26.0	55	-7	1	.79	.33	1.34	2	6.5
Yearly:											
Average---	58.6	33.7	46.2	---	---	---	---	---	---	---	---
Extreme---	99	-28	---	98	-13	---	---	---	---	---	---
Total-----	---	---	---	---	---	3,320	11.63	6.68	13.91	33	32.0

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

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1961-90 at Park Valley, Utah)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	May 17	Jun. 2	Jun. 17
2 years in 10 later than--	May 9	May 25	Jun. 10
5 years in 10 later than--	Apr. 25	May 10	May 28
First freezing temperature in fall:			
1 year in 10 earlier than--	Sept. 28	Sept. 19	Aug. 30
2 years in 10 earlier than--	Oct. 6	Sept. 25	Sept. 7
5 years in 10 earlier than--	Oct. 22	Oct. 7	Sept. 22

TABLE 3.--GROWING SEASON

(Recorded in the period 1961-90 at Park Valley, Utah)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	133	109	84
8 years in 10	143	120	95
5 years in 10	163	140	116
2 years in 10	182	160	137
1 year in 10	192	171	148

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
1	Acana gravelly loam, 1 to 3 percent slopes	18,150	0.6
2	Acana-Collard gravelly loams, 3 to 8 percent slopes	8,000	0.3
3	Acana-Jericho association, 3 to 10 percent slopes	25,800	0.9
4	Acord very cobbly loam, 5 to 15 percent slopes	3,900	0.1
5	Ant Flat-Accord association, 10 to 30 percent slopes	7,400	0.3
6	Bickmore-Eyre families-Rock outcrop association, 30 to 60 percent slopes	11,300	0.4
7	Bickmore-Nielsen families association, 5 to 45 percent slopes	13,200	0.5
8	Birdow silt loam, 0 to 2 percent slopes	3,100	0.1
9	Bluehill-Coalbank association, 20 to 60 percent slopes	1,800	0.1
10	Borvant gravelly loam, 5 to 15 percent slopes	3,750	0.1
11	Brobett-Plegomir association, 3 to 8 percent slopes	33,500	1.2
12	Bullump loam, 3 to 15 percent slopes	21,700	0.8
13	Bullump-Sonlet-Rodrof association, 5 to 30 percent slopes	12,800	0.5
14	Clavicon-Rock outcrop complex, 30 to 60 percent slopes	36,400	1.3
15	Cliffdown very gravelly sandy loam, alkali, 3 to 10 percent slopes	19,200	0.7
16	Cliffdown very gravelly loam, 3 to 10 percent slopes	10,150	0.4
17	Cliffdown-Hiko Peak-Okrist, thick surface association, 3 to 12 percent slopes	9,100	0.3
18	Cliffdown, alkali-Rock outcrop-Promo complex, 10 to 35 percent slopes	20,800	0.7
19	Collard, moist-Hupp complex, 2 to 10 percent slopes	5,800	0.2
20	Cottonthomas-Tomsherry fine sandy loams, 0 to 15 percent slopes	23,900	0.9
21	Crooked Creek silty clay loam, 0 to 2 percent slopes	3,600	0.1
22	Crooked Creek-Hupp complex, 1 to 6 percent slopes	860	*
23	Dahar-Codquin gravelly sandy loams, 8 to 60 percent slopes	52,000	1.9
24	Dateman-Bickmore, cool-Nielsen families complex, 20 to 60 percent slopes	12,700	0.5
25	Declo loam, 1 to 3 percent slopes	900	*
26	Declo-Darkbull association, 1 to 10 percent slopes	16,450	0.6
27	Declo-Lembos-Tarnach association, 1 to 6 percent slopes	44,500	1.6
28	Donnardo gravelly loam, 2 to 8 percent slopes	3,100	0.1
29	Donnardo-Birdow complex, 1 to 8 percent slopes	3,550	0.1
30	Dynal-Playas association, 0 to 15 percent slopes	11,750	0.4
31	Fontreen-Borvant gravelly loams, 5 to 20 percent slopes	11,050	0.4
32	Fontreen-Bullump complex, 3 to 15 percent slopes	8,450	0.3
33	Fontreen-Phage association, 15 to 40 percent slopes	5,600	0.2
34	Hades-Bearskin-Rock outcrop association, 5 to 30 percent slopes	8,500	0.3
35	Hiko Peak gravelly loam, 3 to 12 percent slopes	9,850	0.4
36	Hiko Peak-Kunzler association, 3 to 12 percent slopes	2,850	0.1
37	Hiko Peak-Sheeprock-Rock outcrop association, 3 to 25 percent slopes	3,150	0.1
38	Hiko Peak-Taylorsflat complex, 1 to 12 percent slopes	12,800	0.5
39	Hiko Peak-Taylorsflat-Skumpah association, 1 to 12 percent slopes	13,500	0.5
40	Hiko Springs-Okrist association, 1 to 8 percent slopes	17,250	0.6
41	Jericho-Amtoft complex, 20 to 50 percent slopes	4,600	0.2
42	Jughandle-Parkay families complex, 15 to 45 percent slopes	4,300	0.2
43	Kapod-Donnardo complex, 2 to 10 percent slopes	8,050	0.3
44	Koosharem silt loam, 0 to 2 percent slopes	2,400	0.1
45	Kunzler-Lembos association, 1 to 5 percent slopes	73,000	2.6
46	Lembos-Jericho-Scalade complex, 1 to 30 percent slopes	7,950	0.3
47	Lembos-Taylorsflat complex, 1 to 6 percent slopes	31,100	1.1
48	Lundy-Sonlet-Lodar very gravelly loams, 15 to 50 percent slopes	28,100	1.0
49	Lynndyl loamy sand, 1 to 5 percent slopes	5,100	0.2
50	Mellor silt loam, 0 to 2 percent slopes	4,950	0.2
51	Mellor silt loam, 2 to 6 percent slopes	3,150	0.1
52	Mellor-Declo silt loams, 2 to 12 percent slopes	2,550	0.1
53	Mellor-Pomat association, 0 to 3 percent slopes	10,700	0.4
54	Nielsen-Bickmore families-Rock outcrop association, 20 to 60 percent slopes	17,100	0.6
55	Okrist-Okrist, thick surface complex, 1 to 10 percent slopes	4,850	0.2
56	Overland-Sonlet complex, 15 to 40 percent slopes	2,700	0.1
57	Parkay family gravelly loam, moist, 5 to 35 percent slopes	2,200	0.1
58	Parkay-Dateman families association, 20 to 60 percent slopes	20,100	0.7
59	Parkay-Broad Canyon families association, 20 to 60 percent slopes	72,000	2.6
60	Pits, gravel	119	*
61	Playas	446,000	15.9
62	Plegomir-Hiko Peak-Bullump association, 3 to 25 percent slopes	4,800	0.2

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
63	Promo-Puett complex, 10 to 35 percent slopes	13,900	0.5
64	Puett-Plegomir gravelly loams, 3 to 15 percent slopes	22,300	0.8
65	Raftriver-Duckree complex, 2 to 50 percent slopes	16,650	0.6
66	Raftriver-Koosharem complex, 2 to 20 percent slopes	1,900	0.1
67	Reebok-Puett association, 2 to 35 percent slopes	1,800	0.1
68	Rexmont-Shalper-Rock outcrop complex, 15 to 40 percent slopes	42,000	1.5
69	Ridd-Bullump complex, 3 to 20 percent slopes	4,050	0.1
70	Ridgecrest-Bickmore families association, 30 to 60 percent slopes	29,900	1.1
71	Rock outcrop-Amtoft association, 35 to 80 percent slopes	23,000	0.8
72	Rodrof extremely gravelly loam, 10 to 40 percent slopes	2,300	0.1
73	Rubble land-Nielsen family complex, 30 to 60 percent slopes	10,350	0.4
74	Saltair-Playas association, 0 to 2 percent slopes	81,000	2.9
75	Salt flats	14,400	0.5
76	Saxby-Rock outcrop complex, 10 to 50 percent slopes	7,700	0.3
77	Scalade-Lodar association, 3 to 25 percent slopes	5,250	0.2
78	Skumpah-Playas complex, 1 to 3 percent slopes	158,000	5.6
79	Skumpah, sodic-Playas complex, 0 to 3 percent slopes	75,000	2.7
80	Skumpah-Skumpah, sodic-Swingler association, 1 to 3 percent slopes	62,000	2.2
81	Skylick-Hoodle association, 15 to 50 percent slopes	7,700	0.3
82	Smaug very fine sandy loam, 0 to 5 percent slopes	41,500	1.5
83	Smaug silt loam, 0 to 3 percent slopes	1,100	*
84	Solak-Rock outcrop association, 15 to 50 percent slopes	16,050	0.6
85	Sonlet-Lodar-Rubble land complex, 40 to 60 percent slopes	9,950	0.4
86	Stucky-Hiko Peak association, 8 to 25 percent slopes	15,100	0.5
87	Tarnach gravelly loam, 6 to 15 percent slopes	4,600	0.2
88	Tarnach very gravelly loam, 15 to 45 percent slopes	13,850	0.5
89	Tarnach-Amtoft very gravelly loams, 15 to 50 percent slopes	26,300	0.9
90	Tarnach-Promo complex, 10 to 35 percent slopes	3,250	0.1
91	Tarnach, moist-Tarnach association, 30 to 70 percent slopes	17,100	0.6
92	Tosser very gravelly sandy loam, 3 to 15 percent slopes	20,800	0.7
93	Tosser-Plegomir complex, 3 to 15 percent slopes	17,000	0.6
94	Tosser-Puett association, 15 to 30 percent slopes	3,600	0.1
95	Tosser-Sitar association, 3 to 15 percent slopes	67,000	2.4
96	Vicking silt loam, 3 to 8 percent slopes	280	*
97	Vicking-Raftriver-Codquin complex, 2 to 60 percent slopes	2,900	0.1
98	Vicking-Ramshorn family association, 3 to 25 percent slopes	10,100	0.4
99	Water	663,453	23.7
	Total	2,801,112	100.0

* Less than 0.1 percent.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES

(Only the soils that support rangeland vegetation suitable for grazing are listed)

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
1---------- Acana	Semidesert Shallow Hardpan (Black Sagebrush).	Favorable	650	Black sagebrush----------	25
		Normal	500	Indian ricegrass----------	15
		Unfavorable	250	Bluebunch wheatgrass----------	15
				Needleandthread----------	5
				Bottlebrush squirreltail------	5
				Nevada bluegrass----------	5
				Thickstem wildcabbage---------	5
				Winterfat----------	5
				Douglas rabbitbrush----------	5
				Mormon tea----------	5
2*:					
Acana----------	Semidesert Shallow Hardpan (Black Sagebrush).	Favorable	650	Black sagebrush----------	25
		Normal	500	Indian ricegrass----------	15
		Unfavorable	250	Bluebunch wheatgrass----------	15
				Needleandthread----------	5
				Bottlebrush squirreltail------	5
				Nevada bluegrass----------	5
				Thickstem wildcabbage---------	5
				Winterfat----------	5
				Douglas rabbitbrush----------	5
				Mormon tea----------	5
Collard----------	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.	Favorable	1,000	Wyoming big sagebrush---------	25
		Normal	800	Bluebunch wheatgrass----------	20
		Unfavorable	500	Indian ricegrass----------	10
				Nevada bluegrass----------	5
				Bottlebrush squirreltail------	5
				Hood phlox----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5
				Rose pussytoes----------	5
3*:					
Acana----------	Semidesert Shallow Hardpan (Black Sagebrush).	Favorable	650	Black sagebrush----------	25
		Normal	500	Indian ricegrass----------	15
		Unfavorable	250	Bluebunch wheatgrass----------	15
				Needleandthread----------	5
				Bottlebrush squirreltail------	5
				Nevada bluegrass----------	5
				Thickstem wildcabbage---------	5
				Winterfat----------	5
				Douglas rabbitbrush----------	5
				Mormon tea----------	5
Jericho----------	Semidesert Shallow Hardpan (Juniper).	Favorable	600	Black sagebrush----------	20
		Normal	400	Indian ricegrass----------	15
		Unfavorable	300	Bluebunch wheatgrass----------	15
				Winterfat----------	10
				Bottlebrush squirreltail------	5
				Needleandthread----------	5
				Thickstem wildcabbage---------	5
				Douglas rabbitbrush----------	5
				Mormon tea----------	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
4---------- Acord	Upland Stony Clay (Low Sagebrush).	Favorable	1,000	Low sagebrush----------	20
		Normal	700	Bluebunch wheatgrass----------	15
		Unfavorable	400	Indian ricegrass----------	5
				Western wheatgrass----------	5
				Idaho fescue----------	25
				Phlox----------	5
				Douglas rabbitbrush----------	5
5*:					
Ant Flat----------	Upland Loam (Basin Big Sagebrush).	Favorable	1,300	Bluebunch wheatgrass----------	25
		Normal	1,000	Basin big sagebrush----------	15
		Unfavorable	600	Western wheatgrass----------	15
				Basin wildrye----------	5
				Idaho fescue----------	5
				Arrowleaf balsamroot----------	5
				Nevada bluegrass----------	5
Acord----------	Upland Stony Clay (Low Sagebrush).	Favorable	1,000	Low sagebrush----------	20
		Normal	700	Bluebunch wheatgrass----------	15
		Unfavorable	400	Western wheatgrass----------	5
				Idaho fescue----------	25
				Indian ricegrass----------	5
				Phlox----------	5
				Douglas rabbitbrush----------	5
6*:					
Bickmore family---	Mountain Gravelly Loam (Mountain Big Sagebrush).	Favorable	2,250	Basin wildrye----------	10
		Normal	1,850	Bluebunch wheatgrass----------	10
		Unfavorable	925	Idaho fescue----------	10
				Slender wheatgrass----------	10
				Mountain big sagebrush--------	10
				Mountain brome----------	5
				Nevada bluegrass----------	5
				Western wheatgrass----------	5
				Lupine----------	5
				Geranium----------	5
				Arrowleaf balsamroot----------	5
				Mountain snowberry----------	5
Eyre family-------	Mountainmahogany Thickets (Curlleaf Mountainmahogany).	Favorable	1,600	Curlleaf mountainmahogany-----	50
		Normal	1,200	Bluebunch wheatgrass----------	5
		Unfavorable	800	Idaho fescue----------	5
				Basin wildrye----------	5
				Arrowleaf balsamroot----------	5
				Mountain big sagebrush--------	5
				Mountain snowberry----------	5
Rock outcrop.					
7*:					
Bickmore family---	Subalpine Loam (Subalpine Big Sagebrush-Idaho Fescue).	Favorable	2,450	Idaho fescue----------	20
		Normal	1,850	Whitepoint locoweed----------	5
		Unfavorable	1,650	Subalpine big sagebrush-------	15
				Spike fescue----------	10
				Yarrow----------	5
				Muttongrass----------	10
				Western wheatgrass----------	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
7*:					
Nielsen family----	Subalpine Windswept Ridge	Favorable	700	Idaho fescue----------	45
		Normal	400	Muttongrass----------	20
		Unfavorable	200	Yarrow----------	10
				Fringed sagewort----------	10
				Penstemon----------	5
				Spike trisetum----------	10
8----------	Loamy Bottom (Basin Wildrye)	Favorable	2,500	Basin wildrye----------	55
Birdow		Normal	1,500	Western wheatgrass----------	10
		Unfavorable	1,000	Basin big sagebrush----------	10
				Nevada bluegrass----------	5
				Tapertip hawksbeard----------	5
9*:					
Bluehill----------	Upland Loam (Wyoming Big Sagebrush).	Favorable	1,200	Wyoming big sagebrush---------	15
		Normal	950	Bluebunch wheatgrass----------	15
		Unfavorable	600	Nevada bluegrass----------	10
				Douglas rabbitbrush----------	5
				Bottlebrush squirreltail------	5
				Thurber needlegrass----------	15
				Arrowleaf balsamroot----------	5
				Idaho fescue----------	10
				Phlox----------	5
Coalbank----------	Upland Loam (Wyoming Big Sagebrush).	Favorable	1,200	Wyoming big sagebrush---------	15
		Normal	950	Bluebunch wheatgrass----------	15
		Unfavorable	600	Nevada bluegrass----------	10
				Bottlebrush squirreltail------	5
				Douglas rabbitbrush----------	5
				Thurber needlegrass----------	15
				Arrowleaf balsamroot----------	5
				Idaho fescue----------	10
				Phlox----------	5
10----------	Upland Shallow Hardpan (Pinyon-Juniper).	Favorable	850	Black sagebrush----------	20
Borvant		Normal	700	Bluebunch wheatgrass----------	15
		Unfavorable	400	Indian ricegrass----------	10
				Antelope bitterbrush----------	10
				Wyoming big sagebrush---------	5
				Phlox----------	5
				Nevada bluegrass----------	5
				Bottlebrush squirreltail------	5
				Needlegrass----------	5
				Locoweed----------	5
11*:					
Brobett----------	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.	Favorable	1,000	Wyoming big sagebrush---------	25
		Normal	800	Bluebunch wheatgrass----------	20
		Unfavorable	500	Indian ricegrass----------	10
				Bottlebrush squirreltail------	5
				Nevada bluegrass----------	5
				Hood phlox----------	5
				Rose pussytoes----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
11*:					
Plegomir	Semidesert Shallow Hardpan (Black Sagebrush).	Favorable	650	Black sagebrush	25
		Normal	500	Indian ricegrass	15
		Unfavorable	250	Bluebunch wheatgrass	15
				Bottlebrush squirreltail	5
				Nevada bluegrass	5
				Needleandthread	5
				Thickstem wildcabbage	5
				Winterfat	5
				Mormon tea	5
				Douglas rabbitbrush	5
12 Bullump	Upland Loam (Browse)	Favorable	1,500	Bluebunch wheatgrass	20
		Normal	1,250	Antelope bitterbrush	20
		Unfavorable	900	Idaho fescue	15
				Mountain brome	5
				Basin wildrye	5
				Geranium	5
				Horsemint	5
				Arrowleaf balsamroot	5
				Mountain snowberry	5
				Mountain big sagebrush	5
13*:					
Bullump	Upland Loam (Browse)	Favorable	1,500	Bluebunch wheatgrass	20
		Normal	1,250	Antelope bitterbrush	20
		Unfavorable	900	Idaho fescue	15
				Mountain brome	5
				Basin wildrye	5
				Geranium	5
				Horsemint	5
				Arrowleaf balsamroot	5
				Mountain snowberry	5
				Mountain big sagebrush	5
Sonlet	Upland Shallow Loam (Black Sagebrush).	Favorable	800	Black sagebrush	35
		Normal	600	Bluebunch wheatgrass	35
		Unfavorable	300	Thurber needlegrass	5
				Indian ricegrass	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Idaho fescue	5
				Nevada bluegrass	5
Rodrof	Upland Shallow Loam (Black Sagebrush).	Favorable	800	Black sagebrush	35
		Normal	600	Bluebunch wheatgrass	35
		Unfavorable	300	Thurber needlegrass	5
				Indian ricegrass	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Idaho fescue	5
				Nevada bluegrass	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
14*:					
Clavicon	Upland Stony Loam (Pinyon-Juniper).	Favorable	850	Wyoming big sagebrush	20
		Normal	650	Bluebunch wheatgrass	20
		Unfavorable	350	Black sagebrush	15
				Indian ricegrass	5
				Muttongrass	5
				Nevada bluegrass	5
				Phlox	5
				Slenderbush eriogonum	5
				Mountain snowberry	5
				Douglas rabbitbrush	5
				Tapertip hawksbeard	5
Rock outcrop.					
15---------- Cliffdown	Desert Alkali Bench (Bud Sagebrush).	Favorable	350	Bud sagebrush	40
		Normal	250	Galleta	15
		Unfavorable	150	Shadscale	10
				Bottlebrush squirreltail	5
				Indian ricegrass	5
				Gray molly	5
				Mormon tea	5
16---------- Cliffdown	Desert Gravelly Loam (Shadscale).	Favorable	500	Galleta	20
		Normal	400	Shadscale	20
		Unfavorable	300	Indian ricegrass	10
				Bud sagebrush	10
				Bottlebrush squirreltail	5
				Winterfat	5
				Horsebrush	5
				Mormon tea	5
				Douglas rabbitbrush	5
17*:					
Cliffdown	Desert Gravelly Loam (Shadscale).	Favorable	500	Galleta	20
		Normal	400	Shadscale	20
		Unfavorable	300	Indian ricegrass	10
				Bud sagebrush	10
				Bottlebrush squirreltail	5
				Winterfat	5
				Horsebrush	5
				Mormon tea	5
				Douglas rabbitbrush	5
Hiko Peak	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.	Favorable	1,000	Wyoming big sagebrush	25
		Normal	800	Bluebunch wheatgrass	20
		Unfavorable	500	Indian ricegrass	10
				Bottlebrush squirreltail	5
				Nevada bluegrass	5
				Hood phlox	5
				Rose pussytoes	5
				Shadscale	5
				Douglas rabbitbrush	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
17*:					
Okrist	Semidesert Sandy Loam (Wyoming Big Sagebrush).	Favorable	900	Indian ricegrass	25
		Normal	700	Needleandthread	15
		Unfavorable	500	Wyoming big sagebrush	10
				Winterfat	10
				Fourwing saltbush	10
				Bottlebrush squirreltail	5
				Western wheatgrass	5
				Douglas rabbitbrush	5
				Nevada Mormon tea	5
18*:					
Cliffdown	Desert Alkali Bench (Bud Sagebrush).	Favorable	350	Bud sagebrush	40
		Normal	250	Galleta	15
		Unfavorable	150	Shadscale	10
				Bottlebrush squirreltail	5
				Indian ricegrass	5
				Gray molly	5
				Mormon tea	5
Rock outcrop.					
Promo	Semidesert Shallow Loam (Black Sagebrush).	Favorable	350	Bluebunch wheatgrass	20
		Normal	250	Black sagebrush	20
		Unfavorable	175	Indian ricegrass	10
				Horsebrush	10
				Nevada bluegrass	5
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Hairy balsamroot	5
				Hood phlox	5
				Shadscale	5
				Douglas rabbitbrush	5
19*:					
Collard	Upland Gravelly Loam (Wyoming Big Sagebrush).	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Wyoming big sagebrush	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Phlox	5
				Needleandthread	5
Hupp	Upland Gravelly Loam (Wyoming Big Sagebrush).	Favorable	1,000	Wyoming big sagebrush	25
		Normal	800	Bluebunch wheatgrass	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Phlox	5
				Needleandthread	5
20*:					
Cottonthomas	Upland Loam (Wyoming Big Sagebrush).	Favorable	1,200	Bluebunch wheatgrass	15
		Normal	950	Wyoming big sagebrush	15
		Unfavorable	600	Nevada bluegrass	10
				Idaho fescue	10
				Bottlebrush squirreltail	5
				Phlox	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
				Thurber needlegrass	15

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
20*:					
Tomsherry	Upland Loam (Wyoming Big Sagebrush).	Favorable	1,200	Wyoming big sagebrush	15
		Normal	950	Bluebunch wheatgrass	15
		Unfavorable	600	Nevada bluegrass	10
				Arrowleaf balsamroot	5
				Idaho fescue	10
				Thurber needlegrass	15
				Douglas rabbitbrush	5
				Bottlebrush squirreltail	5
				Phlox	5
21---------- Crooked Creek	Semiwet Fresh Meadow (Sedge)	Favorable	2,500	Bluegrass	15
		Normal	2,000	Sedge	15
		Unfavorable	1,000	Baltic rush	5
				Basin wildrye	5
				Field horsetail	5
				Redtop	5
				Western wheatgrass	5
				Inland saltgrass	5
				Silver cinquefoil	5
				Plantain	5
				Rubber rabbitbrush	5
22*:					
Crooked Creek	Semiwet Fresh Meadow (Sedge)	Favorable	2,500	Bluegrass	15
		Normal	2,000	Sedge	15
		Unfavorable	1,000	Baltic rush	5
				Basin wildrye	5
				Field horsetail	5
				Redtop	5
				Western wheatgrass	5
				Inland saltgrass	5
				Silver cinquefoil	5
				Plantain	5
				Rubber rabbitbrush	5
Hupp	Upland Gravelly Loam (Wyoming Big Sagebrush).	Favorable	1,000	Wyoming big sagebrush	25
		Normal	800	Bluebunch Wheatgrass	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Pholx	5
				Needleandthread	5
23*:					
Dahar	Upland Juniper Savanna (Utah Juniper).	Favorable	750	Bluebunch wheatgrass	15
		Normal	450	Columbia needlegrass	10
		Unfavorable	200	Indian ricegrass	10
				Wyoming big sagebrush	10
				Antelope bitterbrush	10
				Western wheatgrass	5
				Balsamroot	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
23*:					
Codquin	Upland Shallow Loam (Juniper)	Favorable	325	Bluebunch wheatgrass	30
		Normal	175	Wyoming big sagebrush	15
		Unfavorable	50	Antelope bitterbrush	15
				Indian ricegrass	5
				Nevada bluegrass	5
				Blue flax	5
				Douglas dustymaiden	5
				Saskatoon serviceberry	10
				Douglas rabbitbrush	5
				Stemless goldenweed	5
24*:					
Dateman family	High Mountain Loam (Subalpine Fir).	Favorable	150	Western thimbleberry	40
		Normal	75	Mountain snowberry	10
		Unfavorable	50	Oregon-grape	10
				Fendler meadowrue	5
				Sedge	5
				Slender wheatgrass	5
				Spike fescue	5
				Heartleaf arnica	5
Bickmore family	High Mountain Loam (Mountain Big Sagebrush).	Favorable	3,000	Slender wheatgrass	20
		Normal	2,500	Basin wildrye	10
		Unfavorable	1,600	Mountain brome	10
				Bearded wheatgrass	5
				Muttongrass	5
				Idaho fescue	5
				Jacobs ladder	5
				Butterweed	5
				Peavine	5
				Mountain big sagebrush	5
				Mountain snowberry	5
				Common chokecherry	5
Nielsen family	Mountain Windswept Ridge (low Sagebrush).	Favorable	350	Low sagebrush	20
		Normal	250	Bluebunch wheatgrass	20
		Unfavorable	150	Idaho fescue	10
				Bluegrass	5
				Wormleaf stonecrop	5
				Hood phlox	5
				Stemless goldenweed	5
				Douglas rabbitbrush	5
25	Desert Loam (Shadscale)	Favorable	600	Shadscale	20
Declo		Normal	500	Indian ricegrass	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Bud sagebrush	10
				Winterfat	10
				Milkvetch	5
				Scarlet globemallow	5
26*:					
Declo	Desert Loam (Shadscale)	Favorable	600	Shadscale	20
		Normal	500	Indian ricegrass	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Bud sagebrush	10
				Winterfat	10
				Milkvetch	5
				Scarlet globemallow	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
26*:					
Darkbull	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.	Favorable	1,000	Wyoming big sagebrush	25
		Normal	800	Bluebunch wheatgrass	20
		Unfavorable	500	Indian ricegrass	10
				Hood Phlox	5
				Nevada bluegrass	5
				Bottlebrush squirreltail	5
				Shadscale	5
				Douglas rabbitbrush	5
				Rose pussytoes	5
27*:					
Declo	Desert Loam (Shadscale)	Favorable	600	Shadscale	20
		Normal	500	Indian ricegrass	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Bud sagebrush	10
				Winterfat	10
				Milkvetch	5
				Scarlet globemallow	5
Lembos	Semidesert Loam (Wyoming Big Sagebrush).	Favorable	900	Bluebunch wheatgrass	25
		Normal	700	Wyoming big sagebrush	20
		Unfavorable	500	Indian ricegrass	15
				Bottlebrush squirreltail	10
				Needleandthread	5
				Scarlet globemallow	5
				Penstemon	5
				Hood phlox	5
				Douglas rabbitbrush	5
Tarnach	Semidesert Shallow Loam (Black Sagebrush).	Favorable	350	Bluebunch wheatgrass	20
		Normal	250	Black sagebrush	20
		Unfavorable	175	Indian ricegrass	10
				Horsebrush	10
				Nevada bluegrass	5
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Hairy balsamroot	5
				Hood phlox	5
				Shadscale	5
				Douglas rabbitbrush	5
28 Donnardo	Upland Gravelly Loam (Wyoming Big Sagebrush).	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Wyoming big sagebrush	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Needleandthread	5
				Phlox	5
29*:					
Donnardo	Upland Gravelly Loam (Wyoming Big Sagebrush).	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Wyoming big sagebrush	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Needleandthread	5
				Phlox	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
29*:					
Birdow	Upland Loam (Basin Big Sagebrush).	Favorable	1,300	Nevada bluegrass	5
		Normal	1,000	Bluebunch wheatgrass	25
		Unfavorable	600	Basin big sagebrush	15
				Basin wildrye	5
				Arrowleaf balsamroot	5
				Western wheatgrass	15
				Idaho fescue	5
30*:					
Dynal	Desert Oolitic Dunes (Black Greasewood).	Favorable	500	Black greasewood	35
		Normal	400	Fourwing saltbush	30
		Unfavorable	200	Shadscale	15
				Bottlebrush squirreltail	5
Playas.					
31*:					
Fontreen	Upland Stony Loam (Pinyon-Juniper).	Favorable	850	Wyoming big sagebrush	20
		Normal	650	Bluebunch wheatgrass	20
		Unfavorable	350	Black sagebrush	15
				Indian ricegrass	5
				Muttongrass	5
				Nevada bluegrass	5
				Phlox	5
				Slenderbush eriogonum	5
				Mountain snowberry	5
				Douglas rabbitbrush	5
				Tapertip hawksbeard	5
Borvant	Upland Shallow Hardpan (Pinyon-Juniper).	Favorable	850	Black sagebrush	20
		Normal	700	Bluebunch wheatgrass	15
		Unfavorable	400	Indian ricegrass	10
				Antelope bitterbrush	10
				Nevada bluegrass	5
				Wyoming big sagebrush	5
				Phlox	5
				Bottlebrush squirreltail	5
				Needlegrass	5
				Locoweed	5
32*:					
Fontreen	Upland Stony Loam (Black Sagebrush).	Favorable	800	Bluebunch wheatgrass	35
		Normal	600	Black sagebrush	30
		Unfavorable	300	Nevada bluegrass	10
				Needleandthread	5
				Hooker balsamroot	5
				Stemless goldenweed	5
				Douglas rabbitbrush	5
				Slenderbush eriogonum	5
Bullump	Upland Loam (Browse)	Favorable	1,500	Bluebunch wheatgrass	20
		Normal	1,250	Antelope bitterbrush	20
		Unfavorable	900	Idaho fescue	15
				Mountain brome	5
				Basin wildrye	5
				Geranium	5
				Horsemint	5
				Arrowleaf balsamroot	5
				Mountain snowberry	5
				Mountain big sagebrush	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
33*:					
Fontreen	Upland Stony Loam (Pinyon-Juniper).	Favorable	850	Wyoming big sagebrush	20
		Normal	650	Bluebunch wheatgrass	20
		Unfavorable	350	Black sagebrush	15
				Indian ricegrass	5
				Muttongrass	5
				Nevada bluegrass	5
				Phlox	5
				Slenderbush eriogonum	5
				Mountain snowberry	5
				Douglas rabbitbrush	5
				Tapertip hawksbeard	5
Phage	Upland Stony Loam (Pinyon-Juniper).	Favorable	850	Wyoming big sagebrush	20
		Normal	650	Bluebunch wheatgrass	20
		Unfavorable	350	Black sagebrush	15
				Phlox	5
				Indian ricegrass	5
				Muttongrass	5
				Nevada bluegrass	5
				Tapertip hawksbeard	5
				Mountain snowberry	5
				Douglas rabbitbrush	5
				Slenderbush eriogonum	5
34*:					
Hades	Mountain Gravelly Loam (Mountain Big Sagebrush).	Favorable	2,250	Basin wildrye	10
		Normal	1,850	Bluebunch wheatgrass	10
		Unfavorable	925	Idaho fescue	10
				Slender wheatgrass	10
				Mountain big sagebrush	10
				Mountain brome	5
				Nevada bluegrass	5
				Western wheatgrass	5
				Lupine	5
				Mountain snowberry	5
				Arrowleaf balsamroot	5
				Geranium	5
Bearskin	Mountain Shallow Loam (Low Sagebrush).	Favorable	800	Low sagebrush	25
		Normal	600	Idaho fescue	10
		Unfavorable	400	Bluebunch wheatgrass	10
				Thurber needlegrass	5
				Indian ricegrass	5
				Phlox	5
				Pussytoes	5
				Stemless goldenweed	5
				Douglas rabbitbrush	5
				Mountain snowberry	5
				Gray horsebrush	5
				Curlleaf mountainmahogany	5
Rock outcrop.					

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
35---------- Hiko Peak	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.	Favorable	1,000	Wyoming big sagebrush---------	25
		Normal	800	Bluebunch wheatgrass----------	20
		Unfavorable	500	Indian ricegrass----------	10
				Bottlebrush squirreltail------	5
				Nevada bluegrass----------	5
				Hood phlox----------	5
				Rose pussytoes----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5
36*:					
Hiko Peak---------	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.	Favorable	1,000	Wyoming big sagebrush---------	25
		Normal	800	Bluebunch wheatgrass----------	20
		Unfavorable	500	Indian ricegrass----------	10
				Bottlebrush squirreltail------	5
				Nevada bluegrass----------	5
				Hood phlox----------	5
				Rose pussytoes----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5
Kunzler----------	Semidesert Alkali Loam (Black Greasewood).	Favorable	750	Wyoming big sagebrush---------	20
		Normal	600	Black greasewood----------	20
		Unfavorable	300	Bottlebrush squirreltail------	15
				Indian ricegrass----------	5
				Nevada bluegrass----------	5
				Scarlet globemallow----------	5
				Milkvetch----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5
37*:					
Hiko Peak---------	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.	Favorable	1,000	Wyoming big sagebrush---------	25
		Normal	800	Bluebunch wheatgrass----------	20
		Unfavorable	500	Indian ricegrass----------	10
				Bottlebrush squirreltail------	5
				Nevada bluegrass----------	5
				Hood phlox----------	5
				Rose pussytoes----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5
Sheeprock---------	Semidesert Sandy Loam (Wyoming Big Sagebrush).	Favorable	900	Indian ricegrass----------	25
		Normal	700	Needleandthread----------	15
		Unfavorable	500	Fourwing saltbush----------	10
				Wyoming big sagebrush---------	10
				Winterfat----------	10
				Bottlebrush squirreltail------	5
				Western wheatgrass----------	5
				Douglas rabbitbrush----------	5
				Nevada Mormon tea----------	5
Rock outcrop.					

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
38*:					
Hiko Peak	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.	Favorable	1,000	Wyoming big sagebrush	25
		Normal	800	Bluebunch wheatgrass	20
		Unfavorable	500	Indian ricegrass	10
				Bottlebrush squirreltail	5
				Nevada bluegrass	5
				Hood phlox	5
				Rose pussytoes	5
				Shadscale	5
				Douglas rabbitbrush	5
Taylorsflat	Semidesert Loam (Wyoming Big Sagebrush).	Favorable	900	Bluebunch wheatgrass	25
		Normal	700	Wyoming big sagebrush	20
		Unfavorable	500	Bottlebrush squirreltail	15
				Indian ricegrass	10
				Needleandthread	5
				Douglas rabbitbrush	5
				Scarlet globemallow	5
				Penstemon	5
				Hood phlox	5
39*:					
Hiko Peak	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.	Favorable	1,000	Wyoming big sagebrush	25
		Normal	800	Bluebunch wheatgrass	20
		Unfavorable	500	Indian ricegrass	10
				Bottlebrush squirreltail	5
				Nevada bluegrass	5
				Hood phlox	5
				Rose pussytoes	5
				Shadscale	5
				Douglas rabbitbush	5
Taylorsflat	Semidesert Loam (Wyoming Big Sagebrush).	Favorable	900	Bluebunch wheatgrass	25
		Normal	700	Wyoming big sagebrush	20
		Unfavorable	500	Bottlebrush squirreltail	10
				Indian ricegrass	15
				Needleandthread	5
				Douglas rabbitbrush	5
				Scarlet globemallow	5
				Penstemon	5
				Hood phlox	5
Skumpah	Desert Flat (Shadscale)	Favorable	650	Shadscale	55
		Normal	450	Bottlebrush squirreltail	10
		Unfavorable	350	Winterfat	10
				Gray molly	5
				Bud sagebrush	5
40*:					
Hiko Springs	Desert Loam (Shadscale)	Favorable	600	Indian ricegrass	20
		Normal	500	Shadscale	20
		Unfavorable	400	Bottlebrush squirreltail	10
				Bud sagebrush	10
				Winterfat	10
				Scarlet globemallow	5
				Milkvetch	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
40*:					
Okrist	Semidesert Gravelly Sandy Loam (Black Sagebrush).	Favorable	800	Indian ricegrass	20
		Normal	700	Black sagebrush	15
		Unfavorable	400	Needleandthread	10
				Nevada bluegrass	10
				Searls prairie-clover	5
				Spiny hopsage	5
				Horsebrush	5
				Nevada Mormon tea	5
				Small rabbitbrush	5
				Largeflower skeletonweed	5
				Western wheatgrass	5
				Winterfat	5
41*:					
Jericho	Semidesert Shallow Hardpan (Juniper).	Favorable	600	Black sagebrush	20
		Normal	400	Indian ricegrass	15
		Unfavorable	300	Bluebunch wheatgrass	15
				Winterfat	10
				Bottlebrush squirreltail	5
				Needleandthread	5
				Thickstem wildcabbage	5
				Douglas rabbitbrush	5
				Mormon tea	5
Amtoft	Semidesert Shallow Loam (Salmon Wildrye).	Favorable	700	Salmon wildrye	45
		Normal	600	Black sagebrush	35
		Unfavorable	300	Nevada Mormon tea	5
42*:					
Jughandle family	High Mountain Loam (Subalpine Fir).	Favorable	150	Western thimbleberry	40
		Normal	75	Mountain snowberry	10
		Unfavorable	50	Oregon-grape	10
				Fendler meadowrue	5
				Sedge	5
				Slender wheatgrass	5
				Spike fescue	5
				Heartleaf arnica	5
Parkay family	Mountain Gravelly Loam (Mountain Big Sagebrush).	Favorable	2,250	Basin wildrye	10
		Normal	1,850	Bluebunch wheatgrass	10
		Unfavorable	925	Idaho fescue	10
				Slender wheatgrass	10
				Mountain big sagebrush	10
				Mountain brome	5
				Nevada bluegrass	5
				Western wheatgrass	5
				Lupine	5
				Geranium	5
				Arrowleaf balsamroot	5
				Mountain snowberry	5
43*:					
Kapod	Upland Stony Loam (Black Sagebrush).	Favorable	800	Bluebunch wheatgrass	35
		Normal	600	Black sagebrush	35
		Unfavorable	300	Needleandthread	5
				Nevada bluegrass	10
				Hooker balsamroot	5
				Stemless goldenweed	5
				Douglas rabbitbrush	5
				Slender eriogonum	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
43*:					
Donnardo	Upland Gravelly Loam (Wyoming Big Sagebrush).	Favorable	1,000	Bluebunch wheatgrass	25
		Normal	800	Wyoming big sgebrush	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Needleandthread	5
				Phlox	5
44 Koosharem	Loamy Bottom (Basin Wildrye)	Favorable	2,500	Basin wildrye	55
		Normal	1,500	Western wheatgrass	10
		Unfavorable	1,000	Basin big sagebrush	10
				Nevada bluegrass	5
				Tapertip hawksbeard	5
45*:					
Kunzler	Semidesert Alkali Loam (Black Greasewood).	Favorable	750	Wyoming big sagebrush	20
		Normal	600	Black greasewood	20
		Unfavorable	300	Bottlebrush squirreltail	15
				Indian ricegrass	5
				Nevada bluegrass	5
				Scarlet globemallow	5
				Milkvetch	5
				Shadscale	5
				Douglas rabbitbrush	5
Lembos	Semidesert Loam (Wyoming Big Sagebrush).	Favorable	900	Bluebunch wheatgrass	25
		Normal	700	Wyoming big sagebrush	20
		Unfavorable	500	Indian ricegrass	15
				Bottlebrush squirreltail	10
				Needleandthread	5
				Scarlet globemallow	5
				Penstemon	5
				Hood phlox	5
				Douglas rabbitbrush	5
46*:					
Lembos	Semidesert Loam (Wyoming Big Sagebrush).	Favorable	900	Bluebunch wheatgrass	25
		Normal	700	Wyoming big sagebrush	20
		Unfavorable	500	Indian ricegrass	15
				Bottlebrush squirreltail	10
				Needleandthread	5
				Scarlet globemallow	5
				Penstemon	5
				Hood phlox	5
				Douglas rabbitbrush	5
Jericho	Semidesert Shallow Hardpan (Juniper).	Favorable	600	Black sagebrush	20
		Normal	400	Indian ricegrass	15
		Unfavorable	300	Bluebunch wheatgrass	15
				Winterfat	10
				Bottlebrush squirreltail	5
				Needleandthread	5
				Thickstem wildcabbage	5
				Douglas rabbitbrush	5
				Mormon tea	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
46*:					
Scalade	Semidesert Shallow Hardpan (Black Sagebrush).	Favorable	650	Black sagebrush	25
		Normal	500	Indian ricegrass	15
		Unfavorable	250	Bluebunch wheatgrass	15
				Needleandthread	5
				Bottlebrush squirreltail	5
				Winterfat	5
				Mormon tea	5
				Douglas rabbitbrush	5
				Nevada bluegrass	5
				Thickstem wildcabbage	5
47*:					
Lembos	Semidesert Loam (Wyoming Big Sagebrush).	Favorable	900	Bluebunch wheatgrass	25
		Normal	700	Wyoming big sagebrush	20
		Unfavorable	500	Indian ricegrass	15
				Bottlebrush squirreltail	10
				Needleandthread	5
				Scarlet globemallow	5
				Penstemon	5
				Hood phlox	5
				Douglas rabbitbrush	5
Taylorsflat	Semidesert Loam (Wyoming Big Sagebrush).	Favorable	900	Bluebunch wheatgrass	25
		Normal	700	Wyoming big sagebrush	20
		Unfavorable	500	Bottlebrush squirreltail	10
				Indian ricegrass	15
				Needleandthread	5
				Douglas rabbitbrush	5
				Scarlet globemallow	5
				Penstemon	5
				Hood phlox	5
48*:					
Lundy	Upland Shallow Loam (Pinyon-Juniper).	Favorable	700	Bluebunch wheatgrass	20
		Normal	525	Black sagebrush	20
		Unfavorable	200	Bluegrass	10
				Antelope bitterbrush	10
				Indian ricegrass	5
				Bottlebrush squirreltail	5
				Big sagebrush	5
				Mexican cliffrose	5
Sonlet	Upland Shallow Loam (Black Sagebrush).	Favorable	800	Black sagebrush	35
		Normal	600	Bluebunch wheatgrass	35
		Unfavorable	300	Thurber needlegrass	5
				Nevada bluegrass	5
				Indian ricegrass	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Idaho fescue	5
Lodar	Upland Shallow Loam (Pinyon-Juniper).	Favorable	700	Bluebunch wheatgrass	20
		Normal	525	Black sagebrush	20
		Unfavorable	200	Bluegrass	10
				Antelope bitterbrush	10
				Indian ricegrass	5
				Bottlebrush squirreltail	5
				Big sagebrush	5
				Mexican cliffrose	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
49---------- Lynndyl	Desert Sand (Fourwing Saltbush).	Favorable	800	Indian ricegrass----------	20
		Normal	550	Fourwing saltbush----------	20
		Unfavorable	300	Winterfat----------	10
				Galleta----------	10
				Bottlebrush squirreltail------	5
				Mormon tea----------	5
				Spiny hopsage----------	5
				Horsebrush----------	5
				Milkvetch----------	5
50---------- Mellor	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood----------	50
		Normal	700	Bottlebrush squirreltail------	15
		Unfavorable	300	Gardner saltbush----------	5
				Shadscale----------	5
				Alkali sacaton----------	5
				Seepweed----------	5
51---------- Mellor	Semidesert Alkali Loam (Black Greasewood).	Favorable	750	Black greasewood----------	20
		Normal	600	Wyoming big sagebrush---------	20
		Unfavorable	300	Bottlebrush squirreltail------	15
				Indian ricegrass----------	5
				Nevada bluegrass----------	5
				Scarlet globemallow----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5
				Milkvetch----------	5
52*:					
Mellor----------	Semidesert Alkali Loam (Black Greasewood).	Favorable	750	Black greasewood----------	20
		Normal	600	Wyoming big sagebrush---------	20
		Unfavorable	300	Bottlebrush squirreltail------	15
				Indian ricegrass----------	5
				Nevada bluegrass----------	5
				Scarlet globemallow----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5
				Milkvetch----------	5
Declo----------	Semidesert Loam (Wyoming Big Sagebrush).	Favorable	900	Bluebunch wheatgrass----------	25
		Normal	700	Wyoming big sagebrush---------	20
		Unfavorable	500	Indian ricegrass----------	15
				Bottlebrush squirreltail------	10
				Douglas rabbitbrush----------	5
				Needleandthread----------	5
				Scarlet globemallow----------	5
				Hood phlox----------	5
				Penstemon----------	5
53*:					
Mellor----------	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood----------	50
		Normal	700	Bottlebrush squirreltail------	15
		Unfavorable	300	Gardner saltbush----------	5
				Shadscale----------	5
				Alkali sacaton----------	5
				Seepweed----------	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
53*:					
Pomat	Semidesert Loam (Basin Big Sagebrush).	Favorable	1,100	Basin big sagebrush	30
		Normal	900	Bottlebrush squirreltail	25
		Unfavorable	600	Winterfat	15
				Nevada bluegrass	10
				Indian ricegrass	5
				Douglas rabbitbrush	5
54*:					
Nielsen family	Mountain Windswept Ridge (Low Sagebrush).	Favorable	350	Low sagebrush	20
		Normal	250	Bluebunch wheatgrass	20
		Unfavorable	150	Idaho fescue	10
				Bluegrass	5
				Wormleaf stonecrop	5
				Hood phlox	5
				Stemless goldenweed	5
				Douglas rabbitbrush	5
Bickmore family	Mountain Gravelly Loam (Mountain Big Sagebrush).	Favorable	2,250	Basin wildrye	10
		Normal	1,850	Bluebunch wheatgrass	10
		Unfavorable	925	Idaho fescue	10
				Slender wheatgrass	10
				Mountain big sagebrush	10
				Mountain brome	5
				Nevada bluegrass	5
				Western wheatgrass	5
				Lupine	5
				Geranium	5
				Arrowleaf balsamroot	5
				Mountain snowberry	5
Rock outcrop.					
55*:					
Okrist	Semidesert Gravelly Sandy Loam (Black Sagebrush).	Favorable	800	Indian ricegrass	20
		Normal	700	Black sagebrush	20
		Unfavorable	400	Needleandthread	10
				Nevada bluegrass	10
				Western wheatgrass	5
				Winterfat	5
				Searls prairie-clover	5
				Spiny hopsage	5
				Horsebrush	5
				Nevada Mormon tea	5
				Small rabbitbrush	5
				Largeflower skeletonweed	5
Okrist, thick surface	Semidesert Sandy Loam (Wyoming Big Sagebrush).	Favorable	900	Indian ricegrass	25
		Normal	700	Needleandthread	15
		Unfavorable	500	Wyoming big sagebrush	10
				Winterfat	10
				Fourwing saltbush	10
				Bottlebrush squirreltail	5
				Western wheatgrass	5
				Douglas rabbitbrush	5
				Nevada Mormon tea	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
56*:					
Overland----------	Upland Shallow Stony Loam (Juniper).	Favorable	900	Bluebunch wheatgrass----------	20
		Normal	700	Wyoming big sagebrush---------	10
		Unfavorable	500	Basin wildrye----------	10
				Indian ricegrass----------	5
				Needleandthread----------	5
				Bottlebrush squirreltail------	5
				Arrowleaf balsamroot----------	5
				Tapertip hawksbeard----------	5
				Antelope bitterbrush----------	15
				Black sagebrush----------	10
Sonlet----------	Upland Shallow Loam (Black Sagebrush).	Favorable	800	Black sagebrush----------	35
		Normal	600	Bluebunch wheatgrass----------	35
		Unfavorable	300	Thurber needlegrass----------	5
				Nevada bluegrass----------	5
				Tapertip hawksbeard----------	5
				Indian ricegrass----------	5
				Douglas rabbitbrush----------	5
				Idaho fescue----------	5
57*---------- Parkay family	High Mountain Loam (Aspen)----	Favorable	1,700	Mountain snowberry----------	15
		Normal	1,300	Common chokecherry----------	10
		Unfavorable	900	Mountain brome----------	10
				Blue wildrye----------	10
				Butterweed----------	10
				Edible valerian----------	10
				Bearded wheatgrass----------	5
				Nodding bluegrass----------	5
				Horsemint----------	5
				Jacobs ladder----------	5
				Aspen peavine----------	5
				Sweetanice----------	5
				Oregon-grape----------	5
58*:					
Parkay family-----	Mountain Gravelly Loam (Mountain Big Sagebrush).	Favorable	2,250	Basin wildrye----------	10
		Normal	1,850	Bluebunch wheatgrass----------	10
		Unfavorable	925	Idaho fescue----------	10
				Slender wheatgrass----------	10
				Mountain big sagebrush--------	10
				Mountain brome----------	5
				Nevada bluegrass----------	5
				Western wheatgrass----------	5
				Lupine----------	5
				Geranium----------	5
				Arrowleaf balsamroot----------	5
				Mountain snowberry----------	5
Dateman family----	High Mountain Loam (Subalpine Fir).	Favorable	150	Western thimbleberry----------	40
		Normal	75	Mountain snowberry----------	10
		Unfavorable	50	Oregon-grape----------	10
				Fendler meadowrue----------	5
				Sedge----------	5
				Slender wheatgrass----------	5
				Spike fescue----------	5
				Heartleaf arnica----------	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
59*:					
Parkay family-----	Mountain Gravelly Loam (Mountain Big Sagebrush).	Favorable	2,250	Basin wildrye----------	10
		Normal	1,850	Bluebunch wheatgrass----------	10
		Unfavorable	925	Idaho fescue----------	10
				Slender wheatgrass----------	10
				Mountain big sagebrush--------	10
				Mountain brome----------	5
				Nevada bluegrass----------	5
				Western wheatgrass----------	5
				Lupine----------	5
				Geranium----------	5
				Arrowleaf balsamroot----------	5
				Mountain snowberry----------	5
Broad Canyon family----------	Mountain Windswept Ridge (Low Sagebrush).	Favorable	350	Low sagebrush----------	20
		Normal	250	Bluebunch wheatgrass----------	20
		Unfavorable	150	Idaho fescue----------	10
				Bluegrass----------	5
				Wormleaf stonecrop----------	5
				Hood phlox----------	5
				Stemless goldenweed----------	5
				Douglas rabbitbrush----------	5
62*:					
Plegomir----------	Semidesert Shallow Hardpan (Black Sagebrush).	Favorable	650	Black sagebrush----------	25
		Normal	500	Indian ricegrass----------	15
		Unfavorable	250	Bluebunch wheatgrass----------	15
				Bottlebrush squirreltail------	5
				Nevada bluegrass----------	5
				Needleandthread----------	5
				Thickstem wildcabbage---------	5
				Winterfat----------	5
				Mormon tea----------	5
				Douglas rabbitbrush----------	5
Hiko Peak---------	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.	Favorable	1,000	Wyoming big sagebrush---------	25
		Normal	800	Bluebunch wheatgrass----------	20
		Unfavorable	500	Indian ricegrass----------	10
				Bottlebrush squirreltail------	5
				Nevada bluegrass----------	5
				Hood phlox----------	5
				Rose pussytoes----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5
Bullump----------	Upland Loam (Browse)----------	Favorable	1,500	Bluebunch wheatgrass----------	20
		Normal	1,250	Antelope bitterbrush----------	20
		Unfavorable	900	Idaho fescue----------	15
				Mountain brome----------	5
				Basin wildrye----------	5
				Geranium----------	5
				Horsemint----------	5
				Arrowleaf balsamroot----------	5
				Mountain snowberry----------	5
				Mountain big sagebrush--------	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
63*:					
Promo	Semidesert Shallow Loam (Black Sagebrush).	Favorable	350	Bluebunch wheatgrass	20
		Normal	250	Black sagebrush	20
		Unfavorable	175	Indian ricegrass	10
				Horsebrush	10
				Nevada bluegrass	5
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Hairy balsamroot	5
				Hood phlox	5
				Shadscale	5
				Douglas rabbitbrush	5
Puett	Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass)	Favorable	350	Black sagebrush	30
		Normal	250	Bluebunch wheatgrass	25
		Unfavorable	175	Indian ricegrass	10
				Nevada bluegrass	5
				Globemallow	5
				Phlox	5
				Shadscale	5
64*:					
Puett	Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass)	Favorable	350	Black sagebrush	30
		Normal	250	Bluebunch wheatgrass	25
		Unfavorable	175	Indian ricegrass	10
				Nevada bluegrass	5
				Globemallow	5
				Phlox	5
				Shadscale	5
Plegomir	Semidesert Shallow Hardpan (Black Sagebrush).	Favorable	650	Black sagebrush	25
		Normal	500	Indian ricegrass	15
		Unfavorable	250	Bluebunch wheatgrass	15
				Bottlebrush squirreltail	5
				Nevada bluegrass	5
				Needleandthread	5
				Thickstem wildcabbage	5
				Winterfat	5
				Mormon tea	5
				Douglas rabbitbrush	5
65*:					
Raftriver	Upland Loam (Wyoming Big Sagebrush).	Favorable	1,200	Bluebunch wheatgrass	15
		Normal	950	Wyoming big sagebrush	15
		Unfavorable	600	Nevada bluegrass	10
				Idaho fescue	10
				Bottlebrush squirreltail	5
				Thurber needlegrass	15
				Arrowleaf balsamroot	5
				Phlox	5
				Douglas rabbitbrush	5
Duckree	Upland Gravelly Loam (Wyoming Big Sagebrush).	Favorable	1,000	Wyoming big sagebrush	25
		Normal	800	Bluebunch wheatgrass	25
		Unfavorable	400	Bluegrass	15
				Antelope bitterbrush	10
				Needleandthread	5
				Phlox	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
66*:					
Raftriver	Upland Loam (Wyoming Big Sagebrush).	Favorable	1,200	Wyoming big sagebrush	15
		Normal	950	Bluebunch wheatgrass	15
		Unfavorable	600	Nevada wheatgrass	10
				Idaho fescue	10
				Bottlebrush squirreltail	5
				Thurber needlegrass	15
				Phlox	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Koosharem	Upland Loam (Basin Big Sagebrush).	Favorable	1,300	Bluebunch wheatgrass	25
		Normal	1,000	Western wheatgrass	15
		Unfavorable	600	Basin big sagebrush	15
				Basin wildrye	5
				Nevada bluegrass	5
				Idaho fescue	5
				Arrowleaf balsamroot	5
67*:					
Reebok	Upland Shallow Loam (Black Sagebrush).	Favorable	800	Black sagebrush	35
		Normal	600	Bluebunch wheatgrass	35
		Unfavorable	300	Thurber needlegrass	5
				Indian ricegrass	5
				Nevada bluegrass	5
				Idaho fescue	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
Puett	Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass)	Favorable	350	Black sagebrush	30
		Normal	250	Bluebunch wheatgrass	25
		Unfavorable	175	Indian ricegrass	10
				Nevada bluegrass	5
				Globemallow	5
				Phlox	5
				Shadscale	5
68*:					
Rexmont	Upland Shallow Stony Loam (Juniper).	Favorable	900	Bluebunch wheatgrass	20
		Normal	700	Wyoming big sagebrush	10
		Unfavorable	500	Basin wildrye	10
				Indian ricegrass	5
				Needleandthread	5
				Bottlebrush squirreltail	5
				Black sagebrush	10
				Antelope bitterbrush	10
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
Shalper	Upland Shallow Gravelly Loam (Thurber Needlegrass).	Favorable	500	Bluebunch wheatgrass	20
		Normal	400	Thurber needlegrass	20
		Unfavorable	250	Wyoming big sagebrush	10
				Nevada bluegrass	5
				Tapertip hawksbeard	5
				Phlox	5
				Antelope bitterbrush	5
				Douglas rabbitbrush	5
Rock outcrop.					

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
69*:					
Ridd	Upland Stony Loam (Black Sagebrush).	Favorable	800	Bluebunch wheatgrass	35
		Normal	600	Black sagebrush	35
		Unfavorable	300	Needleandthread	5
				Nevada bluegrass	10
				Hooker balsamroot	5
				Stemless goldenweed	5
				Douglas rabbitbrush	5
				Slenderbush eriogonum	5
Bullump	Upland Loam (Browse)	Favorable	1,500	Bluebunch wheatgrass	20
		Normal	1,250	Antelope bitterbrush	20
		Unfavorable	900	Idaho fescue	15
				Mountain brome	5
				Basin wildrye	5
				Geranium	5
				Horsemint	5
				Arrowleaf balsamroot	5
				Mountain snowberry	5
				Mountain big sagebrush	5
70*:					
Ridgecrest family	Mountain Shallow Gravelly Ridge (Black Sagebrush).	Favorable	700	Black sagebrush	25
		Normal	500	Thurber needlegrass	20
		Unfavorable	300	Bluebunch wheatgrass	10
				Indian ricegrass	5
				Arrowleaf balsamroot	5
				Tapertip hawksbeard	5
Bickmore family	Mountain Gravelly Loam (Mountain Big Sagebrush).	Favorable	2,250	Basin wildrye	10
		Normal	1,850	Bluebunch wheatgrass	10
		Unfavorable	925	Idaho fescue	10
				Slender wheatgrass	10
				Mountain big sagebrush	10
				Mountain brome	5
				Nevada bluegrass	5
				Western wheatgrass	5
				Lupine	5
				Geranium	5
				Arrowleaf balsamroot	5
				Mountain snowberry	5
71*:					
Rock outcrop.					
Amtoft	Semidesert Shallow Loam (Salmon Wildrye).	Favorable	700	Salmon wildrye	45
		Normal	600	Black sagebrush	35
		Unfavorable	300	Nevada mormon tea	5
72	Upland Shallow Loam (Black Sagebrush).	Favorable	800	Black sagebrush	35
Rodrof		Normal	600	Bluebunch wheatgrass	35
		Unfavorable	300	Thurber needlegrass	5
				Indian ricegrass	5
				Tapertip hawksbeard	5
				Douglas rabbitbrush	5
				Idaho fescue	5
				Nevada bluegrass	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
73*:					
Rubble land.					
Nielsen family----	Mountain Shallow Loam (Curlleaf Mountainmahogany).	Favorable	1,600	Curlleaf mountainmahogany-----	40
		Normal	1,300	Bluebunch wheatgrass----------	25
		Unfavorable	800	Bluegrass----------	10
				Salmon wildrye----------	10
				Arrowleaf balsamroot----------	5
				Fernbush----------	5
74*:					
Saltair----------	Desert Salty Silt (Pickleweed)	Favorable	250	Pickleweed----------	50
		Normal	200	Inland saltgrass----------	35
		Unfavorable	100	Samphire----------	5
				Seepweed----------	5
Playas.					
76*:					
Saxby----------	Semidesert Bouldery Loam (Wyoming Big Sagebrush).	Favorable	800	Wyoming big sagebrush---------	40
		Normal	650	Indian ricegrass----------	15
		Unfavorable	350	Spiny hopsage----------	15
				Nevada bluegrass----------	5
				Bottlebrush squirreltail------	5
				Horsebrush----------	5
				Douglas rabbitbrush----------	5
Rock outcrop.					
77*:					
Scalade----------	Semidesert Shallow Hardpan (Black Sagebrush).	Favorable	650	Black sagebrush----------	25
		Normal	500	Indian ricegrass----------	15
		Unfavorable	250	Bluebunch wheatgrass----------	15
				Needleandthread----------	5
				Bottlebrush squirreltail------	5
				Winterfat----------	5
				Mormon tea----------	5
				Douglas rabbitbrush----------	5
				Nevada bluegrass----------	5
				Thickstem wildcabbage---------	5
Lodar----------	Upland Shallow Loam (Pinyon-Juniper).	Favorable	700	Bluebunch wheatgrass----------	20
		Normal	525	Black sagebrush----------	20
		Unfavorable	200	Bluegrass----------	10
				Antelope bitterbrush----------	10
				Indian ricegrass----------	5
				Bottlebrush squirreltail------	5
				Big sagebrush----------	5
				Mexican cliffrose----------	5
78*:					
Skumpah----------	Desert Flat (Shadscale)-------	Favorable	650	Shadscale----------	55
		Normal	450	Bottlebrush squirreltail------	10
		Unfavorable	350	Winterfat----------	10
				Gray molly----------	5
				Bud sagebrush----------	5
Playas.					

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
79*:					
Skumpah, sodic----	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood----------	50
		Normal	700	Bottlebrush squirreltail------	15
		Unfavorable	300	Alkali sacaton----------	5
				Seepweed----------	5
				Shadscale----------	5
				Gardner saltbush----------	5
Playas.					
80*:					
Skumpah----------	Desert Flat (Shadscale)-------	Favorable	650	Shadscale----------	55
		Normal	450	Bottlebrush squirreltail------	10
		Unfavorable	350	Winterfat----------	10
				Gray molly----------	5
				Bud sagebrush----------	5
Skumpah, sodic----	Alkali Flat (Black Greasewood)	Favorable	1,000	Black greasewood----------	50
		Normal	700	Bottlebrush squirreltail------	15
		Unfavorable	300	Alkali sacaton----------	5
				Seepweed----------	5
				Shadscale----------	5
				Gardner saltbush----------	5
Swingler----------	Desert Salt Flat (Sickle Saltbush).	Favorable	400	Sickle saltbush----------	55
		Normal	300	Gray molly----------	15
		Unfavorable	100	Bottlebrush squirreltail------	5
				Seepweed----------	5
81*:					
Skylick----------	Mountain Gravelly Loam (Mountain Big Sagebrush).	Favorable	2,250	Slender wheatgrass----------	10
		Normal	1,850	Mountain big sagebrush--------	10
		Unfavorable	925	Idaho fescue----------	10
				Basin wildrye----------	10
				Bluebunch wheatgrass----------	10
				Geranium----------	5
				Mountain snowberry----------	5
				Western wheatgrass----------	5
				Arrowleaf balsamroot----------	5
				Lupine----------	5
				Nevada bluegrass----------	5
				Mountain brome----------	5
Hoodle----------	Mountain Windswept Ridge (Low Sagebrush).	Favorable	350	Low sagebrush----------	25
		Normal	250	Bluebunch wheatgrass----------	20
		Unfavorable	150	Idaho fescue----------	10
				Bluegrass----------	5
				Wormleaf stonecrop----------	5
				Stemless goldenweed----------	5
				Hood phlox----------	5
				Douglas rabbitbrush----------	5
82---------- Smaug	Desert Loam (Shadscale)-------	Favorable	600	Indian ricegrass----------	20
		Normal	500	Shadscale----------	20
		Unfavorable	400	Bottlebrush squirreltail------	10
				Bud sagebrush----------	10
				Winterfat----------	10
				Scarlet globemallow----------	5
				Milkvetch----------	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
83---------- Smaug	Desert Silt Flat (Winterfat)	Favorable	700	Winterfat----------	60
		Normal	500	Shadscale----------	10
		Unfavorable	250	Bottlebrush squirreltail------	5
				Indian ricegrass----------	5
				Bud sagebrush----------	5
84*:					
Solak----------	Upland Shallow Loam (Pinyon-Juniper).	Favorable	700	Black sagebrush----------	20
		Normal	525	Bluebunch wheatgrass----------	20
		Unfavorable	200	Bluegrass----------	10
				Antelope bitterbrush----------	10
				Indian ricegrass----------	5
				Bottlebrush squirreltail------	5
				Big sagebrush----------	5
				Mexican cliffrose----------	5
Rock outcrop.					
85*:					
Sonlet----------	Upland Shallow Loam (Black Sagebrush).	Favorable	800	Black sagebrush----------	35
		Normal	600	Bluebunch wheatgrass----------	35
		Unfavorable	300	Thurber needlegrass----------	5
				Nevada bluegrass----------	5
				Tapertip hawksbeard----------	5
				Indian ricegrass----------	5
				Douglas rabbitbrush----------	5
				Idaho fescue----------	5
Lodar----------	Upland Shallow Loam (Pinyon-Juniper).	Favorable	700	Black sagebrush----------	20
		Normal	525	Bluebunch wheatgrass----------	20
		Unfavorable	200	Bluegrass----------	10
				Antelope bitterbrush----------	10
				Indian ricegrass----------	5
				Bottlebrush squirreltail------	5
				Big sagebrush----------	5
				Mexican cliffrose----------	5
Rubble land.					
86*:					
Stucky----------	Semidesert Stony Loam (Black Sagebrush).	Favorable	700	Black sagebrush----------	35
		Normal	600	Indian ricegrass----------	15
		Unfavorable	400	Bluebunch wheatgrass----------	15
				Bottlebrush squirreltail------	5
				Sandberg bluegrass----------	5
				Hood phlox----------	5
				Hooker balsamroot----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5
Hiko Peak----------	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.	Favorable	1,000	Wyoming big sagebrush----------	25
		Normal	800	Bluebunch wheatgrass----------	20
		Unfavorable	500	Indian ricegrass----------	10
				Bottlebrush squirreltail------	5
				Nevada bluegrass----------	5
				Hood phlox----------	5
				Rose pussytoes----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
87, 88---------- Tarnach	Semidesert Shallow Loam (Black Sagebrush).	Favorable	350	Bluebunch wheatgrass----------	20
		Normal	250	Black sagebrush----------	20
		Unfavorable	175	Indian ricegrass----------	10
				Horsebrush----------	10
				Nevada bluegrass----------	5
				Bottlebrush squirreltail------	5
				Sandberg bluegrass----------	5
				Hairy balsamroot----------	5
				Hood phlox----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5
89*:					
Tarnach----------	Semidesert Shallow Loam (Black Sagebrush).	Favorable	350	Bluebunch wheatgrass----------	20
		Normal	250	Black sagebrush----------	20
		Unfavorable	175	Indian ricegrass----------	10
				Horsebrush----------	10
				Nevada bluegrass----------	5
				Bottlebrush squirreltail------	5
				Sandberg bluegrass----------	5
				Hairy balsamroot----------	5
				Hood phlox----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5
Amtoft----------	Semidesert Shallow Loam (Salmon Wildrye).	Favorable	700	Salmon wildrye----------	45
		Normal	600	Black sagebrush----------	35
		Unfavorable	300	Nevada Mormon tea----------	5
90*:					
Tarnach----------	Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass)	Favorable	350	Black sagebrush----------	30
		Normal	250	Bluebunch wheatgrass----------	25
		Unfavorable	175	Indian ricegrass----------	10
				Nevada bluegrass----------	5
				Hood phlox----------	5
				Shadscale----------	5
				Globemallow----------	5
Promo----------	Semidesert Shallow Loam (Black Sagebrush).	Favorable	350	Bluebunch wheatgrass----------	20
		Normal	250	Black sagebrush----------	20
		Unfavorable	175	Indian ricegrass----------	10
				Horsebrush----------	10
				Nevada bluegrass----------	5
				Bottlebrush squirreltail------	5
				Sandberg bluegrass----------	5
				Hairy balsamroot----------	5
				Hood phlox----------	5
				Shadscale----------	5
				Douglas rabbitbrush----------	5
91*:					
Tarnach, moist----	Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass)	Favorable	350	Black sagebrush----------	30
		Normal	250	Bluebunch wheatgrass----------	25
		Unfavorable	175	Indian ricegrass----------	10
				Nevada bluegrass----------	5
				Hood phlox----------	5
				Shadscale----------	5
				Globemallow----------	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
91*:					
Tarnach	Semidesert Shallow Loam (Black Sagebrush).	Favorable	350	Bluebunch wheatgrass	20
		Normal	250	Black sagebrush	20
		Unfavorable	175	Indian ricegrass	10
				Horsebrush	10
				Nevada bluegrass	5
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Hairy balsamroot	5
				Hood phlox	5
				Shadscale	5
				Douglas rabbitbrush	5
92--- Tosser	Semidesert Stony Loam (Black Sagebrush).	Favorable	700	Black sagebrush	35
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Indian ricegrass	15
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Hood phlox	5
				Hooker balsamroot	5
				Douglas rabbitbrush	5
				Shadscale	5
93*:					
Tosser	Semidesert Stony Loam (Black Sagebrush).	Favorable	700	Black sagebrush	35
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Indian ricegrass	15
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Hood phlox	5
				Hooker balsamroot	5
				Douglas rabbitbrush	5
				Shadscale	5
Plegomir	Semidesert Shallow Hardpan (Black Sagebrush).	Favorable	650	Black sagebrush	25
		Normal	500	Indian ricegrass	15
		Unfavorable	250	Bluebunch wheatgrass	15
				Bottlebrush squirreltail	5
				Nevada bluegrass	5
				Needleandthread	5
				Thickstem wildcabbage	5
				Winterfat	5
				Mormon tea	5
				Douglas rabbitbrush	5
94*:					
Tosser	Semidesert Stony Loam (Black Sagebrush).	Favorable	700	Black sagebrush	35
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Indian ricegrass	15
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Hood phlox	5
				Hooker balsamroot	5
				Douglas rabbitbrush	5
				Shadscale	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
94*:					
Puett	Semidesert Shallow Loam (Utah Juniper-Bluebunch Wheatgrass)	Favorable	350	Black sagebrush	30
		Normal	250	Bluebunch wheatgrass	25
		Unfavorable	175	Indian ricegrass	10
				Nevada bluegrass	5
				Globemallow	5
				Phlox	5
				Shadscale	5
95*:					
Tosser	Semidesert Stony Loam (Black Sagebrush).	Favorable	700	Black sagebrush	35
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Indian ricegrass	15
				Bottlebrush squirreltail	5
				Sandberg bluegrass	5
				Hood phlox	5
				Hooker balsamroot	5
				Douglas rabbitbrush	5
				Shadscale	5
Sitar	Semidesert Gravelly Loam (Wyoming Big Sagebrush) North.	Favorable	1,000	Wyoming big sagebrush	25
		Normal	800	Bluebunch wheatgrass	20
		Unfavorable	500	Indian ricegrass	10
				Bottlebrush squirreltail	5
				Nevada bluegrass	5
				Hood phlox	5
				Rose pussytoes	5
				Shadscale	5
				Douglas rabbitbrush	5
96 Vicking	Upland Loam (Wyoming Big Sagebrush).	Favorable	1,200	Bluebunch wheatgrass	15
		Normal	950	Wyoming big sagebrush	15
		Unfavorable	600	Nevada bluegrass	10
				Idaho fescue	10
				Bottlebrush squirreltail	5
				Thurber needlegrass	15
				Phlox	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
97*:					
Vicking	Upland Loam (Wyoming Big Sagebrush).	Favorable	1,200	Bluebunch wheatgrass	15
		Normal	950	Wyoming big sagebrush	15
		Unfavorable	600	Nevada bluegrass	10
				Idaho fescue	10
				Bottlebrush squirreltail	5
				Thurber needlegrass	15
				Phlox	5
				Arrowleaf balsamroot	5
				Douglas rabbitbrush	5
Raftriver	Upland Loam (Wyoming Big Sagebrush).	Favorable	1,200	Bluebunch wheatgrass	15
		Normal	950	Wyoming big sagebrush	15
		Unfavorable	600	Nevada bluegrass	10
				Idaho fescue	10
				Bottlebrush squirreltail	5
				Thurber needlegrass	15
				Phlox	5
				Arrowleaf balsamroot	5

See footnote at end of table.

TABLE 5.--RANGELAND AND WOODLAND UNDERSTORY PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
97*:					
Codquin	Upland Shallow Loam (Juniper)	Favorable	325	Bluebunch wheatgrass	30
		Normal	175	Wyoming big sagebrush	15
		Unfavorable	50	Antelope bitterbrush	15
				Indian ricegrass	5
				Nevada bluegrass	5
				Blue flax	5
				Douglas dustymaiden	5
				Saskatoon serviceberry	10
				Douglas rabbitbrush	5
				Stemless goldenweed	5
98*:					
Vicking	Upland Loam (Basin Big Sagebrush).	Favorable	1,300	Bluebunch wheatgrass	25
		Normal	1,000	Western wheatgrass	15
		Unfavorable	600	Basin big sagebrush	15
				Nevada bluegrass	5
				Idaho fescue	5
				Arrowleaf balsamroot	5
				Basin wildrye	5
Ramshorn family	Upland Stony Loam (Black Sagebrush).	Favorable	800	Black sagebrush	35
		Normal	600	Bluebunch wheatgrass	30
		Unfavorable	300	Needleandthread	5
				Nevada bluegrass	10
				Hooker balsamroot	5
				Douglas rabbitbrush	5
				Slenderbush eriogonum	5
				Stemless goldenweed	5

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--RECREATIONAL AND URBAN 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	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
1---------- Acana	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Moderate: cemented pan, frost action.	Moderate: cemented pan.
2*:						
Acana----------	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Moderate: cemented pan, frost action.	Moderate: cemented pan.
Collard----------	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Moderate: dusty.	Severe: poor filter.	Moderate: frost action.	Slight.
3*:						
Acana----------	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Moderate: cemented pan, frost action.	Moderate: cemented pan.
Jericho----------	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Moderate: cemented pan, frost action.	Moderate: cemented pan.
4---------- Acord	Severe: large stones.	Severe: large stones.	Severe: large stones.	Moderate: slope, large stones.	Moderate: shrink-swell, low strength, slope.	Moderate: shrink-swell, slope, large stones.
5*:						
Ant Flat----------	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: percs slowly, slope.	Severe: low strength, slope, shrink-swell.	Severe: shrink-swell, slope.
Acord----------	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones.	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.
6*:						
Bickmore family--------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
6*:						
Eyre family	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop.						
7*:						
Bickmore family	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Nielsen family	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
8--- Birdow	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: percs slowly.	Moderate: frost action.	Slight.
9*:						
Bluehill	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Coalbank	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.	Severe: slope.	Severe: slope.
10--- Borvant	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.
11*:						
Brobett	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: cemented pan.	Moderate: frost action, cemented pan.	Moderate: cemented pan.
Plegomir	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.
12--- Bullump	Moderate: slope, dusty.	Moderate: slope, dusty.	Moderate: dusty.	Severe: percs slowly.	Moderate: shrink-swell, slope, frost action.	Moderate: shrink-swell, slope.
13*:						
Bullump	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
13*:						
Sonlet	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rodrof	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.
14*:						
Clavicon	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
15--- Cliffdown	Severe: small stones, excess sodium.	Severe: small stones, excess sodium.	Severe: small stones.	Slight---	Slight---	Slight.
16--- Cliffdown	Severe: small stones.	Severe: small stones.	Severe: small stones.	Slight---	Slight---	Slight.
17*:						
Cliffdown	Moderate: small stones.	Moderate: small stones.	Slight---	Slight---	Slight---	Slight.
Hiko Peak	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Slight---	Moderate: frost action.	Slight.
Okrist	Slight---	Slight---	Slight---	Severe: poor filter.	Slight---	Slight.
18*:						
Cliffdown	Severe: small stones, excess sodium.	Severe: small stones, excess sodium.	Severe: small stones.	Moderate: slope.	Moderate: slope.	Moderate: slope.
Rock outcrop.						
Promo	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
19*:						
Collard	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Moderate: dusty.	Severe: poor filter.	Moderate: frost action.	Slight.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
19*:						
Hupp	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Slight	Moderate: frost action.	Slight.
20*:						
Cottonthomas	Moderate: slope.	Moderate: slope.	Severe: erodes easily.	Moderate: percs slowly, slope.	Moderate: slope, frost action.	Moderate: slope.
Tomsherry	Moderate: slope.	Moderate: slope.	Severe: erodes easily.	Severe: cemented pan.	Severe: frost action.	Moderate: slope.
21 Crooked Creek	Severe: flooding, wetness, percs slowly.	Severe: percs slowly.	Moderate: wetness.	Severe: flooding, wetness, percs slowly.	Severe: low strength, flooding, frost action.	Severe: flooding, wetness, shrink-swell.
22*:						
Crooked Creek	Severe: flooding, wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.	Severe: flooding, wetness, percs slowly.	Severe: shrink-swell, low strength, flooding.	Severe: flooding, wetness, shrink-swell.
Hupp	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Slight	Moderate: frost action.	Slight.
23*:						
Dahar	Moderate: slope, small stones.	Moderate: slope, small stones.	Slight	Severe: cemented pan.	Moderate: slope, frost action.	Moderate: slope.
Codquin	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
24*:						
Dateman family	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Bickmore family	Severe: slope.	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Nielsen family	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
25--- Declo	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Severe: erodes easily.	Moderate: percs slowly.	Moderate: frost action.	Slight.
26*:						
Declo---	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Severe: erodes easily.	Moderate: percs slowly.	Moderate: frost action.	Slight.
Darkbull---	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.	Severe: poor filter.	Moderate: frost action, large stones.	Moderate: large stones.
27*:						
Declo---	Severe: excess sodium, excess salt.	Severe: excess sodium, excess salt.	Severe: erodes easily.	Moderate: percs slowly.	Moderate: frost action.	Slight.
Lembos---	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: cemented pan.	Moderate: cemented pan, frost action.	Moderate: cemented pan.
Tarnach---	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: small stones.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
28--- Donnardo	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Moderate: dusty.	Moderate: percs slowly, large stones.	Moderate: frost action, large stones.	Moderate: large stones.
29*:						
Donnardo---	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Moderate: dusty.	Moderate: percs slowly, large stones.	Moderate: frost action, large stones.	Moderate: large stones.
Birdow---	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: percs slowly.	Moderate: frost action.	Slight.
30*:						
Dynal---	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: poor filter, subsides.	Moderate: slope.	Moderate: slope.
Playas.						

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
31*:						
Fontreen	Moderate: slope, small stones, dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.	Moderate: slope.	Moderate: slope, frost action.	Moderate: slope.
Borvant	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.
32*:						
Fontreen	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Moderate: dusty.	Slight	Moderate: frost action.	Slight.
Bullump	Moderate: slope, dusty.	Moderate: slope, dusty.	Moderate: dusty.	Severe: percs slowly.	Moderate: shrink-swell, slope, frost action.	Moderate: shrink-swell, slope.
33*:						
Fontreen	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Phage	Severe: slope.	Severe: slope.	Moderate: large stones, dusty.	Severe: slope.	Severe: slope.	Severe: slope.
34*:						
Hades	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.
Bearskin	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop.						
35 Hiko Peak	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Slight	Moderate: frost action.	Slight.
36*:						
Hiko Peak	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Slight	Moderate: frost action.	Slight.
Kunzler	Slight	Slight	Slight	Severe: percs slowly.	Moderate: frost action.	Slight.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
37*:						
Hiko Peak	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Slight	Moderate: frost action.	Slight.
Sheeprock	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: poor filter, slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
38*:						
Hiko Peak	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.	Slight	Moderate: frost action.	Slight.
Taylorsflat	Slight	Slight	Moderate: dusty.	Severe: percs slowly.	Severe: low strength.	Moderate: shrink-swell.
39*:						
Hiko Peak	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Slight	Moderate: frost action.	Slight.
Taylorsflat	Slight	Slight	Moderate: dusty.	Severe: percs slowly.	Severe: low strength.	Moderate: shrink-swell.
Skumpah	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.	Severe: percs slowly.	Severe: low strength.	Moderate: shrink-swell.
40*:						
Hiko Springs	Slight	Slight	Slight	Slight	Slight	Slight.
Okrist	Moderate: small stones.	Moderate: small stones.	Slight	Severe: poor filter.	Slight	Slight.
41*:						
Jericho	Severe: slope, cemented pan.	Severe: slope, cemented pan.	Severe: slope.	Severe: cemented pan, slope.	Severe: slope.	Severe: slope.
Amtoft	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
42*:						
Jughandle family	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Parkay family	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
43*:						
Kapod	Moderate: slope, large stones, dusty.	Moderate: slope, large stones, dusty.	Moderate: dusty.	Moderate: percs slowly, slope, large stones.	Moderate: slope, frost action.	Moderate: slope, large stones.
Donnardo	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Moderate: dusty.	Moderate: percs slowly, large stones.	Moderate: frost action, large stones.	Moderate: large stones.
44 Koosharem	Severe: flooding.	Moderate: dusty.	Moderate: dusty.	Moderate: flooding, percs slowly.	Moderate: flooding, frost action.	Severe: flooding.
45*:						
Kunzler	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: percs slowly.	Moderate: frost action.	Slight.
Lembos	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: cemented pan.	Moderate: cemented pan, frost action.	Moderate: cemented pan.
46*:						
Lembos	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: cemented pan.	Moderate: cemented pan, frost action.	Moderate: cemented pan.
Jericho	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Moderate: cemented pan, frost action.	Moderate: cemented pan.
Scalade	Severe: slope, cemented pan.	Severe: slope, cemented pan.	Moderate: slope.	Severe: cemented pan, slope.	Severe: slope.	Severe: slope.
47*:						
Lembos	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: cemented pan.	Moderate: cemented pan, frost action.	Moderate: cemented pan.
Taylorsflat	Slight	Slight	Moderate: dusty.	Severe: percs slowly.	Severe: low strength.	Moderate: shrink-swell.
48*:						
Lundy	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
48*:						
Sonlet	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Lodar	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
49	Moderate:	Moderate:	Moderate:	Severe:	Slight	Slight.
Lynndyl	too sandy.	too sandy.	too sandy.	poor filter.		
50, 51	Severe:	Severe:	Moderate:	Severe:	Severe:	Moderate:
Mellor	excess sodium.	excess sodium.	dusty.	percs slowly.	low strength.	shrink-swell.
52*:						
Mellor	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.	Severe: percs slowly.	Severe: low strength.	Moderate: shrink-swell.
Declo	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.	Moderate: percs slowly.	Slight	Slight.
53*:						
Mellor	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.	Severe: percs slowly.	Severe: low strength.	Moderate: shrink-swell.
Pomat	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: percs slowly.	Moderate: frost action.	Slight.
54*:						
Nielsen family	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Bickmore family	Severe: slope.	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
55*:						
Okrist	Moderate: small stones.	Moderate: small stones.	Slight	Severe: poor filter.	Slight	Slight.
Okrist, thick surface	Slight	Slight	Slight	Severe: poor filter.	Slight	Slight.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
56*:						
Overland	Severe: slope.	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
Sonlet	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
57* Parkay family	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.	Severe: slope.	Severe: slope.
58*:						
Parkay family	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Dateman family	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
59*:						
Parkay family	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Broad Canyon family	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: poor filter, slope.	Severe: slope.	Severe: slope.
60*. Pits, gravel						
61*. Playas						
62*:						
Plegomir	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.
Hiko Peak	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.	Severe: slope.	Severe: slope.
Bullump	Moderate: slope, dusty.	Moderate: slope, dusty.	Moderate: dusty.	Severe: percs slowly.	Moderate: shrink-swell, slope, frost action.	Moderate: shrink-swell, slope.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
63*:						
Promo	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
64*:						
Puett	Severe: depth to rock.	Severe: depth to rock.	Moderate: dusty.	Severe: depth to rock.	Moderate: depth to rock, slope, frost action.	Moderate: slope, depth to rock.
Plegomir	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.
65*:						
Raftriver	Moderate: slope, dusty.	Moderate: slope, dusty.	Moderate: dusty.	Severe: cemented pan.	Moderate: slope, frost action.	Moderate: slope.
Duckree	Severe: slope.	Severe: slope.	Severe: slope.	Severe: poor filter, slope.	Severe: slope.	Severe: slope.
66*:						
Raftriver	Moderate: slope, dusty.	Moderate: slope, dusty.	Moderate: dusty.	Severe: cemented pan.	Moderate: slope, frost action.	Moderate: slope.
Koosharem	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: percs slowly.	Moderate: frost action.	Slight.
67*:						
Reebok	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
68*:						
Rexmont	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, depth to rock, large stones.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
68*:						
Shalper	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop.						
69*:						
Ridd	Severe: large stones.	Severe: large stones.	Moderate: large stones, dusty.	Severe: depth to rock.	Moderate: depth to rock, slope, frost action.	Moderate: slope, depth to rock.
Bullump	Moderate: slope, dusty.	Moderate: slope, dusty.	Moderate: dusty.	Severe: percs slowly.	Moderate: shrink-swell, slope, frost action.	Moderate: shrink-swell, slope.
70*:						
Ridgecrest family	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.
Bickmore family	Severe: slope.	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
71*:						
Rock outcrop.						
Amtoft	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
72--- Rodrof	Severe: slope, small stones, cemented pan.	Severe: slope, small stones, cemented pan.	Severe: slope, small stones.	Severe: cemented pan, slope.	Severe: cemented pan, slope.	Severe: slope, cemented pan.
73*:						
Rubble land.						
Nielsen family	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: large stones, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, depth to rock, large stones.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
74*:						
Saltair	Severe: flooding, wetness, excess salt.	Severe: wetness, excess salt.	Severe: wetness.	Severe: wetness, percs slowly.	Severe: low strength, wetness.	Severe: flooding, wetness.
Playas.						
75*.						
Salt flats						
76*:						
Saxby	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: large stones, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, depth to rock, large stones.
Rock outcrop.						
77*:						
Scalade	Severe: cemented pan.	Severe: cemented pan.	Slight	Severe: cemented pan.	Moderate: cemented pan, frost action.	Moderate: cemented pan.
Lodar	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: large stones, slope, dusty.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
78*, 79*:						
Skumpah	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.	Severe: percs slowly.	Severe: low strength.	Moderate: shrink-swell.
Playas.						
80*:						
Skumpah	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.	Severe: percs slowly.	Severe: low strength.	Moderate: shrink-swell.
Skumpah, sodic	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.	Severe: percs slowly.	Severe: low strength.	Moderate: shrink-swell.
Swingler	Moderate: dusty, excess salt.	Moderate: excess salt, dusty.	Moderate: dusty.	Severe: percs slowly.	Moderate: low strength.	Slight.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
81*:						
Skylick	Severe: slope.	Severe: slope.	Severe: slope.	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.
Hoodle	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: slope.	Severe: slope.
82, 83 Smaug	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Severe: percs slowly.	Slight	Slight.
84*:						
Solak	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop.						
85*:						
Sonlet	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Lodar	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rubble land.						
86*:						
Stucky	Severe: large stones, small stones.	Severe: large stones, small stones.	Severe: large stones, small stones.	Severe: percs slowly, large stones.	Severe: large stones.	Severe: large stones.
Hiko Peak	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.	Severe: slope.	Severe: slope.
87 Tarnach	Severe: depth to rock.	Severe: depth to rock.	Moderate: dusty.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
88 Tarnach	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
89*:						
Tarnach	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Amtoft	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
90*:						
Tarnach	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope, dusty.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Promo	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
91*:						
Tarnach, moist	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Tarnach	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
92 Tosser	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: poor filter.	Moderate: slope.	Moderate: slope.
93*:						
Tosser	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: poor filter.	Moderate: slope.	Moderate: slope.
Plegomir	Severe: cemented pan.	Severe: cemented pan.	Moderate: dusty.	Severe: cemented pan.	Severe: cemented pan.	Severe: cemented pan.
94*:						
Tosser	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: poor filter.	Moderate: slope.	Moderate: slope.
Puett	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope, dusty.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 6.--RECREATIONAL AND URBAN DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Paths and trails	Septic tank absorption fields	Local roads and streets	Dwellings without basements
95*:						
Tosser	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: poor filter.	Moderate: slope.	Moderate: slope.
Sitar	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Moderate: percs slowly, slope.	Moderate: slope, frost action.	Moderate: slope.
96 Vicking	Moderate: dusty.	Moderate: dusty.	Severe: erodes easily.	Severe: percs slowly.	Severe: low strength.	Moderate: shrink-swell.
97*:						
Vicking	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: percs slowly, slope.	Severe: low strength, slope.	Severe: slope.
Raftriver	Moderate: slope, dusty.	Moderate: slope, dusty.	Moderate: dusty.	Severe: cemented pan.	Moderate: slope, frost action.	Moderate: slope.
Codquin	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.
98*:						
Vicking	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Severe: percs slowly.	Severe: low strength.	Moderate: shrink-swell, slope.
Ramshorn family	Severe: slope, small stones.	Severe: slope, small stones.	Moderate: slope, dusty.	Severe: slope.	Severe: slope.	Severe: slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the 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 herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
1---------- Acana	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
2*:											
Acana----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
Collard----------	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	Fair.
3*:											
Acana----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
Jericho----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
4---------- Acord	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
5*:											
Ant Flat----------	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
Acord----------	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
6*:											
Bickmore family---	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	Fair.
Eyre family-------	Very poor.	Very poor.	Fair	---	Fair	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
Rock outcrop.											
7*:											
Bickmore family---	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	Fair.
Nielsen family----	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
8---------- Birdow	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.	Good.
9*:											
Bluehill----------	Very poor.	Very poor.	Poor	Fair	Fair	Very poor.	Very poor.	Very poor.	---	Very poor.	Poor.
Coalbank----------	Very poor.	Very poor.	Good	---	Good	Very poor.	Very poor.	Poor	---	Very poor.	Good.
10---------- Borvant	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.

See footnote at end of table.

TABLE 7.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
11*:											
Brobett	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor.
Plegomir	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
12 Bullump	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
13*:											
Bullump	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
Sonlet	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Rodrof	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
14*:											
Clavicon	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											
15 Cliffdown	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
16 Cliffdown	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
17*:											
Cliffdown	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Hiko Peak	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Okrist	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
18*:											
Cliffdown	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Rock outcrop.											
Promo	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
19*:											
Collard	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	Fair.
Hupp	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	Fair.

See footnote at end of table.

TABLE 7.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
20*:											
Cottonthomas	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	---	Very poor.	Good.
Tomsherry	Fair	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
21--Crooked Creek	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good	Fair.
22*:											
Crooked Creek	Very poor.	Good	Fair	Very poor.	Poor	Good	Good	Poor	Very poor.	Good	Fair.
Hupp	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	Fair.
23*:											
Dahar	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Codquin	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
24*:											
Dateman family	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
Bickmore family	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	Fair.
Nielsen family	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
25--Declo	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	---	Very poor.	Very poor.
26*:											
Declo	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	---	Very poor.	Very poor.
Darkbull	Poor	Poor	Good	Fair	Good	Very poor.	Very poor.	Fair	---	Very poor.	Good.
27*:											
Declo	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	---	Very poor.	Very poor.
Lembos	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor.
Tarnach	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
28--Donnardo	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
29*:											
Donnardo	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.

See footnote at end of table.

TABLE 7.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
29*:											
Birdow	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.	Good.
30*:											
Dynal	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
Playas.											
31*:											
Fontreen	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Borvant	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
32*:											
Fontreen	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Bullump	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
33*:											
Fontreen	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Phage	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
34*:											
Hades	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
Bearskin	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											
35 Hiko Peak	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
36*:											
Hiko Peak	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Kunzler	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Poor.
37*:											
Hiko Peak	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Sheeprock	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											

See footnote at end of table.

TABLE 7.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
38*:											
Hiko Peak	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Taylorsflat	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
39*:											
Hiko Peak	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Taylorsflat	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
Skumpah	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
40*:											
Hiko Springs	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
Okrist	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
41*:											
Jericho	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Amtoft	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
42*:											
Jughandle family	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
Parkay family	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
43*:											
Kapod	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Fair.
Donnardo	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
44--Koosharem	Fair	Fair	Good	Good	Good	Poor	Good	Fair	Good	Fair	Good.
45*:											
Kunzler	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Poor.
Lembos	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor.
46*:											
Lembos	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor.

See footnote at end of table.

TABLE 7.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
46*:											
Jericho	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Scalade	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
47*:											
Lembos	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor.
Taylorsflat	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
48*:											
Lundy	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Sonlet	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Lodar	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
49 Lynndyl	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Very poor.
50 Mellor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.
51 Mellor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.
52*:											
Mellor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.
Declo	Poor	Fair	Fair	---	Good	Very poor.	Very poor.	Poor	---	Very poor.	Fair.
53*:											
Mellor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.
Pomat	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
54*:											
Nielsen family	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Bickmore family	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	Fair.
Rock outcrop.											
55*:											
Okrist	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.

See footnote at end of table.

TABLE 7.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
55*:											
Okrist, thick surface	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
56*:											
Overland	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
Sonlet	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
57*:											
Parkay family, moist	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
58*:											
Parkay family	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Dateman family	Very poor.	Very poor.	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.	Good.
59*:											
Parkay family	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Broad Canyon family	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
60*.											
Pits, gravel											
61*.											
Playas											
62*:											
Plegomir	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Hiko Peak	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Bullump	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
63*:											
Promo	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
Puett	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
64*:											
Puett	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.

See footnote at end of table.

TABLE 7.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
64*:											
Plegomir	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
65*:											
Raftriver	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Duckree	Very poor.	Very poor.	Poor	Poor	Fair	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
66*:											
Raftriver	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Koosharem	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.	Good.
67*:											
Reebok	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Puett	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
68*:											
Rexmont	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Shalper	---	---	Poor	---	Poor	---	---	---	---	---	Poor.
Rock outcrop.											
69*:											
Ridd	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	Fair.
Bullump	Poor	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.	Good.
70*:											
Ridgecrest family	Very poor.	Very poor.	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Bickmore family	Very poor.	Very poor.	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Poor	Very poor.	Fair.
71*:											
Rock outcrop.											
Amtoft	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
72 Rodrof	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
73*:											
Rubble land.											

See footnote at end of table.

TABLE 7.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
73*:											
Nielsen family----	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
74*:											
Saltair----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Playas.											
75*.											
Salt flats											
76*:											
Saxby----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											
77*:											
Scalade----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Lodar----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
78*, 79*:											
Skumpah----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Playas.											
80*:											
Skumpah----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Skumpah, sodic----	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Swingler----------	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
81*:											
Skylick----------	Poor	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
Hoodle----------	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
82, 83---------- Smaug	Very poor.	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor.
84*:											
Solak----------	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rock outcrop.											

See footnote at end of table.

TABLE 7.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
85*:											
Sonlet	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Lodar	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Rubble land.											
86*:											
Stucky	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Hiko Peak	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
87, 88--Tarnach	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
89*:											
Tarnach	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Amtoft	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
90*:											
Tarnach	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Promo	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor.
91*:											
Tarnach, moist	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Tarnach	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
92--Tosser	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
93*:											
Tosser	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Plegomir	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
94*:											
Tosser	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.
Puett	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
95*:											
Tosser	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Poor.

See footnote at end of table.

TABLE 7.--WILDLIFE HABITAT--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	Conif-erous plants	Shrubs	Wetland plants	Shallow water areas	Open-land wild-life	Wood-land wild-life	Wetland wild-life	Range-land wild-life
95*:											
Sitar	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.
96 Vicking	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
97*:											
Vicking	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
Raftriver	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
Codquin	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.
98*:											
Vicking	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.	Fair.
Ramshorn family	Poor	Poor	Fair	Poor	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.	Fair.

*See description of the map unit for composition and behavior characteristics of the map unit

TABLE 8.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
1---------- Acana	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones.
2*: Acana----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones, area reclaim.
Collard----------	Good----------	Probable----------	Probable----------	Poor: small stones, area reclaim.
3*: Acana----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones, area reclaim.
Jericho----------	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones.
4---------- Acord	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
5*: Ant Flat----------	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Acord----------	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
6*: Bickmore family------	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Eyre family----------	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
7*: Bickmore family------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
7*:				
Nielsen family	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
8 Birdow	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
9*:				
Bluehill	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Coalbank	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
10 Borvant	Poor: cemented pan.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: cemented pan, small stones.
11*:				
Brobett	Poor: cemented pan.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Plegomir	Poor: cemented pan.	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones.
12 Bullump	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
13*:				
Bullump	Fair: shrink-swell, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Sonlet	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rodrof	Poor: cemented pan.	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones.
14*:				
Clavicon	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
15 Cliffdown	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, excess salt.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
16--Cliffdown	Good	Probable	Probable	Poor: small stones, area reclaim.
17*:				
Cliffdown	Good	Probable	Probable	Poor: small stones, area reclaim.
Hiko Peak	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Okrist	Good	Probable	Probable	Poor: area reclaim, small stones.
18*:				
Cliffdown	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, excess salt.
Rock outcrop.				
Promo	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
19*:				
Collard	Good	Probable	Probable	Poor: small stones, area reclaim.
Hupp	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
20*:				
Cottonthomas	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, slope.
Tomsherry	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: cemented pan, small stones, thin layer.
21--Crooked Creek	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
22*:				
Crooked Creek	Fair: shrink-swell, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, area reclaim.
Hupp	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
23*:				
Dahar	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Codquin	Poor: depth to rock, slope.	Improbable: small stones.	Improbable: thin layer.	Poor: depth to rock, small stones, slope.
24*:				
Dateman family	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Bickmore family	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Nielsen family	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
25--- Declo	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
26*:				
Declo	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
Darkbull	Fair: large stones.	Probable	Probable	Poor: small stones, area reclaim.
27*:				
Declo	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
Lembos	Poor: cemented pan.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Tarnach	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
28--- Donnardo	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
29*:				
Donnardo	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Birdow	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
30*:				
Dynal	Poor: excess gypsum.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess fines.
Playas.				
31*:				
Fontreen	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Borvant	Poor: cemented pan.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: cemented pan, small stones.
32*:				
Fontreen	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Bullump	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
33*:				
Fontreen	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Phage	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
34*:				
Hades	Fair: depth to rock, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Bearskin	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Rock outcrop.				
35--- Hiko Peak	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
36*:				
Hiko Peak	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Kunzler	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
37*:				
Hiko Peak	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Sheeprock	Fair: slope.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
Rock outcrop.				
38*:				
Hiko Peak	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Taylorsflat	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
39*:				
Hiko Peak	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Taylorsflat	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Skumpah	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
40*:				
Hiko Springs	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Okrist	Good	Probable	Probable	Poor: area reclaim, small stones.
41*:				
Jericho	Poor: thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones, slope.
Amtoft	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
42*:				
Jughandle family	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
42*:				
Parkay family	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
43*:				
Kapod	Fair: large stones.	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
Donnardo	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
44 Koosharem	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
45*:				
Kunzler	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Lembos	Poor: cemented pan.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
46*:				
Lembos	Poor: cemented pan.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Jericho	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones.
Scalade	Fair: slope.	Probable	Probable	Poor: cemented pan, small stones, slope.
47*:				
Lembos	Poor: cemented pan.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Taylorsflat	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
48*:				
Lundy	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Sonlet	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Lodar	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
49--- Lynndyl	Good---	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones, area reclaim.
50, 51--- Mellor	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt, excess sodium.
52*: Mellor---	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt, excess sodium.
Declo---	Good---	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim.
53*: Mellor---	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt, excess sodium.
Pomat---	Good---	Improbable: excess fines.	Improbable: excess fines.	Good.
54*: Nielsen family---	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Bickmore family---	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Rock outcrop.				
55*: Okrist---	Good---	Probable---	Probable---	Poor: area reclaim, small stones.
Okrist, thick surface	Good---	Probable---	Probable---	Poor: area reclaim, small stones.
56*: Overland---	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Sonlet---	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
57*-------- Parkay family	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
58*:				
Parkay family--------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Dateman family-------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
59*:				
Parkay family--------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Broad Canyon family--	Poor: slope.	Improbable: small stones.	Improbable: thin layer.	Poor: small stones, area reclaim, slope.
60*. Pits, gravel				
61*. Playas				
62*:				
Plegomir----------	Poor: cemented pan.	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones.
Hiko Peak----------	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Bullump----------	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
63*:				
Promo----------	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Puett----------	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
64*:				
Puett----------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
64*:				
Plegomir	Poor: cemented pan.	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones.
65*:				
Raftriver	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Duckree	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
66*:				
Raftriver	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Koosharem	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
67*:				
Reebok	Poor: cemented pan.	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones.
Puett	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
68*:				
Rexmont	Poor: depth to rock, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, large stones, slope.
Shalper	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
69*:				
Ridd	Poor: depth to rock.	Improbable: small stones.	Improbable: thin layer.	Poor: small stones.
Bullump	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
70*:				
Ridgecrest family	Poor: slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
Bickmore family	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
71*: Rock outcrop.				
Amtoft	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
72--- Rodrof	Poor: cemented pan, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones, slope.
73*: Rubble land.				
Nielsen family	Poor: depth to rock, large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
74*: Saltair	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, wetness.
Playas.				
75*. Salt flats				
76*: Saxby	Poor: depth to rock, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, large stones, slope.
Rock outcrop.				
77*: Scalade	Good	Probable	Probable	Poor: cemented pan, small stones.
Lodar	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
78*, 79*: Skumpah	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
Playas.				
80*: Skumpah	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
80*:				
Skumpah, sodic	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
Swingler	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
81*:				
Skylick	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Hoodle	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
82, 83 Smaug	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
84*:				
Solak	Poor: depth ro rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop.				
85*:				
Sonlet	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Lodar	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rubble land.				
86*:				
Stucky	Poor: large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim.
Hiko Peak	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
87 Tarnach	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
88 Tarnach	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
89*:				
Tarnach	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Amtoft	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
90*:				
Tarnach	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Promo	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
91*:				
Tarnach, moist	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Tarnach	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
92--- Tosser	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, too sandy.
93*:				
Tosser	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, too sandy.
Plegomir	Poor: cemented pan.	Improbable: excess fines.	Improbable: excess fines.	Poor: cemented pan, small stones.
94*:				
Tosser	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, too sandy.
Puett	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.

See footnote at end of table.

TABLE 8.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
95*:				
Tosser	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, too sandy.
Sitar	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
96--- Vicking	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
97*:				
Vicking	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Raftriver	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Codquin	Poor: depth to rock, slope.	Improbable: small stones.	Improbable: thin layer.	Poor: depth to rock, small stones, slope.
98*:				
Vicking	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
Ramshorn family	Fair: depth to rock, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WATER MANAGEMENT

(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 evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
1---------- Acana	Severe: cemented pan.	Severe: excess salt.	Deep to water----	Droughty, cemented pan, excess salt.	Cemented pan.
2*: Acana----------	Severe: cemented pan.	Severe: seepage.	Deep to water----	Slope, cemented pan, excess salt.	Cemented pan, too sandy.
Collard----------	Severe: seepage.	Severe: seepage.	Deep to water----	Slope, droughty.	Favorable.
3*: Acana----------	Severe: cemented pan.	Severe: seepage.	Deep to water----	Slope, cemented pan, excess salt.	Cemented pan, too sandy.
Jericho----------	Severe: cemented pan.	Severe: seepage.	Deep to water----	Slope, droughty, cemented pan.	Large stones, cemented pan.
4---------- Acord	Severe: seepage, slope.	Severe: large stones.	Deep to water----	Slope, large stones, droughty.	Slope, large stones.
5*: Ant Flat---------	Severe: slope.	Moderate: piping.	Deep to water----	Percs slowly, slope.	Slope, erodes easily, percs slowly.
Acord----------	Severe: slope.	Moderate: large stones.	Deep to water----	Slope, droughty.	Slope, large stones.
6*: Bickmore family--	Severe: slope.	Moderate: thin layer.	Deep to water----	Slope, droughty, depth to rock.	Slope, depth to rock.
Eyre family------ Rock outcrop.	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water----	Droughty, depth to rock, slope.	Slope, depth to rock.
7*: Bickmore family--	Severe: slope.	Moderate: thin layer.	Deep to water----	Slope, droughty, depth to rock.	Slope, depth to rock.
Nielsen family---	Severe: depth to rock, slope.	Moderate: large stones.	Deep to water----	Slope, large stones.	Slope, large stones, depth to rock.
8---------- Birdow	Moderate: seepage.	Severe: piping.	Deep to water----	Favorable--------	Favorable.

See footnote at end of table.

TABLE 9.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
9*:					
Bluehill	Severe: seepage, slope.	Severe: piping.	Deep to water	Soil blowing, depth to rock, slope.	Slope, depth to rock, erodes easily.
Coalbank	Severe: seepage, slope.	Severe: seepage, piping.	Deep to water	Soil blowing, slope, erodes easily.	Slope, erodes easily, too sandy.
10--- Borvant	Severe: cemented pan, slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, cemented pan.
11*:					
Brobett	Moderate: seepage, cemented pan, slope.	Severe: seepage.	Deep to water	Droughty, cemented pan, slope.	Cemented pan.
Plegomir	Severe: cemented pan.	Severe: thin layer.	Deep to water	Droughty, cemented pan, slope.	Cemented pan.
12--- Bullump	Severe: slope.	Slight	Deep to water	Slope	Slope.
13*:					
Bullump	Severe: slope.	Slight	Deep to water	Slope	Slope.
Sonlet	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
Rodrof	Severe: cemented pan, slope.	Severe: thin layer.	Deep to water	Slope, droughty, cemented pan.	Slope, cemented pan.
14*:					
Clavicon	Severe: slope.	Moderate: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
Rock outcrop.					
15--- Cliffdown	Severe: seepage.	Severe: seepage, excess sodium, excess salt.	Deep to water	Droughty, slope, excess sodium.	Favorable.
16--- Cliffdown	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, slope, excess salt.	Favorable.
17*:					
Cliffdown	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, slope, excess salt.	Favorable.
Hiko Peak	Severe: seepage.	Slight	Deep to water	Slope, droughty.	Favorable.

See footnote at end of table.

TABLE 9.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
17*:					
Okrist	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.
18*:					
Cliffdown	Severe: seepage, slope.	Severe: seepage, excess sodium, excess salt.	Deep to water	Droughty, slope, excess sodium.	Slope.
Rock outcrop.					
Promo	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.
19*:					
Collard	Severe: seepage.	Severe: seepage.	Deep to water	Slope, droughty.	Favorable.
Hupp	Severe: seepage.	Severe: seepage.	Deep to water	Slope, droughty.	Favorable.
20*:					
Cottonthomas	Severe: seepage, slope.	Severe: piping.	Deep to water	Soil blowing, slope, erodes easily.	Erodes easily, soil blowing, slope.
Tomsherry	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope, soil blowing, cemented pan.	Slope, cemented pan, erodes easily.
21--- Crooked Creek	Slight	Severe: wetness.	Percs slowly, flooding, frost action.	Wetness, percs slowly.	Wetness, percs slowly.
22*:					
Crooked Creek	Slight	Severe: wetness.	Percs slowly, flooding, frost action.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.
Hupp	Severe: seepage.	Severe: seepage.	Deep to water	Slope, droughty.	Favorable.
23*:					
Dahar	Severe: seepage, slope.	Severe: piping.	Deep to water	Droughty, cemented pan, slope.	Slope, cemented pan.
Codquin	Severe: depth to rock, slope.	Severe: seepage.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
24*:					
Dateman family	Severe: slope.	Slight	Deep to water	Slope, droughty.	Slope.
Bickmore family	Severe: slope.	Moderate: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.

See footnote at end of table.

TABLE 9.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
24*:					
Nielsen family---	Severe: depth to rock, slope.	Moderate: large stones.	Deep to water----	Slope, large stones, droughty.	Slope, large stones, depth to rock.
25---------- Declo	Moderate: seepage.	Severe: piping, excess sodium, excess salt.	Deep to water----	Erodes easily, excess sodium.	Erodes easily.
26*:					
Declo----------	Moderate: seepage.	Severe: piping, excess sodium, excess salt.	Deep to water----	Erodes easily, excess sodium.	Erodes easily.
Darkbull---------	Severe: seepage.	Severe: seepage.	Deep to water----	Large stones, droughty, slope.	Large stones, erodes easily.
27*:					
Declo----------	Moderate: seepage.	Severe: piping, excess sodium, excess salt.	Deep to water----	Erodes easily, excess sodium.	Erodes easily.
Lembos----------	Moderate: seepage, cemented pan, slope.	Severe: piping.	Deep to water----	Cemented pan, slope.	Cemented pan.
Tarnach----------	Severe: depth to rock.	Severe: thin layer.	Deep to water----	Droughty, depth to rock, slope.	Depth to rock.
28---------- Donnardo	Moderate: seepage, slope.	Moderate: large stones.	Deep to water----	Slope, large stones, droughty.	Large stones.
29*:					
Donnardo---------	Moderate: seepage, slope.	Moderate: large stones.	Deep to water----	Slope, large stones, droughty.	Large stones.
Birdow----------	Moderate: seepage.	Severe: piping.	Deep to water----	Erodes easily----	Erodes easily.
30*:					
Dynal----------	Severe: seepage, slope.	Severe: seepage, piping, excess gypsum.	Deep to water----	Slope, droughty, fast intake.	Slope, excess gypsum, soil blowing.
Playas.					
31*:					
Fontreen---------	Severe: seepage, slope.	Slight----------	Deep to water----	Slope, droughty.	Slope.

See footnote at end of table.

TABLE 9.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
31*:					
Borvant	Severe: cemented pan, slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, cemented pan.
32*:					
Fontreen	Severe: seepage.	Slight	Deep to water	Slope, droughty.	Favorable.
Bullump	Severe: slope.	Slight	Deep to water	Slope	Slope.
33*:					
Fontreen	Severe: seepage, slope.	Slight	Deep to water	Slope, droughty.	Slope.
Phage	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, large stones, droughty.	Slope, large stones.
34*:					
Hades	Severe: slope.	Moderate: thin layer, seepage, piping.	Deep to water	Slope	Slope.
Bearskin	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, depth to rock, erodes easily.	Slope, depth to rock, erodes easily.
Rock outcrop.					
35--- Hiko Peak	Severe: seepage.	Slight	Deep to water	Slope, droughty.	Favorable.
36*:					
Hiko Peak	Severe: seepage.	Slight	Deep to water	Slope, droughty.	Favorable.
Kunzler	Severe: seepage.	Severe: piping.	Deep to water	Slope, droughty.	Favorable.
37*:					
Hiko Peak	Severe: seepage.	Slight	Deep to water	Slope, droughty.	Favorable.
Sheeprock	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, droughty, fast intake.	Slope, large stones, too sandy.
Rock outcrop.					
38*:					
Hiko Peak	Severe: seepage.	Slight	Deep to water	Slope, droughty, erodes easily.	Erodes easily.
Taylorsflat	Moderate: slope.	Moderate: piping.	Deep to water	Slope, excess salt.	Favorable.

See footnote at end of table.

TABLE 9.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
39*:					
Hiko Peak	Severe: seepage.	Slight	Deep to water	Slope, droughty.	Favorable.
Taylorsflat	Moderate: slope.	Moderate: piping.	Deep to water	Slope, excess salt.	Favorable.
Skumpah	Slight	Severe: piping, excess sodium, excess salt.	Deep to water	Droughty, erodes easily, excess sodium.	Erodes easily.
40*:					
Hiko Springs	Severe: seepage.	Moderate: thin layer.	Deep to water	Slope, droughty, soil blowing.	Soil blowing.
Okrist	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty.	Too sandy, soil blowing.
41*:					
Jericho	Severe: cemented pan, slope.	Severe: seepage.	Deep to water	Slope, droughty, cemented pan.	Slope, large stones, cemented pan.
Amtoft	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
42*:					
Jughandle family	Severe: seepage, slope.	Slight:	Deep to water	Slope, droughty.	Slope.
Parkay family	Severe: slope.	Slight	Deep to water	Slope, droughty.	Slope.
43*:					
Kapod	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, large stones, droughty.	Slope, large stones.
Donnardo	Moderate: seepage, slope.	Moderate: large stones.	Deep to water	Slope, large stones, droughty.	Large stones.
44 Koosharem	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily	Erodes easily.
45*:					
Kunzler	Severe: seepage.	Severe: piping.	Deep to water	Slope	Erodes easily.
Lembos	Moderate: seepage, cemented pan, slope.	Severe: piping.	Deep to water	Cemented pan, slope.	Cemented pan.

See footnote at end of table.

TABLE 9.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
46*:					
Lembos	Moderate: seepage, cemented pan, slope.	Severe: piping.	Deep to water	Cemented pan, slope.	Cemented pan.
Jericho	Severe: cemented pan.	Severe: seepage.	Deep to water	Slope, droughty, cemented pan.	Large stones, cemented pan.
Scalade	Severe: seepage, cemented pan, slope.	Severe: thin layer.	Deep to water	Slope, droughty, cemented pan.	Slope, cemented pan, erodes easily.
47*:					
Lembos	Moderate: seepage, cemented pan, slope.	Severe: piping.	Deep to water	Cemented pan, slope.	Cemented pan.
Taylorsflat	Moderate: slope.	Moderate: piping.	Deep to water	Slope, excess salt.	Favorable.
48*:					
Lundy	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.
Sonlet	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
Lodar	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.
49--- Lynndyl	Severe: seepage.	Severe: piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.
50--- Mellor	Slight	Severe: excess sodium, excess salt.	Deep to water	Droughty, percs slowly.	Erodes easily, percs slowly.
51--- Mellor	Moderate: slope.	Severe: excess sodium, excess salt.	Deep to water	Slope, droughty, percs slowly.	Erodes easily, percs slowly.
52*:					
Mellor	Moderate: slope.	Severe: excess sodium, excess salt.	Deep to water	Slope, droughty, percs slowly.	Erodes easily, percs slowly.
Declo	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope	Erodes easily.

See footnote at end of table.

TABLE 9.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
53*:					
Mellor	Slight	Severe: excess sodium, excess salt.	Deep to water	Droughty, percs slowly.	Erodes easily, percs slowly.
Pomat	Slight	Severe: piping.	Deep to water	Erodes easily	Erodes easily.
54*:					
Nielsen family	Severe: depth to rock, slope.	Moderate: large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.
Bickmore family	Severe: slope.	Moderate: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
Rock outcrop.					
55*:					
Okrist	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty.	Too sandy, soil blowing.
Okrist, thick surface	Severe: seepage.	Severe: seepage, piping.	Deep to water	Slope, droughty, fast intake.	Too sandy, soil blowing.
56*:					
Overland	Severe: slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
Sonlet	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
57*: Parkay family	Severe: slope.	Slight	Deep to water	Slope, droughty.	Slope.
58*:					
Parkay family	Severe: slope.	Slight	Deep to water	Slope, droughty.	Slope.
Dateman family	Severe: slope.	Slight	Deep to water	Slope, droughty.	Slope.
59*:					
Parkay family	Severe: slope.	Slight	Deep to water	Slope, droughty.	Slope.
Broad Canyon family	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, slope, excess salt.	Slope, too sandy.
60*. Pits, gravel					
61*. Playas					

See footnote at end of table.

TABLE 9.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
62*:					
Plegomir	Severe: cemented pan.	Severe: thin layer.	Deep to water	Droughty, cemented pan, slope.	Cemented pan.
Hiko Peak	Severe: seepage, slope.	Slight	Deep to water	Slope, droughty.	Slope.
Bullump	Severe: slope.	Slight	Deep to water	Slope	Slope.
63*:					
Promo	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.
Puett	Severe: depth to rock, slope.	Severe: piping.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
64*:					
Puett	Severe: depth to rock, slope.	Severe: piping.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
Plegomir	Severe: cemented pan.	Severe: thin layer.	Deep to water	Droughty, cemented pan, slope.	Cemented pan.
65*:					
Raftriver	Severe: slope.	Severe: piping.	Deep to water	Droughty, cemented pan, slope.	Slope, cemented pan.
Duckree	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, droughty, excess salt.	Slope, too sandy.
66*:					
Raftriver	Severe: slope.	Severe: piping.	Deep to water	Droughty, cemented pan, slope.	Slope, cemented pan.
Koosharem	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily.
67*:					
Reebok	Severe: cemented pan, slope.	Severe: thin layer.	Deep to water	Slope, droughty, cemented pan.	Slope, cemented pan.
Puett	Severe: depth to rock, slope.	Severe: piping.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
68*:					
Rexmont	Severe: depth to rock, slope.	Severe: piping, large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.

See footnote at end of table.

TABLE 9.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
68*:					
Shalper	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Droughty, depth to rock, slope.	Slope, depth to rock.
Rock outcrop.					
69*:					
Ridd	Severe: seepage, slope.	Severe: seepage.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.
Bullump	Severe: slope.	Slight	Deep to water	Slope	Slope.
70*:					
Ridgecrest family	Severe: seepage, slope.	Severe: large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
Bickmore family	Severe: slope.	Moderate: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
71*:					
Rock outcrop.					
Amtoft	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.
72 Rodrof	Severe: cemented pan, slope.	Severe: thin layer.	Deep to water	Slope, droughty, cemented pan.	Slope, cemented pan.
73*:					
Rubble land.					
Nielsen family	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.
74*:					
Saltair	Slight	Severe: piping, wetness, excess salt.	Percs slowly, frost action.	Wetness, droughty, percs slowly.	Erodes easily, wetness, percs slowly.
Playas.					
75*.					
Salt flats					
76*:					
Saxby	Severe: depth to rock, slope.	Severe: piping, large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.
Rock outcrop.					

See footnote at end of table.

TABLE 9.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
77*:					
Scalade	Severe: seepage, cemented pan.	Severe: thin layer.	Deep to water	Slope, droughty, cemented pan.	Cemented pan, erodes easily.
Lodar	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.
78*, 79*:					
Skumpah	Slight	Severe: piping, excess sodium, excess salt.	Deep to water	Droughty, erodes easily, excess sodium.	Erodes easily.
Playas.					
80*:					
Skumpah	Slight	Severe: piping, excess sodium, excess salt.	Deep to water	Droughty, erodes easily, excess sodium.	Erodes easily.
Skumpah, sodic	Slight	Severe: piping, excess sodium, excess salt.	Deep to water	Droughty, erodes easily, excess sodium.	Erodes easily.
Swingler	Slight	Severe: piping, excess salt.	Deep to water	Droughty, erodes easily, excess salt.	Erodes easily.
81*:					
Skylick	Severe: slope.	Moderate: piping.	Deep to water	Slope	Slope.
Hoodle	Severe: slope.	Slight	Deep to water	Droughty, slope.	Slope.
82 Smaug	Slight	Severe: piping, excess salt.	Deep to water	Droughty, soil blowing.	Erodes easily, soil blowing.
83 Smaug	Slight	Severe: piping, excess salt.	Deep to water	Droughty	Erodes easily.
84*:					
Solak	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Droughty, depth to rock, slope.	Slope, depth to rock.
Rock outcrop.					
85*:					
Sonlet	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.

See footnote at end of table.

TABLE 9.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
85*:					
Lodar	Severe: depth to rock, slope.	Severe: large stones.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.
Rubble land.					
86*:					
Stucky	Severe: seepage, slope.	Severe: seepage, large stones.	Deep to water	Large stones, droughty, slope.	Slope, large stones.
Hiko Peak	Severe: seepage, slope.	Slight	Deep to water	Slope, droughty.	Slope.
87, 88 Tarnach	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Droughty, depth to rock, slope.	Slope, depth to rock.
89*:					
Tarnach	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Droughty, depth to rock, slope.	Slope, depth to rock.
Amtoft	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
90*:					
Tarnach	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Droughty, depth to rock, slope.	Slope, depth to rock.
Promo	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.
91*:					
Tarnach, moist	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Droughty, depth to rock, slope.	Slope, depth to rock.
Tarnach	Severe: depth to rock, slope.	Severe: thin layer.	Deep to water	Droughty, depth to rock, slope.	Slope, depth to rock.
92 Tosser	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, rooting depth, slope.	Slope, too sandy.
93*:					
Tosser	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, rooting depth, slope.	Slope, too sandy.
Plegomir	Severe: cemented pan.	Severe: thin layer.	Deep to water	Droughty, cemented pan, slope.	Cemented pan.

See footnote at end of table.

TABLE 9.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--		Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions
94*:					
Tosser	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, rooting depth, slope.	Slope, too sandy.
Puett	Severe: depth to rock, slope.	Severe: piping.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
95*:					
Tosser	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, rooting depth, slope.	Slope, too sandy.
Sitar	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, slope, erodes easily.	Slope, erodes easily.
96--- Vicking	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily.
97*:					
Vicking	Severe: slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Raftriver	Severe: slope.	Severe: piping.	Deep to water	Droughty, cemented pan, slope.	Slope, cemented pan.
Codquin	Severe: depth to rock, slope.	Severe: seepage.	Deep to water	Slope, droughty, depth to rock.	Slope, depth to rock.
98*:					
Vicking	Severe: slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Ramshorn family	Severe: seepage, slope.	Moderate: thin layer.	Deep to water	Droughty, slope.	Slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--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		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
1---------- Acana	0-3	Gravelly loam----	GM-GC, SM-SC	A-4	0	55-80	50-75	40-65	35-50	20-30	5-10
	3-13	Loam----------	CL-ML, CL	A-4, A-6	0	85-100	80-100	65-85	50-70	25-35	5-15
	13-17	Sandy loam-------	SM-SC	A-2, A-4	0	85-100	80-100	45-60	25-40	20-30	5-10
	17	Indurated--------	---	---	---	---	---	---	---	---	---
2*:											
Acana----------	0-3	Gravelly loam----	GM-GC, SM-SC	A-4	0-5	55-80	50-75	40-65	35-50	20-30	5-10
	3-11	Gravelly loam----	GC, SC	A-6	0-5	55-80	50-75	40-65	35-50	25-35	10-15
	11	Indurated--------	---	---	---	---	---	---	---	---	---
Collard---------	0-5	Gravelly loam----	GM-GC, SM-SC	A-4	0	55-80	50-75	45-65	35-50	25-30	5-10
	5-10	Gravelly sandy clay loam.	GM-GC, GC, SM-SC, SC	A-2, A-4, A-6	0	55-80	50-75	40-65	25-40	25-35	5-15
	10-18	Very gravelly sandy clay loam.	GM-GC, GC	A-1, A-2	0-10	35-55	30-50	20-45	10-25	25-35	5-15
	18-60	Extremely gravelly loamy sand.	GP-GM	A-1	20-35	25-45	15-30	10-20	5-10	---	NP
3*:											
Acana----------	0-3	Gravelly loam----	GM-GC, SM-SC	A-4	0-5	55-80	50-75	40-65	35-50	20-30	5-10
	3-11	Gravelly loam----	GC, SC	A-6	0-5	55-80	50-75	40-65	35-50	25-35	10-15
	11	Indurated--------	---	---	---	---	---	---	---	---	---
Jericho---------	0-3	Gravelly loam----	GM-GC, SM-SC, GM, SM	A-4	0	55-80	50-75	40-65	35-50	20-30	NP-10
	3-8	Gravelly fine sandy loam, gravelly coarse sandy loam.	GM, GM-GC, SM, SM-SC	A-2, A-4, A-1	0-15	55-80	50-75	35-65	20-40	20-30	NP-10
	8-17	Very gravelly fine sandy loam, very gravelly coarse sandy loam.	GM, GM-GC	A-2, A-1	15-25	40-65	35-60	25-50	15-30	20-30	NP-10
	17	Indurated--------	---	---	---	---	---	---	---	---	---
4---------- Acord	0-4	Very cobbly loam	CL-ML, CL, GC, GM-GC	A-4, A-6	40-55	65-80	60-75	55-70	45-60	25-35	5-15
	4-24	Very cobbly clay, very cobbly clay loam.	GC, CL	A-6, A-7	30-50	50-70	45-65	40-60	35-55	35-50	15-25
	24-60	Very gravelly loam, very gravelly sandy loam, very cobbly clay loam.	GM-GC, GC	A-2, A-4, A-6	10-40	35-55	30-50	25-45	15-40	25-35	5-15

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
5*:											
Ant Flat--------	0-10	Gravelly loam----	GM-GC, GC	A-4	0-10	65-70	60-65	50-55	35-45	25-35	5-15
	10-31	Clay loam, clay, silty clay.	CL, CH	A-6, A-7	0	80-100	75-100	70-100	55-95	35-60	15-35
	31-60	Clay loam, gravelly loam, gravelly clay loam.	CL, GC, SC	A-6	0	60-100	55-100	50-100	40-80	30-40	10-20
Acord-----------	0-11	Very cobbly loam	GM-GC, SM-SC	A-4, A-6	40-55	65-80	60-75	50-65	35-50	25-35	5-15
	11-36	Very gravelly clay loam, very gravelly clay.	GC	A-2, A-6, A-7	0-10	35-55	30-50	25-45	20-45	35-50	15-25
	36-60	Very gravelly clay loam.	GC	A-2, A-6	0-15	35-55	30-50	25-45	20-40	30-40	10-20
6*:											
Bickmore family-	0-3	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0	60-75	55-70	40-65	30-50	20-25	5-10
	3-37	Very gravelly loam.	GM-GC	A-2, A-4	0	35-55	30-50	25-50	20-40	25-30	5-10
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Eyre family-----	0-4	Very gravelly sandy loam.	GM	A-1	0	45-55	40-50	25-40	15-25	15-25	NP-5
	4-10	Very gravelly sandy loam, extremely gravelly sandy loam.	GM	A-1	0-10	35-45	25-45	20-30	10-25	15-25	NP-5
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
7*:											
Bickmore family-	0-12	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0	60-75	55-70	40-65	30-50	20-25	5-10
	12-31	Very gravelly loam.	GM-GC	A-2, A-4	0	35-55	30-50	25-50	20-40	25-30	5-10
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Nielsen family--	0-8	Loam----------	CL-ML	A-4	0	80-100	75-100	60-95	50-75	15-25	5-10
	8-17	Very gravelly clay loam.	GC	A-2, A-6	10-20	35-55	30-50	25-50	20-40	30-40	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
8----------	0-30	Silt loam--------	CL-ML	A-4	0	100	100	90-100	80-90	25-30	5-10
Birdow	30-60	Loam, clay loam	CL-ML, CL	A-4, A-6	0	80-100	75-100	60-80	50-70	25-35	5-15
9*:											
Bluehill--------	0-4	Fine sandy loam	ML	A-4	0-10	85-100	80-100	75-95	50-60	25-35	NP-5
	4-32	Loam, very fine sandy loam.	ML, SM	A-4	0	85-100	75-100	65-100	40-65	25-40	NP-10
	32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
9*:											
Coalbank--------	0-18	Fine sandy loam	SM	A-2, A-4	0	95-100	95-100	90-100	30-40	30-40	NP-5
	18-45	Stratified fine sandy loam to fine sand.	SM	A-2	0	90-100	80-100	60-90	15-30	20-30	NP-5
	45	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
10---------- Borvant	0-4	Gravelly loam----	GM-GC, SM-SC	A-4	0-10	60-80	55-75	45-65	35-50	20-30	5-10
	4-12	Very gravelly loam, very cobbly loam, extremely gravelly loam.	GM-GC	A-2, A-4	20-55	35-65	30-60	25-50	20-40	20-30	5-10
	12	Indurated--------	---	---	---	---	---	---	---	---	---
11*:											
Brobett---------	0-3	Loam-------------	CL-ML	A-4	0	85-95	80-90	65-85	50-70	20-30	5-10
	3-8	Gravelly loam----	GM, SM	A-2, A-4	0-10	60-80	55-75	40-65	30-50	30-35	5-10
	8-30	Very gravelly sandy loam.	GM	A-1, A-2	0	35-50	30-45	20-30	10-15	20-25	NP-5
	30	Cemented---------	---	---	---	---	---	---	---	---	---
Plegomir--------	0-2	Gravelly loam----	GM-GC, SM-SC, GC, SC	A-2, A-4, A-6	0	60-85	55-75	40-75	30-50	25-35	5-15
	2-5	Loam-------------	CL-ML, CL	A-4, A-6	0	80-95	75-90	60-85	50-70	25-35	5-15
	5-13	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC, GC, SC	A-2, A-4, A-6	0	60-85	55-80	30-75	15-50	25-35	5-15
	13	Indurated--------	---	---	---	---	---	---	---	---	---
12---------- Bullump	0-16	Loam-------------	CL-ML, ML	A-4	0	100	90-100	70-80	50-65	20-35	5-10
	16-46	Very gravelly clay loam.	GC	A-2	0-25	40-50	35-45	25-35	15-30	30-40	10-20
	46-60	Very cobbly sandy clay loam, very gravelly sandy clay loam.	GC	A-2	25-40	45-55	40-50	20-35	10-25	30-35	10-15
13*:											
Bullump---------	0-16	Loam-------------	CL-ML, ML	A-4	0	100	90-100	70-80	50-65	20-35	5-10
	16-46	Very gravelly clay loam.	GC	A-2	0-25	40-50	35-45	25-35	15-30	30-40	10-20
	46-60	Very cobbly sandy clay loam, very gravelly sandy clay loam.	GC	A-2	25-40	45-55	40-50	20-35	10-25	30-35	10-15

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
13*:											
Sonlet----------	0-3	Very gravelly loam.	GM-GC	A-2, A-4	0	40-55	35-50	25-50	20-40	20-30	5-10
	3-15	Very gravelly loam, very gravelly sandy loam.	GM-GC	A-2	0	45-55	40-50	25-40	15-30	25-35	5-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rodrof----------	0-8	Gravelly loam----	GM-GC, SM-SC	A-4	0	55-80	50-75	40-65	35-50	20-30	5-10
	8-18	Extremely gravelly loam.	GM-GC, GP-GC	A-2	0-15	15-30	10-25	5-25	5-20	25-30	5-10
	18	Indurated--------	---	---	---	---	---	---	---	---	---
14*:											
Clavicon--------	0-5	Very gravelly loam.	GM-GC	A-2, A-4	0-15	45-55	40-50	35-50	25-40	20-25	5-10
	5-38	Very gravelly loam.	GM-GC	A-2, A-4	0-15	35-55	30-50	25-50	20-40	20-25	5-10
	38	Weathered bedrock	---	---	---	---	---	---	---	---	---
Rock outcrop.											
15---------- Cliffdown	0-13	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0-5	35-55	30-50	15-35	10-20	15-25	NP-10
	13-60	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0-5	35-55	30-50	15-35	10-20	15-25	NP-10
16---------- Cliffdown	0-3	Very gravelly loam.	GM, GM-GC	A-1, A-2, A-4	0-10	35-55	30-50	25-50	20-40	15-25	NP-10
	3-60	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0-5	35-55	30-50	25-35	15-20	15-25	NP-10
17*:											
Cliffdown-------	0-6	Gravelly sandy loam.	GM, GM-GC, SM, SM-SC	A-1, A-2	0-5	55-80	50-75	30-50	15-30	15-25	NP-10
	6-42	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0-5	35-55	30-50	25-35	15-20	15-25	NP-10
	42-60	Very gravelly loamy sand.	GP-GM, GM	A-1	0-5	35-55	30-50	15-30	5-15	---	NP
Hiko Peak-------	0-4	Gravelly loam----	GM-GC, SM-SC, CL-ML	A-2, A-4	0-10	55-90	50-85	35-75	25-60	20-30	5-10
	4-21	Gravelly loam, very gravelly loam.	GM-GC, SM-SC	A-2, A-4	0-15	45-80	40-75	35-65	25-50	25-30	5-10
	21-60	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam.	GM-GC, GP-GC	A-1, A-2, A-4	0-15	30-65	25-55	10-50	5-40	20-30	5-10
Okrist----------	0-22	Loamy sand-------	SM	A-1, A-2	0	85-100	80-100	40-75	15-30	---	NP
	22-33	Loamy sand-------	SM	A-1, A-2	0	85-100	80-100	40-75	15-30	---	NP
	33-60	Sand, gravelly sand.	SP-SM, SM	A-1, A-2, A-3	0-5	65-100	60-100	30-70	5-15	---	NP

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
18*:											
Cliffdown-------	0-13	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0-5	35-55	30-50	15-35	10-20	15-25	NP-10
	13-60	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0-5	35-55	30-50	15-35	10-20	15-25	NP-10
Rock outcrop.											
Promo-----------	0-8	Very gravelly loam.	GM-GC	A-2	0-25	40-50	35-45	30-40	25-35	20-30	5-10
	8-13	Very gravelly loam.	GC	A-2	0-15	35-45	30-40	30-40	25-35	25-35	10-15
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
19*:											
Collard---------	0-8	Gravelly loam----	GM-GC, SM-SC	A-4	0	55-80	50-75	45-65	35-50	25-30	5-10
	8-38	Very gravelly sandy clay loam.	GM-GC, GC	A-1, A-2	0-10	35-55	30-50	20-45	10-25	25-35	5-15
	38-60	Very gravelly sandy loam.	GM	A-1	0-10	40-55	35-50	25-40	15-30	---	NP-5
Hupp------------	0-4	Loam-------------	ML, CL-ML	A-4	0	95-100	90-100	80-90	60-75	20-30	NP-10
	4-11	Gravelly loam----	SM-SC	A-4	0	70-80	65-75	55-65	40-50	20-30	5-10
	11-26	Very gravelly loam.	GM-GC	A-2, A-4	0-10	45-55	40-50	35-50	25-40	20-30	5-10
	26-60	Extremely gravelly loam.	GM, GM-GC	A-2, A-1	0-10	20-30	15-25	15-20	10-15	20-30	NP-10
20*:											
Cottonthomas----	0-13	Fine sandy loam	SM	A-4	0	95-100	90-100	80-90	40-50	20-30	NP-5
	13-51	Fine sandy loam, loam.	SM	A-4	0	80-100	70-100	65-90	35-50	20-30	NP-5
	51-60	Fine sandy loam, loamy fine sand.	SM	A-2, A-4	0	80-100	70-100	65-90	20-45	---	NP
Tomsherry-------	0-13	Fine sandy loam	SM	A-4	0	90-100	85-100	60-80	40-50	25-35	NP-5
	13-24	Fine sandy loam, sandy loam.	SM	A-4	0	80-100	75-100	55-80	30-50	25-35	NP-5
	24-29	Indurated--------	---	---	---	---	---	---	---	---	---
	29-60	Loamy fine sand, loamy sand.	SM	A-2, A-4	0	80-100	75-100	50-80	20-35	---	NP
21---------------	0-13	Silty clay loam	CL	A-6, A-7	0	95-100	95-100	90-100	75-95	30-45	15-25
Crooked Creek	13-60	Clay loam, clay, silty clay.	CL, CH	A-7	0	95-100	95-100	90-100	75-95	40-55	15-30
22*:											
Crooked Creek---	0-13	Silt loam--------	ML	A-4	0	95-100	95-100	90-100	80-90	20-25	NP-5
	13-40	Clay loam, clay	CL	A-6, A-7	0	95-100	95-100	90-100	75-90	35-50	15-25
	40-60	Extremely gravelly clay loam.	GC	A-2	5-15	20-30	15-25	10-25	10-20	30-40	10-20
Hupp------------	0-4	Loam-------------	ML, CL-ML	A-4	0	95-100	90-100	80-90	60-75	20-30	NP-10
	4-11	Gravelly loam----	SM-SC	A-4	0	70-80	65-75	55-65	40-50	20-30	5-10
	11-26	Very gravelly loam.	GM-GC	A-2, A-4	0-10	45-55	40-50	35-50	25-40	20-30	5-10
	26-60	Extremely gravelly loam.	GM, GM-GC	A-2, A-1	0-10	20-30	15-25	15-20	10-15	20-30	NP-10

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
23*:											
Dahar----------	0-3	Gravelly sandy loam.	SM-SC	A-2, A-1	0	60-70	55-65	30-40	15-25	20-30	5-10
	3-12	Gravelly loam----	SM-SC, GM-GC	A-4	0	65-75	60-70	50-65	35-50	20-30	5-10
	12-21	Sandy loam-------	SM-SC	A-2, A-4	0	85-95	80-90	50-60	30-40	20-30	5-10
	21-27	Cemented---------	---	---	---	---	---	---	---	---	---
	27-43	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0	35-55	30-50	15-35	10-20	15-25	NP-10
	43-60	Sandy loam-------	SM, SM-SC	A-2, A-4	0	85-100	80-100	50-60	30-40	20-30	NP-10
Codquin---------	0-4	Gravelly sandy loam.	SM	A-2, A-4	0	80-90	75-85	55-60	30-40	15-25	NP-5
	4-17	Extremely gravelly sandy loam.	GP	A-1	0	10-15	5-10	0-10	0-5	---	NP
	17	Weathered bedrock	---	---	---	---	---	---	---	---	---
24*:											
Dateman family--	0-12	Gravelly loam----	GM-GC, SM-SC	A-4	0-10	55-80	50-75	40-65	35-50	20-30	5-10
	12-43	Very gravelly loam.	GC	A-2, A-6	0	35-55	30-50	25-50	20-40	25-30	10-15
	43-60	Extremely gravelly sandy loam, extremely gravelly loam.	GM-GC, GP-GC	A-2	0-10	20-30	15-25	10-20	5-15	20-30	5-10
Bickmore family-	0-12	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0	60-75	55-70	40-65	30-50	20-25	5-10
	12-31	Very gravelly loam.	GM-GC	A-2, A-4	0	35-55	30-50	25-50	20-40	25-30	5-10
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Nielsen family--	0-7	Very gravelly loam.	GM-GC	A-2, A-4	10-20	40-55	35-50	25-50	20-40	25-30	5-10
	7-14	Very gravelly clay loam.	GC	A-2, A-6	10-20	35-55	30-50	25-50	20-40	30-40	10-15
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
25----------	0-4	Loam----------	ML	A-4	0	95-100	95-100	80-95	70-85	20-30	NP-5
Declo	4-17	Loam, silt loam	ML	A-4	0	95-100	90-100	75-95	65-85	20-30	NP-5
	17-60	Loam, sandy loam, very fine sandy loam.	SM, ML	A-2, A-4	0	85-100	75-95	50-90	25-65	20-25	NP-5
26*:											
Declo----------	0-4	Loam----------	ML	A-4	0	95-100	95-100	80-95	70-85	20-30	NP-5
	4-17	Loam, silt loam	ML	A-4	0	95-100	90-100	75-95	65-85	20-30	NP-5
	17-60	Loam, sandy loam, very fine sandy loam.	SM, ML	A-2, A-4	0	85-100	75-95	50-90	25-65	20-25	NP-5
Darkbull--------	0-20	Loam----------	SM, ML	A-4	0	85-100	75-100	70-95	45-80	20-25	NP-5
	20-60	Stratified extremely gravelly loamy sand to very cobbly sand.	SP, GP, GP-GM, SP-SM	A-1	10-50	35-60	25-45	15-30	0-10	---	NP

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
27*:											
Declo	0-4	Loam	ML	A-4	0	95-100	95-100	80-95	70-85	20-30	NP-5
	4-17	Loam, silt loam	ML	A-4	0	95-100	90-100	75-95	65-85	20-30	NP-5
	17-60	Loam, sandy loam, very fine sandy loam.	SM, ML	A-2, A-4	0	85-100	75-95	50-90	25-65	20-25	NP-5
Lembos	0-3	Loam	CL-ML	A-4	0	90-95	85-90	65-85	50-70	20-30	5-10
	3-12	Loam, silt loam	CL-ML, CL	A-4, A-6	0	90-100	85-95	60-90	50-80	25-35	5-15
	12-29	Gravelly loam, cobbly loam.	CL-ML, SM-SC, GM-GC	A-4	0-30	70-90	60-85	50-75	35-60	20-30	5-10
	29	Indurated	---	---	---	---	---	---	---	---	---
Tarnach	0-4	Very gravelly loam.	GM-GC	A-2, A-4	0	30-55	25-50	20-50	15-40	20-30	5-10
	4-15	Very gravelly loam.	GM-GC	A-2, A-4	0-10	35-55	30-50	25-55	20-45	20-30	5-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
28 Donnardo	0-11	Gravelly loam	GM-GC, SM-SC	A-2, A-4	0-5	60-75	55-70	40-65	30-50	20-30	5-10
	11-60	Very cobbly loam, very cobbly sandy loam.	GM-GC	A-2	30-45	45-60	40-60	30-50	20-35	20-30	5-10
29*:											
Donnardo	0-11	Gravelly loam	GM-GC, SM-SC	A-2, A-4	0-5	60-75	55-70	40-65	30-50	20-30	5-10
	11-60	Very cobbly loam, very cobbly sandy loam.	GM-GC	A-2	30-45	45-60	40-60	30-50	20-35	20-30	5-10
Birdow	0-27	Loam	ML	A-4	0	100	100	95-100	50-70	15-25	NP-5
	27-60	Loam, clay loam	CL-ML, CL	A-4, A-6	0	80-100	75-100	60-80	50-70	25-35	5-15
30*:											
Dynal	0-5	Sand	SP-SM	A-3	0	100	95-100	50-60	5-10	---	NP
	5-60	Sand, fine sand	SM, SP-SM	A-3, A-2	0	100	95-100	50-75	5-15	---	NP
Playas.											
31*:											
Fontreen	0-8	Gravelly loam	GM-GC, SM-SC	A-2, A-4	5-25	60-75	55-75	45-65	30-50	20-30	5-10
	8-60	Very gravelly loam, extremely gravelly loam.	GM-GC	A-2	5-10	25-45	20-40	15-30	10-20	20-30	5-15
Borvant	0-4	Gravelly loam	GM-GC, SM-SC	A-4	0-10	60-80	55-75	45-65	35-50	20-30	5-10
	4-12	Very gravelly loam, very cobbly loam, extremely gravelly loam.	GM-GC	A-2, A-4	20-55	35-65	30-60	25-50	20-40	20-30	5-10
	12	Indurated	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
32*:											
Fontreen--------	0-7	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	5-25	60-75	55-75	45-65	30-50	20-30	5-10
	7-60	Very gravelly loam, extremely gravelly loam.	GM-GC	A-2	5-10	25-45	20-40	15-30	10-20	20-30	5-15
Bullump---------	0-15	Loam-------------	CL-ML, ML	A-4	0	100	90-100	70-80	50-65	20-35	5-10
	15-60	Very gravelly clay loam.	GC	A-2	0-25	40-50	35-45	25-35	15-30	30-40	10-20
33*:											
Fontreen--------	0-8	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	5-25	60-75	55-75	45-65	30-50	20-30	5-10
	8-60	Very gravelly loam, extremely gravelly loam.	GM-GC	A-2	5-10	25-45	20-40	15-30	10-20	20-30	5-15
Phage-----------	0-10	Gravelly loam----	CL-ML, GM-GC, ML, GM	A-4	5-40	65-95	60-90	50-80	35-60	25-35	5-10
	10-60	Stratified extremely gravelly sandy loam to very gravelly loam.	SM, GM	A-1	0-25	50-70	30-55	20-35	10-20	20-25	NP-5
34*:											
Hades-----------	0-3	Loam-------------	SM, ML, CL-ML, SM-SC	A-4	0	80-100	75-100	60-95	40-75	15-25	NP-10
	3-25	Loam, gravelly loam.	SM, ML, CL-ML, SM-SC	A-4	0	75-100	70-100	60-95	40-75	20-30	NP-10
	25-40	Sandy clay loam	SC, CL	A-2, A-6	0-5	80-95	75-90	55-85	30-60	30-40	10-20
	40-57	Sandy loam-------	SM	A-2	0	90-100	85-90	45-65	25-35	---	NP
	57	Weathered bedrock	---	---	---	---	---	---	---	---	---
Bearskin--------	0-3	Loam-------------	CL-ML	A-4	0	100	80-90	65-85	50-70	20-25	5-10
	3-14	Sandy clay loam	CL, SC	A-2, A-6	0	95-100	90-100	70-90	30-55	30-40	15-25
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
35---------- Hiko Peak	0-4	Gravelly loam----	GM-GC, SM-SC, CL-ML	A-2, A-4	0-10	55-90	50-85	35-75	25-60	20-30	5-10
	4-21	Gravelly loam, very gravelly loam.	GM-GC, SM-SC	A-2, A-4	0-15	45-80	40-75	35-65	25-50	25-30	5-10
	21-60	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam.	GM-GC, GP-GC	A-1, A-2, A-4	0-15	30-65	25-55	10-50	5-40	20-30	5-10

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
36*:											
Hiko Peak-------	0-4	Gravelly loam----	GM-GC, SM-SC, CL-ML	A-2, A-4	0-10	55-90	50-85	35-75	25-60	20-30	5-10
	4-21	Gravelly loam, very gravelly loam.	GM-GC, SM-SC	A-2, A-4	0-15	45-80	40-75	35-65	25-50	25-30	5-10
	21-60	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam.	GM-GC, GP-GC	A-1, A-2, A-4	0-15	30-65	25-55	10-50	5-40	20-30	5-10
Kunzler---------	0-4	Loamy sand-------	SM	A-1, A-2	0-5	85-100	80-95	40-70	15-35	---	NP
	4-60	Fine sandy loam, sandy loam.	SM, SM-SC	A-2, A-4	0	90-100	85-100	45-80	25-50	20-30	NP-10
37*:											
Hiko Peak-------	0-4	Gravelly loam----	GM-GC, SM-SC, CL-ML	A-2, A-4	0-10	55-90	50-85	35-75	25-60	20-30	5-10
	4-21	Gravelly loam, very gravelly loam.	GM-GC, SM-SC	A-2, A-4	0-15	45-80	40-75	35-65	25-50	25-30	5-10
	21-60	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam.	GM-GC, GP-GC	A-1, A-2, A-4	0-15	30-65	25-55	10-50	5-40	20-30	5-10
Sheeprock-------	0-3	Loamy fine sand	SM	A-2	0-5	90-100	85-100	65-90	20-30	---	NP
	3-12	Gravelly sandy loam.	SM	A-1, A-2	0-5	60-80	55-75	30-50	20-30	15-25	NP-5
	12-24	Very cobbly loamy sand.	GP-GM, GM, SP-SM, SM	A-1	25-40	50-70	45-65	20-45	10-20	---	NP
	24-60	Very gravelly fine sand, very gravelly sand.	GP, GM, SP, SM	A-1	5-15	45-55	40-50	20-40	0-15	---	NP
Rock outcrop.											
38*:											
Hiko Peak-------	0-10	Loam------------	CL-ML	A-4	0-5	85-100	80-100	65-95	50-75	25-30	5-10
	10-21	Gravelly loam, very gravelly loam.	GM-GC, SM-SC	A-2, A-4	0-15	45-80	40-75	35-65	25-50	25-30	5-10
	21-60	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam.	GM-GC, GP-GC	A-1, A-2, A-4	0-15	30-65	25-55	10-50	5-40	20-30	5-10
Taylorsflat-----	0-5	Silt loam--------	CL-ML	A-4	0	85-100	80-90	70-80	60-70	20-30	5-10
	5-25	Loam, sandy clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	85-100	80-90	70-80	50-65	20-35	5-15
	25-60	Silty clay loam, loam, sandy clay loam.	CL	A-6	0	85-100	80-90	70-90	60-80	30-40	10-20

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
39*:											
Hiko Peak-------	0-4	Gravelly loam----	GM-GC, SM-SC, CL-ML	A-2, A-4	0-10	55-90	50-85	35-75	25-60	20-30	5-10
	4-21	Gravelly loam, very gravelly loam.	GM-GC, SM-SC	A-2, A-4	0-15	45-80	40-75	35-65	25-50	25-30	5-10
	21-60	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam.	GM-GC, GP-GC	A-1, A-2, A-4	0-15	30-65	25-55	10-50	5-40	20-30	5-10
Taylorsflat-----	0-5	Silt loam--------	CL-ML	A-4	0	85-100	80-90	70-80	60-70	20-30	5-10
	5-25	Loam, sandy clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	85-100	80-90	70-80	50-65	20-35	5-15
	25-60	Silty clay loam, loam, sandy clay loam.	CL	A-6	0	85-100	80-90	70-90	60-80	30-40	10-20
Skumpah---------	0-3	Silt loam--------	CL-ML, CL	A-4, A-6	0	100	100	90-100	75-90	25-35	5-15
	3-9	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	35-40	15-20
	9-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	95-100	75-90	20-40	5-20
40*:											
Hiko Springs----	0-3	Sandy loam-------	SM-SC	A-2	0	85-100	80-95	45-65	25-35	20-25	5-10
	3-50	Gravelly sandy loam.	SM-SC	A-1, A-2	0-5	60-80	55-75	30-50	15-25	20-25	5-10
	50-60	Gravelly loamy sand.	SM	A-1	0-5	60-80	55-75	25-50	10-20	---	NP
Okrist----------	0-3	Gravelly sandy loam.	SM	A-1, A-2	0	65-80	60-75	40-50	20-30	---	NP
	3-8	Sandy loam-------	SM	A-2	0	85-100	80-100	45-70	25-35	---	NP
	8-30	Loamy sand-------	SM	A-1, A-2	0	85-100	80-100	40-75	15-30	---	NP
	30-60	Sand, gravelly sand.	SP-SM, SM	A-1, A-2, A-3	0-5	65-100	60-100	30-70	5-15	---	NP
41*:											
Jericho---------	0-3	Gravelly loam----	GM-GC, SM-SC, GM, SM	A-4	0	55-80	50-75	40-65	35-50	20-30	NP-10
	3-8	Gravelly fine sandy loam, gravelly coarse sandy loam.	GM, GM-GC, SM, SM-SC	A-2, A-4, A-1	0-15	55-80	50-75	35-65	20-40	20-30	NP-10
	8-17	Very gravelly fine sandy loam, very gravelly coarse sandy loam.	GM, GM-GC	A-2, A-1	15-25	40-65	35-60	25-50	15-30	20-30	NP-10
	17	Indurated--------	---	---	---	---	---	---	---	---	---
Amtoft----------	0-9	Very gravelly loam.	GM-GC	A-2, A-4	0-15	35-60	30-55	25-50	20-40	25-30	5-10
	9-19	Very gravelly loam.	GM-GC	A-2, A-4	0-15	35-60	30-55	25-50	20-40	25-30	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
42*:											
Jughandle family	0-5	Gravelly sandy loam.	SM-SC	A-2, A-1	0	60-80	55-75	35-50	15-25	20-30	5-10
	5-60	Gravelly sandy loam.	SM-SC	A-2, A-1	0	60-80	55-75	35-50	15-25	20-30	5-10
Parkay family---	0-4	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0	55-80	50-75	40-65	30-50	25-30	5-10
	4-19	Very gravelly loam.	GM-GC	A-2, A-4	0	35-55	30-50	25-45	20-40	25-30	5-10
	19-34	Very gravelly loam.	GC	A-2	0-10	35-50	30-50	25-45	20-35	25-35	10-15
	34-60	Extremely gravelly clay loam.	GC	A-2	0-10	20-30	15-25	15-25	10-20	35-40	15-20
43*:											
Kapod----------	0-6	Cobbly loam------	CL-ML	A-4	15-25	85-95	80-90	65-85	50-70	20-30	5-10
	6-34	Very cobbly loam	GM-GC	A-4	25-30	60-70	55-65	50-60	35-45	25-30	5-10
	34-60	Extremely gravelly loam.	GM-GC, GP-GC	A-2	10-20	15-30	10-25	5-20	5-20	25-30	5-10
Donnardo--------	0-11	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0-5	60-75	55-70	40-65	30-50	20-30	5-10
	11-60	Very cobbly loam, very cobbly sandy loam.	GM-GC	A-2	30-45	45-60	40-60	30-50	20-35	20-30	5-10
44---------------	0-24	Silt loam--------	CL-ML	A-4	0-5	90-100	85-100	75-100	60-90	25-30	5-10
Koosharem	24-60	Loam, silt loam	CL-ML	A-4	0-5	85-100	80-100	65-100	50-90	25-30	5-10
45*:											
Kunzler---------	0-11	Loam-------------	ML, CL-ML	A-4	0	90-100	85-100	65-95	50-75	20-30	NP-10
	11-16	Loam-------------	ML, CL-ML	A-4	0	90-100	85-100	65-95	50-75	20-30	NP-10
	16-41	Fine sandy loam, sandy loam.	SM, SM-SC	A-2, A-4	0	90-100	85-100	45-80	25-50	20-30	NP-10
	41-60	Loam-------------	ML, CL-ML	A-4	0	90-100	85-100	65-95	50-75	20-30	NP-10
Lembos----------	0-4	Loam-------------	CL-ML	A-4	0	90-95	85-90	65-85	50-70	20-30	5-10
	4-10	Loam, silt loam	CL-ML, CL	A-4, A-6	0	90-100	85-95	60-90	50-80	25-35	5-15
	10-18	Loam-------------	CL-ML, CL	A-4, A-6	0	80-100	75-95	65-85	50-70	25-35	5-15
	18-23	Gravelly loam, cobbly loam.	CL-ML, SM-SC, GM-GC	A-4	0-30	70-90	60-85	50-75	35-60	20-30	5-10
	23	Indurated--------	---	---	---	---	---	---	---	---	---
46*:											
Lembos----------	0-4	Loam-------------	CL-ML	A-4	0	90-95	85-90	65-85	50-70	20-30	5-10
	4-10	Loam, silt loam	CL-ML, CL	A-4, A-6	0	90-100	85-95	60-90	50-80	25-35	5-15
	10-18	Loam-------------	CL-ML, CL	A-4, A-6	0	80-100	75-95	65-85	50-70	25-35	5-15
	18-23	Gravelly loam, cobbly loam.	CL-ML, SM-SC, GM-GC	A-4	0-30	70-90	60-85	50-75	35-60	20-30	5-10
	23	Indurated--------	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
46*:											
Jericho----------	0-3	Gravelly loam----	GM-GC, SM-SC, GM, SM	A-4	0	55-80	50-75	40-65	35-50	20-30	NP-10
	3-8	Gravelly fine sandy loam, gravelly coarse sandy loam.	GM, GM-GC, SM, SM-SC	A-2, A-4, A-1	0-15	55-80	50-75	35-65	20-40	20-30	NP-10
	8-17	Very gravelly fine sandy loam, very gravelly coarse sandy loam.	GM, GM-GC	A-2, A-1	15-25	40-65	35-60	25-50	15-30	20-30	NP-10
	17	Indurated--------	---	---	---	---	---	---	---	---	---
Scalade----------	0-8	Gravelly sandy loam.	SM-SC, GM-GC	A-2	0	55-80	50-75	30-50	15-25	20-30	5-10
	8-18	Loam----------	CL-ML, ML	A-4	0	85-100	80-100	65-95	50-75	20-30	NP-10
	18	Cemented---------	---	---	---	---	---	---	---	---	---
47*:											
Lembos----------	0-4	Loam----------	CL-ML	A-4	0	90-95	85-90	65-85	50-70	20-30	5-10
	4-10	Loam, silt loam	CL-ML, CL	A-4, A-6	0	90-100	85-95	60-90	50-80	25-35	5-15
	10-18	Loam----------	CL-ML, CL	A-4, A-6	0	80-100	75-95	65-85	50-70	25-35	5-15
	18-23	Gravelly loam, cobbly loam.	CL-ML, SM-SC, GM-GC	A-4	0-30	70-90	60-85	50-75	35-60	20-30	5-10
	23	Indurated--------	---	---	---	---	---	---	---	---	---
Taylorsflat-----	0-5	Silt loam--------	CL-ML	A-4	0	85-100	80-90	70-80	60-70	20-30	5-10
	5-25	Loam, sandy clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	85-100	80-90	70-80	50-65	20-35	5-15
	25-60	Silty clay loam, loam, sandy clay loam.	CL	A-6	0	85-100	80-90	70-90	60-80	30-40	10-20
48*:											
Lundy----------	0-3	Very gravelly loam.	GM-GC	A-2, A-4	10-20	35-60	30-55	25-55	20-45	20-30	5-10
	3-15	Very gravelly loam.	GM-GC	A-2	0-20	35-55	30-50	25-45	20-40	25-35	5-10
	15-19	Very cobbly loam	SM-SC, GM-GC	A-4	55-70	65-75	60-70	50-65	35-50	25-35	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sonlet----------	0-2	Very gravelly loam.	GM-GC	A-2, A-4	0	40-55	35-50	25-50	20-40	20-30	5-10
	2-10	Very gravelly loam, very gravelly sandy loam.	GM-GC	A-2	0	45-55	40-50	25-40	15-30	25-35	5-10
	10-19	Extremely gravelly sandy loam.	GM-GC	A-2	5-10	30-50	25-45	10-30	10-20	25-35	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
48*:											
Lodar	0-8	Very gravelly loam.	GM-GC	A-2, A-4	15-30	40-60	35-55	30-50	25-40	20-30	5-10
	8-15	Very cobbly loam, very stony loam, very gravelly loam.	GM-GC	A-2, A-4	15-50	40-60	35-55	30-50	25-40	20-30	5-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
49	0-5	Loamy sand	SM	A-2, A-4	0	95-100	90-100	55-70	25-40	---	NP
Lynndyl	5-36	Loamy fine sand, loamy sand.	SM, ML	A-2, A-4	0	90-100	85-100	55-85	30-55	---	NP
	36-60	Stratified fine sand to gravelly coarse sandy loam.	SM	A-1, A-2, A-4	0	60-100	55-100	35-80	15-40	---	NP
50	0-5	Silt loam	CL-ML	A-4	0	100	100	95-100	75-90	20-30	5-10
Mellor	5-13	Silty clay loam	CL	A-6	0	100	100	95-100	80-95	30-40	10-20
	13-60	Silty clay loam, silt loam, silty clay.	CL	A-6, A-7	0	100	100	95-100	75-95	25-45	10-25
51	0-4	Silt loam	CL-ML	A-4	0	100	100	95-100	75-90	20-30	5-10
Mellor	4-18	Silty clay loam	CL	A-6	0	100	100	95-100	80-95	30-40	10-20
	18-60	Silty clay loam, silt loam, silty clay.	CL	A-6, A-7	0	100	100	95-100	75-95	25-45	10-25
52*:											
Mellor	0-4	Silt loam	CL-ML	A-4	0	100	100	95-100	75-90	20-30	5-10
	4-18	Silty clay loam	CL	A-6	0	100	100	95-100	80-95	30-40	10-20
	18-60	Silty clay loam, silt loam, silty clay.	CL	A-6, A-7	0	100	100	95-100	75-95	25-45	10-25
Declo	0-5	Silt loam	ML	A-4	0	95-100	95-100	90-100	70-85	20-25	NP-5
	5-9	Loam, silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	95-100	95-100	85-95	65-80	20-30	NP-10
	9-48	Loam, silt loam	ML	A-4	0	95-100	95-100	85-95	65-85	20-25	NP-5
	48-60	Gravelly sandy loam, gravelly loam, gravelly silt loam.	SM, ML	A-2, A-4	0	65-85	60-75	50-70	25-60	20-25	NP-5
53*:											
Mellor	0-5	Silt loam	CL-ML	A-4	0	100	100	95-100	75-90	20-30	5-10
	5-13	Silty clay loam	CL	A-6	0	100	100	95-100	80-95	30-40	10-20
	13-60	Silty clay loam, silt loam, silty clay.	CL	A-6, A-7	0	100	100	95-100	75-95	25-45	10-25
Pomat	0-10	Silt loam	CL-ML	A-4	0	100	100	95-100	80-95	20-25	5-10
	10-60	Silt loam	CL-ML	A-4	0	100	100	95-100	80-95	20-25	5-10

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
54*:											
Nielsen family--	0-7	Very gravelly loam.	GM-GC	A-2, A-4	10-20	40-55	35-50	25-50	20-40	25-30	5-10
	7-14	Very gravelly clay loam.	GC	A-2, A-6	10-20	35-55	30-50	25-50	20-40	30-40	10-15
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bickmore family-	0-3	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0	60-75	55-70	40-65	30-50	20-25	5-10
	3-37	Very gravelly loam.	GM-GC	A-2, A-4	0	35-55	30-50	25-50	20-40	25-30	5-10
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
55*:											
Okrist----------	0-3	Gravelly sandy loam.	SM	A-1, A-2	0	65-80	60-75	40-50	20-30	---	NP
	3-8	Sandy loam-------	SM	A-2	0	85-100	80-100	45-70	25-35	---	NP
	8-30	Loamy sand-------	SM	A-1, A-2	0	85-100	80-100	40-75	15-30	---	NP
	30-60	Sand, gravelly sand, gravelly coarse sand.	SP-SM, SM	A-1, A-2, A-3	0-5	65-100	60-100	30-70	5-15	---	NP
Okrist, thick surface-------	0-22	Loamy sand-------	SM	A-1, A-2	0	85-100	80-100	40-75	15-30	---	NP
	22-33	Loamy sand-------	SM	A-1, A-2	0	85-100	80-100	40-75	15-30	---	NP
	33-60	Sand, gravelly sand.	SP-SM, SM	A-1, A-2, A-3	0-5	65-100	60-100	30-70	5-15	---	NP
56*:											
Overland--------	0-10	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0	55-80	50-75	40-65	35-50	25-30	5-10
	10-28	Very gravelly loam.	GM-GC	A-1, A-2	0-10	40-60	30-50	25-50	20-40	25-30	5-10
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Sonlet----------	0-2	Very gravelly loam.	GM-GC	A-2, A-4	0	40-55	35-50	25-50	20-40	20-30	5-10
	2-10	Very gravelly loam, very gravelly sandy loam.	GM-GC	A-2	0	45-55	40-50	25-40	15-30	25-35	5-10
	10-19	Extremely gravelly sandy loam.	GM-GC	A-2	5-10	30-50	25-45	10-30	10-20	25-35	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
57*-------------- Parkay family	0-6	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0	55-80	50-75	40-65	30-50	25-30	5-10
	6-20	Very gravelly loam.	GC	A-2	0-10	35-50	30-50	25-45	20-35	25-35	10-15
	20-60	Extremely gravelly clay loam.	GC	A-2	0-10	20-30	15-25	15-25	10-20	35-40	15-20

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
58*:											
Parkay family---	0-4	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0	55-80	50-75	40-65	30-50	25-30	5-10
	4-19	Very gravelly loam.	GM-GC	A-2, A-4	0	35-55	30-50	25-45	20-40	25-30	5-10
	19-34	Very gravelly loam.	GC	A-2	0-10	35-50	30-50	25-45	20-35	25-35	10-15
	34-60	Extremely gravelly clay loam.	GC	A-2	0-10	20-30	15-25	15-25	10-20	35-40	15-20
Dateman family--	0-12	Gravelly loam----	GM-GC, SM-SC	A-4	0-10	55-80	50-75	40-65	35-50	20-30	5-10
	12-43	Very gravelly loam.	GC	A-2, A-6	0	35-55	30-50	25-50	20-40	25-30	10-15
	43-60	Extremely gravelly sandy loam, extremely gravelly loam.	GM-GC, GP-GC	A-2	0-10	20-30	15-25	10-20	5-15	20-30	5-10
59*:											
Parkay family---	0-4	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0	55-80	50-75	40-65	30-50	25-30	5-10
	4-19	Very gravelly loam.	GM-GC	A-2, A-4	0	35-55	30-50	25-45	20-40	25-30	5-10
	19-34	Very gravelly loam.	GC	A-2	0-10	35-50	30-50	25-45	20-35	25-35	10-15
	34-60	Extremely gravelly clay loam.	GC	A-2	0-10	20-30	15-25	15-25	10-20	35-40	15-20
Broad Canyon family--------	0-15	Very gravelly loam.	GM-GC	A-2, A-4	0-5	35-55	30-50	25-50	20-40	25-35	5-10
	15-27	Extremely gravelly sandy loam.	GP, GP-GM, GP-GC, GM-GC	A-1, A-2	0-15	15-35	10-30	5-20	0-15	15-25	NP-10
	27-50	Extremely gravelly loamy sand.	GP, GP-GM	A-1	0-15	10-35	5-30	0-20	0-10	15-20	NP-5
	50	Weathered bedrock	---	---	---	---	---	---	---	---	---
60*. Pits, gravel											
61*. Playas											
62*:											
Plegomir--------	0-2	Gravelly loam----	GM-GC, SM-SC, GC, SC	A-2, A-4, A-6	0	60-85	55-75	40-75	30-50	25-35	5-15
	2-5	Loam----------	CL-ML, CL	A-4, A-6	0	80-95	75-90	60-85	50-70	25-35	5-15
	5-13	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC, GC, SC	A-2, A-4, A-6	0	60-85	55-80	30-75	15-50	25-35	5-15
	13	Indurated--------	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
62*:											
Hiko Peak-------	0-4	Gravelly loam----	GM-GC, SM-SC, CL-ML	A-2, A-4	0-10	55-90	50-85	35-75	25-60	20-30	5-10
	4-21	Gravelly loam, very gravelly loam.	GM-GC, SM-SC	A-2, A-4	0-15	45-80	40-75	35-65	25-50	25-30	5-10
	21-60	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam.	GM-GC, GP-GC	A-1, A-2, A-4	0-15	30-65	25-55	10-50	5-40	20-30	5-10
Bullump---------	0-15	Loam-------------	CL-ML, ML	A-4	0	100	90-100	70-80	50-65	20-35	5-10
	15-60	Very gravelly clay loam.	GC	A-2	0-25	40-50	35-45	25-35	15-30	30-40	10-20
63*:											
Promo-----------	0-8	Very gravelly loam.	GM-GC	A-2	0-25	40-50	35-45	30-40	25-35	20-30	5-10
	8-13	Very gravelly loam.	GC	A-2	0-15	35-45	30-40	30-40	25-35	25-35	10-15
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Puett-----------	0-2	Gravelly loam----	SM, ML	A-4	0-5	70-80	65-75	55-65	40-55	15-25	NP-5
	2-12	Sandy loam-------	SM, ML	A-4	0-5	100	85-95	60-75	40-60	---	NP
	12	Weathered bedrock	---	---	---	---	---	---	---	---	---
64*:											
Puett-----------	0-2	Gravelly loam----	SM, ML	A-4	0-5	70-80	65-75	55-65	40-55	15-25	NP-5
	2-12	Sandy loam-------	SM, ML	A-4	0-5	100	85-95	60-75	40-60	---	NP
	12	Weathered bedrock	---	---	---	---	---	---	---	---	---
Plegomir--------	0-2	Gravelly loam----	GM-GC, SM-SC, GC, SC	A-2, A-4, A-6	0	60-85	55-75	40-75	30-50	25-35	5-15
	2-5	Loam-------------	CL-ML, CL	A-4, A-6	0	80-95	75-90	60-85	50-70	25-35	5-15
	5-13	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC, GC, SC	A-2, A-4, A-6	0	60-85	55-80	30-75	15-50	25-35	5-15
	13	Indurated--------	---	---	---	---	---	---	---	---	---
65*:											
Raftriver-------	0-12	Loam-------------	ML, CL-ML	A-4	0	85-100	80-100	65-95	50-75	15-30	NP-10
	12-24	Sandy loam-------	SM, SM-SC	A-2, A-4	0-5	85-100	80-100	45-70	25-40	15-25	NP-10
	24-32	Cemented---------	---	---	---	---	---	---	---	---	---
	32-60	Sandy loam-------	SM, SM-SC	A-2, A-4	0-10	85-100	80-100	45-70	25-40	15-25	NP-10
Duckree---------	0-11	Gravelly sandy loam.	GM, SM	A-1, A-2	0-5	55-80	50-75	30-50	15-30	20-30	NP-5
	11-31	Very gravelly sandy loam.	GM	A-1	0-15	35-55	30-50	15-35	10-20	20-30	NP-5
	31-60	Very gravelly loamy sand.	GM, GP-GM	A-1	5-20	35-55	30-50	20-35	5-15	---	NP
66*:											
Raftriver-------	0-12	Loam-------------	ML, CL-ML	A-4	0	85-100	80-100	65-95	50-75	15-30	NP-10
	12-24	Sandy loam-------	SM, SM-SC	A-2, A-4	0-5	85-100	80-100	45-70	25-40	15-25	NP-10
	24-32	Cemented---------	---	---	---	---	---	---	---	---	---
	32-60	Sandy loam-------	SM, SM-SC	A-2, A-4	0-10	85-100	80-100	45-70	25-40	15-25	NP-10

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
66*:											
Koosharem-------	0-21	Silt loam--------	CL-ML	A-4	0-5	90-100	85-100	75-100	60-90	25-30	5-10
	21-60	Loam, silt loam	CL-ML	A-4	0-5	85-100	80-100	65-100	50-90	25-30	5-10
67*:											
Reebok----------	0-7	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0	55-80	50-75	40-65	30-50	25-30	5-10
	7-16	Very gravelly loam.	GM-GC	A-2, A-4	0-10	35-55	30-50	25-45	20-40	25-30	5-10
	16	Indurated--------	---	---	---	---	---	---	---	---	---
Puett-----------	0-2	Gravelly loam----	SM, ML	A-4	0-5	70-80	65-75	55-65	40-55	15-25	NP-5
	2-12	Sandy loam-------	SM, ML	A-4	0-5	100	85-95	60-75	40-60	---	NP
	12	Weathered bedrock	---	---	---	---	---	---	---	---	---
68*:											
Rexmont---------	0-6	Very stony loam	GM-GC	A-2, A-4	15-35	45-65	40-60	35-55	25-45	25-30	5-10
	6-12	Very stony loam, extremely stony loam.	GM, GM-GC, SM, SM-SC	A-2, A-4	30-85	55-90	50-85	40-75	30-50	20-30	NP-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Shalper---------	0-2	Very gravelly loam.	GC	A-2, A-6	0	30-55	25-50	20-45	20-40	25-35	10-15
	2-7	Very gravelly clay loam, very gravelly loam.	GC	A-2, A-6	0	30-55	25-50	20-45	15-40	30-40	15-20
	7	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
69*:											
Ridd------------	0-6	Very cobbly loam	GM	A-4	25-35	65-75	60-70	50-60	40-50	15-20	NP-5
	6-13	Very cobbly loam	SM-SC, SM, GM-GC, GM	A-4	25-35	65-75	60-70	50-60	35-45	15-25	NP-10
	13-38	Extremely gravelly loam, extremely gravelly sandy loam.	GM-GC, GM, GP-GM	A-2, A-1	5-10	20-30	15-25	10-20	5-15	15-25	NP-10
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Bullump---------	0-15	Loam-------------	CL-ML, ML	A-4	0	100	90-100	70-80	50-65	20-35	5-10
	15-60	Very gravelly clay loam.	GC	A-2	0-25	40-50	35-45	25-35	15-30	30-40	10-20
70*:											
Ridgecrest family--------	0-3	Very gravelly loam.	GM-GC	A-2	10-20	30-40	25-35	15-30	15-25	20-30	5-10
	3-9	Extremely gravelly loam.	GC, GP-GC	A-2	0-10	20-30	15-25	10-20	5-15	25-30	10-15
	9-25	Extremely gravelly sandy loam.	GM-GC, GP-GC	A-2	0-25	15-30	10-25	10-20	5-15	20-30	5-10
	25-60	Extremely cobbly sandy loam.	GM-GC	A-2	65-75	35-40	30-35	15-30	10-25	20-30	5-10

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
70*:											
Bickmore family-	0-3	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0	60-75	55-70	40-65	30-50	20-25	5-10
	3-37	Very gravelly loam.	GM-GC	A-2, A-4	0	35-55	30-50	25-50	20-40	25-30	5-10
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
71*:											
Rock outcrop.											
Amtoft----------	0-5	Extremely cobbly loam.	GM-GC	A-2	50-60	25-45	20-40	15-35	10-30	25-30	5-10
	5-16	Very gravelly loam.	GM-GC	A-2, A-4	0-15	35-60	30-55	25-50	20-40	25-30	5-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
72---------- Rodrof	0-10	Extremely gravelly loam.	GM-GC, GP-GC	A-2	0-15	15-30	10-25	5-25	5-20	25-30	5-10
	10-19	Extremely gravelly loam.	GM-GC, GP-GC	A-2	0-15	15-30	10-25	5-25	5-20	25-30	5-10
	19	Indurated--------	---	---	---	---	---	---	---	---	---
73*:											
Rubble land.											
Nielsen family--	0-8	Extremely stony loam.	GM-GC	A-2, A-4	65-80	35-55	30-50	25-50	20-40	25-30	5-10
	8-16	Extremely cobbly clay loam.	GC	A-2, A-6, A-7	60-75	50-70	45-65	35-60	30-50	30-40	10-15
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
74*:											
Saltair---------	0-6	Silt loam--------	CL-ML	A-4	0	100	100	95-100	75-90	20-30	5-10
	6-60	Silty clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	100	100	95-100	75-95	20-40	5-20
Playas.											
75*. Salt flats											
76*:											
Saxby-----------	0-3	Extremely bouldery silt loam.	GM-GC, CL-ML	A-4	45-60	50-65	45-60	40-60	40-55	20-30	5-10
	3-16	Very cobbly silt loam, extremely cobbly loam, very cobbly loam.	GM-GC, CL-ML	A-4	55-75	50-75	45-70	40-65	35-60	20-30	5-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
77*:											
Scalade---------	0-3	Gravelly sandy loam.	SM-SC, GM-GC	A-2	0	55-80	50-75	30-50	15-25	20-30	5-10
	3-11	Loam----------	CL-ML, ML	A-4	0	85-100	80-100	65-95	50-75	20-30	NP-10
	11-18	Fine sandy loam	SM, SM-SC	A-2, A-4	0	85-100	80-100	50-85	30-50	20-30	NP-10
	18-23	Cemented---------	---	---	---	---	---	---	---	---	---
	23-45	Gravelly sandy loam.	SM-SC, GM-GC	A-2	0	55-80	50-75	30-50	15-25	20-30	5-10
	45-60	Gravelly sand----	SP, SP-SM	A-1	0	55-80	50-75	25-50	0-10	---	NP
Lodar-----------	0-8	Very gravelly loam.	GM-GC	A-2, A-4	15-30	40-60	35-55	30-50	25-40	20-30	5-10
	8-15	Very cobbly loam, very stony loam, very gravelly loam.	GM-GC	A-2, A-4	15-50	40-60	35-55	30-50	25-40	20-30	5-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
78*:											
Skumpah---------	0-3	Silt loam--------	CL-ML, CL	A-4, A-6	0	100	100	90-100	75-90	25-35	5-15
	3-9	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	35-40	15-20
	9-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	95-100	75-90	20-40	5-20
Playas.											
79*:											
Skumpah---------	0-4	Silt loam--------	CL-ML, CL	A-4, A-6	0	100	100	90-100	75-90	25-35	5-15
	4-15	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	35-40	15-20
	15-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	95-100	75-90	20-40	5-20
Playas.											
80*:											
Skumpah---------	0-3	Silt loam--------	CL-ML, CL	A-4, A-6	0	100	100	90-100	75-90	25-35	5-15
	3-9	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	35-40	15-20
	9-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	95-100	75-90	20-40	5-20
Skumpah, sodic--	0-4	Silt loam--------	CL-ML, CL	A-4, A-6	0	100	100	90-100	75-90	25-35	5-15
	4-15	Silty clay loam	CL	A-6	0	100	100	95-100	85-95	35-40	15-20
	15-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	95-100	75-90	20-40	5-20
Swingler--------	0-5	Silt loam--------	CL-ML, ML	A-4	0	100	100	95-100	75-90	25-35	5-10
	5-60	Silt loam--------	CL-ML, ML	A-4	0	100	100	95-100	75-90	25-35	5-10
81*:											
Skylick---------	0-19	Loam----------	CL-ML, ML	A-4	0	95-100	90-100	75-95	55-75	20-30	NP-10
	19-25	Sandy loam, loam	SM-SC, SC, CL-ML, CL	A-4, A-6	0	95-100	90-100	60-90	35-75	25-35	5-15
	25-60	Sandy clay loam, clay loam.	SC, CL	A-2, A-6	0	90-100	85-100	55-85	30-70	30-40	10-20

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
81*:											
Hoodle----------	0-5	Very gravelly loam.	GM-GC	A-2, A-4	0-20	35-60	30-55	25-50	20-40	25-30	5-10
	5-12	Gravelly loam----	GM-GC, SM-SC	A-2, A-4	0-10	55-80	50-75	40-65	30-50	25-30	5-10
	12-26	Very gravelly clay loam.	GC	A-2, A-6	0-15	35-60	30-55	25-50	20-40	30-35	10-15
	26-60	Very gravelly clay loam.	GC	A-2, A-6	0-10	35-55	30-50	25-50	20-40	30-35	10-15
82---------- Smaug	0-3	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	95-100	65-75	15-25	NP-10
	3-35	Very fine sandy loam.	ML, CL-ML	A-4	0	100	100	95-100	65-75	15-25	NP-10
	35-60	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	75-90	15-25	NP-10
83---------- Smaug	0-2	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	75-90	15-25	NP-10
	2-60	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	75-90	15-25	NP-10
84*:											
Solak----------	0-10	Very gravelly loam.	GM-GC	A-2	0	30-50	25-50	20-45	15-40	20-25	5-10
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
85*:											
Sonlet----------	0-2	Very gravelly loam.	GM-GC	A-2, A-4	0	40-55	35-50	25-50	20-40	20-30	5-10
	2-10	Very gravelly loam, very gravelly sandy loam.	GM-GC	A-2	0	45-55	40-50	25-40	15-30	25-35	5-10
	10-19	Extremely gravelly sandy loam.	GM-GC	A-2	5-10	30-50	25-45	10-30	10-20	25-35	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Lodar----------	0-8	Very gravelly loam.	GM-GC	A-2, A-4	15-30	40-60	35-55	30-50	25-40	20-30	5-10
	8-15	Very cobbly loam, very stony loam, very gravelly loam.	GM-GC	A-2, A-4	15-50	40-60	35-55	30-50	25-40	20-30	5-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rubble land.											
86*:											
Stucky----------	0-4	Extremely stony sandy loam.	GM, GM-GC	A-1, A-2	60-85	35-60	30-55	15-30	10-20	20-25	NP-10
	4-26	Very cobbly sandy clay loam, extremely cobbly sandy clay loam.	GC	A-2	40-65	45-55	40-50	30-45	15-30	35-45	15-25
	26-60	Extremely stony sandy loam.	GM, GM-GC	A-1, A-2	55-75	35-50	30-45	15-35	10-20	20-25	NP-10

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
86*:											
Hiko Peak-------	0-4	Gravelly loam----	GM-GC, SM-SC, CL-ML	A-2, A-4	0-10	55-90	50-85	35-75	25-60	20-30	5-10
	4-21	Gravelly loam, very gravelly loam.	GM-GC, SM-SC	A-2, A-4	0-15	45-80	40-75	35-65	25-50	25-30	5-10
	21-60	Very gravelly sandy loam, very gravelly fine sandy loam, very gravelly loam.	GM-GC, GP-GC	A-1, A-2, A-4	0-15	30-65	25-55	10-50	5-40	20-30	5-10
87---------- Tarnach	0-4	Gravelly loam----	GM-GC, SM-SC, CL-ML	A-2, A-4	0-10	55-80	50-75	40-75	30-60	20-30	5-10
	4-15	Very gravelly loam.	GM-GC	A-2, A-4	0-10	35-55	30-50	25-55	20-45	20-30	5-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
88---------- Tarnach	0-4	Very gravelly loam.	GM-GC	A-2, A-4	0	30-55	25-50	20-50	15-40	20-30	5-10
	4-15	Very gravelly loam.	GM-GC	A-2, A-4	0-10	35-55	30-50	25-55	20-45	20-30	5-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
89*:											
Tarnach---------	0-4	Very gravelly loam.	GM-GC	A-2, A-4	0	30-55	25-50	20-50	15-40	20-30	5-10
	4-15	Very gravelly loam.	GM-GC	A-2, A-4	0-10	35-55	30-50	25-55	20-45	20-30	5-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Amtoft----------	0-9	Very gravelly loam.	GM-GC	A-2, A-4	0-15	35-60	30-55	25-50	20-40	25-30	5-10
	9-19	Very gravelly loam.	GM-GC	A-2, A-4	0-15	35-60	30-55	25-50	20-40	25-30	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
90*:											
Tarnach---------	0-6	Gravelly loam----	GM-GC, SM-SC, CL-ML	A-2, A-4	0-10	55-80	50-75	40-75	30-60	20-30	5-10
	6-13	Very gravelly loam.	GM-GC	A-2, A-4	0-10	35-55	30-50	25-55	20-45	20-30	5-10
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Promo-----------	0-8	Very gravelly loam.	GM-GC	A-2	0-25	40-50	35-45	30-40	25-35	20-30	5-10
	8-13	Very gravelly loam.	GC	A-2	0-15	35-45	30-40	30-40	25-35	25-35	10-15
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
91*:											
Tarnach, moist--	0-6	Gravelly loam----	GM-GC, SM-SC, CL-ML	A-2, A-4	0-10	55-80	50-75	40-75	30-60	20-30	5-10
	6-13	Very gravelly loam.	GM-GC	A-2, A-4	0-10	35-55	30-50	25-55	20-45	20-30	5-10
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Tarnach---------	0-4	Very gravelly loam.	GM-GC	A-2, A-4	0	30-55	25-50	20-50	15-40	20-30	5-10
	4-15	Very gravelly loam.	GM-GC	A-2, A-4	0-10	35-55	30-50	25-55	20-45	20-30	5-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
92--------------- Tosser	0-4	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0	35-55	30-50	15-35	10-20	15-25	NP-10
	4-10	Gravelly fine sandy loam.	SM, SM-SC	A-1, A-2, A-4	0	60-80	55-75	35-60	20-40	15-25	NP-10
	10-23	Very gravelly loamy sand.	GP-GM, GM	A-1	0	35-55	30-50	15-30	5-15	---	NP
	23-37	Extremely gravelly sand, extremely gravelly loamy sand.	GP	A-1	0	20-30	15-25	5-15	0-5	---	NP
	37-60	Very gravelly loamy sand.	GM	A-1	0	35-55	30-50	15-35	10-20	---	NP
93*:											
Tosser----------	0-4	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0	35-55	30-50	15-35	10-20	15-25	NP-10
	4-10	Gravelly fine sandy loam.	SM, SM-SC	A-1, A-2, A-4	0	60-80	55-75	35-60	20-40	15-25	NP-10
	10-23	Very gravelly loamy sand.	GP-GM, GM	A-1	0	35-55	30-50	15-30	5-15	---	NP
	23-37	Extremely gravelly sand, extremely gravelly loamy sand.	GP	A-1	0	20-30	15-25	5-15	0-5	---	NP
	37-60	Very gravelly loamy sand.	GM	A-1	0	35-55	30-50	15-35	10-20	---	NP
Plegomir--------	0-2	Gravelly loam----	GM-GC, SM-SC, GC, SC	A-2, A-4, A-6	0	60-85	55-75	40-75	30-50	25-35	5-15
	2-5	Loam-------------	CL-ML, CL	A-4, A-6	0	80-95	75-90	60-85	50-70	25-35	5-15
	5-13	Gravelly loam, gravelly sandy loam.	GM-GC, SM-SC, GC, SC	A-2, A-4, A-6	0	60-85	55-80	30-75	15-50	25-35	5-15
	13	Indurated--------	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 10.--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	
94*:											
Tosser----------	0-4	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0	35-55	30-50	15-35	10-20	15-25	NP-10
	4-10	Gravelly fine sandy loam.	SM, SM-SC	A-1, A-2, A-4	0	60-80	55-75	35-60	20-40	15-25	NP-10
	10-23	Very gravelly loamy sand.	GP-GM, GM	A-1	0	35-55	30-50	15-30	5-15	---	NP
	23-37	Extremely gravelly sand, extremely gravelly loamy sand.	GP	A-1	0	20-30	15-25	5-15	0-5	---	NP
	37-60	Very gravelly loamy sand.	GM	A-1	0	35-55	30-50	15-35	10-20	---	NP
Puett----------	0-2	Gravelly loam----	SM, ML	A-4	0-5	70-80	65-75	55-65	40-55	15-25	NP-5
	2-12	Sandy loam-------	SM, ML	A-4	0-5	100	85-95	60-75	40-60	---	NP
	12	Weathered bedrock	---	---	---	---	---	---	---	---	---
95*:											
Tosser----------	0-4	Very gravelly sandy loam.	GM, GM-GC	A-1, A-2	0	35-55	30-50	15-35	10-20	15-25	NP-10
	4-10	Gravelly fine sandy loam.	SM, SM-SC	A-1, A-2, A-4	0	60-80	55-75	35-60	20-40	15-25	NP-10
	10-23	Very gravelly loamy sand.	GP-GM, GM	A-1	0	35-55	30-50	15-30	5-15	---	NP
	23-37	Extremely gravelly sand, extremely gravelly loamy sand.	GP	A-1	0	20-30	15-25	5-15	0-5	---	NP
	37-60	Very gravelly loamy sand.	GM	A-1	0	35-55	30-50	15-35	10-20	---	NP
Sitar----------	0-8	Silt loam--------	CL-ML, ML	A-4	0	85-100	80-100	70-100	55-90	25-35	5-10
	8-29	Very gravelly silt loam, extremely gravelly silt loam.	GM-GC, GM	A-2	0-10	35-45	30-40	15-40	15-35	20-25	NP-5
	29-60	Very gravelly very fine sandy loam.	GM	A-1, A-2	0-10	35-55	30-50	25-50	15-30	15-25	NP-5
96----------	0-11	Silt loam--------	CL-ML	A-4	0-5	85-100	80-100	75-100	60-80	20-30	5-10
Vicking	11-31	Clay loam--------	CL	A-6, A-7	0	85-100	80-100	75-95	55-75	35-45	15-20
	31-60	Loam-------------	CL-ML, ML	A-4	0	85-100	80-100	70-95	60-75	25-35	5-10
97*:											
Vicking---------	0-11	Silt loam--------	CL-ML	A-4	0-5	85-100	80-100	75-100	60-80	20-30	5-10
	11-31	Clay loam--------	CL	A-6, A-7	0	85-100	80-100	75-95	55-75	35-45	15-20
	31-60	Loam-------------	CL-ML, ML	A-4	0	85-100	80-100	70-95	60-75	25-35	5-10

See footnote at end of table.

TABLE 10.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>3 inches	4	10	40	200		
	In				Pct					Pct	
97*:											
Raftriver-------	0-12	Loam-------------	ML, CL-ML	A-4	0	85-100	80-100	65-95	50-75	15-30	NP-10
	12-24	Sandy loam-------	SM, SM-SC	A-2, A-4	0-5	85-100	80-100	45-70	25-40	15-25	NP-10
	24-32	Cemented---------	---	---	---	---	---	---	---	---	---
	32-60	Sandy loam-------	SM, SM-SC	A-2, A-4	0-10	85-100	80-100	45-70	25-40	15-25	NP-10
Codquin---------	0-4	Gravelly sandy loam.	SM	A-2, A-4	0	80-90	75-85	55-60	30-40	15-25	NP-5
	4-17	Extremely gravelly sandy loam.	GP	A-1	0	10-15	5-10	0-10	0-5	---	NP
	17	Weathered bedrock	---	---	---	---	---	---	---	---	---
98*:											
Vicking---------	0-11	Loam-------------	CL-ML, ML	A-4	0	85-100	80-100	70-95	60-75	25-35	5-10
	11-30	Clay loam--------	CL	A-6, A-7	0	85-100	80-100	75-95	55-75	35-45	15-20
	30-60	Loam-------------	CL-ML, ML	A-4	0	85-100	80-100	70-95	60-75	25-35	5-10
Ramshorn family-	0-3	Very gravelly loam.	GM-GC	A-2, A-4	0-10	45-55	40-50	35-50	25-40	20-30	5-10
	3-14	Very channery silt loam.	GM-GC	A-2	0	35-40	30-35	25-30	20-25	20-30	5-10
	14-41	Extremely channery silt loam.	GP-GC, GM-GC	A-2	0	15-30	10-25	5-20	5-20	20-30	5-10
	41	Weathered bedrock	---	---	---	---	---	---	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" 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	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
1----------	0-3	12-18	1.30-1.50	0.6-2.0	0.11-0.15	7.9-8.4	<2	Low-------	0.15	1	5	1-2
Acana	3-13	18-25	1.30-1.50	0.2-0.6	0.12-0.18	7.9-9.0	<2	Moderate	0.20			
	13-17	10-20	1.40-1.50	0.6-2.0	0.03-0.07	>8.4	>16	Low-------	0.24			
	17	---	---	---	---	---	---	----------	----			
2*:												
Acana----------	0-3	12-20	1.15-1.30	0.6-2.0	0.11-0.14	7.9-8.4	<2	Low-------	0.17	1	5	1-2
	3-11	18-25	1.20-1.40	0.2-0.6	0.11-0.14	7.9-9.0	8-16	Low-------	0.17			
	11	---	---	---	---	---	---	----------	----			
Collard---------	0-5	18-27	1.25-1.30	0.6-2.0	0.11-0.14	6.6-7.8	<2	Low-------	0.15	5	7	1-3
	5-10	20-35	1.30-1.35	0.6-2.0	0.12-0.15	6.6-7.3	<2	Low-------	0.15			
	10-18	20-35	1.30-1.35	0.6-2.0	0.08-0.12	6.6-7.3	<2	Low-------	0.10			
	18-60	5-10	1.50-1.60	>20	0.02-0.04	6.1-8.4	<2	Low-------	0.05			
3*:												
Acana----------	0-3	12-20	1.15-1.30	0.6-2.0	0.11-0.14	7.9-8.4	<2	Low-------	0.17	1	5	1-2
	3-11	18-25	1.20-1.40	0.2-0.6	0.11-0.14	7.9-9.0	8-16	Low-------	0.17			
	11	---	---	---	---	---	---	----------	----			
Jericho---------	0-3	10-18	1.30-1.50	0.6-2.0	0.11-0.15	7.9-9.0	<2	Low-------	0.20	1	5	1-2
	3-8	10-18	1.30-1.55	2.0-6.0	0.08-0.14	7.9-9.0	<2	Low-------	0.17			
	8-17	10-18	1.30-1.55	2.0-6.0	0.06-0.10	7.9-9.0	<2	Low-------	0.10			
	17	---	---	---	---	---	---	----------	----			
4----------	0-4	20-25	1.30-1.40	0.6-2.0	0.09-0.11	6.6-7.8	<2	Low-------	0.15	5	8	2-3
Acord	4-24	35-50	1.25-1.35	0.2-0.6	0.09-0.12	6.6-8.4	<2	Moderate	0.10			
	24-60	15-30	1.35-1.45	2.0-6.0	0.06-0.09	7.9-9.0	<2	Low-------	0.10			
5*:												
Ant Flat--------	0-10	14-27	1.15-1.25	0.6-2.0	0.14-0.16	6.1-7.8	<2	Low-------	0.20	2	7	1-3
	10-31	35-55	1.15-1.25	0.06-0.2	0.14-0.20	6.1-8.4	<2	High------	0.32			
	31-60	26-36	1.15-1.25	0.06-0.2	0.14-0.20	6.6-9.0	<2	Moderate	0.43			
Acord----------	0-11	18-25	1.30-1.40	0.6-2.0	0.08-0.11	6.6-7.8	<2	Low-------	0.10	5	8	2-3
	11-36	35-50	1.25-1.35	0.2-0.6	0.08-0.13	6.6-8.4	<2	Moderate	0.10			
	36-60	28-40	1.30-1.40	0.6-2.0	0.09-0.13	7.9-9.0	<2	Low-------	0.10			
6*:												
Bickmore family-	0-3	15-22	1.30-1.50	0.6-2.0	0.12-0.14	6.6-7.8	<2	Low-------	0.15	2	6	5-15
	3-37	17-27	1.30-1.50	0.6-2.0	0.09-0.12	7.4-7.8	<2	Low-------	0.15			
	37	---	---	---	---	---	---	----------	----			
Eyre family-----	0-4	5-15	1.40-1.60	2.0-20	0.05-0.08	6.6-7.3	<2	Low-------	0.17	1	6	5-10
	4-10	5-15	1.40-1.60	6.0-20	0.03-0.07	6.6-7.3	<2	Low-------	0.20			
	10	---	---	---	---	---	---	----------	----			
Rock outcrop.												
7*:												
Bickmore family-	0-12	15-22	1.30-1.50	0.6-2.0	0.12-0.14	6.6-7.8	<2	Low-------	0.15	2	6	5-15
	12-31	17-27	1.30-1.50	0.6-2.0	0.09-0.12	7.4-7.8	<2	Low-------	0.15			
	31	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
7*:												
Nielsen family--	0-8	10-18	1.25-1.45	0.6-2.0	0.14-0.17	6.6-7.3	<2	Low	0.24	1	5	5-10
	8-17	28-35	1.40-1.60	0.2-0.6	0.09-0.10	6.6-7.3	<2	Low	0.10			
	17	---	---	---	---	---	---	---	---			
8----------	0-30	18-27	1.25-1.35	0.2-0.6	0.19-0.21	7.4-9.0	<2	Low	0.32	5	4L	3-7
Birdow	30-60	18-32	1.15-1.30	0.6-2.0	0.13-0.17	7.4-9.0	<2	Low	0.28			
9*:												
Bluehill--------	0-4	---	0.90-0.95	2.0-6.0	0.18-0.20	7.4-8.4	<2	Low	0.55	5	3	0-1
	4-32	---	1.00-1.05	2.0-6.0	0.15-0.20	7.9-9.0	<2	Low	0.64			
	32	---	---	---	---	---	---	---	---			
Coalbank--------	0-18	---	1.00-1.15	2.0-6.0	0.18-0.20	6.6-7.8	<2	Low	0.43	3	3	2-4
	18-45	---	1.10-1.25	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low	0.49			
	45	---	---	---	---	---	---	---	---			
10---------	0-4	10-18	1.10-1.15	0.6-2.0	0.10-0.14	7.4-9.0	<2	Low	0.17	1	5	1-2
Borvant	4-12	10-18	1.15-1.25	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low	0.15			
	12	---	---	---	---	---	---	---	---			
11*:												
Brobett---------	0-3	16-24	1.20-1.40	0.6-2.0	0.15-0.17	7.4-8.4	<2	Low	0.32	2	4L	.5-1
	3-8	18-27	1.20-1.40	0.6-2.0	0.10-0.15	7.4-8.4	2-4	Low	0.24			
	8-30	8-17	1.30-1.60	0.6-2.0	0.05-0.07	7.9-9.0	<4	Low	0.10			
	30	---	---	---	---	---	---	---	---			
Plegomir--------	0-2	16-27	1.00-1.30	0.6-2.0	0.12-0.14	7.9-8.4	<2	Low	0.24	1	5	.5-1
	2-5	18-27	1.10-1.40	0.6-2.0	0.15-0.16	7.9-9.0	<2	Low	0.32			
	5-13	12-25	1.10-1.40	0.6-2.0	0.07-0.14	8.5-9.0	<2	Low	0.17			
	13	---	---	---	---	---	---	---	---			
12---------	0-16	10-25	1.30-1.40	2.0-6.0	0.14-0.17	6.6-7.8	<2	Low	0.28	2	5	3-7
Bullump	16-46	27-35	1.35-1.50	0.2-0.6	0.14-0.18	6.6-7.8	<2	Moderate	0.15			
	46-60	20-30	1.30-1.45	0.2-0.6	0.13-0.16	6.6-7.8	<2	Low	0.05			
13*:												
Bullump---------	0-16	10-25	1.30-1.40	2.0-6.0	0.14-0.17	6.6-7.8	<2	Low	0.28	2	5	3-7
	16-46	27-35	1.35-1.50	0.2-0.6	0.14-0.18	6.6-7.8	<2	Moderate	0.15			
	46-60	20-30	1.30-1.45	0.2-0.6	0.13-0.16	6.6-7.8	<2	Low	0.05			
Sonlet----------	0-3	16-20	1.15-1.25	0.6-2.0	0.09-0.11	7.4-8.4	<2	Low	0.15	1	6	1-3
	3-15	12-18	1.25-1.35	0.6-2.0	0.06-0.11	7.4-8.4	<2	Low	0.10			
	15	---	---	---	---	---	---	---	---			
Rodrof----------	0-8	18-27	1.30-1.50	0.6-2.0	0.11-0.15	7.4-8.4	<2	Low	0.15	1	5	1-3
	8-18	18-27	1.30-1.50	0.6-2.0	0.07-0.11	7.4-8.4	<2	Low	0.10			
	18	---	---	---	---	---	---	---	---			
14*:												
Clavicon--------	0-5	12-16	1.40-1.50	0.6-2.0	0.11-0.13	7.4-8.4	<2	Low	0.15	2	6	2-4
	5-38	12-18	1.40-1.50	0.6-2.0	0.08-0.12	>7.8	<2	Low	0.10			
	38	---	---	---	---	---	---	---	---			
Rock outcrop.												
15---------	0-13	8-18	1.40-1.55	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low	0.10	5	6	<.5
Cliffdown	13-60	8-18	1.40-1.60	2.0-6.0	0.02-0.04	7.9-9.0	>16	Low	0.10			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
16----------	0-3	8-18	1.30-1.45	0.6-2.0	0.08-0.11	7.9-9.0	<2	Low-------	0.20	5	6	<.5
Cliffdown	3-60	8-18	1.40-1.60	2.0-6.0	0.05-0.07	7.9-9.0	2-8	Low-------	0.10			
17*:												
Cliffdown-------	0-6	8-18	1.40-1.55	2.0-6.0	0.07-0.09	7.9-9.0	<2	Low-------	0.20	5	5	<.5
	6-42	8-18	1.40-1.60	2.0-6.0	0.05-0.07	7.9-9.0	2-8	Low-------	0.10			
	42-60	2-8	1.40-1.65	6.0-20	0.03-0.05	7.9-9.0	2-8	Low-------	0.10			
Hiko Peak-------	0-4	10-18	1.40-1.50	0.6-2.0	0.11-0.14	7.9-9.0	<4	Low-------	0.17	5	5	1-2
	4-21	10-18	1.40-1.50	2.0-6.0	0.09-0.14	7.9-9.0	<4	Low-------	0.17			
	21-60	10-18	1.40-1.60	2.0-6.0	0.06-0.11	7.9-9.0	<4	Low-------	0.10			
Okrist----------	0-22	2-10	1.35-1.65	6.0-20	0.06-0.08	7.4-9.0	<2	Low-------	0.15	2	2	1-2
	22-33	2-10	1.65-1.85	0.6-2.0	0.03-0.04	7.9-9.0	<8	Low-------	0.15			
	33-60	2-10	1.35-1.65	6.0-20	0.04-0.06	>8.4	<8	Low-------	0.10			
18*:												
Cliffdown-------	0-13	8-18	1.40-1.55	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low-------	0.10	5	6	<.5
	13-60	8-18	1.40-1.60	2.0-6.0	0.02-0.04	7.9-9.0	>16	Low-------	0.10			
Rock outcrop.												
Promo-----------	0-8	10-20	1.30-1.50	0.6-2.0	0.08-0.11	7.9-9.0	<2	Low-------	0.17	1	6	1-3
	8-13	18-25	1.30-1.50	2.0-6.0	0.08-0.11	7.9-9.0	<2	Low-------	0.17			
	13	---	---	---	---	---	---	----------	----			
19*:												
Collard---------	0-8	18-27	1.25-1.30	0.6-2.0	0.11-0.14	6.6-7.8	<2	Low-------	0.15	5	7	1-3
	8-38	20-35	1.30-1.35	0.6-2.0	0.08-0.12	6.6-7.3	<2	Low-------	0.10			
	38-60	8-18	1.40-1.50	6.0-20.0	0.04-0.07	6.1-8.4	<2	Low-------	0.05			
Hupp----------	0-4	10-25	1.10-1.20	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.32	5	5	3-5
	4-11	18-25	1.10-1.20	0.6-2.0	0.11-0.14	7.4-8.4	<2	Low-------	0.17			
	11-26	18-25	1.15-1.25	2.0-6.0	0.08-0.11	7.9-9.0	<2	Low-------	0.10			
	26-60	10-25	1.20-1.30	2.0-6.0	0.06-0.08	7.9-9.0	<2	Low-------	0.05			
20*:												
Cottonthomas----	0-13	---	1.00-1.15	0.6-2.0	0.12-0.17	6.6-7.8	<2	Low-------	0.43	5	3	1-2
	13-51	---	1.05-1.25	0.6-2.0	0.12-0.17	7.4-8.4	<2	Low-------	0.49			
	51-60	---	1.00-1.20	2.0-6.0	0.10-0.14	7.4-8.4	<2	Low-------	0.55			
Tomsherry-------	0-13	---	1.00-1.15	2.0-6.0	0.12-0.17	6.6-7.3	<2	Low-------	0.43	2	3	1-2
	13-24	---	1.05-1.25	2.0-6.0	0.12-0.17	7.9-8.4	<2	Low-------	0.49			
	24-29	---	---	---	---	---	---	----------	----			
	29-60	5-10	1.00-1.20	2.0-6.0	0.10-0.14	7.9-8.4	<2	Low-------	0.55			
21----------	0-13	27-35	1.20-1.30	0.06-0.2	0.18-0.20	6.6-8.4	<4	High------	0.28	5	7	2-6
Crooked Creek	13-60	35-50	1.15-1.25	<0.06	0.18-0.20	6.6-7.8	<2	High------	0.24			
22*:												
Crooked Creek---	0-13	28-50	1.20-1.30	0.2-0.6	0.18-0.20	6.6-7.8	<2	Low-------	0.43	5	6	2-6
	13-40	35-50	1.25-1.35	0.06-0.2	0.17-0.18	6.6-7.8	<2	High------	0.28			
	40-60	30-40	1.30-1.40	0.2-0.6	0.08-0.10	6.6-7.8	<2	Moderate	0.05			
Hupp----------	0-4	10-25	1.10-1.20	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.32	5	5	3-5
	4-11	18-25	1.10-1.20	0.6-2.0	0.11-0.14	7.4-8.4	<2	Low-------	0.17			
	11-26	18-25	1.15-1.25	2.0-6.0	0.08-0.11	7.9-9.0	<2	Low-------	0.10			
	26-60	10-25	1.20-1.30	2.0-6.0	0.06-0.08	7.9-9.0	<2	Low-------	0.05			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
23*:												
Dahar	0-3	12-20	1.20-1.35	2.0-6.0	0.04-0.05	7.4-8.4	<2	Low	0.10	2	5	1-2
	3-12	10-18	1.00-1.25	2.0-6.0	0.07-0.09	7.9-9.0	<2	Low	0.28			
	12-21	12-18	1.20-1.40	2.0-6.0	0.07-0.09	7.9-9.0	<2	Low	0.28			
	21-27	---	---	---	---	---	<2					
	27-43	10-20	1.30-1.40	2.0-6.0	0.05-0.07	7.9-9.0	<4	Low	0.10			
	43-60	10-20	1.30-1.40	2.0-6.0	0.09-0.11	7.9-9.0	<4	Low	0.28			
Codquin	0-4	6-15	1.30-1.50	6.0-20	0.08-0.10	7.4-8.4	<2	Low	0.17	1	5	.5-1
	4-17	6-18	1.30-1.50	6.0-20	0.04-0.06	7.4-9.0	<2	Low	0.02			
	17	---	---	---	---	---	---					
24*:												
Dateman family	0-12	12-18	1.30-1.50	0.6-2.0	0.12-0.15	6.1-7.3	<2	Low	0.15	5	6	5-10
	12-43	18-27	1.30-1.50	0.6-2.0	0.09-0.12	6.1-7.8	<2	Low	0.15			
	43-60	8-18	1.30-1.50	0.6-2.0	0.05-0.08	6.1-7.3	<2	Low	0.10			
Bickmore family	0-12	15-22	1.30-1.50	0.6-2.0	0.12-0.14	6.6-7.8	<2	Low	0.15	2	6	5-15
	12-31	17-27	1.30-1.50	0.6-2.0	0.09-0.12	7.4-7.8	<2	Low	0.15			
	31	---	---	---	---	---	---					
Nielsen family	0-7	20-26	1.40-1.60	0.6-2.0	0.08-0.09	6.6-7.3	<2	Low	0.10	1	8	5-10
	7-14	28-35	1.40-1.60	0.2-0.6	0.09-0.10	6.6-7.3	<2	Low	0.10			
	14	---	---	---	---	---	---					
25	0-4	10-14	---	0.6-2.0	0.16-0.20	7.9-9.0	>8	Low	0.49	5	4L	.5-1
Declo	4-17	10-14	---	0.6-2.0	0.16-0.20	7.9-9.0	>8	Low	0.49			
	17-60	10-15	---	0.6-6.0	0.08-0.17	7.9-9.0	>16	Low	0.32			
26*:												
Declo	0-4	10-14	---	0.6-2.0	0.16-0.20	7.9-9.0	>8	Low	0.32	5	4L	.5-1
	4-17	10-14	---	0.6-2.0	0.16-0.20	7.9-9.0	>8	Low	0.28			
	17-60	10-15	---	0.6-6.0	0.08-0.17	7.9-9.0	>16	Low	0.28			
Darkbull	0-20	10-15	1.40-1.50	0.6-2.0	0.13-0.17	7.9-9.0	2-4	Low	0.32	2	4L	.5-1
	20-60	0-15	1.60-1.70	>20	0.01-0.04	7.9-9.0	4-8	Low	0.05			
27*:												
Declo	0-4	10-14	---	0.6-2.0	0.16-0.20	7.9-9.0	>8	Low	0.49	5	4L	.5-1
	4-17	10-17	---	0.6-2.0	0.16-0.20	7.9-9.0	>8	Low	0.49			
	17-60	10-17	---	0.6-6.0	0.08-0.17	7.9-9.0	>16	Low	0.32			
Lembos	0-3	15-20	1.15-1.25	0.6-2.0	0.14-0.16	7.9-9.0	2-4	Low	0.28	2	4L	1-2
	3-12	18-27	1.10-1.25	0.6-2.0	0.15-0.17	7.4-9.0	8-16	Low	0.28			
	12-29	14-20	1.30-1.40	0.6-2.0	0.10-0.14	>7.8	>16	Low	0.10			
	29	---	---	---	---	---	---					
Tarnach	0-4	18-27	1.10-1.30	0.6-2.0	0.08-0.11	7.9-9.0	<2	Low	0.15	1	6	1-2
	4-15	18-27	1.10-1.30	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low	0.15			
	15	---	---	---	---	---	---					
28	0-11	15-25	1.30-1.50	0.6-2.0	0.11-0.15	7.4-8.4	<2	Low	0.15	5	5	1-3
Donnardo	11-60	15-25	1.20-1.50	0.6-2.0	0.07-0.09	7.9-9.0	<2	Low	0.10			
29*:												
Donnardo	0-11	15-25	1.30-1.50	0.6-2.0	0.11-0.15	7.4-8.4	<2	Low	0.15	5	5	1-3
	11-60	15-25	1.20-1.50	0.6-2.0	0.07-0.09	7.9-9.0	<2	Low	0.10			
Birdow	0-27	10-20	1.25-1.35	0.6-2.0	0.15-0.17	7.4-9.0	<2	Low	0.28	5	4L	2-3
	27-60	18-32	1.15-1.30	0.6-2.0	0.13-0.17	7.4-9.0	<2	Low	0.28			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
30*:												
Dynal----------	0-5	0-2	1.45-1.60	6.0-20	0.04-0.07	>7.3	<8	Low-------	0.10	5	1	<.5
	5-60	0-2	1.45-1.60	6.0-20	0.04-0.07	>7.8	<8	Low-------	0.10			
Playas.												
31*:												
Fontreen--------	0-8	15-20	1.20-1.30	2.0-6.0	0.10-0.12	7.9-8.4	<2	Low-------	0.17	5	5	2-5
	8-60	15-27	1.20-1.30	2.0-6.0	0.07-0.10	7.9-9.0	<2	Low-------	0.17			
Borvant---------	0-4	10-18	1.10-1.15	0.6-2.0	0.10-0.14	7.4-9.0	<2	Low-------	0.17	1	5	1-2
	4-12	10-18	1.15-1.25	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low-------	0.15			
	12	---	---	---	---	---	---	----------	----			
32*:												
Fontreen--------	0-7	15-20	1.20-1.30	2.0-6.0	0.10-0.12	7.9-8.4	<2	Low-------	0.17	5	5	2-5
	7-60	15-27	1.20-1.30	2.0-6.0	0.07-0.10	7.9-9.0	<2	Low-------	0.17			
Bullump---------	0-15	10-25	1.30-1.40	2.0-6.0	0.14-0.17	6.6-7.8	<2	Low-------	0.28	5	5	3-7
	15-60	27-35	1.35-1.50	0.2-0.6	0.14-0.18	6.6-7.8	<2	Moderate	0.15			
33*:												
Fontreen--------	0-8	15-20	1.20-1.30	2.0-6.0	0.10-0.12	7.9-8.4	<2	Low-------	0.17	5	5	2-5
	8-60	15-27	1.20-1.30	2.0-6.0	0.07-0.10	7.9-9.0	<2	Low-------	0.17			
Phage-----------	0-10	15-25	1.25-1.35	0.6-2.0	0.10-0.12	7.9-8.4	<2	Low-------	0.15	5	5	1-2
	10-60	10-20	1.40-1.55	2.0-6.0	0.04-0.07	7.9-8.4	<2	Low-------	0.05			
34*:												
Hades-----------	0-3	10-15	1.25-1.45	0.6-2.0	0.14-0.17	5.6-7.3	<2	Low-------	0.24	3	5	5-15
	3-25	10-22	1.25-1.45	0.6-2.0	0.13-0.17	6.1-7.3	<2	Low-------	0.24			
	25-40	25-35	1.30-1.50	0.2-0.6	0.14-0.17	6.6-7.3	<2	Moderate	0.15			
	40-57	5-11	1.35-1.55	2.0-6.0	0.09-0.11	6.6-7.3	<2	Low-------	0.24			
	57	---	---	---	---	---	---	----------	----			
Bearskin--------	0-3	10-15	1.05-1.35	0.6-2.0	0.13-0.17	6.1-6.5	<2	Low-------	0.37	1	5	5-10
	3-14	20-30	1.10-1.40	0.6-2.0	0.15-0.20	6.1-6.5	<2	Moderate	0.15			
	14	---	---	---	---	---	---	----------	----			
Rock outcrop.												
35----------	0-4	10-18	1.40-1.50	0.6-2.0	0.11-0.14	7.9-9.0	<4	Low-------	0.24	5	5	1-2
Hiko Peak	4-21	10-18	1.40-1.50	2.0-6.0	0.09-0.14	7.9-9.0	<4	Low-------	0.17			
	21-60	10-18	1.40-1.60	2.0-6.0	0.06-0.11	7.9-9.0	<4	Low-------	0.10			
36*:												
Hiko Peak-------	0-4	10-18	1.40-1.50	0.6-2.0	0.11-0.14	7.9-9.0	<4	Low-------	0.24	5	5	1-2
	4-21	10-18	1.40-1.50	2.0-6.0	0.09-0.14	7.9-9.0	<4	Low-------	0.17			
	21-60	10-18	1.40-1.60	2.0-6.0	0.06-0.11	7.9-9.0	<4	Low-------	0.10			
Kunzler---------	0-4	2-10	1.25-1.40	6.0-20.0	0.07-0.09	7.9-9.0	<2	Low-------	0.10	5	2	1-2
	4-60	10-18	1.35-1.60	0.2-0.6	0.11-0.13	>7.8	4-16	Low-------	0.24			
37*:												
Hiko Peak-------	0-4	10-18	1.40-1.50	0.6-2.0	0.11-0.14	7.9-9.0	<4	Low-------	0.24	5	5	1-2
	4-21	10-18	1.40-1.50	2.0-6.0	0.09-0.14	7.9-9.0	<4	Low-------	0.17			
	21-60	10-18	1.40-1.60	2.0-6.0	0.06-0.11	7.9-9.0	<4	Low-------	0.10			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
37*:												
Sheeprock-------	0-3	5-10	1.30-1.40	6.0-20	0.07-0.09	7.9-8.4	<4	Low--------	0.20	5	2	.5-1
	3-12	10-17	1.25-1.40	6.0-20	0.07-0.09	7.9-8.4	<4	Low--------	0.10			
	12-24	5-10	1.35-1.55	6.0-20	0.03-0.05	7.9-9.0	<4	Low--------	0.05			
	24-60	2-10	1.40-1.60	>20	0.03-0.05	7.9-9.0	<4	Low--------	0.05			
Rock outcrop.												
38*:												
Hiko Peak-------	0-10	10-18	1.40-1.50	0.6-2.0	0.14-0.17	7.9-9.0	<4	Low--------	0.43	5	4L	1-2
	10-21	10-18	1.40-1.50	2.0-6.0	0.09-0.14	7.9-9.0	<4	Low--------	0.17			
	21-60	10-18	1.40-1.60	2.0-6.0	0.06-0.11	7.9-9.0	<4	Low--------	0.10			
Taylorsflat-----	0-5	10-20	1.25-1.35	0.6-2.0	0.14-0.16	7.9-8.4	2-4	Low--------	0.24	5	5	1-2
	5-25	18-25	1.25-1.35	0.2-0.6	0.15-0.17	7.9-9.0	2-4	Moderate	0.32			
	25-60	18-30	1.20-1.40	0.2-0.6	0.13-0.15	8.5-9.0	4-8	Moderate	0.28			
39*:												
Hiko Peak-------	0-4	10-18	1.40-1.50	0.6-2.0	0.11-0.14	7.9-9.0	<4	Low--------	0.24	5	5	1-2
	4-21	10-18	1.40-1.50	2.0-6.0	0.09-0.14	7.9-9.0	<4	Low--------	0.17			
	21-60	10-18	1.40-1.60	2.0-6.0	0.06-0.11	7.9-9.0	<4	Low--------	0.10			
Taylorsflat-----	0-5	10-20	1.25-1.35	0.6-2.0	0.14-0.16	7.9-8.4	2-4	Low--------	0.32	5	4L	1-2
	5-25	18-25	1.25-1.35	0.2-0.6	0.15-0.17	7.9-9.0	2-4	Moderate	0.32			
	25-60	18-30	1.20-1.40	0.2-0.6	0.13-0.15	8.5-9.0	4-8	Moderate	0.28			
Skumpah---------	0-3	18-27	1.15-1.40	0.2-0.6	0.16-0.18	8.5-9.0	2-8	Low--------	0.49	5	4L	.5-1
	3-9	27-35	1.30-1.50	0.2-0.6	0.08-0.16	>9.0	>4	Moderate	0.49			
	9-60	15-35	1.20-1.40	0.2-0.6	0.02-0.08	7.9-9.0	>16	Moderate	0.49			
40*:												
Hiko Springs----	0-3	10-18	1.30-1.50	2.0-6.0	0.09-0.11	8.5-9.0	2-4	Low--------	0.24	5	3	.5-1
	3-50	10-18	1.20-1.40	2.0-6.0	0.08-0.09	8.5-9.0	2-4	Low--------	0.15			
	50-60	5-10	1.20-1.40	2.0-6.0	0.05-0.06	8.5-9.0	2-4	Low--------	0.10			
Okrist----------	0-3	5-10	1.30-1.55	2.0-6.0	0.07-0.09	7.4-9.0	<2	Low--------	0.17	5	5	1-2
	3-8	5-10	1.30-1.60	2.0-6.0	0.09-0.11	7.4-9.0	<4	Low--------	0.20			
	8-30	2-10	1.65-1.85	0.6-2.0	0.03-0.04	7.9-9.0	<8	Low--------	0.15			
	30-60	2-10	1.35-1.65	6.0-20	0.04-0.06	>8.4	<8	Low--------	0.10			
41*:												
Jericho---------	0-3	10-18	1.30-1.50	0.6-2.0	0.11-0.15	7.9-9.0	<2	Low--------	0.20	1	5	1-2
	3-8	10-18	1.30-1.55	2.0-6.0	0.08-0.14	7.9-9.0	<2	Low--------	0.17			
	8-17	10-18	1.30-1.55	2.0-6.0	0.06-0.10	7.9-9.0	<2	Low--------	0.10			
	17	---	---	---	---	---	---	----------	----			
Amtoft----------	0-9	18-22	1.30-1.50	0.6-2.0	0.08-0.11	7.4-8.4	<4	Low--------	0.17	1	6	.5-2
	9-19	18-27	1.30-1.50	2.0-6.0	0.08-0.11	7.9-9.0	<4	Low--------	0.17			
	19	---	---	---	---	---	---	----------	----			
42*:												
Jughandle family	0-5	10-20	1.30-1.40	2.0-6.0	0.08-0.10	6.1-7.3	<2	Low--------	0.15	5	5	1-3
	5-60	10-18	1.30-1.40	2.0-6.0	0.08-0.09	6.1-7.8	<2	Low--------	0.15			
Parkay family---	0-4	15-20	1.25-1.30	0.6-2.0	0.12-0.14	6.1-6.5	<2	Low--------	0.15	5	6	5-10
	4-19	12-20	1.25-1.30	0.6-2.0	0.08-0.11	6.6-7.3	<2	Low--------	0.10			
	19-34	20-28	1.25-1.30	0.6-2.0	0.08-0.11	6.6-7.3	<2	Low--------	0.10			
	34-60	28-35	1.25-1.30	0.6-2.0	0.07-0.09	6.6-7.3	<2	Low--------	0.05			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
43*:												
Kapod	0-6	10-25	1.15-1.25	0.6-2.0	0.11-0.14	6.6-7.3	<2	Low	0.20	5	6	2-5
	6-34	18-27	1.25-1.35	0.6-2.0	0.08-0.11	6.6-7.8	<2	Low	0.10			
	34-60	18-27	1.25-1.35	2.0-6.0	0.04-0.08	7.9-8.4	<2	Low	0.05			
Donnardo	0-11	15-25	1.30-1.50	0.6-2.0	0.11-0.15	7.4-8.4	<2	Low	0.15	5	5	1-3
	11-60	15-25	1.20-1.50	0.6-2.0	0.07-0.09	7.9-9.0	<2	Low	0.10			
44	0-24	18-27	1.15-1.30	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low	0.43	5	4L	2-5
Koosharem	24-60	18-27	1.15-1.35	0.6-2.0	0.14-0.18	7.4-7.8	<2	Low	0.37			
45*:												
Kunzler	0-11	12-20	1.15-1.35	0.6-6.0	0.14-0.17	7.9-9.0	<2	Low	0.37	5	4L	1-2
	11-16	10-18	1.25-1.60	0.6-6.0	0.09-0.17	>7.8	2-4	Low	0.24			
	16-41	10-18	1.35-1.60	0.2-0.6	0.11-0.13	>7.8	4-16	Low	0.24			
	41-60	10-18	1.30-1.60	0.6-6.0	0.09-0.17	>7.8	>16	Low	0.43			
Lembos	0-4	15-20	1.15-1.25	0.6-2.0	0.14-0.16	7.9-9.0	2-4	Low	0.28	2	4L	1-2
	4-10	18-27	1.10-1.25	0.6-2.0	0.15-0.17	7.4-9.0	8-16	Low	0.28			
	10-18	18-27	1.10-1.25	0.6-2.0	0.09-0.16	>7.8	8-16	Low	0.28			
	18-23	14-20	1.30-1.40	0.6-2.0	0.10-0.14	>7.8	>16	Low	0.10			
	23	---	---	---	---	---	---	---	----			
46*:												
Lembos	0-4	15-20	1.15-1.25	0.6-2.0	0.14-0.16	7.9-9.0	2-4	Low	0.28	2	4L	1-2
	4-10	18-27	1.10-1.25	0.6-2.0	0.15-0.17	7.4-9.0	8-16	Low	0.28			
	10-18	18-27	1.10-1.25	0.6-2.0	0.09-0.16	>7.8	8-16	Low	0.28			
	18-23	14-20	1.30-1.40	0.6-2.0	0.10-0.14	>7.8	>16	Low	0.10			
	23	---	---	---	---	---	---	---	----			
Jericho	0-3	10-18	1.30-1.50	0.6-2.0	0.11-0.15	7.9-9.0	<2	Low	0.20	1	5	1-2
	3-8	10-18	1.30-1.55	2.0-6.0	0.08-0.14	7.9-9.0	<2	Low	0.17			
	8-17	10-18	1.30-1.55	2.0-6.0	0.06-0.10	7.9-9.0	<2	Low	0.10			
	17	---	---	---	---	---	---	---	----			
Scalade	0-8	15-20	1.35-1.50	2.0-6.0	0.07-0.09	7.4-8.4	<4	Low	0.15	1	5	1-2
	8-18	12-18	1.25-1.30	0.6-2.0	0.14-0.17	7.9-8.4	<4	Low	0.43			
	18	---	---	---	---	---	---	---	----			
47*:												
Lembos	0-4	15-20	1.15-1.25	0.6-2.0	0.14-0.16	7.9-9.0	2-4	Low	0.28	2	4L	1-2
	4-10	18-27	1.10-1.25	0.6-2.0	0.15-0.17	7.4-9.0	8-16	Low	0.28			
	10-18	18-27	1.10-1.25	0.6-2.0	0.09-0.16	>7.8	8-16	Low	0.28			
	18-23	14-20	1.30-1.40	0.6-2.0	0.10-0.14	>7.8	>16	Low	0.10			
	23	---	---	---	---	---	---	---	----			
Taylorsflat	0-5	10-20	1.25-1.35	0.6-2.0	0.14-0.16	7.9-8.4	2-4	Low	0.32	5	4L	1-2
	5-25	18-25	1.25-1.35	0.2-0.6	0.15-0.17	7.9-9.0	2-4	Moderate	0.32			
	25-60	18-30	1.20-1.40	0.2-0.6	0.13-0.15	8.5-9.0	4-8	Moderate	0.28			
48*:												
Lundy	0-3	15-22	1.25-1.50	0.6-2.0	0.08-0.11	7.4-7.8	<4	Low	0.10	1	6	2-5
	3-15	18-27	1.25-1.50	0.6-2.0	0.06-0.08	7.4-8.4	<4	Low	0.05			
	15-19	18-27	1.25-1.50	0.6-2.0	0.06-0.08	7.4-8.4	<4	Low	0.10			
	19	---	---	---	---	---	---	---	----			
Sonlet	0-2	16-20	1.15-1.25	0.6-2.0	0.09-0.11	7.4-8.4	<2	Low	0.15	1	6	1-3
	2-10	12-18	1.25-1.35	0.6-2.0	0.06-0.11	7.4-8.4	<2	Low	0.10			
	10-19	12-18	1.25-1.35	0.6-2.0	0.06-0.11	7.4-9.0	<2	Low	0.10			
	19	---	---	---	---	---	---	---	----			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
48*:												
Lodar	0-8	18-27	1.15-1.25	0.6-2.0	0.08-0.11	7.4-8.4	<2	Low	0.15	1	6	1-4
	8-15	18-27	1.20-1.30	0.6-2.0	0.07-0.11	7.9-9.0	<2	Low	0.15			
	15	---	---	---	---	---	---	---	---			
49	0-5	2-10	1.35-1.70	6.0-20	0.07-0.08	7.9-9.0	<2	Low	0.15	5	2	.5-1
Lynndyl	5-36	2-10	1.35-1.70	6.0-20	0.07-0.09	>7.8	<2	Low	0.28			
	36-60	2-12	1.35-1.70	6.0-20	0.06-0.11	>7.8	2-8	Low	0.28			
50	0-5	20-27	1.10-1.25	0.2-0.6	0.08-0.15	>8.4	2-8	Low	0.55	5	4L	1-2
Mellor	5-13	27-35	1.15-1.30	0.06-0.2	0.02-0.12	>8.4	>8	Moderate	0.55			
	13-60	20-45	1.15-1.30	0.06-0.2	0.02-0.08	>8.4	>16	Moderate	0.55			
51	0-4	20-27	1.10-1.25	0.2-0.6	0.08-0.15	>8.4	2-8	Low	0.55	5	4L	1-2
Mellor	4-18	27-35	1.15-1.30	0.06-0.2	0.02-0.12	>8.4	>8	Moderate	0.55			
	18-60	20-45	1.15-1.30	0.06-0.2	0.02-0.08	>8.4	>16	Moderate	0.55			
52*:												
Mellor	0-4	20-27	1.10-1.25	0.2-0.6	0.08-0.15	>8.4	2-8	Low	0.55	5	4L	1-2
	4-18	27-35	1.15-1.30	0.06-0.2	0.02-0.12	>8.4	>8	Moderate	0.55			
	18-60	20-45	1.15-1.30	0.06-0.2	0.02-0.08	>8.4	>16	Moderate	0.55			
Declo	0-5	10-15	---	0.6-2.0	0.18-0.20	6.6-7.8	<2	Low	0.37	5	4L	1-3
	5-9	10-17	---	0.6-2.0	0.15-0.18	7.4-8.4	<2	Low	0.32			
	9-48	12-17	---	0.6-2.0	0.15-0.18	7.9-9.0	2-4	Low	0.32			
	48-60	10-15	---	0.6-2.0	0.10-0.13	7.9-9.0	2-4	Low	0.20			
53*:												
Mellor	0-5	20-27	1.10-1.25	0.2-0.6	0.08-0.15	>8.4	2-8	Low	0.55	5	4L	1-2
	5-13	27-35	1.15-1.30	0.06-0.2	0.02-0.12	>8.4	>8	Moderate	0.55			
	13-60	20-45	1.15-1.30	0.06-0.2	0.02-0.08	>8.4	>16	Moderate	0.55			
Pomat	0-10	12-18	1.00-1.10	0.2-0.6	0.15-0.18	8.5-9.0	<2	Low	0.37	5	4L	1-2
	10-60	12-18	1.05-1.15	0.2-0.6	0.15-0.18	8.5-9.0	<2	Low	0.43			
54*:												
Nielsen family	0-7	20-26	1.40-1.60	0.6-2.0	0.08-0.09	6.6-7.3	<2	Low	0.10	1	8	5-10
	7-14	28-35	1.40-1.60	0.2-0.6	0.09-0.10	6.6-7.3	<2	Low	0.10			
	14	---	---	---	---	---	---	---	---			
Bickmore family	0-3	15-22	1.30-1.50	0.6-2.0	0.12-0.14	6.6-7.8	<2	Low	0.15	2	6	5-15
	3-37	17-27	1.30-1.50	0.6-2.0	0.09-0.12	7.4-7.8	<2	Low	0.15			
	37	---	---	---	---	---	---	---	---			
Rock outcrop.												
55*:												
Okrist	0-3	5-10	1.30-1.55	2.0-6.0	0.07-0.09	7.4-9.0	<2	Low	0.17	2	5	1-2
	3-8	5-10	1.30-1.60	2.0-6.0	0.09-0.11	7.4-9.0	<4	Low	0.20			
	8-30	2-10	1.65-1.85	0.6-2.0	0.03-0.04	7.9-9.0	<8	Low	0.15			
	30-60	2-10	1.35-1.65	6.0-20	0.04-0.06	>8.4	<8	Low	0.10			
Okrist, thick surface	0-22	2-10	1.35-1.65	6.0-20	0.06-0.08	7.4-9.0	<2	Low	0.15	2	2	1-2
	22-33	2-10	1.65-1.85	0.6-2.0	0.03-0.04	7.9-9.0	<8	Low	0.15			
	33-60	2-10	1.35-1.65	6.0-20	0.04-0.06	>8.4	<8	Low	0.10			
56*:												
Overland	0-10	18-25	1.30-1.50	0.6-2.0	0.11-0.14	7.9-9.0	<2	Low	0.15	2	5	1-2
	10-28	18-25	1.25-1.45	0.6-2.0	0.07-0.10	7.9-9.0	<2	Low	0.10			
	28	---	---	---	---	---	---	---	---			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
56*:												
Sonlet----------	0-2	16-20	1.15-1.25	0.6-2.0	0.09-0.11	7.4-8.4	<2	Low-------	0.15	1	6	1-3
	2-10	12-18	1.25-1.35	0.6-2.0	0.06-0.11	7.4-8.4	<2	Low-------	0.10			
	10-19	12-18	1.25-1.35	0.6-2.0	0.06-0.11	7.4-9.0	<2	Low-------	0.10			
	19	---	---	---	---	---	---	----------	----			
57*----------	0-6	15-20	1.25-1.30	0.6-2.0	0.12-0.14	6.1-6.5	<2	Low-------	0.15	5	6	5-10
Parkay family	6-20	20-28	1.25-1.30	0.6-2.0	0.08-0.11	6.6-7.3	<2	Low-------	0.10			
	20-60	28-35	1.25-1.30	0.6-2.0	0.07-0.09	6.6-7.3	<2	Low-------	0.05			
58*:												
Parkay family---	0-4	15-20	1.25-1.30	0.6-2.0	0.12-0.14	6.1-6.5	<2	Low-------	0.15	5	6	5-10
	4-19	12-20	1.25-1.30	0.6-2.0	0.08-0.11	6.6-7.3	<2	Low-------	0.10			
	19-34	20-28	1.25-1.30	0.6-2.0	0.08-0.11	6.6-7.3	<2	Low-------	0.10			
	34-60	28-35	1.25-1.30	0.6-2.0	0.07-0.09	6.6-7.3	<2	Low-------	0.05			
Dateman family--	0-12	12-18	1.30-1.50	0.6-2.0	0.12-0.15	6.1-7.3	<2	Low-------	0.15	5	6	5-10
	12-43	18-27	1.30-1.50	0.6-2.0	0.09-0.12	6.1-7.8	<2	Low-------	0.15			
	43-60	8-18	1.30-1.50	0.6-2.0	0.05-0.08	6.1-7.3	<2	Low-------	0.10			
59*:												
Parkay family---	0-4	15-20	1.25-1.30	0.6-2.0	0.12-0.14	6.1-6.5	<2	Low-------	0.15	5	6	5-10
	4-19	12-20	1.25-1.30	0.6-2.0	0.08-0.11	6.6-7.3	<2	Low-------	0.10			
	19-34	20-28	1.25-1.30	0.6-2.0	0.08-0.11	6.6-7.3	<2	Low-------	0.10			
	34-60	28-35	1.25-1.30	0.6-2.0	0.07-0.09	6.6-7.3	<2	Low-------	0.05			
Broad Canyon family--------	0-15	16-23	1.15-1.40	0.6-6.0	0.08-0.11	6.6-7.3	<2	Low-------	0.10	3	6	5-10
	15-27	8-18	1.30-1.50	2.0-6.0	0.04-0.06	7.4-8.4	2-4	Low-------	0.05			
	27-50	4-12	1.40-1.60	6.0-20	0.03-0.05	7.9-8.4	4-16	Low-------	0.05			
	50	---	---	---	---	---	---	----------	----			
60*. Pits, gravel												
61*. Playas												
62*:												
Plegomir--------	0-2	16-27	1.00-1.30	0.6-2.0	0.12-0.14	7.9-8.4	<2	Low-------	0.24	1	5	.5-1
	2-5	18-27	1.10-1.40	0.6-2.0	0.15-0.16	7.9-9.0	<2	Low-------	0.32			
	5-13	12-25	1.10-1.40	0.6-2.0	0.07-0.14	8.5-9.0	<2	Low-------	0.17			
	13	---	---	---	---	---	---	----------	----			
Hiko Peak-------	0-4	10-18	1.40-1.50	0.6-2.0	0.11-0.14	7.9-9.0	<4	Low-------	0.24	5	5	1-2
	4-21	10-18	1.40-1.50	2.0-6.0	0.09-0.14	7.9-9.0	<4	Low-------	0.17			
	21-60	10-18	1.40-1.60	2.0-6.0	0.06-0.11	7.9-9.0	<4	Low-------	0.10			
Bullump---------	0-15	10-25	1.30-1.40	2.0-6.0	0.14-0.17	6.6-7.8	<2	Low-------	0.28	5	5	3-7
	15-60	27-35	1.35-1.50	0.2-0.6	0.14-0.18	6.6-7.8	<2	Moderate	0.15			
63*:												
Promo-----------	0-8	10-20	1.30-1.50	0.6-2.0	0.08-0.11	7.9-9.0	<2	Low-------	0.17	1	6	1-3
	8-13	18-25	1.30-1.50	2.0-6.0	0.08-0.11	7.9-9.0	<2	Low-------	0.17			
	13	---	---	---	---	---	---	----------	----			
Puett-----------	0-2	7-15	1.30-1.50	2.0-6.0	0.11-0.14	7.9-9.0	<2	Low-------	0.17	1	5	.5-1
	2-12	5-10	1.35-1.55	2.0-6.0	0.09-0.12	7.9-9.0	<2	Low-------	0.20			
	12	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
64*:												
Puett	0-2	7-15	1.30-1.50	2.0-6.0	0.11-0.14	7.9-9.0	<2	Low	0.17	1	5	.5-1
	2-12	5-10	1.35-1.55	2.0-6.0	0.09-0.12	7.9-9.0	<2	Low	0.20			
	12	---	---	---	---	---	---	---	---			
Plegomir	0-2	16-27	1.00-1.30	0.6-2.0	0.12-0.14	7.9-8.4	<2	Low	0.24	1	5	.5-1
	2-5	18-27	1.10-1.40	0.6-2.0	0.15-0.16	7.9-9.0	<2	Low	0.32			
	5-13	12-25	1.10-1.40	0.6-2.0	0.07-0.14	8.5-9.0	<2	Low	0.17			
	13	---	---	---	---	---	---	---	---			
65*:												
Raftriver	0-12	10-20	1.20-1.40	0.6-2.0	0.14-0.17	7.4-8.4	<2	Low	0.32	2	5	1-3
	12-24	10-18	1.50-1.70	0.6-2.0	0.05-0.09	7.9-9.0	8-16	Low	0.24			
	24-32	---	---	---	---	---	---	---	---			
	32-60	6-18	1.50-1.70	0.6-2.0	0.05-0.09	7.4-9.0	8-16	Low	0.24			
Duckree	0-11	11-18	1.25-1.35	2.0-6.0	0.07-0.09	7.9-8.4	<2	Low	0.10	5	5	1-3
	11-31	11-18	1.30-1.40	2.0-6.0	0.05-0.07	>7.8	2-4	Low	0.05			
	31-60	5-10	1.45-1.60	6.0-20	0.03-0.05	7.9-9.0	2-8	Low	0.05			
66*:												
Raftriver	0-12	10-20	1.20-1.40	0.6-2.0	0.14-0.17	7.4-8.4	<2	Low	0.32	2	5	1-3
	12-24	10-18	1.50-1.70	0.6-2.0	0.05-0.09	7.9-9.0	8-16	Low	0.24			
	24-32	---	---	---	---	---	---	---	---			
	32-60	6-18	1.50-1.70	0.6-2.0	0.05-0.09	7.4-9.0	8-16	Low	0.24			
Koosharem	0-21	18-27	1.15-1.30	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low	0.43	5	6	2-5
	21-60	18-27	1.15-1.35	0.6-2.0	0.14-0.18	7.4-7.8	<2	Low	0.37			
67*:												
Reebok	0-7	18-27	1.25-1.35	0.6-2.0	0.11-0.14	7.4-7.8	<2	Low	0.17	1	5	1-3
	7-16	18-27	1.25-1.40	0.6-2.0	0.08-0.11	7.9-8.4	<4	Low	0.10			
	16	---	---	---	---	---	---	---	---			
Puett	0-2	7-15	1.30-1.50	2.0-6.0	0.11-0.14	7.9-9.0	<2	Low	0.17	1	5	.5-1
	2-12	5-10	1.35-1.55	2.0-6.0	0.09-0.12	7.9-9.0	<2	Low	0.20			
	12	---	---	---	---	---	---	---	---			
68*:												
Rexmont	0-6	18-22	1.60-1.70	0.6-2.0	0.08-0.11	6.6-7.8	<2	Low	0.10	1	7	2-4
	6-12	12-22	1.60-1.70	0.6-2.0	0.06-0.09	7.4-8.4	<2	Low	0.05			
	12	---	---	---	---	---	---	---	---			
Shalper	0-2	18-26	1.25-1.45	0.6-2.0	0.10-0.12	6.6-7.3	<2	Low	0.10	1	8	2-4
	2-7	20-27	1.30-1.50	0.2-0.6	0.06-0.15	6.6-7.3	<2	Low	0.10			
	7	---	---	---	---	---	---	---	---			
Rock outcrop.												
69*:												
Ridd	0-6	5-10	1.15-1.25	0.6-2.0	0.10-0.14	6.6-7.3	<2	Low	0.17	2	7	2-4
	6-13	5-18	1.15-1.25	0.6-2.0	0.10-0.14	6.6-7.3	<2	Low	0.15			
	13-38	5-18	1.10-1.20	2.0-6.0	0.06-0.09	6.6-7.3	<2	Low	0.10			
	38	---	---	---	---	---	---	---	---			
Bullump	0-15	10-25	1.30-1.40	2.0-6.0	0.14-0.17	6.6-7.8	<2	Low	0.28	5	5	3-7
	15-60	27-35	1.35-1.50	0.2-0.6	0.14-0.18	6.6-7.8	<2	Moderate	0.15			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
70*:												
Ridgecrest family--------	0-3	16-22	1.30-1.50	0.6-2.0	0.07-0.08	7.9-8.4	<2	Low--------	0.05	5	6	5-10
	3-9	18-25	1.30-1.50	0.6-2.0	0.08-0.11	7.9-8.4	<2	Low--------	0.05			
	9-25	12-20	1.40-1.60	2.0-6.0	0.04-0.07	7.9-9.0	<2	Low--------	0.02			
	25-60	15-20	1.40-1.60	2.0-6.0	0.04-0.07	8.5-9.0	<2	Low--------	0.02			
Bickmore family-	0-3	15-22	1.30-1.50	0.6-2.0	0.12-0.14	6.6-7.8	<2	Low--------	0.15	2	6	5-15
	3-37	17-27	1.30-1.50	0.6-2.0	0.09-0.12	7.4-7.8	<2	Low--------	0.15			
	37	---	---	---	---	---	---	----------	----			
71*:												
Rock outcrop.												
Amtoft----------	0-5	18-22	1.30-1.50	0.6-2.0	0.07-0.09	7.4-8.4	<4	Low--------	0.10	1	8	.5-2
	5-16	18-27	1.30-1.50	2.0-6.0	0.08-0.11	7.9-9.0	<4	Low--------	0.17			
	16	---	---	---	---	---	---	----------	----			
72----------	0-10	18-27	1.30-1.50	0.6-2.0	0.07-0.08	7.4-8.4	<2	Low--------	0.05	1	8	1-3
Rodrof	10-19	18-27	1.30-1.50	0.6-2.0	0.07-0.11	7.4-8.4	<2	Low--------	0.10			
	19	---	---	---	---	---	---	----------	----			
73*:												
Rubble land.												
Nielsen family--	0-8	18-27	1.40-1.60	0.6-2.0	0.06-0.08	6.6-7.3	<2	Low--------	0.05	1	8	5-10
	8-16	28-35	1.40-1.60	0.2-0.6	0.08-0.10	6.6-7.3	<2	Low--------	0.05			
	16	---	---	---	---	---	---	----------	----			
74*:												
Saltair----------	0-6	20-27	1.15-1.25	0.2-0.6	0.01-0.08	>7.8	>16	Low--------	0.49	5	4L	<1
	6-60	20-35	1.20-1.30	0.06-0.2	0.01-0.08	>7.8	>16	Moderate	0.49			
Playas.												
75*.												
Salt flats												
76*:												
Saxby----------	0-3	15-20	1.15-1.25	0.6-2.0	0.11-0.13	>8.4	<2	Low--------	0.02	1	8	1-3
	3-16	15-20	1.15-1.25	0.6-2.0	0.08-0.12	>8.4	<2	Low--------	0.10			
	16	---	---	---	---	---	---	----------	----			
Rock outcrop.												
77*:												
Scalade----------	0-3	15-20	1.35-1.50	2.0-6.0	0.07-0.09	7.4-8.4	<4	Low--------	0.24	1	5	1-2
	3-11	12-18	1.25-1.30	0.6-2.0	0.14-0.17	7.9-8.4	<4	Low--------	0.43			
	11-18	10-18	1.40-1.50	2.0-6.0	0.10-0.12	8.5-9.0	<4	Low--------	0.32			
	18-23	---	---	---	---	---	---	----------	----			
	23-45	10-18	1.65-1.75	0.6-2.0	0.05-0.07	7.4-9.0	<4	Low--------	0.15			
	45-60	0-5	1.45-1.60	>20	0.03-0.05	7.4-9.0	<4	Low--------	0.10			
Lodar----------	0-8	18-27	1.15-1.25	0.6-2.0	0.08-0.11	7.4-8.4	<2	Low--------	0.15	1	6	1-4
	8-15	18-27	1.20-1.30	0.6-2.0	0.07-0.11	7.9-9.0	<2	Low--------	0.15			
	15	---	---	---	---	---	---	----------	----			
78*:												
Skumpah----------	0-3	18-27	1.15-1.40	0.2-0.6	0.16-0.18	8.5-9.0	2-8	Low--------	0.49	5	4L	.5-1
	3-9	27-35	1.30-1.50	0.2-0.6	0.08-0.16	>9.0	>4	Moderate	0.49			
	9-60	15-35	1.20-1.40	0.2-0.6	0.02-0.08	7.9-9.0	>16	Moderate	0.49			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
78*:												
Playas.												
79*:												
Skumpah	0-4	18-27	1.15-1.40	0.2-0.6	0.16-0.18	8.5-9.0	2-8	Low	0.49	5	4L	.5-1
	4-15	27-35	1.30-1.50	0.2-0.6	0.08-0.16	>9.0	>4	Moderate	0.49			
	15-60	15-35	1.20-1.40	0.2-0.6	0.02-0.08	7.9-9.0	>16	Moderate	0.49			
Playas.												
80*:												
Skumpah	0-3	18-27	1.15-1.40	0.2-0.6	0.16-0.18	8.5-9.0	2-8	Low	0.49	5	4L	.5-1
	3-9	27-35	1.30-1.50	0.2-0.6	0.08-0.16	>9.0	>4	Moderate	0.49			
	9-60	15-35	1.20-1.40	0.2-0.6	0.02-0.08	7.9-9.0	>16	Moderate	0.49			
Skumpah, sodic	0-4	18-27	1.15-1.40	0.2-0.6	0.16-0.18	8.5-9.0	2-8	Low	0.49	5	4L	.5-1
	4-15	27-35	1.30-1.50	0.2-0.6	0.08-0.16	>9.0	>4	Moderate	0.49			
	15-60	15-35	1.20-1.40	0.2-0.6	0.02-0.08	7.9-9.0	>16	Moderate	0.49			
Swingler	0-5	18-25	1.25-1.45	0.2-0.6	0.14-0.17	7.9-9.0	2-8	Low	0.49	5	4L	.5-1
	5-60	18-25	1.25-1.50	0.2-0.6	0.05-0.10	7.9-9.0	>16	Low	0.55			
81*:												
Skylick	0-19	10-19	1.20-1.30	0.6-2.0	0.13-0.17	6.6-7.8	<2	Low	0.20	5	5	2-10
	19-25	15-27	1.30-1.50	0.2-2.0	0.10-0.17	6.6-7.8	<2	Low	0.24			
	25-60	20-35	1.30-1.50	0.2-0.6	0.10-0.17	7.4-7.8	<2	Moderate	0.28			
Hoodle	0-5	18-25	1.25-1.30	2.0-6.0	0.09-0.11	7.4-7.8	<2	Low	0.10	5	8	2-5
	5-12	18-25	1.25-1.30	2.0-6.0	0.11-0.14	7.4-7.8	<2	Low	0.15			
	12-26	27-35	1.30-1.35	0.6-2.0	0.09-0.12	7.4-8.4	<2	Moderate	0.10			
	26-60	27-35	1.30-1.35	0.6-2.0	0.09-0.12	7.9-8.4	<2	Moderate	0.10			
82	0-3	10-18	1.25-1.40	0.6-2.0	0.13-0.16	7.9-9.0	<4	Low	0.43	5	3	.5-1
Smaug	3-35	10-18	1.25-1.50	0.6-2.0	0.12-0.14	7.9-9.0	>4	Low	0.49			
	35-60	10-18	1.20-1.40	0.2-0.6	0.04-0.14	7.9-9.0	>4	Low	0.64			
83	0-2	10-18	1.10-1.30	0.2-0.6	0.15-0.18	7.9-9.0	<4	Low	0.55	5	4L	.5-1
Smaug	2-60	10-18	1.20-1.40	0.2-0.6	0.04-0.14	7.9-9.0	>4	Low	0.64			
84*:												
Solak	0-10	12-18	1.35-1.40	0.6-2.0	0.07-0.09	7.9-8.4	<2	Low	0.05	1	6	<1
	10	---	---	---	---	---	---	---	---			
Rock outcrop.												
85*:												
Sonlet	0-2	16-20	1.15-1.25	0.6-2.0	0.09-0.11	7.4-8.4	<2	Low	0.15	1	6	1-3
	2-10	12-18	1.25-1.35	0.6-2.0	0.06-0.11	7.4-8.4	<2	Low	0.10			
	10-19	12-18	1.25-1.35	0.6-2.0	0.06-0.11	7.4-9.0	<2	Low	0.10			
	19	---	---	---	---	---	---	---	---			
Lodar	0-8	18-27	1.15-1.25	0.6-2.0	0.08-0.11	7.4-8.4	<2	Low	0.15	1	6	1-4
	8-15	18-27	1.20-1.30	0.6-2.0	0.07-0.11	7.9-9.0	<2	Low	0.15			
	15	---	---	---	---	---	---	---	---			
Rubble land.												
86*:												
Stucky	0-4	10-17	1.25-1.35	2.0-6.0	0.04-0.06	6.6-7.3	<2	Low	0.05	5	8	.5-2
	4-26	27-35	1.45-1.55	0.2-0.6	0.08-0.10	6.6-7.3	<2	Low	0.05			
	26-60	8-17	1.35-1.45	2.0-6.0	0.04-0.06	6.6-8.4	<2	Low	0.05			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
86*:												
Hiko Peak-------	0-4	10-18	1.40-1.50	0.6-2.0	0.11-0.14	7.9-9.0	<4	Low--------	0.24	5	5	1-2
	4-21	10-18	1.40-1.50	2.0-6.0	0.09-0.14	7.9-9.0	<4	Low--------	0.17			
	21-60	10-18	1.40-1.60	2.0-6.0	0.06-0.11	7.9-9.0	<4	Low--------	0.10			
87----------	0-4	18-27	1.10-1.30	0.6-2.0	0.11-0.14	7.9-8.4	<2	Low--------	0.20	1	5	1-2
Tarnach	4-15	18-27	1.10-1.30	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low--------	0.15			
	15	---	---	---	---	---	---	----------	----			
88----------	0-4	18-27	1.10-1.30	0.6-2.0	0.08-0.11	7.9-9.0	<2	Low--------	0.15	1	6	1-2
Tarnach	4-15	18-27	1.10-1.30	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low--------	0.15			
	15	---	---	---	---	---	---	----------	----			
89*:												
Tarnach---------	0-4	18-27	1.10-1.30	0.6-2.0	0.08-0.11	7.9-9.0	<2	Low--------	0.15	1	6	1-2
	4-15	18-27	1.10-1.30	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low--------	0.15			
	15	---	---	---	---	---	---	----------	----			
Amtoft----------	0-9	18-22	1.30-1.50	0.6-2.0	0.08-0.11	7.4-8.4	<4	Low--------	0.17	1	6	.5-2
	9-19	18-27	1.30-1.50	2.0-6.0	0.08-0.11	7.9-9.0	<4	Low--------	0.17			
	19	---	---	---	---	---	---	----------	----			
90*:												
Tarnach---------	0-6	18-27	1.10-1.30	0.6-2.0	0.11-0.14	7.9-8.4	<2	Low--------	0.20	1	5	1-2
	6-13	18-27	1.10-1.30	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low--------	0.15			
	13	---	---	---	---	---	---	----------	----			
Promo-----------	0-8	10-20	1.30-1.50	0.6-2.0	0.08-0.11	7.9-9.0	<2	Low--------	0.17	1	6	1-3
	8-13	18-25	1.30-1.50	2.0-6.0	0.08-0.11	7.9-9.0	<2	Low--------	0.17			
	13	---	---	---	---	---	---	----------	----			
91*:												
Tarnach, moist--	0-6	18-27	1.10-1.30	0.6-2.0	0.11-0.14	7.9-8.4	<2	Low--------	0.20	1	5	1-2
	6-13	18-27	1.10-1.30	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low--------	0.15			
	13	---	---	---	---	---	---	----------	----			
Tarnach---------	0-4	18-27	1.10-1.30	0.6-2.0	0.08-0.11	7.9-9.0	<2	Low--------	0.15	1	6	1-2
	4-15	18-27	1.10-1.30	0.6-2.0	0.08-0.12	7.9-9.0	<2	Low--------	0.15			
	15	---	---	---	---	---	---	----------	----			
92----------	0-4	5-15	1.30-1.40	2.0-6.0	0.04-0.08	7.4-8.4	<2	Low--------	0.10	5	6	1-2
Tosser	4-10	10-17	1.30-1.45	2.0-6.0	0.08-0.10	7.9-9.0	<2	Low--------	0.24			
	10-23	2-8	1.30-1.50	6.0-20	0.03-0.06	>8.4	<4	Low--------	0.05			
	23-37	2-8	1.50-1.80	6.0-20	0.02-0.04	>8.4	<4	Low--------	0.02			
	37-60	2-8	1.50-1.80	2.0-6.0	0.04-0.07	>8.4	<4	Low--------	0.10			
93*:												
Tosser----------	0-4	5-15	1.30-1.40	2.0-6.0	0.04-0.08	7.4-8.4	<2	Low--------	0.10	5	6	1-2
	4-10	10-17	1.30-1.45	2.0-6.0	0.08-0.10	7.9-9.0	<2	Low--------	0.24			
	10-23	2-8	1.30-1.50	6.0-20	0.03-0.06	>8.4	<4	Low--------	0.05			
	23-37	2-8	1.50-1.80	6.0-20	0.02-0.04	>8.4	<4	Low--------	0.02			
	37-60	2-8	1.50-1.80	2.0-6.0	0.04-0.07	>8.4	<4	Low--------	0.10			
Plegomir--------	0-2	16-27	1.00-1.30	0.6-2.0	0.12-0.14	7.9-8.4	<2	Low--------	0.24	1	5	.5-1
	2-5	18-27	1.10-1.40	0.6-2.0	0.15-0.16	7.9-9.0	<2	Low--------	0.32			
	5-13	12-25	1.10-1.40	0.6-2.0	0.07-0.14	8.5-9.0	<2	Low--------	0.17			
	13	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 11.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH	mmhos/cm					Pct
94*:												
Tosser----------	0-4	5-15	1.30-1.40	2.0-6.0	0.04-0.08	7.4-8.4	<2	Low-------	0.10	5	6	1-2
	4-10	10-17	1.30-1.45	2.0-6.0	0.08-0.10	7.9-9.0	<2	Low-------	0.24			
	10-23	2-8	1.30-1.50	6.0-20	0.03-0.06	>8.4	<4	Low-------	0.05			
	23-37	2-8	1.50-1.80	6.0-20	0.02-0.04	>8.4	<4	Low-------	0.02			
	37-60	2-8	1.50-1.80	2.0-6.0	0.04-0.07	>8.4	<4	Low-------	0.10			
Puett----------	0-2	7-15	1.30-1.50	2.0-6.0	0.11-0.14	7.9-9.0	<2	Low-------	0.17	1	5	.5-1
	2-12	5-10	1.35-1.55	2.0-6.0	0.09-0.12	7.9-9.0	<2	Low-------	0.20			
	12	---	---	---	---	---	---	----------	----			
95*:												
Tosser----------	0-4	5-15	1.30-1.40	2.0-6.0	0.04-0.08	7.4-8.4	<2	Low-------	0.10	5	6	1-2
	4-10	10-17	1.30-1.45	2.0-6.0	0.08-0.10	7.9-9.0	<2	Low-------	0.24			
	10-23	2-8	1.30-1.50	6.0-20	0.03-0.06	>8.4	<4	Low-------	0.05			
	23-37	2-8	1.50-1.80	6.0-20	0.02-0.04	>8.4	<4	Low-------	0.02			
	37-60	2-8	1.50-1.80	2.0-6.0	0.04-0.07	>8.4	<4	Low-------	0.10			
Sitar----------	0-8	18-27	1.15-1.25	0.2-0.6	0.16-0.20	8.5-9.0	<2	Low-------	0.37	5	4L	.5-2
	8-29	12-18	1.15-1.25	0.6-2.0	0.10-0.16	>8.4	<2	Low-------	0.20			
	29-60	8-18	1.15-1.25	2.0-6.0	0.08-0.12	>8.4	<2	Low-------	0.17			
96----------	0-11	12-18	1.25-1.30	0.6-2.0	0.17-0.18	6.6-7.8	<2	Low-------	0.43	5	5	1-3
Vicking	11-31	27-35	1.40-1.50	0.2-0.6	0.17-0.18	7.4-7.8	<2	Moderate	0.24			
	31-60	18-27	1.35-1.45	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low-------	0.37			
97*:												
Vicking----------	0-11	12-18	1.25-1.30	0.6-2.0	0.17-0.18	6.6-7.8	<2	Low-------	0.43	5	5	1-3
	11-31	27-35	1.40-1.50	0.2-0.6	0.17-0.18	7.4-7.8	<2	Moderate	0.24			
	31-60	18-27	1.35-1.45	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low-------	0.37			
Raftriver-------	0-12	10-20	1.20-1.40	0.6-2.0	0.14-0.17	7.4-8.4	<2	Low-------	0.32	2	5	1-3
	12-24	10-18	1.50-1.70	0.6-2.0	0.05-0.09	7.9-9.0	8-16	Low-------	0.24			
	24-32	---	---	---	---	---	---	----------	----			
	32-60	6-18	1.50-1.70	0.6-2.0	0.05-0.09	7.4-9.0	8-16	Low-------	0.24			
Codquin---------	0-4	6-15	1.30-1.50	6.0-20	0.08-0.10	7.4-8.4	<2	Low-------	0.17	1	5	.5-1
	4-17	6-18	1.30-1.50	6.0-20	0.04-0.06	7.4-9.0	<2	Low-------	0.02			
	17	---	---	---	---	---	---	----------	----			
98*:												
Vicking----------	0-11	18-27	1.30-1.40	0.6-2.0	0.15-0.17	6.6-7.8	<2	Low-------	0.37	5	6	1-3
	11-30	27-35	1.40-1.50	0.2-0.6	0.17-0.18	7.4-7.8	<2	Moderate	0.24			
	30-60	18-27	1.35-1.45	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low-------	0.37			
Ramshorn family-	0-3	18-27	1.25-1.45	2.0-6.0	0.10-0.15	7.9-8.4	<2	Low-------	0.15	3	6	1-3
	3-14	18-27	1.20-1.40	2.0-6.0	0.10-0.17	7.9-8.4	<2	Low-------	0.15			
	14-41	18-27	1.20-1.40	2.0-6.0	0.08-0.09	7.9-8.4	<2	Low-------	0.05			
	41	---	---	---	---	---	---	----------	----			

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "occasional" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding		High water table	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Months	Depth	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
				Ft	In		In				
1---------- Acana	D	None--------	---	>6.0	>60	---	10-20	Thin	Moderate	High-----	Moderate.
2*:											
Acana----------	D	None--------	---	>6.0	>60	---	10-20	Thin	Moderate	High-----	Moderate.
Collard----------	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Low.
3*:											
Acana----------	D	None--------	---	>6.0	>60	---	10-20	Thin	Moderate	High-----	Moderate.
Jericho----------	D	None--------	---	>6.0	>60	---	14-20	Thin	Moderate	High-----	Moderate.
4---------- Acord	C	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
5*:											
Ant Flat----------	C	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
Acord----------	C	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
6*:											
Bickmore family--	C	None--------	---	>6.0	20-40	Hard	---	---	Moderate	Moderate	Low.
Eyre family------	D	None--------	---	>6.0	10-20	Hard	---	---	Moderate	Moderate	Low.
Rock outcrop.											
7*:											
Bickmore family--	C	None--------	---	>6.0	20-40	Hard	---	---	Moderate	Moderate	Low.
Nielsen family---	D	None--------	---	>6.0	10-20	Hard	---	---	Moderate	Moderate	Low.
8---------- Birdow	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
9*:											
Bluehill----------	C	None--------	---	>6.0	20-40	Soft	---	---	Low------	High-----	Low.
Coalbank----------	B	None--------	---	>6.0	40-60	Soft	---	---	Moderate	High-----	Low.
10---------- Borvant	D	None--------	---	>6.0	>60	---	10-20	Thick	Moderate	High-----	Moderate.

See footnote at end of table.

TABLE 12.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding		High water table	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Months	Depth	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
				Ft	In		In				
11*:											
Brobett	C	None	---	>6.0	>60	---	20-40	Thick	Moderate	High	Moderate.
Plegomir	D	None	---	>6.0	>60	---	10-20	Thick	Moderate	High	Moderate.
12--Bullump	B	None	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
13*:											
Bullump	B	None	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
Sonlet	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
Rodrof	D	None	---	>6.0	>60	---	10-20	Thick	Moderate	High	Low.
14*:											
Clavicon	C	None	---	>6.0	20-40	Soft	---	---	Moderate	High	Low.
Rock outcrop.											
15--Cliffdown	B	None	---	>6.0	>60	---	---	---	Low	High	High.
16--Cliffdown	B	None	---	>6.0	>60	---	---	---	Low	High	Moderate.
17*:											
Cliffdown	B	None	---	>6.0	>60	---	---	---	Low	High	Moderate.
Hiko Peak	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
Okrist	B	None	---	>6.0	>60	---	---	---	Low	High	Moderate.
18*:											
Cliffdown	B	None	---	>6.0	>60	---	---	---	Low	High	High.
Rock outcrop.											
Promo	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
19*:											
Collard	B	None	---	>6.0	>60	---	---	---	Moderate	High	Low.
Hupp	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
20*:											
Cottonthomas	B	None	---	>6.0	>60	---	---	---	Moderate	High	Low.

See footnote at end of table.

TABLE 12.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding		High water table	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Months	Depth	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
				Ft	In		In				
20*:											
Tomsherry	C	None	---	>6.0	>60	---	20-40	Thin	High	High	Low.
21---------- Crooked Creek	D	Occasional	Mar-Jun	1.0-2.0	>60	---	---	---	High	High	Low.
22*:											
Crooked Creek	D	Occasional	Mar-Jun	1.0-2.0	>60	---	---	---	High	High	Low.
Hupp	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
23*:											
Dahar	C	None	---	>6.0	>60	---	20-40	Thin	Moderate	High	Moderate.
Codquin	D	None	---	>6.0	10-20	Soft	---	---	Moderate	High	Moderate.
24*:											
Dateman family	B	None	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
Bickmore family	C	None	---	>6.0	20-40	Hard	---	---	Moderate	Moderate	Low.
24*:											
Nielsen family	D	None	---	>6.0	10-20	Hard	---	---	Moderate	Moderate	Low.
25---------- Declo	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
26*:											
Declo	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
Darkbull	B	None	---	>6.0	>60	---	---	---	Moderate	High	Low.
27*:											
Declo	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
Lembos	C	None	---	>6.0	>60	---	20-40	Thick	Moderate	High	Moderate.
Tarnach	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
28---------- Donnardo	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
29*:											
Donnardo	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
Birdow	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
30*:											
Dynal	A	None	---	>6.0	>60	---	---	---	Low	High	High.

See footnote at end of table.

TABLE 12.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding		High water table	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Months	Depth	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
				Ft	In		In				
30*:											
Playas.											
31*:											
Fontreen	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
Borvant	D	None	---	>6.0	>60	---	10-20	Thick	Moderate	High	Moderate.
32*:											
Fontreen	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
Bullump	B	None	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
33*:											
Fontreen	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
Phage	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
34*:											
Hades	B	None	---	>6.0	40-60	Soft	---	---	Moderate	Moderate	Moderate.
Bearskin	D	None	---	>6.0	10-20	Hard	---	---	Moderate	Moderate	Low.
Rock outcrop.											
35	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
Hiko Peak											
36*:											
Hiko Peak	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
Kunzler	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
37*:											
Hiko Peak	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
Sheeprock	A	None	---	>6.0	>60	---	---	---	Low	High	Moderate.
Rock outcrop.											
38*:											
Hiko Peak	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
Taylorsflat	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
39*:											
Hiko Peak	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.

See footnote at end of table.

TABLE 12.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding		High water table	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Months	Depth	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
				Ft	In		In				
39*:											
Taylorsflat------	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
Skumpah----------	D	None--------	---	>6.0	>60	---	---	---	Low------	High-----	High.
40*:											
Hiko Springs-----	B	None--------	---	>6.0	>60	---	---	---	Low------	High-----	Moderate.
Okrist-----------	B	None--------	---	>6.0	>60	---	---	---	Low------	High-----	Moderate.
41*:											
Jericho----------	D	None--------	---	>6.0	>60	---	14-20	Thin	Moderate	High-----	Moderate.
Amtoft------------	D	None--------	---	>6.0	10-20	Hard	---	---	Moderate	High-----	Moderate.
42*:											
Jughandle family-	B	None--------	---	>6.0	>60	---	---	---	Low------	Moderate	Low.
Parkay family----	B	None--------	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
43*:											
Kapod------------	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Low.
Donnardo---------	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
44---------------- Koosharem	B	Rare--------	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
45*:											
Kunzler----------	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
Lembos-----------	C	None--------	---	>6.0	>60	---	20-40	Thick	Moderate	High-----	Moderate.
46*:											
Lembos-----------	C	None--------	---	>6.0	>60	---	20-40	Thick	Moderate	High-----	Moderate.
Jericho----------	D	None--------	---	>6.0	>60	---	14-20	Thin	Moderate	High-----	Moderate.
Scalade----------	D	None--------	---	>6.0	>60	---	10-20	Thin	Moderate	High-----	Moderate.
47*:											
Lembos-----------	C	None--------	---	>6.0	>60	---	20-40	Thick	Moderate	High-----	Moderate.
Taylorsflat------	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
48*:											
Lundy------------	D	None--------	---	>6.0	10-20	Hard	---	---	Moderate	High-----	Moderate.

See footnote at end of table.

TABLE 12.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding		High water table	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Months	Depth	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
				Ft	In		In				
48*:											
Sonlet	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
Lodar	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
49--Lynndyl	A	None	---	>6.0	>60	---	---	---	Low	High	Moderate.
50, 51--Mellor	D	None	---	>6.0	>60	---	---	---	Moderate	High	High.
52*:											
Mellor	D	None	---	>6.0	>60	---	---	---	Moderate	High	High.
Declo	B	None	---	>6.0	>60	---	---	---	Low	High	Low.
53*:											
Mellor	D	None	---	>6.0	>60	---	---	---	Moderate	High	High.
Pomat	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
54*:											
Nielsen family	D	None	---	>6.0	10-20	Hard	---	---	Moderate	Moderate	Low.
Bickmore family	C	None	---	>6.0	20-40	Hard	---	---	Moderate	Moderate	Low.
Rock outcrop.											
55*:											
Okrist	B	None	---	>6.0	>60	---	---	---	Low	High	Moderate.
Okrist, thick surface	B	None	---	>6.0	>60	---	---	---	Low	High	Moderate.
56*:											
Overland	C	None	---	>6.0	20-40	Hard	---	---	Moderate	High	Low.
Sonlet	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
57*:											
Parkay family	B	None	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
58*:											
Parkay family	B	None	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
Dateman family	B	None	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.

See footnote at end of table.

TABLE 12.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding		High water table	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Months	Depth	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
				Ft	In		In				
59*:											
Parkay family----	B	None--------	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
Broad Canyon family----------	B	None--------	---	>6.0	40-60	Soft	---	---	Moderate	High-----	Moderate.
60*. Pits, gravel											
61*. Playas											
62*:											
Plegomir---------	D	None--------	---	>6.0	>60	---	10-20	Thick	Moderate	High-----	Moderate.
Hiko Peak--------	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
Bullump----------	B	None--------	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
63*:											
Promo------------	D	None--------	---	>6.0	10-20	Hard	---	---	Moderate	High-----	Moderate.
Puett------------	D	None--------	---	>6.0	10-20	Soft	---	---	Moderate	High-----	Low.
64*:											
Puett------------	D	None--------	---	>6.0	10-20	Soft	---	---	Moderate	High-----	Low.
Plegomir---------	D	None--------	---	>6.0	>60	---	10-20	Thick	Moderate	High-----	Moderate.
65*:											
Raftriver--------	C	None--------	---	>6.0	>60	---	20-40	Thin	Moderate	High-----	High.
Duckree----------	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
66*:											
Raftriver--------	C	None--------	---	>6.0	>60	---	20-40	Thin	Moderate	High-----	High.
Koosharem--------	B	None--------	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
67*:											
Reebok-----------	D	None--------	---	>6.0	>60	---	10-20	Thick	Moderate	High-----	Moderate.
Puett------------	D	None--------	---	>6.0	10-20	Soft	---	---	Moderate	High-----	Low.
68*:											
Rexmont----------	D	None--------	---	>6.0	10-20	Hard	---	---	Moderate	High-----	Low.

See footnote at end of table.

TABLE 12.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding		High water table	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Months	Depth	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
				Ft	In		In				
68*:											
Shalper	D	None	---	>6.0	4-12	Hard	---	---	Moderate	Moderate	Low.
Rock outcrop.											
69*:											
Ridd	C	None	---	>6.0	20-40	Hard	---	---	Moderate	Moderate	Low.
Bullump	B	None	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
70*:											
Ridgecrest family	B	None	---	>6.0	>60	---	---	---	Moderate	High	Low.
Bickmore family	C	None	---	>6.0	20-40	Hard	---	---	Moderate	Moderate	Low.
71*:											
Rock outcrop.											
Amtoft	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
72---------- Rodrof	D	None	---	>6.0	>60	---	10-20	Thick	Moderate	High	Low.
73*:											
Rubble land.											
Nielsen family	D	None	---	>6.0	10-20	Hard	---	---	Moderate	Moderate	Low.
74*:											
Saltair	D	None	---	0-1.0	>60	---	---	---	High	High	High.
Playas.											
75*. Salt flats											
76*:											
Saxby	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
Rock outcrop.											
77*:											
Scalade	D	None	---	>6.0	>60	---	10-20	Thin	Moderate	High	Moderate.
Lodar	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
78*, 79*:											
Skumpah	D	None	---	>6.0	>60	---	---	---	Low	High	High.

See footnote at end of table.

TABLE 12.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding		High water table	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Months	Depth	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
				Ft	In		In				
78*, 79*: Playas.											
80*:											
Skumpah	D	None	---	>6.0	>60	---	---	---	Low	High	High.
Skumpah, sodic	D	None	---	>6.0	>60	---	---	---	Low	High	High.
Swingler	B	None	---	>6.0	>60	---	---	---	Low	High	High.
81*:											
Skylick	B	None	---	>6.0	>60	---	---	---	Moderate	Moderate	Low.
Hoodle	B	None	---	>6.0	>60	---	---	---	Moderate	High	Low.
82, 83 Smaug	B	None	---	>6.0	>60	---	---	---	Low	High	High.
84*:											
Solak	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Low.
Rock outcrop.											
85*:											
Sonlet	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
Lodar	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
Rubble land.											
86*:											
Stucky	B	None	---	>6.0	>60	---	---	---	Moderate	High	Low.
Hiko Peak	B	None	---	>6.0	>60	---	---	---	Moderate	High	Moderate.
87, 88 Tarnach	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
89*:											
Tarnach	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
Amtoft	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
90*:											
Tarnach	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.
Promo	D	None	---	>6.0	10-20	Hard	---	---	Moderate	High	Moderate.

See footnote at end of table.

TABLE 12.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding		High water table	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
		Frequency	Months	Depth	Depth	Hardness	Depth	Hardness		Uncoated steel	Concrete
				Ft	In		In				
91*:											
Tarnach, moist---	D	None--------	---	>6.0	10-20	Hard	---	---	Moderate	High-----	Moderate.
Tarnach----------	D	None--------	---	>6.0	10-20	Hard	---	---	Moderate	High-----	Moderate.
92---------- Tosser	B	None--------	---	>6.0	>60	---	---	---	Low------	High-----	Moderate.
93*:											
Tosser-----------	B	None--------	---	>6.0	>60	---	---	---	Low------	High-----	Moderate.
Plegomir---------	D	None--------	---	>6.0	>60	---	10-20	Thick	Moderate	High-----	Moderate.
94*:											
Tosser-----------	B	None--------	---	>6.0	>60	---	---	---	Low------	High-----	Moderate.
Puett------------	D	None--------	---	>6.0	10-20	Soft	---	---	Moderate	High-----	Low.
95*:											
Tosser-----------	B	None--------	---	>6.0	>60	---	---	---	Low------	High-----	Moderate.
95*:											
Sitar------------	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
96---------- Vicking	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
97*:											
Vicking----------	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
Raftriver--------	C	None--------	---	>6.0	>60	---	20-40	Thin	Moderate	High-----	High.
Codquin----------	D	None--------	---	>6.0	10-20	Soft	---	---	Moderate	High-----	Moderate.
98*:											
Vicking----------	B	None--------	---	>6.0	>60	---	---	---	Moderate	High-----	Moderate.
Ramshorn family--	B	None--------	---	>6.0	40-60	Soft	---	---	Moderate	High-----	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Acana	Loamy, mixed, mesic, shallow Xerollic Durargids
Acord	Clayey-skeletal, montmorillonitic, frigid Calcic Argixerolls
Amtoft	Loamy-skeletal, carbonatic, mesic Lithic Xerollic Calciorthids
Ant Flat	Fine, montmorillonitic, frigid Calcic Argixerolls
Bearskin	Loamy, mixed, frigid Lithic Argixerolls
Bickmore family	Loamy-skeletal, mixed Argic Pachic Cryoborolls
Birdow	Fine-loamy, mixed, mesic Cumulic Haploxerolls
Bluehill	Ashy, mesic Typic Vitrandepts
Borvant	Loamy-skeletal, carbonatic, mesic, shallow Aridic Petrocalcic Palexerolls
Broad Canyon family	Loamy-skeletal, mixed Typic Cryoborolls
Brobett	Loamy-skeletal, mixed, mesic Haploxerollic Durargids
Bullump	Loamy-skeletal, mixed, frigid Pachic Argixerolls
Clavicon	Loamy-skeletal, mixed, frigid Typic Calcixerolls
Cliffdown	Loamy-skeletal, mixed (calcareous), mesic Typic Torriorthents
Coalbank	Ashy, frigid Mollic Vitrandepts
Codquin	Loamy-skeletal, mixed (calcareous), frigid, shallow Typic Xerorthents
Collard	Loamy-skeletal, mixed, mesic Aridic Argixerolls
Cottonthomas	Ashy, frigid Mollic Vitrandepts
Crooked Creek	Fine, montmorillonitic, frigid Cumulic Haplaquolls
Dahar	Coarse-loamy, mixed, frigid Haploxerollic Durorthids
Darkbull	Loamy-skeletal, mixed, mesic Xerollic Calciorthids
Dateman family	Loamy-skeletal, mixed Pachic Cryoborolls
Declo	Coarse-loamy, mixed, mesic Xerollic Calciorthids
Donnardo	Loamy-skeletal, mixed, mesic Aridic Calcixerolls
Duckree	Loamy-skeletal, mixed, frigid Xerollic Calciorthids
Dynal	Carbonatic, mesic Typic Torripsamments
Eyre family	Loamy-skeletal, mixed Lithic Cryoborolls
Fontreen	Loamy-skeletal, carbonatic, frigid Aridic Calcixerolls
Hades	Fine-loamy, mixed, frigid Pachic Argixerolls
Hiko Peak	Loamy-skeletal, mixed, mesic Xerollic Calciorthids
Hiko Springs	Coarse-loamy, mixed, mesic Typic Calciorthids
Hoodle	Loamy-skeletal, mixed Argic Cryoborolls
Hupp	Loamy-skeletal, mixed, mesic Calcic Haploxerolls
Jericho	Loamy-skeletal, mixed, mesic shallow Xerollic Durorthids
Jughandle family	Coarse-loamy, mixed Typic Cryocrepts
Kapod	Loamy-skeletal, mixed, mesic Calcic Argixerolls
Koosharem	Fine-loamy, mixed, frigid Cumulic Haploxerolls
Kunzler	Coarse-loamy, mixed, mesic Durixerollic Calciorthids
Lembos	Fine-loamy, mixed, mesic Xerollic Durargids
Lodar	Loamy-skeletal, carbonatic, mesic Lithic Calcixerolls
Lundy	Loamy-skeletal, carbonatic, frigid Lithic Calcixerolls
Lynndyl	Sandy, mixed, mesic Typic Calciorthids
Mellor	Fine-silty, mixed, mesic Xerollic Natrargids
Nielsen family	Loamy-skeletal, mixed Argic Lithic Cryoborolls
Okrist	Sandy, mixed, mesic Durixerollic Calciorthids
Overland	Loamy-skeletal, carbonatic, frigid Xerollic Calciorthids
Parkay family	Loamy-skeletal, mixed Argic Pachic Cryoborolls
Phage	Loamy-skeletal, carbonatic, mesic Xerollic Calciorthids
Plegomir	Loamy, mixed, mesic, shallow Xerollic Durorthids
Pomat	Coarse-silty, mixed (calcareous), mesic Xeric Torriorthents
Promo	Loamy-skeletal, mixed (calcareous), mesic Lithic Xeric Torriorthents
Puett	Loamy, mixed (calcareous), mesic, shallow Xeric Torriorthents
Raftriver	Coarse-loamy, mixed, frigid Haploxerollic Durorthids
Ramshorn family	Loamy-skeletal, carbonatic, frigid Xeric Torriorthents
Reebok	Loamy-skeletal, mixed, mesic, shallow Aridic Petrocalcic Palexerolls
Rexmont	Loamy-skeletal, mixed, frigid Lithic Haploxerolls
Ridd	Loamy-skeletal, mixed, mesic Typic Argixerolls
Ridgecrest family	Loamy-skeletal, carbonatic, frigid Calcic Haploxerolls
Rodrof	Loamy-skeletal, mixed, frigid, shallow Orthidic Durixerolls
Saltair	Fine-silty, mixed, mesic Typic Salorthids
Saxby	Loamy-skeletal, mixed, mesic Lithic Xerollic Calciorthids
Scalade	Loamy, mixed, mesic, shallow Haploxerollic Durorthids
Shalper	Loamy-skeletal, mixed, frigid Lithic Argixerolls

TABLE 13.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Sheeprock	Sandy-skeletal, mixed, mesic Xeric Torriorthents
Sitar	Loamy-skeletal, mixed, mesic Xerollic Calciorthids
Skumpah	Fine-silty, mixed, mesic Typic Natrargids
Skylick	Fine-loamy, mixed Cryic Pachic Paleborolls
Smaug	Coarse-silty, mixed (calcareous), mesic Typic Torriorthents
Solak	Loamy-skeletal, mixed (calcareous), frigid Lithic Xeric Torriorthents
Sonlet	Loamy-skeletal, mixed, frigid Lithic Xerollic Calciorthids
Stucky	Loamy-skeletal, mixed, mesic Xerollic Haplargids
Swingler	Fine-silty, mixed (calcareous), mesic Typic Torriorthents
Tarnach	Loamy-skeletal, mixed, mesic Lithic Xerollic Calciorthids
Taylorsflat	Fine-loamy, mixed, mesic Xerollic Calciorthids
Tomsherry	Ashy, frigid Xeric Durandepts
Tosser	Sandy-skeletal, mixed, mesic Xerollic Calciorthids
Vicking	Fine-loamy, mixed, frigid Calcic Argixerolls

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