United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with United States Department of the Interior, Bureau of Land Management; University of Idaho, College of Agriculture; and Idaho Soil Conservation Commission

Soil Survey of Owyhee County Area, Idaho

How to Use This Soil Survey

General Soil Map

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

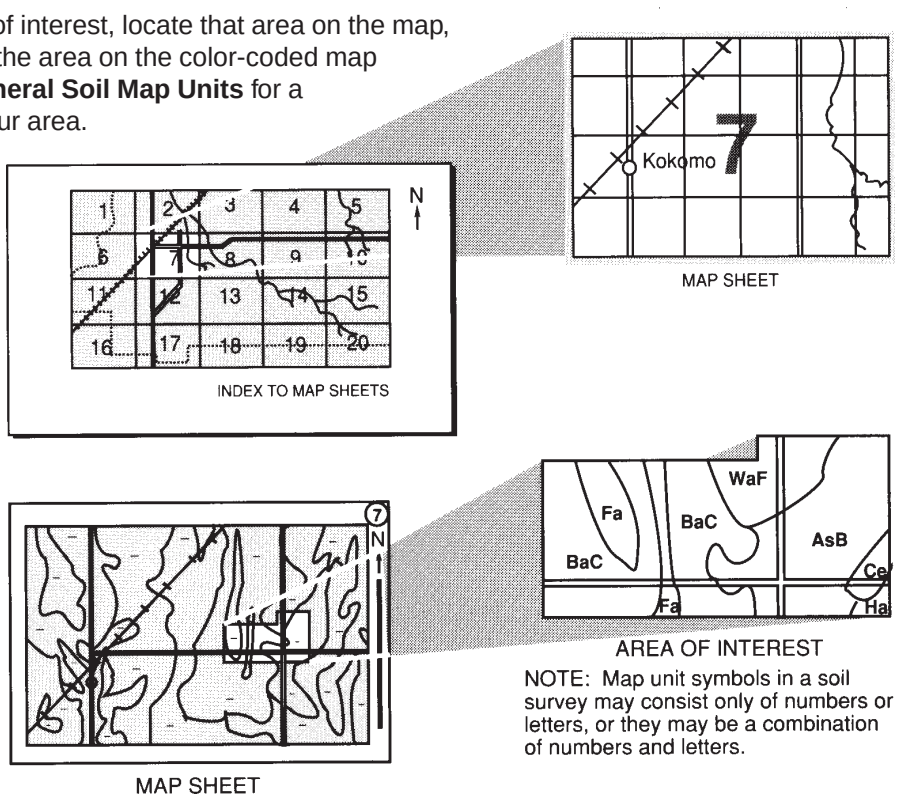
To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

Detailed Soil Maps

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

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

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



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

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including 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 1987. Soil names and descriptions were approved in 1990. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1987. This survey was made cooperatively by the Natural Resources Conservation Service and the United States Department of the Interior, Bureau of Land Management; University of Idaho, College of Agriculture; and Idaho Soil Conservation Commission. The survey is part of the technical assistance furnished to the Balanced Rock, Bruneau River, and Owyhee Soil Conservation District.

Since the publication of this survey, more information on soil properties may have been collected, new interpretations developed, or existing interpretive criteria modified. The most current soil information and interpretations for this survey are in the Field Office Technical Guide (FOTG) at the local Natural Resources Conservation Service field office. The soil maps in this publication may exist in digital form in a full quadrangle format. The digitizing of the maps is in accordance with the Soil Survey Geographic (SSURGO) database standards. During the digitizing process, changes or corrections to the maps may have occurred. These changes or corrections improve the matching of this survey to adjacent surveys and correct previous errors or omissions of map unit symbols or lines. If digital SSURGO certified maps exist for this survey, they are considered the official maps for the survey area and are part of the FOTG at the local Natural Resources Conservation Service field office.

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.

Cover: Typical area of Bieber and Hurryback soils on low hills, Zola and Welch soils on stream terraces, Wickahoney and Budlewis soils on tablelands, and Blackleg and Northcastle soils on knolls is right center. South Mountain is in background.

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

Contents

Issued 1998

Foreword

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

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

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

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

These and many other soil properties that affect land use are described in this soil survey. 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.

Luana E. Kiger
State Conservationist
Natural Resources Conservation Service

Soil Survey of
Owyhee County Area, Idaho

By Alan L. Harkness, Natural Resources Conservation Service

Fieldwork by Alan L. Harkness, Natural Resources Conservation Service; and Paul J. Seronko, F. Don Hobson, Don B. Jackson, James S. Renthal, Robert D. Roudabush, Richard S. Spencer, and Robert Long, Bureau of Land Management

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
United States Department of the Interior, Bureau of Land Management; University of Idaho, College of Agriculture; and Idaho Soil Conservation Commission

Owyhee County Area is in the southwestern part of Idaho (fig. 1). The survey area is comprised of 3,710,266 acres, or about 5,797 square miles, of Owyhee County. The rest of the county is included in the soil surveys of Canyon Area, Idaho; Elmore Area, Idaho; and Duck Valley Indian Reservation, Idaho and Nevada. Owyhee County Area includes private and State land intermingled with Federal land administered by the Bureau of Land Management.

Owyhee County is bounded on the north by the Snake River and Elmore County, on the east by Twin Falls County, on the south by Nevada, and on the west by Oregon. Murphy, the county seat of Owyhee County, has a population of about 50.

The survey area consists dominantly of undulating to rolling tablelands, structural benches, and foothills. The major drainageways in the area are the Bruneau and Owyhee Rivers. The spectacular narrow canyons formed by these rivers are more than 1,000 feet deep in some areas. Steep mountains are in the west-central part of the area. Hayden Peak, the highest point, is 8,403 feet in elevation. The lowest point, 2,225 feet in elevation, is along the Snake River in a band of dissected fan terraces at the northwestern boundary.

An older survey, "Soil-Geology-Vegetation Inventories for Reynolds Creek Watershed" published in 1977 *(11)*. The present survey, however, updates the earlier survey and provides additional information.

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

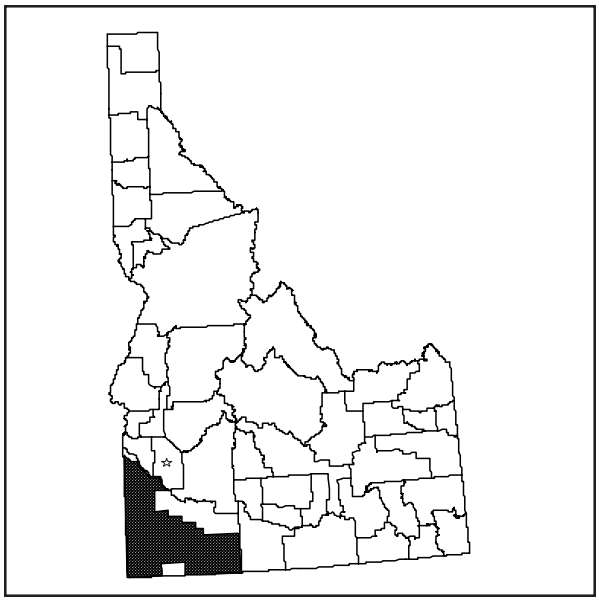


Figure 1.—Location of Owyhee County Area in Idaho.

General Nature of the Survey Area

This section gives general information about the survey area. It discusses history and development, agriculture and water supply, recreation, and climate.

History and Development

By Margaret Wyatt, archaeologist, Bureau of Land Management.

Indians living in the survey area at the time of the first white exploration included those of the Shoshone,

Bannock, and Northern Paiute tribes. As early as 1812, European fur trappers, such as Peter Skene Ogden and Donald McKenzie, were exploring the area claimed by the British and known as the Oregon Country. A treaty between the United States and Great Britain was signed in 1846. It affirmed the Northwest as American territory and stimulated westward expansion.

For the next two decades, wagon traffic was heavy through Idaho on the Oregon and California Trails. Beyond its importance for emigrants, the Oregon Trail also was used as a stage and freight route until after 1862. The discovery of gold in California in the 1850's and the expansion of miners from the Boise Basin mining communities contributed to an Owyhee gold rush. Towns such as Booneville, Ruby City, Delamar, and Silver City sprang up and grew rapidly. Millions of dollars in minerals was taken from the Owyhee Mountains.

Owyhee County was established on December 31, 1863. Its name reportedly was taken from an earlier spelling of a word missionaries later spelled "Hawaii," which referred to the Sandwich Islands. Natives of these islands were brought to the Northwest to work for the fur companies. Silver City served as the county seat from 1867 to 1934, and it was the first city in Idaho to have telegraph service and a daily newspaper. The Boise-Nampa & Owyhee Railroad, for which Murphy was the terminal city, served the county from 1898 to 1945. Shipments by train from Murphy in 1915 included 16 carloads of horses, 112 carloads of cattle, 6 carloads of hogs, 395 carloads of sheep, 3 carloads of wool, 8 carloads of alfalfa seed, and $50,000 worth of bullion from the mines *(1)*.

Swan Falls Dam on the Snake River is one of the oldest hydroelectric power plants in the West. Completed in 1901, it furnished the mills and towns of the Silver City area with the first electric power in Idaho. Cattle from Texas and California were introduced into Owyhee County in about 1867. In 1934 the county seat was moved from Silver City to Murphy, marking a transition from mining to agriculture as the dominant industry in the county.

The survey area has some of the most rugged and arid land in Idaho; hence, the population centers have been confined to the northwestern lowlands along the Snake River. The economy is dependent on agriculture, wholesale and retail trade, and government employment. Industrial development historically has been limited to mining because of the great distance between available markets. Mining is a rapidly growing employment opportunity. Delamar Mine is one of the largest open-pit gold and silver mines in the United States.

Transportation routes include U.S. Highway 95, which runs across the northwestern corner of the area, and State Highway 51, which runs north and south in the central part. State Highway 45 runs east and west along the Snake River, and a hard-surface county highway serves Three Creek and Murphy Hot Springs in the southeastern part. No rail access currently is available. Several small airstrips are in the area.

Agriculture and Water Supply

Irrigated agriculture in the survey area was initiated by the ranchers that settled stream valleys around Silver City in the late 1860's and the 1870's. Federal land acts, such as the Homestead Act of 1862, the Desert Land Act of 1877, and the Carey Act of 1894, promoted continued agricultural development. In 1885 the county as a whole supported 50,000 head of cattle, 30,000 head of sheep, and 10,000 head of horses as well as orchards along Reynolds and Sinker Creeks.

Most of the arable land near sources of irrigation water was developed by the turn of the century. Water supplies from rainfall and streamflow, however, proved to be small and unreliable. Spring water developments, stream diversions, excavated ponds, and small reservoirs were constructed to provide more adequate sources of water.

The Murphy Land and Irrigation Company was one of the earliest organized irrigation endeavors. By 1910 its canals delivered water to Murphy Flat from a 70-foot-high earthen dam on Sinker Creek. The dam collapsed in June 1943, but it was rebuilt in 1976. The Grasmere Reservoir was built in 1910 by an English development company. In 1913 the Wilson Water Users Association was formed to pump irrigation water from the Snake River near Guffey.

The advent of high-lift pumps in the 1960's allowed for the most recent rush to convert arid public land to irrigated cropland. Deep wells and high-lift pumps are used to irrigated more than 75 percent of the irrigated cropland in the survey area.

The survey area encompasses most of the Owyhee Soil Conservation District, organized in 1953, and parts of the Bruneau River and Balanced Rock Soil Conservation Districts, organized in 1953 and 1961, respectively. The Agricultural Research Service, through intensive study of the Reynolds Creek Experimental Watershed, helps to identify the most suitable management practices for the agricultural land in the survey area.

Recreation

By Wally Meyer, outdoor recreation planner, Bureau of Land Management.

The survey area provides numerous opportunities for outdoor recreation. The various landforms provide for activities such as recreational motor vehicle use, rock hounding, sightseeing, hiking, cross-country skiing, camping, and picnicking. The area also provides excellent fishing, hunting, and nature study opportunities. Boating on the Snake River is popular, and the Owyhee and Bruneau Rivers are nationally known for white-water rafting and kayaking. Museums at Murphy and Silver City and remnants of the Oregon Trail attract people interested in history.

Recreational sites have been developed at Jump Creek Falls and along the North Fork of the Owyhee River. The Bureau of Land Management has developed sites for off-road vehicle use near Murphy. To provide opportunities for sightseeing, the Bureau has also established the Owyhee Uplands National Back Country Byway along the Deep Creek-Mud Flat Road, from Jordan Valley to Grandview. Soil compaction is a concern at several popular undeveloped recreation sites in the area. Use of off-road vehicles in several areas has resulted in plant destruction and severe soil erosion. Unpaved roads throughout the area are dusty in summer and may be impassable during wet periods.

Vast remote areas of the survey area provide primitive recreation opportunities. Unmodified natural settings provide isolation from the sites and sounds of man. Twenty-two wilderness study areas, totaling 713,596 acres, have been identified in the survey area.

Climate

By the Natural Resources Conservation Service, Water and Climate Center, Portland, Oregon.

The climate tables were created from data recorded at Reynolds, Idaho, and Mountain City, Nevada, during the period 1961 to 1990. Thunderstorm days, relative humidity, percent sunshine, and wind information were estimated from data recorded at the first order station at Boise, Idaho.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Reynolds and Mountain City. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on the length of the growing season.

In winter, the average daily temperature is 30.2 degrees F at Reynolds and 25.2 degrees at Mountain City and the average daily minimum temperature is 20.3 and 10.9 degrees, respectively. The lowest temperature on record, which occurred on January 21, 1962, was -24 degrees at Reynolds and -40 degrees at Mountain City. In summer, the average daily temperature is 65.9 degrees at Reynolds and 59.5 degrees at Mountain City and the average daily maximum temperature is 82.2 degrees at Reynolds and 81.1 degrees at Mountain City. The highest temperature on record at Reynolds was 105 degrees on August 9, 1990, and at Mountain City, 99 degrees on August 5, 1994.

Growing degree days, shown in table 1, 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). 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 10.9 inches at Reynolds and 13.2 inches at Mountain City. Of this, about 3 inches, or 30 percent, usually falls in June through September. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 2.38 inches at Reynolds on April 14, 1973. Thunderstorms occur on about 15 days each year, and most occur during the period May through August.

The average seasonal snowfall is 11 inches at Reynolds and 20 inches at Mountain City. The greatest snow depth at any one time on record at Reynolds was 9 inches on February 8, 1994, and at Mountain City, 20 inches on January 1, 1969. On an average, at least 1 inch of snow is on the ground 8 days per year at Reynolds and 20 days per year at Mountain City. The heaviest 1-day snowfall on record at Reynolds was 9 inches on February 8, 1994, and at Mountain City, 12 inches on October 29, 1972.

The average relative humidity in midafternoon is about 40 percent. Humidity is higher at night, and the average at dawn is about 70 percent. The sun shines 83 percent of the time in summer and 45 percent of the time in winter. The prevailing wind is from the west. Average windspeed is highest, 10 miles per hour, in March.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and

management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. Helicopters were used to observe some areas that were inaccessible. The scientists 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 of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

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

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

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

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

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

This survey area was mapped at two levels of detail. At the more detailed level, map units are narrowly defined. Map unit boundaries were plotted and verified at closely spaced intervals. At the less detailed level, map units are broadly defined. Boundaries were plotted and verified at wider intervals. The broadly defined units are indicated by an asterisk in the legend for the detailed soil maps. The detail of mapping was selected to meet the anticipated long-term use of the survey, and the map units were designed to meet the needs for that use.

This survey area was mapped at two levels of detail. At the more detailed level, map units are narrowly defined. Map unit boundaries were plotted and verified at closely spaced intervals. At the less

detailed level, map units are broadly defined. Boundaries were plotted and verified at wider intervals. In the legend for the detailed soil maps, narrowly defined units are indicated by symbols in which the first letter is a capital and the second is lowercase. For broadly defined units, the first and second letters are capitals.

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

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 components of one map unit can occur in another but in a different pattern.

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

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

Soil Descriptions

Soils on terraces and bottom lands

Number of map units: 5
Percentage of survey area: 11

1. Paynecreek-Bluecreek-Northcastle

Gently sloping, loamy and clayey, well drained, cool, moderately deep to very deep soils that formed in recent mixed alluvium

Major landforms: Stream terraces and fan terraces
Percentage of survey area: 2
Elevation: 5,000 to 5,900 feet
Frost-free period: 60 to 95 days
Average annual precipitation: 12 to 16 inches
Minor components: Welch, Pixley, Barkley, Upcreek, Tucker, Zola, and Blackwell soils
Present uses: Pastureland, hayland, rangeland, and wetland wildlife habitat
Limitations for use: Depth to hardpan, depth to water table, restricted permeability, hazard of flooding, hazard of wind erosion, low available water capacity, and short frost-free period

2. Alzola

Gently sloping to moderately steep, loamy, well drained, cool, very deep soils that formed in mixed alluvium

Major landforms: Outwash terraces
Percentage of survey area: 0.5
Elevation: 5,000 to 5,800 feet
Frost-free period: 75 to 90 days
Average annual precipitation: 10 to 13 inches
Minor components: Freshwater soils
Present uses: Rangeland and wildlife habitat
Limitations for use: Low precipitation and short frost-free period

3. Blackleg-Threek-Barkley

Undulating to hilly, clayey and loamy, well drained, cool, moderately deep to very deep soils that formed in mixed alluvium

Major landforms: Outwash terraces and fan terraces (see fig. 2, page 20)
Percentage of survey area: 1.5
Elevation: 4,800 to 7,100 feet
Frost-free period: 60 to 95 days
Average annual precipitation: 12 to 17 inches
Minor components: Booford, Brunzell, Hatpeak, Doodlelink, and Northcastle soils
Present uses: Rangeland and wildlife habitat
Limitations for use: Depth to hardpan, depth to bedrock, restricted permeability, low available

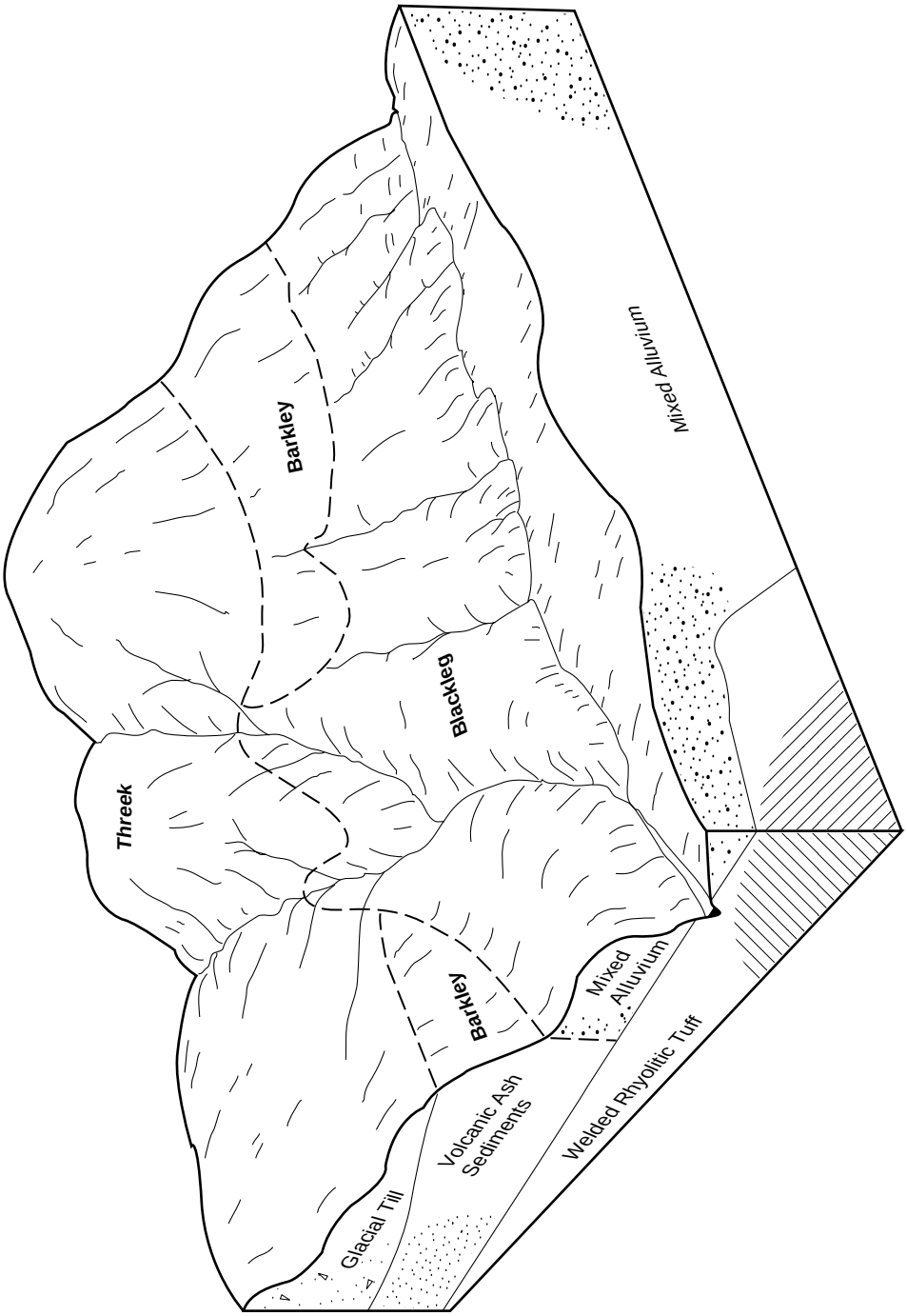


Figure 2.—Typical pattern of soils in general soil map unit 3.

water capacity, hazard of water erosion in steeper areas, and short frost-free period

4. Arbidge-Hardtrigger-Gariper

Gently sloping to moderately steep, loamy and clayey, well drained, warm, moderately deep to very deep soils that formed in mixed alluvium

Major landforms: Fan terraces
Percentage of survey area: 4
Elevation: 2,350 to 5,500 feet
Frost-free period: 85 to 150 days
Average annual precipitation: 8 to 13 inches
Minor components: Owsel, Chilcott, Gooding, Succor, Bieber, Salisbury, and Lamonta soils
Present uses: Rangeland, hayland, and wildlife habitat
Limitations for use: Hazard of wind erosion, hazard of water erosion in steeper areas, restricted permeability, depth to hardpan, and low precipitation

5. McKeeth-Escalante-Badlands

Gently sloping to strongly sloping, loamy, well drained, warm, very deep soils that formed in eolian sand and mixed alluvium, and Badlands

Major landforms: Fan terraces and fan piedmonts (see fig. 3, page 22)
Percentage of survey area: 3
Elevation: 2,300 to 3,800 feet
Frost-free period: 120 to 150 days
Average annual precipitation: 7 to 10 inches
Minor components: Tindahay soils; Typic Torriorthents; Veta, Shoofly, and Ornea soils; Xeric Torriorthents; and Ratsnest, Royal, and Diawell soils
Present uses: Rangeland, irrigated cropland, and wildlife habitat
Limitations for use: Hazard of wind erosion and low precipitation

Soils on foothills, structural benches, tablelands, calderas, and plug domes

Number of map units: 8
Percentage of survey area: 75

6. Heckison-Freshwater

Undulating to hilly, loamy, well drained, cool, shallow and moderately deep soils that formed in residuum and alluvium derived from basalt and breccia

Major landforms: Structural benches, calderas, and plug domes
Percentage of survey area: 6
Elevation: 5,000 to 6,000 feet
Frost-free period: 70 to 95 days
Average annual precipitation: 10 to 13 inches
Minor components: Larioscamp, Bigflat, Tanner, Brace, Dishpan, Insidert, and Roca soils
Present uses: Rangeland and wildlife habitat
Limitations for use: Depth to hardpan, depth to bedrock, very low available water capacity, low precipitation, and short frost-free period

7. Wickahoney-Monasterio-Yatahoney

Undulating to steep, clayey and loamy, well drained, cool, shallow and moderately deep soils that formed in residuum and alluvium derived from welded rhyolitic tuff, breccia, and basalt

Major landforms: Foothills, tablelands, and structural benches (see fig. 4, page 23)
Percentage of survey area: 21
Elevation: 4,800 to 7,300 feet
Frost-free period: 60 to 95 days
Average annual precipitation: 13 to 18 inches
Minor components: Deunah, Wagonbox, Lostvalley, Squawcreek, Zecanyon, and Budlewis soils, and Mollic Haploxeralfs
Present uses: Rangeland and wildlife habitat
Limitations for use: Depth to hardpan, depth to bedrock, low available water capacity, restricted permeability, slope, stones on the surface, and short frost-free period

8. Hat-Cleavage

Undulating to steep, loamy, well drained, cool, shallow and moderately deep soils that formed in residuum and colluvium derived from welded rhyolitic tuff

Major landforms: Foothills and structural benches
Percentage of survey area: 12
Elevation: 4,800 to 6,800 feet
Frost-free period: 60 to 90 days
Average annual precipitation: 13 to 18 inches
Minor components: Monasterio soils; Rock outcrop; and Nipintuck, Mulshoe, Squawcreek, Vitale, Avtable, Thacker, Gaib, Hurryback, and Saturday soils
Present uses: Rangeland and wildlife habitat
Limitations for use: Slope, depth to bedrock, very low available water capacity, stones on the surface,

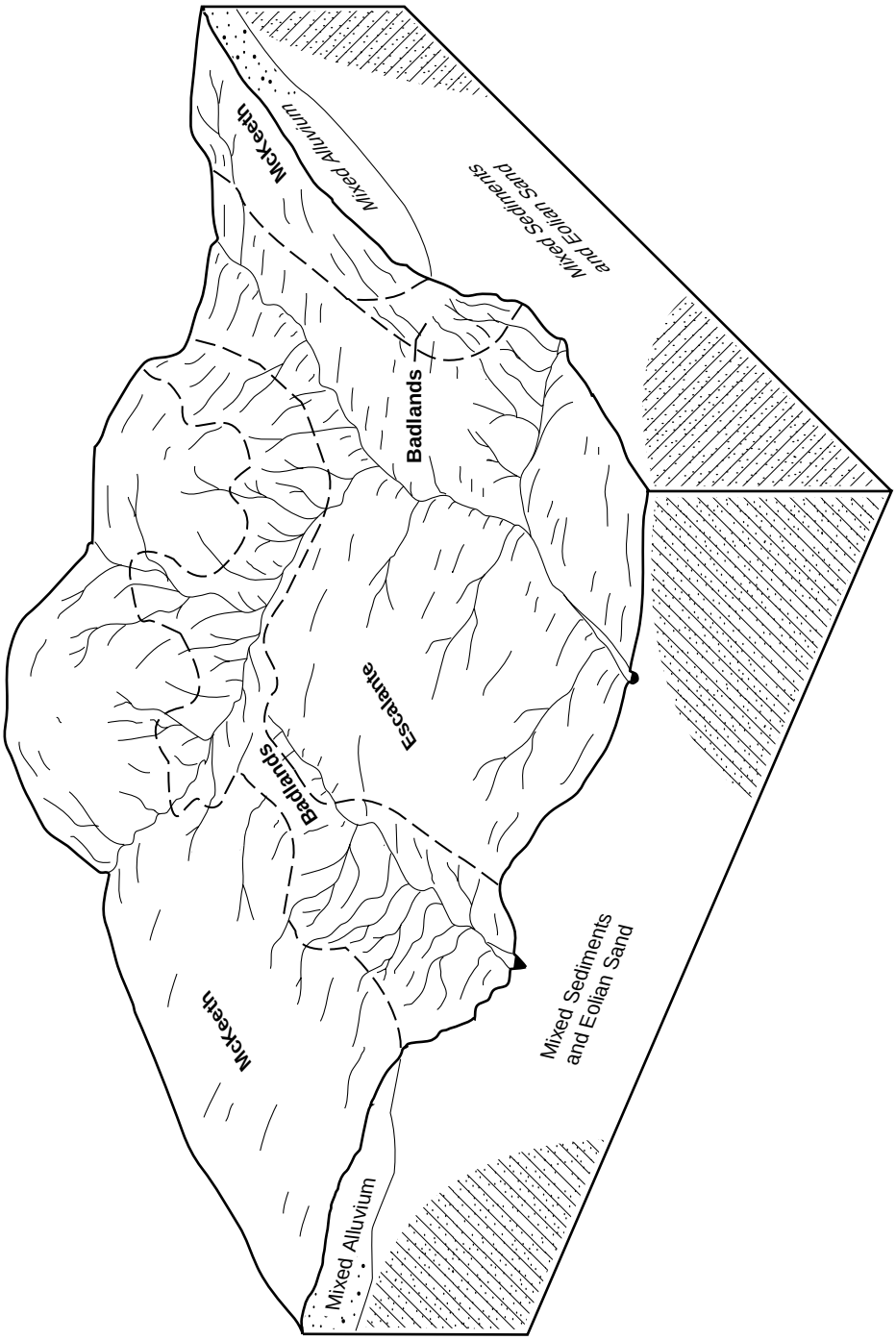


Figure 3.—Typical pattern of soils in general soil map unit 5.

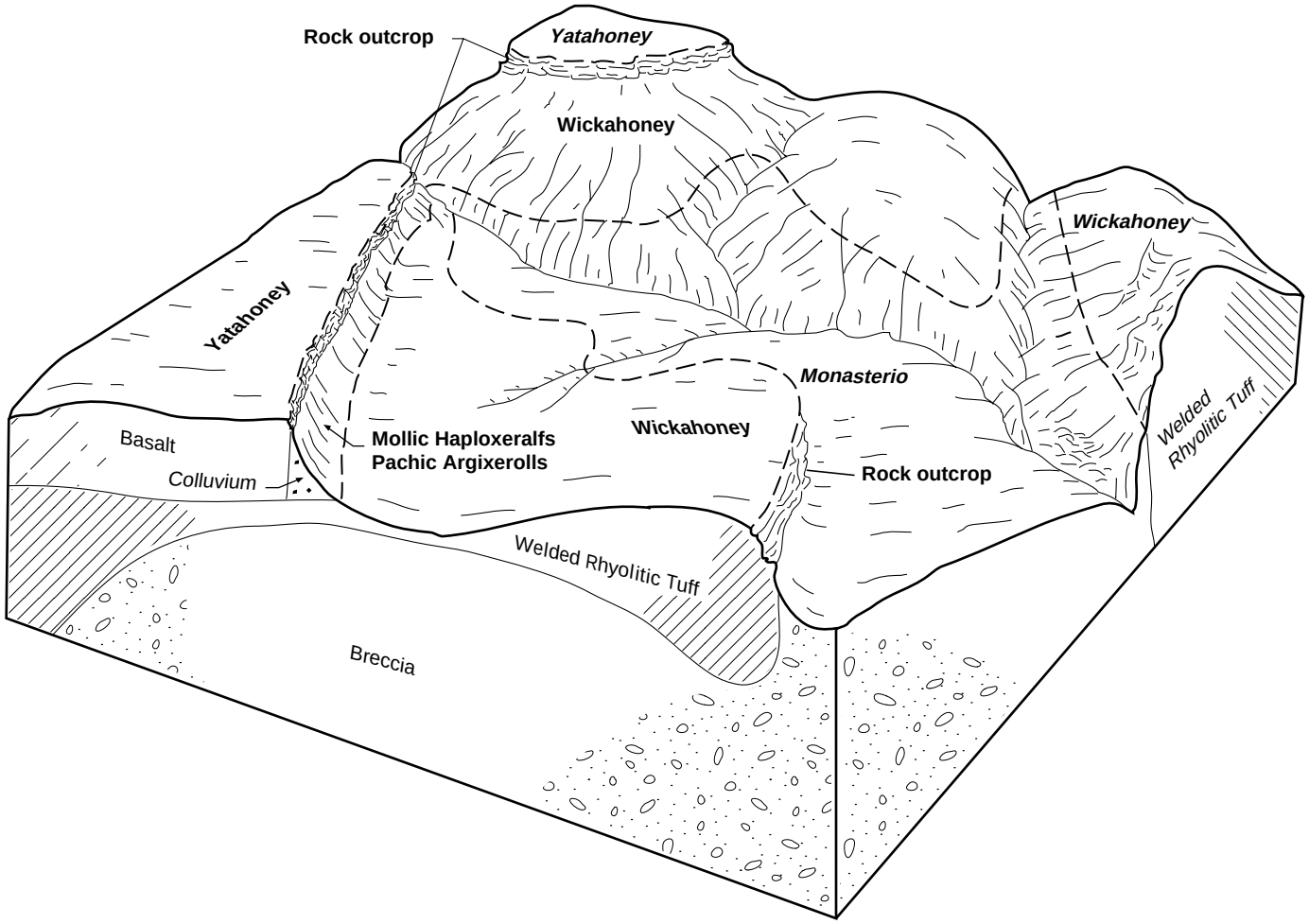


Figure 4.—Typical pattern of soils in general soil map unit 7.

hazard of water erosion in steeper areas, and short frost-free period

9. Scism-Briabbit

Undulating to hilly, loamy and silty, well drained, warm, moderately deep soils that formed in alluvium and loess derived from basalt and lacustrine deposits

Major landforms: Foothills, tablelands, structural benches, and calderas
Percentage of survey area: 2
Elevation: 2,300 to 5,000 feet
Frost-free period: 100 to 150 days
Average annual precipitation: 8 to 11 inches
Minor components: Hardtrigger, Tindahay, Murphill, and Bruncan soils, Typic Torripsamments, and Typic Torriorthents
Present uses: Rangeland, irrigated cropland, and wildlife habitat
Limitations for use: Depth to hardpan, depth to bedrock, low available water capacity, hazard of wind erosion, and low precipitation

10. Fairylawn-Acrelane-Longcreek

Undulating to steep, clayey and loamy, well drained, warm, shallow and moderately deep soils that formed in residuum, colluvium, and alluvium derived from basalt and granite

Major landforms: Foothills, tablelands, and structural benches
Percentage of survey area: 3
Elevation: 2,800 to 5,500 feet
Frost-free period: 85 to 135 days
Average annual precipitation: 10 to 15 inches
Minor components: Chinabutte, Duco, Hurryback, Perla, Schnipper, Succor, Catchell, and Loomis soils; Rock outcrop; and Dougal and Weash soils
Present uses: Rangeland and wildlife habitat
Limitations for use: Slope, depth to bedrock, depth to hardpan, stones on the surface, very low available water capacity, restricted permeability, hazard of water erosion in steeper areas, and low precipitation at lower elevations

11. Willhill-Dougal

Undulating to hilly, loamy, well drained, warm, shallow and moderately deep soils that formed in residuum and slope alluvium derived from welded rhyolitic tuff

Major landforms: Foothills and structural benches
Percentage of survey area: 11
Elevation: 2,800 to 5,500 feet
Frost-free period: 85 to 140 days
Average annual precipitation: 10 to 13 inches
Minor components: Cottle, Troughs, Snowmore, Bruncan, Igert, Sugarcreek, and Minveno soils
Present uses: Rangeland and wildlife habitat
Limitations for use: Depth to bedrock, depth to hardpan, stones on the surface, very low available water capacity, and low precipitation

12. Bruncan-Troughs-Snowmore

Nearly level to hilly, loamy, well drained, warm, shallow and moderately deep soils that formed in alluvium and loess derived from basalt and tuff

Major landforms: Calderas, tablelands, and structural benches
Percentage of survey area: 12
Elevation: 2,700 to 5,500 feet
Frost-free period: 85 to 145 days
Average annual precipitation: 8 to 13 inches
Minor components: Laped, Jenor, Arbidge, Owsel, Hardtrigger, Orovada, Coonskin, and Minveno soils
Present uses: Rangeland and wildlife habitat
Limitations for use: Depth to hardpan, depth to bedrock, stones on the surface, very low available water capacity, and low precipitation

13. Arbidge-Bedstead-Buncelvoir

Gently sloping to strongly sloping, loamy and clayey, well drained, warm, moderately deep to very deep soils that formed in loess and silty alluvium derived from basalt and volcanic ash

Major landforms: Calderas, tablelands, and foothills

Percentage of survey area: 8
Elevation: 3,250 to 5,500 feet
Frost-free period: 85 to 130 days
Average annual precipitation: 8 to 13 inches
Minor components: Bruncan, Hunnton, Chilcott, and Hardtrigger soils
Present uses: Rangeland and wildlife habitat
Limitations for use: Depth to hardpan, depth to bedrock, very low available water capacity, restricted permeability, stones on the surface, and low precipitation

Soils, Rock outcrop, and Rubbleland on mountains and in canyons

Number of map units: 4
Percentage of survey area: 14

14. Kanlee-Poisoncreek

Undulating to steep, loamy, well drained and somewhat excessively drained, cool, shallow and moderately deep soils that formed in residuum and colluvium derived from granitic rock

Major landforms: Mountains
Percentage of survey area: 3
Elevation: 4,600 to 7,000 feet
Frost-free period: 60 to 95 days
Average annual precipitation: 13 to 18 inches
Minor components: Takeuchi, Quicksilver, Bauscher, and Ola soils, and Rock outcrop
Present uses: Rangeland and wildlife habitat
Limitations for use: Slope, depth to bedrock, very low available water capacity, hazard of wind erosion, hazard of water erosion in steeper areas, and short frost-free period

15. Sharesnout-Snell

Rolling to steep, clayey, well drained, cool, moderately deep to very deep soils that formed in residuum and slope alluvium derived from basalt and welded rhyolitic tuff

Major landforms: Mountains
Percentage of survey area: 4
Elevation: 4,800 to 7,200 feet
Frost-free period: 55 to 95 days
Average annual precipitation: 13 to 17 inches
Minor components: Cleavage, Coser, Hades, Doodlelink, and Kiyi soils
Present uses: Rangeland and wildlife habitat
Limitations for use: Slope, depth to bedrock, very low available water capacity, restricted permeability, stones on the surface, hazard of water erosion in steeper areas, and short frost-free period

16. Parkay-Dehana-Wareagle

Rolling to steep, loamy, well drained, cold, deep and very deep soils that formed in residuum, colluvium, and slope alluvium derived from welded rhyolitic tuff

Major landforms: Mountains and canyons (see fig. 5, page 26)
Percentage of survey area: 3
Elevation: 5,050 to 8,400 feet
Frost-free period: 30 to 70 days
Average annual precipitation: 16 to 32 inches
Minor components: Povey soils, Rock outcrop, and Booneville, Nagitsy, Graylock, Takeuchi, Earcree, Foxmount, Wickahoney, and Bregar soils
Present uses: Woodland, rangeland, and wildlife habitat
Limitations for use: Slope, depth to bedrock, stones on the surface, hazard of water erosion, and short frost-free period

17. Rock outcrop-Rubbleland

Very steep extrusive flow Rock outcrop and Rubbleland

Major landforms: Canyons
Percentage of survey area: 4
Elevation: 2,300 to 6,750 feet
Frost-free period: 60 to 140 days
Average annual precipitation: 8 to 18 inches
Minor components: Xerollic Haplargids and Pachic Argixerolls
Present uses: Wildlife habitat and recreation
Limitations for use: Slope, exposed bedrock, rock fragments on surface

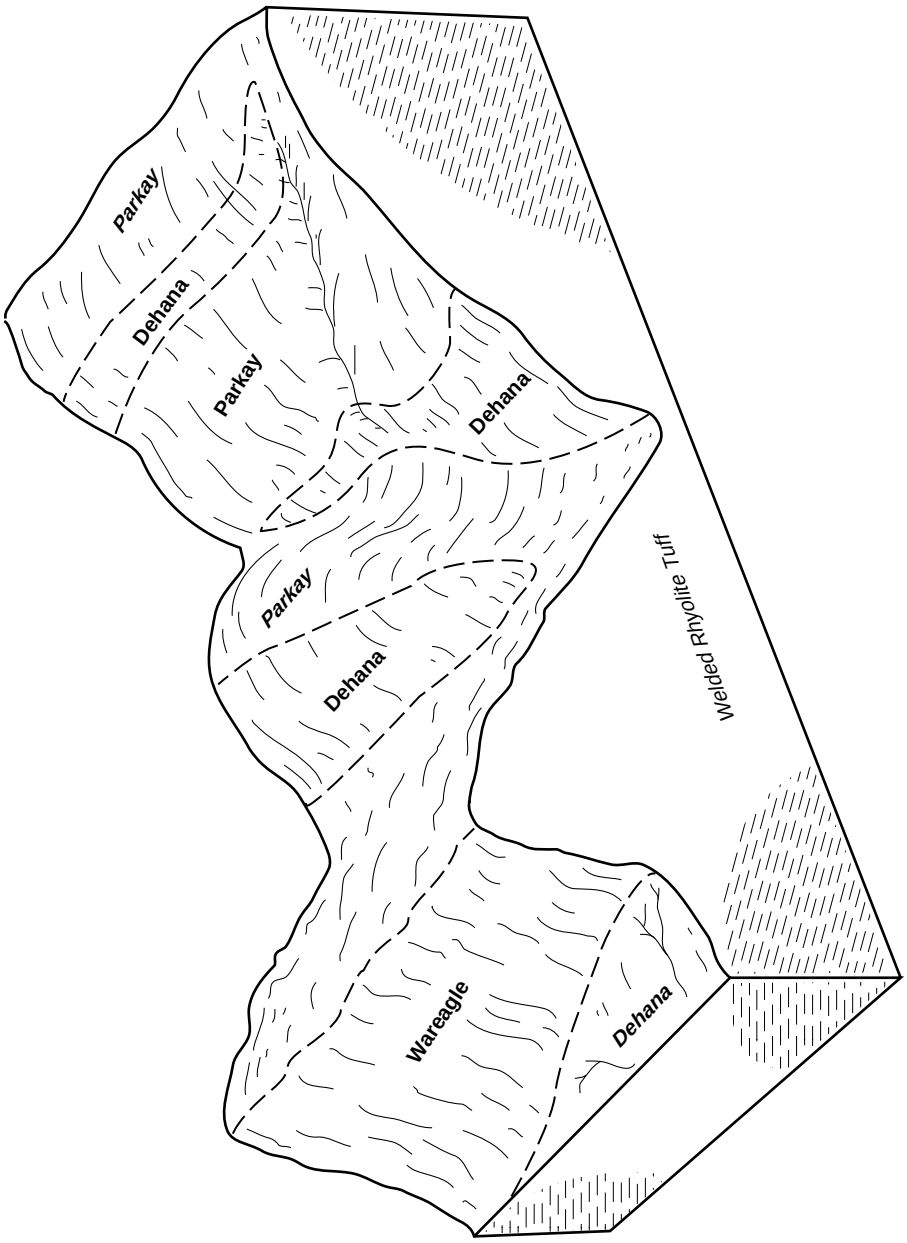


Figure 5.—Typical pattern of soils in general soil map unit 16.

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 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 landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Bruncan very stony silt loam, 2 to 15 percent slopes, is a phase of the Bruncan series.

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

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Nipintuck-Squawcreek-Rock outcrop complex, 2 to 30 percent slopes, is an example.

An *association* is made up of two or more

geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Takeuchi-Quicksilver association, 3 to 50 percent slopes, is an example.

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

In the map unit descriptions that follow, a semitabular format is used. In this format a boldface heading (for example, **Composition***)* is used to identify the kind of information grouped directly below it. Introducing each item of information under the heading is an italicized term or phrase (for example, *Position on landscape:)* that identifies or describes the information. Many of the boldface headings and introductory terms or phrases are self-explanatory; however, some of them need further explanation. These explanations are provided in the following paragraphs, generally in the order in which they are used in the map unit descriptions.

Composition is given for the components identified in the name of the map unit as well as for the contrasting inclusions.

Inclusions are areas of components (soils or miscellaneous areas) that differ from the components for which the unit is named. Inclusions can be either similar or contrasting. *Similar inclusions* are components that differ from the components for which the unit is named but that for purposes of use and management can be considered to be the same as the named components. Note that in the “Composition” paragraph a single percentage is provided for a named soil and the similar inclusions because their use and management are similar.

Contrasting inclusions are components that differ sufficiently from the components for which the unit is named that they would have different use and management if they were extensive enough to be managed separately. For most uses, contrasting inclusions have limited effect on use and management. Inclusions generally are in small areas, and they could not be mapped separately because of the scale used. Some small areas of strongly contrasting inclusions are identified by a special symbol on the detailed soil maps. A few inclusions 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 inclusions on the landscape.

Position on landscape refers to the dominant position or positions on which the component is located. In naming landscape positions, an effort has been made to give the specific position of the component rather than a general position that could encompass other components. In some instances, however, the component is distributed over a larger landscape to such a degree that it is more nearly accurate to name the larger landscape positions rather than the local ones.

Vegetal climax association consists of the plants that typify the native plant community.

Typical profile is a vertical, two-dimensional section of the soil extending from the surface to a restrictive layer or to a depth of 60 inches or more.

Depth class is an adjective term (for example, moderately deep) for the depth of the soil to a restrictive layer. The type of restrictive layer is specified unless it is consolidated bedrock.

Permeability is 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.

Available water capacity is the capacity of the soil to hold water available for use by most plants. It commonly is expressed as inches of water per inch of soil (see “Glossary”).

Hazard of erosion refers to the hazard if protective plant cover is removed. The hazard of erosion is constant and cannot be increased or decreased.

Table 4 gives the the acreage and proportionate extent of each map unit. Other tables (see “Contents”) 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.

Soil Descriptions

1—Acrelane-Rock outcrop complex, 10 to 45 percent slopes

Setting

Major landform: Foothills
Elevation: 3,000 to 5,200 feet
Major uses: Rangeland and wildlife habitat

Composition

Acrelane very gravelly sandy loam and similar inclusions—60 percent
Rock outcrop—15 percent
Contrasting inclusions—25 percent

Acrelane Soil

Position on landscape: Side slopes
Slope range: 10 to 45 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 51 degrees F
Frost-free period—90 to 135 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—grayish brown very gravelly sandy loam
3 to 6 inches—brown gravelly sandy loam
6 to 12 inches—brown and yellowish brown very gravelly sandy clay loam
12 inches—weathered bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderate
Available water capacity: Very low
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Rock Outcrop

Description of areas: Random, exposed areas of hard intermediate intrusive rock
Vegetation: Curlleaf mountainmahogany rooted in fractures
Runoff: Very rapid

Contrasting Inclusions

- Soils that are similar to Cottle soils but have a dark-colored surface layer, are on summits and south-facing side slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Ratsnest soils but are more moist, are in saddles and on lower side slopes, and support low sagebrush and bluebunch wheatgrass—5 percent or less
- Soils that are similar to Kanlee soils but are warmer, are on toe slopes and north-facing side slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—5 percent or less
- Fuego soils that are on upper north-facing side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less

Land Capability Classification

Acrelane soil: VIs, nonirrigated
Rock outcrop: VIII
Map unit (complex): VIs, nonirrigated

2—Alzola silt loam, 1 to 10 percent slopes

Setting

Major landform: Outwash terraces
Elevation: 5,200 to 5,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Alzola silt loam and similar inclusions—75 percent
Contrasting inclusions—25 percent

Alzola Soil

Position on landscape: Summits and side slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 4 inches—light gray and very pale brown silt loam
4 to 9 inches—pale brown cobbly silty clay loam
9 to 14 inches—light yellowish brown extremely cobbly clay loam
14 to 22 inches—weakly cemented, very pale brown extremely cobbly sandy loam
22 to 60 inches—very pale brown extremely cobbly loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Freshwater soils that are in saddles and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Owsel soils but are cooler,

are in swales, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Slickspots—5 percent or less

Land Capability Classification

VIe, nonirrigated

3—Alzola-Troughs-Bigflat stony loams, 5 to 35 percent slopes

Setting

Major landform: Calderas
Elevation: 5,000 to 5,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Alzola stony loam and similar inclusions—35 percent
Troughs stony loam and similar inclusions—30 percent
Bigflat stony loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Alzola Soil

Position on landscape: Shoulder slopes and upper escarpments
Slope range: 8 to 20 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown stony loam
4 to 15 inches—brown and yellowish brown cobbly silty clay loam
15 to 22 inches—very pale brown very cobbly clay loam
22 to 30 inches—weakly cemented very pale brown very cobbly sandy loam
30 to 60 inches—very pale brown very cobbly sandy loam
Taxadjunct feature: The upper part of this soil has colors that meet the criteria for a mollic epipedon. This difference, however, does not significantly affect use and management.
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Troughs Soil

Position on landscape: South-facing escarpments
Slope range: 8 to 25 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 46 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—pale brown stony loam
6 to 12 inches—light yellowish brown very cobbly loam
12 to 18 inches—very pale brown very cobbly loam
18 to 40 inches—hardpan
40 inches—bedrock
Taxadjunct feature: The subsoil of this soil does not meet the criteria for an argillic horizon. This difference, however, does not significantly affect use and management.
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Rapid or very rapid
Permeability: Moderate
Available water capacity: Very low
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Bigflat Soil

Position on landscape: North-facing escarpments
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 95 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 7 inches—brown stony loam
7 to 20 inches—brown cobbly clay
20 to 27 inches—very pale brown cobbly loam
27 to 44 inches—very pale brown cobbly fine sandy loam
44 to 60 inches—hardpan
Depth class: Deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 5 to 10 inches
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High

Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Haw soils but are cooler, do not contain lime, are on escarpments and foot slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Rock outcrop—5 percent or less
- Rubbleland—small areas

Land Capability Classification

Alzola soil: VIe, nonirrigated
Troughs soil: VIe, nonirrigated
Bigflat soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

4—Arbidge-Buncelvoir-Chilcott complex, 2 to 6 percent slopes

Setting

Major landform: Calderas
Elevation: 5,000 to 5,350 feet
Major uses: Rangeland and wildlife habitat

Composition

Arbidge loam and similar inclusions—40 percent
Buncelvoir silt loam and similar inclusions—30 percent
Chilcott loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Arbidge Soil

Position on landscape: Smooth and convex slopes
Slope range: 2 to 6 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—85 to 100 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 4 inches—pale brown loam
4 to 20 inches—pale brown and very pale brown clay loam
20 to 34 inches—very pale brown gravelly sandy loam
34 to 36 inches—hardpan
36 to 60 inches—very pale brown very gravelly loamy sand
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Buncelvoir Soil

Position on landscape: Smooth and concave slopes
Slope range: 2 to 6 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 105 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 5 inches—pale brown silt loam
5 to 13 inches—light yellowish brown silty clay loam
13 to 17 inches—very pale brown clay loam
17 to 60 inches—very pale brown fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Chilcott Soil

Position on landscape: Convex slopes
Slope range: 2 to 6 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 3 inches—very pale brown loam
3 to 10 inches—light yellowish brown silty clay
10 to 14 inches—very pale brown silty clay loam
14 to 18 inches—very pale brown silt loam
18 to 39 inches—very pale brown fine sandy loam
39 to 43 inches—hardpan
43 to 60 inches—pale brown sandy loam
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 3 to 10 inches
Drainage class: Well drained
Runoff: Medium
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High

Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Roseworth soils that are on ridges and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Owsel soils that are in draws and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Slickspots—small areas

Land Capability Classification

Arbidge soil: VIe, nonirrigated
Buncelvoir soil: VIe, nonirrigated
Chilcott soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

5—Arbidge-Chilcott silt loams, 1 to 8 percent slopes

Setting

Major landform: Calderas
Elevation: 5,050 to 5,300 feet
Major uses: Rangeland and wildlife habitat

Composition

Arbidge silt loam and similar inclusions—50 percent
Chilcott silt loam and similar inclusions—25 percent
Contrasting inclusions—25 percent

Arbidge Soil

Position on landscape: Smooth and convex slopes
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—grayish brown silt loam
3 to 20 inches—brown and pale brown clay loam
20 to 30 inches—pale brown gravelly sandy loam
30 to 38 inches—hardpan
38 to 60 inches—very pale brown very gravelly loamy sand
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Chilcott Soil

Position on landscape: Smooth and concave slopes
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 8 inches—light yellowish brown silt loam
8 to 14 inches—light yellowish brown silty clay
14 to 17 inches—light yellowish brown silty clay loam
17 to 37 inches—very pale brown and light yellowish brown fine sandy loam
37 to 44 inches—hardpan
44 inches—bedrock
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 3 to 10 inches
Drainage class: Well drained
Runoff: Slow
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Gariper soils that are on upper ridges and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Bruncan soils that are on rims and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Slickspots—5 percent or less
- Coonskin soils that are on lower ridges and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less

Land Capability Classification

Arbidge soil: VIe, nonirrigated
Chilcott soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

6—Arbidge-Heckison association, 2 to 15 percent slopes

Setting

Major landform: Plug domes
Elevation: 4,900 to 5,400 feet
Major uses: Rangeland and wildlife habitat

Composition

Arbidge loam and similar inclusions—50 percent
Heckison loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Arbidge Soil

Position on landscape: South-facing side slopes
Slope range: 6 to 15 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—85 to 100 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 4 inches—pale brown loam
4 to 20 inches—pale brown and very pale brown clay loam
20 to 34 inches—very pale brown gravelly sandy loam
34 to 36 inches—hardpan
36 to 60 inches—very pale brown very gravelly loamy sand
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Heckison Soil

Position on landscape: Summits and north-facing side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—44 to 45 degrees F
Frost-free period—85 to 95 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—brown loam
3 to 8 inches—brown silty clay loam
8 to 12 inches—pale brown silt loam
12 to 30 inches—very pale brown cobbly very fine sandy loam
30 to 36 inches—hardpan
36 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Bruncan soils that are on side slopes and toe slopes and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Slickspots—5 percent or less
- Soils that are similar to Pixley soils but are drier, are moderately deep, are on steeper north-facing side slopes, and support basin big sagebrush and bluebunch wheatgrass—5 percent or less
- Buncelvoir soils that are on foot slopes and support Wyoming big sagebrush and Thurber needlegrass—small areas

Land Capability Classification

Arbidge soil: VIe, nonirrigated
Heckison soil: IVe, nonirrigated

7—Arbidge-Hunnton silt loams, 1 to 8 percent slopes

Setting

Major landform: Tablelands
Elevation: 4,900 to 5,400 feet
Major uses: Rangeland and wildlife habitat

Composition

Arbidge silt loam and similar inclusions—55 percent
Hunnton silt loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Arbidge Soil

Position on landscape: Summits
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 47 degrees F
Frost-free period—85 to 100 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass

Typical profile:
0 to 3 inches—grayish brown silt loam
3 to 20 inches—brown and pale brown clay loam
20 to 30 inches—pale brown gravelly sandy loam
30 to 38 inches—hardpan
38 to 60 inches—very pale brown very gravelly loamy sand
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Hunnton Soil

Position on landscape: Summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—pale brown silt loam
3 to 11 inches—light yellowish brown silty clay loam
11 to 27 inches—light yellowish brown clay
27 to 50 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Moderate

Contrasting Inclusions

- Bruncan soils that are on knolls and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Bedstead soils that are on rims and in swales and support low sagebrush and bluebunch wheatgrass—10 percent or less
- Slickspots—5 percent or less

Land Capability Classification

Arbidge soil: VIe, nonirrigated
Hunnton soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

8—Arbidge-Laped-Slickspots complex, 0 to 8 percent slopes

Setting

Major landform: Basins of calderas and tablelands
Elevation: 4,150 to 5,350 feet
Major uses: Rangeland and wildlife habitat

Composition

Arbidge silt loam and similar inclusions—40 percent
Laped stony silt loam and similar inclusions—20 percent
Slickspots—20 percent
Contrasting inclusions—20 percent

Arbidge Soil

Position on landscape: Mounds and fan terraces
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 115 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—grayish brown silt loam
3 to 20 inches—brown and pale brown clay loam
20 to 30 inches—pale brown gravelly sandy loam
30 to 38 inches—hardpan
38 to 60 inches—very pale brown very gravelly loamy sand
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Laped Soil

Position on landscape: Toe slopes
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Typical profile:

0 to 3 inches—light gray stony silt loam
3 to 8 inches—very pale brown gravelly silt loam
8 to 16 inches—light yellowish brown gravelly silty clay loam
16 to 19 inches—very pale brown gravelly loam
19 to 22 inches—hardpan
22 inches—bedrock

Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Slickspots

Position on landscape: Shallow depressions
Slope range: 0 to 1 percent
Description of areas: Barren areas that have a puddled or crusted, very smooth, nearly impervious surface
Kind of material: Dense, massive very fine sandy loam to clay
Depth class: Very deep
Drainage class: Well drained
Runoff: Ponded
Permeability: Very slow
Shrink-swell potential: Moderate
Sodicity: High

Contrasting Inclusions

- Soils that are similar to Owsel soils but are drier, are on alluvial flats, and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—10 percent or less
- Bruncan soils that are on knolls and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Wholan soils that are on alluvial flats and support winterfat and Indian ricegrass—5 percent or less
- Midraw soils that are in draws and support low sagebrush and bluebunch wheatgrass—small areas

Land Capability Classification

Arbidge soil: VIe, nonirrigated
Laped soil: VIIe, nonirrigated
Slickspots: VIII
Map unit (complex): VIIe, nonirrigated

9—Arbidge-Owsel-Gariper complex, 1 to 15 percent slopes

Setting

Major landform: Fan terraces
Elevation: 3,850 to 5,300 feet
Major uses: Rangeland and wildlife habitat

Composition

Arbidge silt loam and similar inclusions—40 percent
Owsel silt loam and similar inclusions—25 percent
Gariper loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Arbidge Soil

Position on landscape: Summits and upper side slopes
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 120 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—grayish brown silt loam
3 to 20 inches—brown and pale brown clay loam
20 to 30 inches—pale brown gravelly sandy loam
30 to 38 inches—hardpan
38 to 60 inches—very pale brown very gravelly loamy sand

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Owsel Soil

Position on landscape: Toe slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 120 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:

0 to 10 inches—pale brown silt loam
10 to 23 inches—light yellowish brown silty clay loam
23 to 45 inches—very pale brown fine sandy loam
45 to 60 inches—very pale brown fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow to medium
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Gariper Soil

Position on landscape: Lower side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 120 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 9 inches—light brownish gray and pale brown loam
9 to 18 inches—yellowish brown clay
18 to 22 inches—light yellowish brown clay loam
22 to 47 inches—very pale brown gravelly sandy loam
47 to 60 inches—hardpan
Depth class: Deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 4 to 10 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Babbington soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—10 percent or less
- Soils that are similar to Alzola soils but are warmer, are on upper fan terraces, and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Soils that are similar to Chilcott soils but are shallow, are in swales, and support low sagebrush and bluebunch wheatgrass—small areas

Land Capability Classification

Arbidge soil: VIe, nonirrigated
Owsel soil: VIe, nonirrigated
Gariper soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

10—Arness-Humdun complex, 1 to 8 percent slopes

Setting

Major landform: Fan terraces
Elevation: 5,250 to 5,450 feet
Major uses: Rangeland, hayland, and wildlife habitat

Composition

Arness fine sandy loam and similar inclusions—60 percent
Humdun very fine sandy loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Arness Soil

Position on landscape: Summits
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—70 to 95 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown fine sandy loam
4 to 10 inches—yellowish brown loam
10 to 16 inches—light yellowish brown gravelly clay loam
16 to 19 inches—light yellowish brown gravelly loam
19 to 33 inches—hardpan
33 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Humdun Soil

Position on landscape: Lower slopes
Slope range: 1 to 4 percent

Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—70 to 95 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown very fine sandy loam
4 to 12 inches—yellowish brown loam
12 to 25 inches—light yellowish brown very fine sandy loam
25 to 30 inches—very pale brown very fine sandy loam
30 to 60 inches—light yellowish brown loamy fine sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderate
Available water capacity: Very high
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Contrasting Inclusions

- Soils that are similar to Chilcott soils but are cooler, are on side slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Dougal soils but are cooler, are on knolls and ridges, and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Soils that are similar to Blackleg soils but are drier, have an abrupt textural change, are on escarpments, and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less

Land Capability Classification

Arness soil: VIs, nonirrigated
Humdun soil: VIc, nonirrigated
Map unit (complex): VIs, nonirrigated

11—Babbington-Beetville loams, 0 to 3 percent slopes

Setting

Major landform: Bottom land
Elevation: 3,400 to 4,650 feet
Major uses: Hayland, rangeland, and wildlife habitat

Composition

Babbington loam and similar inclusions—55 percent
Beetville loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Babbington Soil

Position on landscape: Stream terraces
Slope range: 0 to 3 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—47 to 50 degrees F
Frost-free period—100 to 130 days
Vegetal climax association: Basin big sagebrush, bluegrass, and basin wildrye
Typical profile:
0 to 4 inches—grayish brown loam
4 to 29 inches—brown and grayish brown clay loam
29 to 42 inches—light brownish gray loam
42 to 60 inches—light brownish gray stratified loamy sand and very gravelly sand
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 40 to 60 inches
Drainage class: Moderately well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate
Frequency of flooding: Rare

Beetville Soil

Position on landscape: Stream terraces
Slope range: 0 to 2 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—47 to 51 degrees F
Frost-free period—100 to 130 days
Vegetal climax association: Basin big sagebrush, bluegrass, and basin wildrye
Typical profile:
0 to 13 inches—grayish brown loam
13 to 29 inches—light yellowish brown silt loam
29 to 44 inches—light gray gravelly loamy sand
44 to 60 inches—light olive brown silt loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 40 to 60 inches
Drainage class: Moderately well drained
Runoff: Very slow
Permeability: Moderate
Available water capacity: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate
Frequency of flooding: Occasional

Contrasting Inclusions

- Soils that are similar to Upcreek soils but are warmer, are on fluvial bottoms, and support sedge and bluegrass—10 percent or less
- Riverwash—5 percent or less
- Soils that are similar to Succor soils but are somewhat poorly drained, are on lower alluvial terraces, and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Gariper soils that are on upper fan terraces and support basin big sagebrush and bluebunch wheatgrass—5 percent or less
- Slickspots—small areas
- Soils that are similar to Deshler soils but are somewhat poorly drained, have a higher content of rock fragments, are on lower alluvial terraces, and support low sagebrush and bluebunch wheatgrass—small areas

Land Capability Classification

Babbington soil: IIw, irrigated, and Vw, nonirrigated
Beetville soil: IIIw, irrigated, and Vw, nonirrigated
Map unit (complex): IIw, irrigated, and Vw, nonirrigated

12—Babbington-Piline association, 0 to 3 percent slopes

Setting

Major landform: Alluvial flats
Elevation: 4,800 to 5,300 feet
Major uses: Rangeland, hayland, and wildlife habitat

Composition

Babbington silt loam and similar inclusions—50 percent
Piline silty clay loam and similar inclusions—40 percent
Contrasting inclusions—10 percent

Babbington Soil

Position on landscape: Stream terraces and mounds
Slope range: 0 to 3 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Basin big sagebrush, bluegrass, and basin wildrye
Typical profile:
0 to 3 inches—light brownish gray silt loam
3 to 8 inches—brown silty clay loam
8 to 24 inches—pale brown and light yellowish brown silty clay loam
24 to 40 inches—light yellowish brown clay loam
40 to 60 inches—light yellowish brown loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 40 to 60 inches
Drainage class: Moderately well drained
Runoff: Very slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate
Frequency of flooding: Rare

Piline Soil

Position on landscape: Alluvial flats
Slope range: 0 to 2 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Silver sagebrush and bluegrass
Typical profile:
0 to 10 inches—light gray silty clay loam
10 to 16 inches—light gray silty clay
16 to 30 inches—pale brown clay
30 to 48 inches—very pale brown clay loam
48 to 60 inches—light yellowish brown loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 0 to 24 inches
Drainage class: Poorly drained
Runoff: Ponded
Permeability: Very slow
Available water capacity: Very high
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Buncelvoir soils that are on toe slopes and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less

Land Capability Classification

Babbington soil: IIIc, irrigated, and VIs, nonirrigated
Piline soil: Vw, irrigated and nonirrigated

13—Badlands-Typic Torriorthents-Xeric Torriorthents complex, very steep

Setting

Major landforms: Escarpments of fan terraces, fan piedmonts, and structural benches
Elevation: 2,250 to 4,000 feet
Major uses: Wildlife habitat and recreation

Composition

Badlands—30 percent
Typic Torriorthents and similar inclusions—30 percent
Xeric Torriorthents and similar inclusions—20 percent
Contrasting inclusions—20 percent

Badlands

Position on landscape: South-facing, convex slopes and ridges
Slope range: 15 to 90 percent
Description of areas: Barren soft lacustrine material dissected by many intermittent drainageways
Depth class: Very shallow
Runoff: Rapid or very rapid

Typic Torriorthents

Position on landscape: South-facing side slopes
Slope range: 5 to 60 percent
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—48 to 53 degrees F
Frost-free period—110 to 150 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Sample profile:
0 to 45 inches—very pale brown silt loam
45 inches—weathered bedrock
Depth class: Moderately deep and deep
Drainage class: Somewhat excessively drained
Runoff: Slow to very rapid
Permeability: Moderately slow to moderately rapid
Available water capacity: High
Hazard of erosion by water: Slight to severe
Hazard of erosion by wind: Moderate
Sodicity: Moderate

Xeric Torriorthents

Position on landscape: North-facing side slopes
Slope range: 10 to 45 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 53 degrees F
Frost-free period—110 to 150 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Sample profile:
0 to 4 inches—brown stony loam
4 to 15 inches—very pale brown fine sandy loam
15 to 30 inches—very pale brown very fine sandy loam
30 to 60 inches—extremely cobbly very fine sandy loam
Depth class: Deep and very deep
Drainage class: Well drained
Runoff: Medium and rapid
Permeability: Moderately rapid to moderate
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight
Sodicity: Moderate

Contrasting Inclusions

- Soils that are on gently sloping toe slopes and support Wyoming big sagebrush and Indian ricegrass—10 percent or less
- Soils that have an abrupt textural change and a hardpan, are on strongly sloping shoulder slopes, and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—5 percent or less
- Rock outcrop—5 percent or less

Land Capability Classification

Badlands: VIII
Typic Torriorthents: VIIe, nonirrigated
Xeric Torriorthents: VIIe, nonirrigated
Map unit (complex): VIIe, nonirrigated

14—Bauscher-Sharesnout association, 5 to 35 percent slopes

Setting

Major landform: Mountains
Elevation: 5,300 to 7,100 feet
Major uses: Rangeland and wildlife habitat

Composition

Bauscher sandy loam and similar inclusions—35 percent
Bauscher sandy loam, dry, and similar inclusions—30 percent
Sharesnout stony loam and similar inclusions—15 percent
Contrasting inclusions—20 percent

Bauscher Soil

Position on landscape: Concave, north-facing side slopes
Slope range: 8 to 35 percent
Climatic data (average annual):
Precipitation—16 to 18 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—dark grayish brown sandy loam
3 to 8 inches—very dark grayish brown sandy loam
8 to 30 inches—brown and dark yellowish brown sandy clay loam
30 to 42 inches—light yellowish brown gravelly coarse sandy loam
42 to 60 inches— weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: High

Bauscher Soil, Dry

Position on landscape: Saddles and foot slopes
Slope range: 5 to 20 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—39 to 44 degrees F
Frost-free period—60 to 85 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 12 inches—grayish brown sandy loam
12 to 45 inches—brown and yellowish brown sandy clay loam
45 to 54 inches—light yellowish brown gravelly coarse sandy loam
54 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Sharesnout Soil

Position on landscape: Summits and convex side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—38 to 43 degrees F
Frost-free period—55 to 75 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—dark brown stony loam
6 to 10 inches—brown extremely gravelly clay loam
10 to 30 inches—yellowish brown extremely gravelly clay
30 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Saturday soils that are on ridges and knolls and support curlleaf mountainmahogany and mountain snowberry—10 percent or less
- Kanlee soils that are on south-facing side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Welch soils that are on fluvial bottoms and support sedge and bluegrass—small areas

Land Capability Classification

Bauscher soil: IVe, nonirrigated
Bauscher soil, dry: IVe, nonirrigated
Sharesnout soil: VIe, nonirrigated

15—Bedstead-Arbidge association, 2 to 15 percent slopes

Setting

Major landform: Tablelands
Elevation: 4,800 to 5,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Bedstead extremely stony silt loam and similar inclusions—40 percent

Arbidge silt loam and similar inclusions—35 percent
Contrasting inclusions—25 percent

Bedstead Soil

Position on landscape: Swales, knolls, and rims
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 47 degrees F
Frost-free period—85 to 100 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 1 inch—pale brown extremely stony silt loam
1 inch to 6 inches—brown stony silt loam
6 to 11 inches—pale brown cobbly silt loam
11 to 18 inches—brown extremely stony clay
18 to 21 inches—brown extremely stony clay loam
21 to 22 inches—hardpan
22 inches—bedrock
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 6 to 12 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Arbidge Soil

Position on landscape: Mounds and foot slopes
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 47 degrees F
Frost-free period—85 to 100 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—grayish brown silt loam
3 to 20 inches—brown and pale brown clay loam
20 to 30 inches—pale brown gravelly sandy loam
30 to 38 inches—hardpan
38 to 60 inches—very pale brown very gravelly loamy sand
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Hotcreek soils but are deeper, are on rims and ridges, and support low sagebrush and bluebunch wheatgrass—10 percent or less
- Buncelvoir soils that are on alluvial flats and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Rubbleland—5 percent or less
- Slickspots—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Bedstead soil: VIIs, nonirrigated
Arbidge soil: VIe, nonirrigated

16—Bieber-Hurryback association, 2 to 40 percent slopes

Setting

Major landform: Fan piedmonts
Elevation: 4,600 to 5,200 feet
Major uses: Rangeland and wildlife habitat

Composition

Bieber gravelly loam and similar inclusions—50 percent
Hurryback loam and similar inclusions—25 percent
Contrasting inclusions—25 percent

Bieber Soil

Position on landscape: Summits
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 58 degrees F
Frost-free period—85 to 105 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown gravelly loam
4 to 11 inches—brown clay loam
11 to 17 inches—yellowish brown clay
17 to 60 inches—hardpan
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: Very low

Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Hurryback Soil

Position on landscape: North-facing side slopes
Slope range: 8 to 40 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—44 to 45 degrees F
Frost-free period—80 to 95 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 6 inches—dark brown loam
6 to 24 inches—brown clay loam
24 to 35 inches—dark yellowish brown gravelly clay loam
35 to 60 inches—yellowish brown clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Salisbury soils that are on mounds and support low sagebrush and Idaho fescue—10 percent or less
- Soils that are similar to Blackleg soils but are warmer, have less clay, are on summits and side slopes, and support low sagebrush and Idaho fescue—5 percent or less
- Tucker soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Soils that are similar to Haw soils but have more rock fragments, do not contain lime, and support basin big sagebrush and bluebunch wheatgrass—5 percent or less
- Soils that are similar to McKeeth soils but are somewhat poorly drained, are in small depressions, and support sedge and bluegrass—small areas

Land Capability Classification

Bieber soil: VIe, nonirrigated
Hurryback soil: IVe, nonirrigated

17—Blackleg-Northcastle complex, 1 to 12 percent slopes

Setting

Major landform: Fan terraces
Elevation: 5,000 to 5,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Blackleg gravelly loam and similar inclusions—70 percent
Northcastle loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Blackleg Soil

Position on landscape: Summits
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—grayish brown gravelly loam
8 to 13 inches—brown gravelly clay loam
13 to 22 inches—light yellowish brown very gravelly clay
22 to 29 inches—light brown very gravelly clay loam
29 to 42 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Northcastle Soil

Position on landscape: Mounds
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 95 days
Vegetal climax association: Basin big sagebrush,

Idaho fescue, and bluebunch wheatgrass with common western juniper
Typical profile:
0 to 16 inches—dark grayish brown loam
16 to 34 inches—yellowish brown gravelly clay loam
34 to 60 inches—hardpan
60 to 72 inches—very pale brown gravelly sandy loam
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

• Soils that are similar to Scism soils but are cooler and more moist, are on side slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
• Threek soils that are on upper side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less

Land Capability Classification

Blackleg soil: IVe, nonirrigated
Northcastle soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

18—Blackleg-Threek association, 3 to 40 percent slopes

Setting

Major landform: Outwash terraces
Elevation: 5,300 to 6,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Blackleg stony loam and similar inclusions—40 percent
Threek stony loam and similar inclusions—35 percent
Contrasting inclusions—25 percent

Blackleg Soil

Position on landscape: North-facing side slopes
Slope range: 3 to 30 percent
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 6 inches—brown stony loam
6 to 13 inches—brown loam
13 to 23 inches—brown cobbly clay loam
23 to 29 inches—yellowish brown very cobbly clay
29 to 36 inches—yellowish brown cobbly clay
36 to 50 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Threek Soil

Position on landscape: South-facing side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—40 to 44 degrees F
Frost-free period—65 to 85 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 4 inches—dark brown stony loam
4 to 12 inches—brown very gravelly clay loam
12 to 24 inches—brown extremely gravelly clay
24 to 34 inches—brown fine sandy loam
34 to 60 inches—brown loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

• Soils that are similar to Coser soils but are very deep; are on north-facing concave side slopes; and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
• Soils that are similar to Pixley soils but are drier, are on ridges and shoulder slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
• Blackleg soils that are on summits and upper side

slopes and support low sagebrush and Idaho fescue—5 percent or less
• Rock outcrop—small areas

Land Capability Classification

Blackleg soil: IVe, nonirrigated
Threek soil: IVe, nonirrigated

19—Bluecreek sandy loam, 1 to 10 percent slopes

Setting

Major landform: Fan terraces
Elevation: 5,300 to 5,400 feet
Major uses: Rangeland and wildlife habitat

Composition

Bluecreek sandy loam and similar inclusions—80 percent
Contrasting inclusions—20 percent

Bluecreek Soil

Position on landscape: Summits
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—44 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 9 inches—light brownish gray and brown sandy loam
9 to 14 inches—yellowish brown sandy clay loam
14 to 24 inches—yellowish brown sandy clay
24 to 35 inches—hardpan
35 to 60 inches—very pale brown gravelly loamy sand
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Contrasting Inclusions

• Yatahoney soils that are on fan terraces and support alkali sagebrush and Idaho fescue—10 percent or less
• Nicholflat soils that are on concave alluvial flats and support low sagebrush and Idaho fescue—10 percent or less
• Paynecreek soils that are on lower stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

IVe, nonirrigated

20—Booford-Barkley complex, 8 to 45 percent slopes

Setting

Major landform: Terrace escarpments
Elevation: 5,200 to 6,200 feet
Major uses: Rangeland and wildlife habitat

Composition

Booford loam and similar inclusions—50 percent
Barkley stony loam and similar inclusions—35 percent
Contrasting inclusions—15 percent

Booford Soil

Position on landscape: Side slopes
Slope range: 10 to 45 percent
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—40 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 10 inches—grayish brown loam
10 to 14 inches—brown gravelly clay loam
14 to 25 inches—pale brown clay
25 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Barkley Soil

Position on landscape: Upper side slopes
Slope range: 8 to 30 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:

2 inches to 0—undecomposed organic mat
0 to 7 inches—brown stony loam
7 to 14 inches—yellowish brown clay loam
14 to 26 inches—light yellowish brown gravelly sandy clay loam
26 to 38 inches—yellowish brown gravelly sandy loam
38 to 48 inches—pink weakly cemented very gravelly sandy loam
48 to 60 inches—pink gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Coser soils but are shallow, are on shoulder slopes, and support low sagebrush and Idaho fescue—10 percent or less
- Threek soils that are on upper side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less
- Rock outcrop—small areas
- Hades soils that are on upper side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—small areas

Land Capability Classification

Booford soil: VIe, nonirrigated
Barkley soil: IVe, nonirrigated
Map unit (complex): VIe, nonirrigated

21—Booford-Blackleg association, 2 to 12 percent slopes

Setting

Major landform: Fan terraces
Elevation: 5,700 to 6,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Booford loam and similar inclusions—55 percent
Blackleg gravelly loam and similar inclusions—30 percent
Contrasting inclusions—15 percent

Booford Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 10 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—41 to 43 degrees F
Frost-free period—70 to 80 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 10 inches—grayish brown loam
10 to 14 inches—brown gravelly clay loam
14 to 25 inches—pale brown clay
25 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Blackleg Soil

Position on landscape: Knolls and shoulder slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—40 to 43 degrees F
Frost-free period—65 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—grayish brown gravelly loam
8 to 13 inches—brown gravelly clay loam
13 to 22 inches—light yellowish brown very gravelly clay
22 to 29 inches—light brown very gravelly clay loam
29 to 42 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Barkley soils that are on steeper side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Paynecreek soils that are on stream terraces and support basin big sagebrush and Idaho fescue—5 percent or less

Land Capability Classification

Booford soil: IVe, nonirrigated
Blackleg soil: IVe, nonirrigated

22—Boulder Lake-Yatahoney association, 0 to 10 percent slopes

Setting

Major landform: Basin floors
Elevation: 5,300 to 6,150 feet
Major uses: Wildlife habitat and rangeland

Composition

Boulder Lake clay and similar inclusions—70 percent
Yatahoney silt loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Boulder Lake Soil

Position on landscape: Alluvial flats
Slope range: 0 to 2 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Silver sagebrush and bluegrass
Typical profile:
0 to 10 inches—grayish brown clay
10 to 45 inches—light brownish gray and pale brown clay
45 to 60 inches—very pale brown silty clay loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 0 to 18 inches
Drainage class: Very poorly drained
Runoff: Ponded
Permeability: Very slow
Available water capacity: Very high
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Yatahoney Soil

Position on landscape: Toe slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Alkali sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—light yellowish brown silt loam
3 to 9 inches—light yellowish brown loam
9 to 22 inches—yellowish brown clay loam
22 to 26 inches—yellowish brown clay
26 to 30 inches—hardpan
30 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Nicholflat soils but are moderately deep to bedrock, are on toe slopes, and support low sagebrush and Idaho fescue—5 percent or less
- Soils that are similar to Coser soils but are deep, are on mounds, and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Soils that are similar to Boulder Lake soils but are frequently flooded for very long periods and are in intermittent lakebeds—small areas

Land Capability Classification

Boulder Lake soil: VIw, nonirrigated
Yatahoney soil: IVe, nonirrigated

23—Brace-Freshwater complex, 1 to 15 percent slopes

Setting

Major landform: Structural benches
Elevation: 5,300 to 6,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Brace loam and similar inclusions—50 percent
Freshwater stony loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Brace Soil

Position on landscape: Summits and concave side slopes
Slope range: 1 to 12 percent
Climatic data (average annual):
Precipitation—11 to 13 inches

Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—light brownish gray loam
6 to 19 inches—pale brown gravelly clay loam
19 to 23 inches—pale brown cobbly clay loam
23 to 26 inches—hardpan
26 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Freshwater Soil

Position on landscape: Ridges and south-facing side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 5 inches—pale brown stony loam
5 to 13 inches—pale brown clay loam
13 to 18 inches—light yellowish brown clay loam
18 to 22 inches—hardpan
22 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Roca soils but have less rock fragments, are on north-facing side slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Rock outcrop—5 percent or less
- Alzola soils that are on side slopes and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less

Land Capability Classification

Brace soil: VIe, nonirrigated
Freshwater soil: VIs, nonirrigated
Map unit (complex): VIe, nonirrigated

24—Briabbit-Murphill complex, 2 to 35 percent slopes

Setting

Major landforms: Foothills and structural benches
Elevation: 2,300 to 4,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Briabbit fine sandy loam and similar inclusions—50 percent
Murphill very gravelly fine sandy loam and similar inclusions—25 percent
Contrasting inclusions—25 percent

Briabbit Soil

Position on landscape: Side slopes
Slope range: 3 to 15 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 53 degrees F
Frost-free period—105 to 150 days
Vegetal climax association: Wyoming big sagebrush and Indian ricegrass
Typical profile:
0 to 10 inches—brown fine sandy loam
10 to 22 inches—pale brown cobbly sandy loam
22 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately rapid
Available water capacity: Low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: High

Murphill Soil

Position on landscape: Summits, shoulder slopes, and south-facing side slopes
Slope range: 2 to 35 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 53 degrees F
Frost-free period—105 to 150 days
Vegetal climax association: Wyoming big sagebrush and Indian ricegrass

Typical profile:
0 to 3 inches—light yellowish brown very gravelly fine sandy loam
3 to 9 inches—yellowish brown fine sandy loam
9 to 14 inches—yellowish brown extremely gravelly loamy sand
14 inches—weathered bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately rapid
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Rubbleland that commonly has purple sage rooted in fractures—10 percent or less
- Escalante soils that are on fan terraces and support fourwing saltbush and Indian ricegrass—10 percent or less
- Rock outcrop—5 percent or less
- Ratsnest soils that are on side slopes and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—small areas
- Hardtrigger soils that are on side slopes and toe slopes and support Wyoming big sagebrush and Indian ricegrass—small areas

Land Capability Classification

Briabbit soil: VIe, nonirrigated
Murphill soil: VIs, nonirrigated
Map unit (complex): VIe, nonirrigated

25—Bruncan very stony silt loam, 2 to 15 percent slopes

Setting

Major landform: Buttes
Elevation: 2,700 to 3,850 feet
Major uses: Rangeland and wildlife habitat

Composition

Bruncan very stony silt loam and similar inclusions—75 percent
Contrasting inclusions—25 percent

Bruncan Soil

Position on landscape: Summits
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—50 to 52 degrees F
Frost-free period—120 to 145 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 4 inches—pale brown very stony silt loam
4 to 8 inches—pale brown loam
8 to 16 inches—pale brown gravelly clay loam
16 to 20 inches—very pale brown very cobbly loam
20 to 26 inches—hardpan
26 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Escalante soils but are moderately deep, are on summits, and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—10 percent or less
- Rock outcrop—5 percent or less
- Soils that are similar to Buncelvoir soils but are moderately deep, are on flats, and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Soils that are similar to Mackey soils but are shallow, are on rims, and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less

Land Capability Classification

VIs, nonirrigated

26—Bruncan-Arbidge complex, 1 to 8 percent slopes

Setting

Major landform: Tablelands
Elevation: 5,100 to 5,400 feet
Major uses: Rangeland and wildlife habitat

Composition

Bruncan gravelly silt loam and similar inclusions—50 percent
Arbidge silt loam and similar inclusions—25 percent
Contrasting inclusions—25 percent

Bruncan Soil

Position on landscape: Summits
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—85 to 100 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—pale brown gravelly silt loam
2 to 5 inches—pale brown silt loam
5 to 8 inches—very pale brown clay loam
8 to 14 inches—very pale brown very cobbly silt loam
14 to 16 inches—hardpan
16 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Arbidge Soil

Position on landscape: Summits
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 47 degrees F
Frost-free period—85 to 100 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—grayish brown silt loam
3 to 20 inches—brown and pale brown clay loam
20 to 30 inches—pale brown gravelly sandy loam
30 to 38 inches—hardpan
38 to 60 inches—very pale brown very gravelly loamy sand
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Hunnton soils that are on alluvial flats and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Slickspots—10 percent or less
- Owsel soils that are on summits and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Laped soils that are on summits and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—small areas

Land Capability Classification

Bruncan soil: VIe, nonirrigated
Arbidge soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

27—Bruncan-Hardtrigger-Buncelvoir complex, 1 to 8 percent slopes

Setting

Major landform: Calderas
Elevation: 4,800 to 5,400 feet
Major uses: Rangeland and wildlife habitat

Composition

Bruncan stony loam and similar inclusions—50 percent
Hardtrigger gravelly loam and similar inclusions—20 percent
Buncelvoir loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Bruncan Soil

Position on landscape: Ridges and convex slopes
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 47 degrees F
Frost-free period—85 to 105 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—pale brown stony loam
3 to 5 inches—pale brown loam
5 to 11 inches—very pale brown clay loam
11 to 14 inches—very pale brown very cobbly loam

14 to 20 inches—hardpan
20 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Hardtrigger Soil

Position on landscape: Smooth and convex slopes
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown gravelly loam
4 to 8 inches—very pale brown gravelly loam
8 to 15 inches—very pale brown clay loam
15 to 20 inches—very pale brown gravelly clay loam
20 to 28 inches—white gravelly sandy loam
28 to 60 inches—white very gravelly loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Buncelvoir Soil

Position on landscape: Swales and concave slopes
Slope range: 1 to 6 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 7 inches—light gray loam
7 to 15 inches—light yellowish brown silty clay loam
15 to 19 inches—very pale brown clay loam
19 to 60 inches—very pale brown gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Chilcott soils that are on fan terraces and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Owsel soils that are on north-facing side slopes and in swales and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Babbington soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Bruncan soil: VIe, nonirrigated
Hardtrigger soil: VIe, nonirrigated
Buncelvoir soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

28—Bruncan-Jenor-Troughs association, 1 to 10 percent slopes

Setting

Major landform: Calderas
Elevation: 4,800 to 5,100 feet
Major uses: Rangeland and wildlife habitat

Composition

Bruncan very stony loam and similar inclusions—35 percent
Jenor very fine sandy loam and similar inclusions—25 percent
Troughs very stony loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Bruncan Soil

Position on landscape: Knolls and convex slopes
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 105 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 3 inches—very pale brown very stony loam

3 to 11 inches—very pale brown gravelly clay loam
11 to 14 inches—very pale brown very cobbly loam
14 to 20 inches—hardpan
20 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Jenor Soil

Position on landscape: Concave slopes and swales
Slope range: 1 to 4 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—95 to 110 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Typical profile:
0 to 5 inches—very pale brown very fine sandy loam
5 to 21 inches—very pale brown fine sandy loam
21 to 60 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow
Permeability: Moderately rapid
Available water capacity: Low
Hazard of erosion by water: Moderate
Hazard of erosion by wind: High
Sodicity: Moderate

Troughs Soil

Position on landscape: Smooth and convex slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—very pale brown very stony loam
2 to 8 inches—pale brown cobbly clay loam
8 to 15 inches—very pale brown extremely cobbly loam
15 to 30 inches—hardpan
30 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Owsel soils that are on concave slopes and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Chilcott soils that are on stream terraces and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Slickspots—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Bruncan soil: VIs, nonirrigated
Jenor soil: VIIe, nonirrigated
Troughs soil: VIs, nonirrigated

29—Bruncan-Laped complex, 1 to 8 percent slopes

Setting

Major landform: Tablelands
Elevation: 5,100 to 5,350 feet
Major uses: Rangeland and wildlife habitat

Composition

Bruncan gravelly silt loam and similar inclusions—55 percent
Laped stony silt loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Bruncan Soil

Position on landscape: Summits
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—pale brown gravelly silt loam
2 to 5 inches—pale brown silt loam
5 to 8 inches—very pale brown clay loam

8 to 14 inches—very pale brown very cobbly silt loam
14 to 16 inches—hardpan
16 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Laped Soil

Position on landscape: Knolls and rims
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Typical profile:
0 to 3 inches—light gray stony silt loam
3 to 8 inches—very pale brown gravelly silt loam
8 to 16 inches—light yellowish brown gravelly silty clay loam
16 to 19 inches—very pale brown gravelly loam
19 to 22 inches—hardpan
22 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Slickspots—10 percent or less
- Arbidge soils that are on summits and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Loomis soils that are in swales and support low sagebrush and bluebunch wheatgrass—5 percent or less
- Playas—small areas
- Rock outcrop—small areas

Land Capability Classification

Bruncan soil: VIe, nonirrigated
Laped soil: VIIe, nonirrigated
Map unit (complex): VIe, nonirrigated

30—Bruncan-Minveno complex, 2 to 15 percent slopes

Setting

Major landform: Structural benches
Elevation: 4,200 to 5,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Bruncan very stony silt loam and similar inclusions—40 percent
Minveno stony silt loam and similar inclusions—35 percent
Contrasting inclusions—25 percent

Bruncan Soil

Position on landscape: Summits
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 49 degrees F
Frost-free period—95 to 115 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 4 inches—pale brown very stony silt loam
4 to 8 inches—pale brown loam
8 to 16 inches—pale brown gravelly clay loam
16 to 20 inches—very pale brown very cobbly loam
20 to 26 inches—hardpan
26 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Minveno Soil

Position on landscape: Shoulder slopes and side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—46 to 49 degrees F

Frost-free period—95 to 120 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 3 inches—pale brown stony silt loam
3 to 12 inches—light yellowish brown silt loam
12 to 19 inches—very pale brown loam
19 to 23 inches—hardpan
23 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: Low
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Troughs soils that are on side slopes and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Scism soils that are on north-facing side slopes and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Chilcott soils that are on summits and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Slickspots—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Bruncan soil: VIs, nonirrigated
Minveno soil: VIe, nonirrigated
Map unit (complex): VIs, nonirrigated

31—Bruncan-Snowmore silt loams, 1 to 8 percent slopes

Setting

Major landform: Calderas
Elevation: 4,900 to 5,200 feet
Major uses: Rangeland and wildlife habitat

Composition

Bruncan silt loam and similar inclusions—40 percent
Snowmore silt loam and similar inclusions—35 percent
Contrasting inclusions—25 percent

Bruncan Soil

Position on landscape: Smooth and convex slopes
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—pale brown silt loam
6 to 15 inches—light yellowish brown silt loam
15 to 19 inches—very pale brown very cobbly silt loam
19 to 24 inches—hardpan
24 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Snowmore Soil

Position on landscape: Smooth slopes
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown silt loam
4 to 13 inches—light yellowish brown and very pale brown clay loam
13 to 23 inches—very pale brown cobbly loam
23 to 28 inches—hardpan
28 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Chilcott soils that are on concave slopes and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less

• Owsel soils that are in swales and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
• Bedstead soils that are in swales and draws and support low sagebrush and bluebunch wheatgrass—5 percent or less
• Slickspots—5 percent or less

Land Capability Classification

Bruncan soil: VIe, nonirrigated
Snowmore soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

32—Bruncan-Troughs very stony loams, 1 to 10 percent slopes

Setting

Major landform: Calderas
Elevation: 4,700 to 5,300 feet
Major uses: Rangeland and wildlife habitat

Composition

Bruncan very stony loam and similar inclusions—45 percent
Troughs very stony loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Bruncan Soil

Position on landscape: Knolls, ridges, and rims
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 105 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 3 inches—very pale brown very stony loam
3 to 11 inches—very pale brown gravelly clay loam
11 to 14 inches—very pale brown very cobbly loam
14 to 20 inches—hardpan
20 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Troughs Soil

Position on landscape: Smooth slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—very pale brown very stony loam
2 to 8 inches—pale brown cobbly clay loam
8 to 15 inches—very pale brown extremely cobbly loam
15 to 30 inches—hardpan
30 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Contrasting Inclusions

• Snowmore soils that are in swales and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
• Jenor soils that are on mounds and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—10 percent or less
• Slickspots—5 percent or less
• Rock outcrop—small areas

Land Capability Classification

Bruncan soil: VIs, nonirrigated
Troughs soil: VIs, nonirrigated
Map unit (complex): VIs, nonirrigated

33—Bruncan-Troughs-Midraw complex, 0 to 5 percent slopes

Setting

Major landform: Structural benches
Elevation: 3,800 to 4,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Bruncan extremely stony silt loam and similar inclusions— 40 percent

Troughs extremely stony silt loam and similar inclusions— 25 percent
Midraw very stony silt loam and similar inclusions—25 percent
Contrasting inclusions—10 percent

Bruncan Soil

Position on landscape: Summits
Slope range: 0 to 5 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—47 to 50 degrees F
Frost-free period—95 to 120 days
Vegetal climax association: Black sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—pale brown extremely stony silt loam
2 to 4 inches—light brownish gray loam
4 to 11 inches—light brownish gray clay loam
11 to 18 inches—very pale brown very gravelly loam
18 to 20 inches—hardpan
20 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Troughs Soil

Position on landscape: Summits
Slope range: 0 to 5 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—47 to 50 degrees F
Frost-free period—95 to 120 days
Vegetal climax association: Black sagebrush and Thurber needlegrass
Typical profile:
0 to 3 inches—pale brown extremely stony silt loam
3 to 7 inches—pale brown cobbly clay loam
7 to 13 inches—very pale brown extremely cobbly loam
13 to 20 inches—hardpan
20 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Midraw Soil

Position on landscape: Summits
Slope range: 0 to 5 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—47 to 50 degrees F
Frost-free period—95 to 120 days
Vegetal climax association: Black sagebrush and Thurber needlegrass
Typical profile:
0 to 3 inches—light gray very stony silt loam
3 to 6 inches—pale brown gravelly silty clay loam
6 to 15 inches—very pale brown cobbly clay
15 to 20 inches—hardpan
20 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Hardtrigger soils but have more silt, are on summits, and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Soils that are similar to McKeeth soils but are more moist, are on summits, and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less

Land Capability Classification

Bruncan soil: VIIs, nonirrigated
Troughs soil: VIIs, nonirrigated
Midraw soil: VIs, nonirrigated
Map unit (complex): VIIs, nonirrigated

34—Brunzell-Doodlelink-Threek gravelly loams, 2 to 45 percent slopes

Setting

Major landform: Outwash terraces
Elevation: 5,000 to 5,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Brunzell gravelly loam and similar inclusions—45 percent
Doodlelink gravelly loam and similar inclusions—25 percent
Threek gravelly loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Brunzell Soil

Position on landscape: Summits and south-facing side slopes
Slope range: 3 to 30 percent
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 95 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue and some western juniper
Typical profile:
0 to 9 inches—brown and grayish brown gravelly loam
9 to 15 inches—dark yellowish brown very gravelly clay loam
15 to 25 inches—yellowish brown very gravelly sandy clay loam
25 to 40 inches—white very cobbly sandy loam
40 to 60 inches—very pale brown extremely cobbly sandy clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Doodlelink Soil

Position on landscape: North-facing side slopes
Slope range: 5 to 45 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—42 to 44 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue and some western juniper
Typical profile:
0 to 6 inches—dark grayish brown gravelly loam
6 to 25 inches—dark brown and grayish brown very gravelly loam
25 to 40 inches—pale brown very gravelly clay loam
40 to 60 inches—light yellowish brown extremely gravelly clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Threek Soil

Position on landscape: North-facing side slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 95 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue and some western juniper
Typical profile:
0 to 7 inches—grayish brown and dark grayish brown gravelly loam
7 to 13 inches—brown very gravelly clay loam
13 to 31 inches—light yellowish brown very gravelly clay
31 to 60 inches—brownish yellow weakly cemented extremely gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

• Nagitsy soils that are on upper, north-facing side slopes and support mountain big sagebrush, mountain snowberry, and mountain brome—10 percent or less
• Parkay soils that are on north-facing shoulder slopes and support snowbrush ceanothus—5 percent or less
• Blackleg soils that are on summits and support low sagebrush and Idaho fescue—small areas
• Soils that are similar to Saturday soils but are very deep, are on shoulder slopes, and support curlleaf

mountainmahogany and mountain snowberry—small areas

Land Capability Classification

Brunzell soil: IVe, nonirrigated
Doodlelink soil: VIe, nonirrigated
Threek soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

35—Catchell-Longcreek complex, 3 to 25 percent slopes

Setting

Major landforms: Structural benches and foothills
Elevation: 3,800 to 4,900 feet
Major uses: Rangeland and wildlife habitat

Composition

Catchell loam and similar inclusions—50 percent
Longcreek gravelly loam and similar inclusions—25 percent
Contrasting inclusions—25 percent

Catchell Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 25 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—46 to 50 degrees F
Frost-free period—95 to 120 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—light brownish gray loam
4 to 8 inches—grayish brown gravelly loam
8 to 15 inches—brown clay
15 to 18 inches—reddish yellow clay loam
18 to 25 inches—very pale brown gravelly loam
25 to 26 inches—hardpan
26 inches—bedrock
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 2 to 8 inches
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Very slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Longcreek Soil

Position on landscape: Shoulder slopes and side slopes
Slope range: 3 to 25 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—46 to 50 degrees F
Frost-free period—95 to 120 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—grayish brown gravelly loam
4 to 9 inches—brown very cobbly clay loam
9 to 17 inches—light brown and pink very cobbly clay loam
17 inches—bedrock
Characteristics outside range for series: Elevation and frost-free period (differences do not affect use and management)
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Plush soils that are on south-facing side slopes and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Alibi soils that are in saddles and on north-facing side slopes and support low sagebrush and Idaho fescue—5 percent or less
- Rubbleland—5 percent or less
- Rock outcrop—5 percent or less
- Goose Creek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Catchell soil: VIs, nonirrigated
Longcreek soil: VIs, nonirrigated
Map unit (complex): VIs, nonirrigated

36—Chayson-Merlin complex, 2 to 12 percent slopes

Setting

Major landform: Plug domes
Elevation: 5,500 to 5,900 feet
Major uses: Rangeland and wildlife habitat

Composition

Chayson silt loam and similar inclusions—60 percent
Merlin very stony loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Chayson Soil

Position on landscape: Summits and north-facing side slopes
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—42 to 44 degrees F
Frost-free period—70 to 85 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 4 inches—dark grayish brown silt loam
4 to 27 inches—brown and dark brown clay loam
27 to 37 inches—pale brown gravelly loam
37 to 45 inches—hardpan
45 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Merlin Soil

Position on landscape: Swales and concave side slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 44 degrees F
Frost-free period—50 to 85 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—grayish brown very stony loam
4 to 9 inches—brown clay loam
9 to 19 inches—yellowish brown clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Dishpan soils but are more moist, have more clay, are on foot slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
- Rock outcrop—5 percent or less
- Itca soils that are in swales and support fussy sagebrush and Idaho fescue—5 percent or less
- Budlewis soils that are on side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less

Land Capability Classification

Chayson soil: IVe, nonirrigated
Merlin soil: VIs, nonirrigated
Map unit (complex): IVs, nonirrigated

37—Chilcott-Igert gravelly loams, 2 to 20 percent slopes

Setting

Major landform: Fan terraces
Elevation: 3,100 to 4,450 feet
Major uses: Rangeland and wildlife habitat

Composition

Chilcott gravelly loam and similar inclusions—70 percent
Igert gravelly loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Chilcott Soil

Position on landscape: Summits
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 51 degrees F
Frost-free period—105 to 130 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 5 inches—pale brown gravelly loam

5 to 12 inches—light yellowish brown gravelly clay
12 to 21 inches—very pale brown very gravelly clay loam
21 to 60 inches—hardpan
Characteristics outside range for series: Percentage of rock fragments in the lower part of the subsoil (difference does not affect use and management)
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 3 to 10 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Igert Soil

Position on landscape: Side slopes
Slope range: 3 to 20 percent
Climatic data (average annual):
Precipitation—10 to 11 inches
Air temperature—48 to 50 degrees F
Frost-free period—105 to 130 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 12 inches—pale brown gravelly loam
12 to 18 inches—yellowish brown gravelly loam
18 to 23 inches—light yellowish brown gravelly loam
23 to 39 inches—very pale brown extremely gravelly loam
39 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Gariper soils that are on summits and side slopes and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Longcreek soils that are on shoulder slopes and support low sagebrush and bluebunch wheatgrass—5 percent or less
- Ratsnest soils that are on foot slopes and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—small areas

Land Capability Classification

Chilcott soil: VIs, nonirrigated
Igert soil: VIe, nonirrigated
Map unit (complex): VIs, nonirrigated

38—Chilcott-Lamonta complex, 2 to 12 percent slopes

Setting

Major landform: Pediments
Elevation: 3,900 to 4,900 feet
Major uses: Rangeland and wildlife habitat

Composition

Chilcott loam and similar inclusions—50 percent
Lamonta gravelly clay loam and similar inclusions—35 percent
Contrasting inclusions—15 percent

Chilcott Soil

Position on landscape: Summits
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—47 to 50 degrees F
Frost-free period—100 to 120 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown loam
4 to 7 inches—light gray very fine sandy loam
7 to 11 inches—yellowish brown clay
11 to 17 inches—yellowish brown clay loam
17 to 31 inches—white and light gray silt loam
31 to 40 inches—hardpan
40 to 60 inches—pale brown sandy loam
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 3 to 10 inches
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Lamonta Soil

Position on landscape: Summits
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—11 to 13 inches

Air temperature—47 to 50 degrees F
Frost-free period—95 to 120 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 7 inches—dark grayish brown gravelly clay loam
7 to 18 inches—brown clay
18 to 23 inches—brown clay loam
23 to 28 inches—hardpan
28 to 60 inches—light yellowish brown very cobbly loamy sand
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 6 to 10 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Gariper soils but have a dark-colored surface layer, are on summits, and support low sagebrush and bluebunch wheatgrass—5 percent or less
- Soils that are similar to Haw soils but do not contain lime, are on fan terraces, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—5 percent or less
- Soils that are similar to Haw soils but have more clay, are on mounds, and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Rock outcrop—small areas
- Soils that are similar to Dougal soils but have a dark-colored surface layer, are on knolls and shoulder slopes, and support low sagebrush and bluegrass—small areas

Land Capability Classification

Chilcott soil: VIe, nonirrigated
Lamonta soil: VIs, nonirrigated
Map unit (complex): VIe, nonirrigated

39—Chinabutte-Alibi very stony loams, 3 to 45 percent slopes

Setting

Major landform: Foothills
Elevation: 3,700 to 5,250 feet
Major uses: Rangeland and wildlife habitat

Composition

Chinabutte very stony loam and similar inclusions—50 percent
Alibi very stony loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Chinabutte Soil

Position on landscape: Summits and convex side slopes
Slope range: 3 to 45 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 125 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—brown very stony loam
5 to 8 inches—brown very gravelly clay loam
8 to 15 inches—brown extremely cobbly clay loam
15 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Alibi Soil

Position on landscape: Toe slopes and north-facing side slopes
Slope range: 3 to 35 percent
Climatic data (average annual):
Precipitation—12 to 15 inches

Air temperature—45 to 50 degrees F
Frost-free period—90 to 125 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—brown very stony loam
4 to 7 inches—brown gravelly loam
7 to 17 inches—yellowish brown and brown gravelly clay
17 to 23 inches—pink very gravelly sandy loam
23 inches—bedrock
Depth class: Moderately deep
Restriction to rooting depth: Abrupt textural change at a depth of 7 to 10 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Rubbleland—10 percent or less
- Soils that are similar to Paynecreek soils but are warmer, are on north-facing side slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
- Hardtrigger soils that are on south-facing side slopes and support Wyoming big sagebrush and Thurber needlegrass—small areas
- Rock outcrop—small areas

Land Capability Classification

Chinabutte soil: VIs, nonirrigated
Alibi soil: VIs, nonirrigated
Map unit (complex): VIs, nonirrigated

40—Cleavage-Avtable-Monasterio complex, 1 to 35 percent slopes

Setting

Major landform: Foothills
Elevation: 5,300 to 6,400 feet
Major uses: Rangeland and wildlife habitat

Composition

Cleavage stony loam and similar inclusions—35 percent
Avtable stony loam and similar inclusions—30 percent
Monasterio stony sandy loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Cleavage Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 35 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—grayish brown stony loam
3 to 8 inches—brown very gravelly loam
8 to 18 inches—yellowish brown very gravelly clay loam
18 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Avtable Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—yellowish brown stony loam
4 to 10 inches—yellowish brown gravelly loam
10 to 19 inches—light yellowish brown extremely stony clay loam
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Monasterio Soil

Position on landscape: Side slopes and toe slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—39 to 44 degrees F
Frost-free period—60 to 85 days

Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown stony sandy loam
8 to 11 inches—brown gravelly sandy loam
11 to 17 inches—dark yellowish brown very gravelly sandy loam
17 to 25 inches—brown very cobbly sandy clay loam
25 to 28 inches—brown extremely cobbly sandy clay loam
28 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderate
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Sharesnout soils that are on side slopes and support low sagebrush and Idaho fescue—5 percent or less
- Nipintuck soils that are on ridges and support low sagebrush and bluegrass and occasional western juniper—5 percent or less
- Rock outcrop that commonly has western juniper rooted in fractures—5 percent or less
- Parkay soils that are on north-facing, concave slopes and support snowbank aspen—small areas

Land Capability Classification

Cleavage soil: VIs, nonirrigated
Avtable soil: VIs, nonirrigated
Monasterio soil: IVe, nonirrigated
Map unit (complex): VIs, nonirrigated

41—Cleavage-Rubbleland complex, 2 to 35 percent slopes

Setting

Major landform: Foothills
Elevation: 5,900 to 6,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Cleavage stony loam and similar inclusions—65 percent
Rubbleland—15 percent
Contrasting inclusions—20 percent

Cleavage Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 35 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—38 to 43 degrees F
Frost-free period—70 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—grayish brown stony loam
3 to 8 inches—brown very gravelly loam
8 to 18 inches—yellowish brown very gravelly clay loam
18 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Rubbleland

Position on landscape: Swales and intermounds
Description of areas: Barren garlands and stripes of loose, angular welded rhyolitic tuff fragments that formed mainly under periglacial conditions
Runoff: Rapid

Contrasting Inclusions

- Itca soils that are on summits and support low sagebrush and Idaho fescue—10 percent or less
- Vitale soils that are on mounds and support low sagebrush and Idaho fescue—10 percent or less
- Rock outcrop—small areas

Land Capability Classification

Cleavage soil: VIs, nonirrigated
Rubbleland: VIII
Map unit (complex): VIs, nonirrigated

42—Cleavage-Snell complex, 5 to 50 percent slopes

Setting

Major landforms: Foothills and mountains
Elevation: 4,800 to 6,750 feet
Major uses: Rangeland and wildlife habitat

Composition

Cleavage very stony loam and similar inclusions—50 percent
Snell stony loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Cleavage Soil

Position on landscape: Summits and side slopes
Slope range: 5 to 50 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—38 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 9 inches—brown very stony loam
9 to 16 inches—brown very gravelly clay loam
16 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Snell Soil

Position on landscape: Side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—40 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 10 inches—dark grayish brown stony loam
10 to 22 inches—dark grayish brown very gravelly clay loam
22 to 39 inches—brown very cobbly clay loam
39 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Mulshoe soils but have a thicker dark-colored surface layer, are on north-facing side slopes, and support mountain big sagebrush and Idaho fescue—10 percent or less
- Dehana soils that are on north-facing, concave side slopes and support snowbank aspen—5 percent or less
- Rock outcrop that has curlleaf mountainmahogany rooted in some fractures—5 percent or less
- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Cleavage soil: VIs, nonirrigated
Snell soil: VIe, nonirrigated
Map unit (complex): VIs, nonirrigated

43—Cottle-Willhill complex, 3 to 25 percent slopes

Setting

Major landform: Foothills
Elevation: 3,300 to 4,900 feet
Major uses: Rangeland and wildlife habitat

Composition

Cottle stony fine sandy loam and similar inclusions—60 percent
Willhill stony loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Cottle Soil

Position on landscape: Summits and side slopes
Slope range: 4 to 25 percent
Climatic data (average annual):
Precipitation—9 to 12 inches
Air temperature—47 to 51 degrees F
Frost-free period—95 to 130 days
Vegetal climax association: Black sagebrush and Thurber needlegrass
Typical profile:
0 to 3 inches—very pale brown stony fine sandy loam

3 to 10 inches—pale brown and very pale brown very gravelly loam
10 to 16 inches—very pale brown extremely cobbly clay loam
16 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Willhill Soil

Position on landscape: Side slopes
Slope range: 3 to 25 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—47 to 51 degrees F
Frost-free period—95 to 130 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—pale brown stony loam
3 to 7 inches—light yellowish brown gravelly clay loam
7 to 10 inches—very pale brown very gravelly clay loam
10 to 15 inches—very pale brown extremely gravelly loam
15 to 22 inches—white extremely cobbly loam
22 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Troughs soils that are on foot slopes and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- McKeeth soils that are on fan terraces and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—5 percent or less
- Cottle soils that are on similar landscape positions but support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Briabbit soils that are in draws and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Cottle soil: VIe, nonirrigated
Willhill soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

44—Dehana-Nagitsy association, 2 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 6,200 to 6,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Dehana gravelly loam and similar inclusions—45 percent
Nagitsy gravelly loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Dehana Soil

Position on landscape: Swales and toe slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—36 to 38 degrees F
Frost-free period—40 to 50 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 7 inches—dark brown gravelly loam
7 to 20 inches—dark brown gravelly loam
20 to 42 inches—brown gravelly loam
42 to 60 inches—light yellowish brown gravelly clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very high
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Nagitsy Soil

Position on landscape: North-facing side slopes
Slope range: 10 to 50 percent

Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—35 to 37 degrees F
Frost-free period—40 to 50 days
Vegetal climax association: Mountain big sagebrush, mountain snowberry, and mountain brome
Typical profile:
2 inches to 0—partially decomposed leaves and twigs
0 to 9 inches—very dark grayish brown gravelly loam
9 to 17 inches—dark brown gravelly loam
17 to 22 inches—dark yellowish brown very gravelly loam
22 to 35 inches—yellowish brown extremely gravelly loam
35 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Doodlelink soils but have a thinner surface layer, are on ridges, and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Nagitsy soils that are on north-facing side slopes and support snowbrush ceanothus—5 percent or less
- Rock outcrop—5 percent or less
- Hat soils that are on shoulder slopes and support curlleaf mountainmahogany and mountain snowberry—5 percent or less
- Wareagle soils that are on north-facing side slopes and support Douglas fir and mountain snowberry—small areas
- Eroded Nagitsy soils that are on upper north-facing side slopes, support forbs, and commonly are covered by snowdrifts—small areas
- Povey soils that are on concave slopes and support quaking aspen—small areas

Land Capability Classification

Dehana soil: VIe, nonirrigated
Nagitsy soil: VIe, nonirrigated

45—Deunah-Yatahoney-Lostvalley complex, 1 to 10 percent slopes

Setting

Major landform: Tablelands
Elevation: 5,300 to 6,150 feet
Major uses: Rangeland and wildlife habitat

Composition

Deunah very stony loam and similar inclusions—35 percent
Yatahoney silt loam and similar inclusions—25 percent
Lostvalley very stony silt loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Deunah Soil

Position on landscape: Summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Alkali sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—pale brown very stony loam
3 to 7 inches—pale brown clay loam
7 to 22 inches—brown clay
22 to 25 inches—light yellowish brown clay
25 to 28 inches—hardpan
28 inches—bedrock
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 2 to 10 inches
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Very slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Yatahoney Soil

Position on landscape: Summits
Slope range: 1 to 10 percent
Climatic data (average annual):

Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Alkali sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—light yellowish brown silt loam
3 to 9 inches—light yellowish brown loam
9 to 22 inches—yellowish brown clay loam
22 to 26 inches—yellowish brown clay
26 to 38 inches—hardpan
38 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Lostvalley Soil

Position on landscape: Summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Alkali sagebrush and Idaho fescue
Typical profile:
0 to 2 inches—pale brown very stony silt loam
2 to 6 inches—pale brown silt loam
6 to 14 inches—yellowish brown clay
14 to 27 inches—yellowish brown silty clay
27 to 32 inches—yellowish brown gravelly clay loam
32 inches—bedrock
Depth class: Moderately deep
Restriction to rooting depth: Abrupt textural change at a depth of 4 to 10 inches
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Squawcreek soils that are on mounds and support low sagebrush and Idaho fescue—10 percent or less
- Hatpeak soils that are on north-facing side slopes and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
- Rock outcrop—5 percent or less
- Soils that are similar to Boulder Lake soils but are frequently flooded for very long periods and are on intermittent lakebeds—small areas

Land Capability Classification

Deunah soil: VIs, nonirrigated
Yatahoney soil: IVe, nonirrigated
Lostvalley soil: Vs, nonirrigated
Map unit (complex): VIs, nonirrigated

46—Diawell-McKeeth association, 2 to 20 percent slopes

Setting

Major landform: Fan piedmonts
Elevation: 3,200 to 3,750 feet
Major uses: Rangeland and wildlife habitat

Composition

Diawell gravelly sandy clay loam and similar inclusions—55 percent
McKeeth gravelly loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Diawell Soil

Position on landscape: Side slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—50 to 51 degrees F
Frost-free period—120 to 135 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 6 inches—pale brown gravelly sandy clay loam
6 to 11 inches—light yellowish brown gravelly sandy clay loam
11 to 20 inches—very pale brown gravelly fine sandy loam
20 to 22 inches—hardpan
22 to 30 inches—light yellowish brown gravelly sandy loam
30 to 50 inches—light yellowish brown gravelly loamy sand
50 to 60 inches—light yellowish brown very gravelly loamy sand
Depth class: Shallow to a hardpan
Drainage class: Well drained

Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

McKeeth Soil

Position on landscape: Summits and foot slopes
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—50 to 51 degrees F
Frost-free period—120 to 135 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Typical profile:
0 to 5 inches—light gray gravelly loam
5 to 12 inches—very pale brown gravelly clay loam
12 to 16 inches—light yellowish brown gravelly loam
16 to 20 inches—very pale brown very gravelly sandy loam
20 to 60 inches—brownish yellow extremely gravelly loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Enko soils that are on lower fan terraces and support Wyoming big sagebrush and Indian ricegrass—10 percent or less
- Soils that are similar to Alzola soils but are warmer, are on summits and shoulder slopes, and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less

Land Capability Classification

Diawell soil: VIs, nonirrigated
McKeeth soil: VIIe, nonirrigated

47—Dollarhide-Rock outcrop complex, 15 to 75 percent slopes

Setting

Major landform: Mountain summits
Elevation: 6,000 to 7,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Dollarhide very stony loam and similar inclusions—65 percent
Rock outcrop—30 percent
Contrasting inclusions—5 percent

Dollarhide Soil

Position on landscape: Ridges and upper side slopes
Slope range: 15 to 75 percent
Climatic data (average annual):
Precipitation—6 to 18 inches
Air temperature—37 to 39 degrees F
Frost-free period—40 to 60 days
Vegetal climax association: Low sagebrush, Idaho fescue, and bluegrass
Typical profile:
0 to 5 inches—dark grayish brown very stony loam
5 to 13 inches— brown and grayish brown extremely cobbly loam
13 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Rapid or very rapid
Permeability: Moderately rapid
Available water capacity: Very low
Hazard of erosion by water: Moderate to severe
Hazard of erosion by wind: Slight

Rock Outcrop

Position on landscape: Ridges
Kind of material: Exposed hard quartzitic metamorphic rock
Vegetation: Curlleaf mountainmahogany commonly rooted in fractures
Runoff: Very rapid

Contrasting Inclusions

- Nagitsy soils that are on ridges and support curlleaf mountainmahogany and mountain snowberry—5 percent or less

• Eroded Nagitsy soils that are on upper north-facing side slopes, support forbs, and commonly are covered by snowdrifts—small areas

Land Capability Classification

Dollarhide soil: VIIs, nonirrigated
Rock outcrop: VIII
Map unit (complex): VIIs, nonirrigated

48—Doodlelink-Bregar-Sharesnout complex, 5 to 40 percent slopes

Setting

Major landform: Mountains
Elevation: 5,600 to 6,650 feet
Major uses: Rangeland and wildlife habitat

Composition

Doodlelink gravelly loam and similar inclusions—40 percent
Bregar stony loam and similar inclusions—25 percent
Sharesnout gravelly loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Doodlelink Soil

Position on landscape: Side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—40 to 43 degrees F
Frost-free period—60 to 80 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—dark grayish brown gravelly loam
6 to 25 inches—dark brown and grayish brown very gravelly loam
25 to 40 inches—pale brown very gravelly clay loam
40 to 60 inches—light yellowish brown extremely gravelly clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Medium
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Bregar Soil

Position on landscape: Ridges and toe slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—41 to 44 degrees F
Frost-free period—70 to 85 days
Vegetal climax association: Low sagebrush and bluegrass
Typical profile:
0 to 4 inches—yellowish brown stony loam
4 to 8 inches—light yellowish brown extremely gravelly loam
8 inches—bedrock
Depth class: Very shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Sharesnout Soil

Position on landscape: Summits and side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—38 to 43 degrees F
Frost-free period—55 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—grayish brown gravelly loam
4 to 10 inches—brown gravelly clay loam
10 to 15 inches—brown very gravelly clay loam
15 to 22 inches—yellowish brown extremely cobbly clay
22 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

• Rubbleland—5 percent or less
• Rock outcrop—5 percent or less
• Sharesnout soils that support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less
• Soils that are similar to Dehana soils but have a thinner surface layer, are on upper north-facing side slopes, and support snowbrush ceanothus—small areas

Land Capability Classification

Doodlelink soil: IVe, nonirrigated
Bregar soil: VIIs, nonirrigated
Sharesnout soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

49—Doodlelink-Sharesnout-Parkay association, 3 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 6,000 to 7,200 feet
Major uses: Rangeland and wildlife habitat

Composition

Doodlelink gravelly loam and similar inclusions—35 percent
Sharesnout gravelly loam and similar inclusions—25 percent
Parkay cobbly loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Doodlelink Soil

Position on landscape: North-facing side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—40 to 42 degrees F
Frost-free period—60 to 75 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—dark grayish brown gravelly loam
6 to 25 inches—dark brown and grayish brown very gravelly loam
25 to 40 inches—pale brown very gravelly clay loam
40 to 60 inches—light yellowish brown extremely gravelly clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Medium
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Sharesnout Soil

Position on landscape: Summits and south-facing side slopes
Slope range: 3 to 15 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—38 to 43 degrees F
Frost-free period—55 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—grayish brown gravelly loam
4 to 10 inches—brown gravelly clay loam
10 to 15 inches—brown very gravelly clay loam
15 to 22 inches—yellowish brown extremely cobbly clay
22 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Parkay Soil

Position on landscape: Concave side slopes
Slope range: 5 to 50 percent
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—36 to 38 degrees F
Frost-free period—35 to 50 days
Vegetal climax association: Snowbank aspen
Typical profile:
0 to 1 inch—very dark grayish brown cobbly loam
1 inch to 9 inches—dark brown and brown cobbly loam
9 to 21 inches—brown very cobbly loam
21 to 31 inches—pale brown very cobbly clay loam
31 to 60 inches—light brownish gray extremely cobbly sandy clay loam
60 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Vitale soils that are on summits and south-facing side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Strickland soils that are on upper north-facing side

slopes and support mountain big sagebrush, mountain snowberry, and mountain brome—10 percent or less
- Rubbleland—5 percent or less
- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas
- Rock outcrop—small areas

Land Capability Classification

Doodlelink soil: IVe, nonirrigated
Sharesnout soil: VIe, nonirrigated
Parkay soil: VIe, nonirrigated

50—Doodlelink-Snell-Parkay complex, 5 to 40 percent slopes

Setting

Major landform: Mountains
Elevation: 5,600 to 6,750 feet
Major uses: Rangeland and wildlife habitat

Composition

Doodlelink gravelly loam and similar inclusions—40 percent
Snell stony loam and similar inclusions—20 percent
Parkay gravelly loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Doodlelink Soil

Position on landscape: North-facing side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—40 to 43 degrees F
Frost-free period—60 to 80 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—dark grayish brown gravelly loam
6 to 25 inches—dark brown and grayish brown very gravelly loam
25 to 40 inches—pale brown very gravelly clay loam
40 to 60 inches—light yellowish brown extremely gravelly clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Medium
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Snell Soil

Position on landscape: Convex side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—40 to 44 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 10 inches—dark grayish brown stony loam
10 to 22 inches—dark grayish brown very gravelly clay loam
22 to 39 inches—brown very cobbly clay loam
39 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Parkay Soil

Position on landscape: Concave side slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—37 to 42 degrees F
Frost-free period—45 to 70 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue with occasional western juniper
Typical profile:
0 to 4 inches—brown gravelly loam
4 to 10 inches—grayish brown gravelly loam
10 to 35 inches—brown and grayish brown cobbly loam
35 to 45 inches—brown very cobbly clay loam
45 inches—bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Cleavage soils that are on ridges and support low sagebrush and Idaho fescue—10 percent or less
- Sharesnout soils that are on ridges and upper side slopes and support low sagebrush and Idaho fescue—5 percent or less

• Bregar soils that are on south-facing ridges and support low sagebrush and bluegrass—5 percent or less
• Soils that are similar to Dehana soils but have a thinner surface layer, are on upper north-facing side slopes, and support snowbrush ceanothus—5 percent or less
• Rock outcrop—small areas
• Zola soils that are on fluvial bottoms and support sedge and bluegrass—small areas

Land Capability Classification

Doodlelink soil: IVe, nonirrigated
Snell soil: VIe, nonirrigated
Parkay soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

51—Dougal-Bruncan stony sandy loams, 2 to 20 percent slopes

Setting

Major landform: Structural benches
Elevation: 4,550 to 5,450 feet
Major uses: Rangeland and wildlife habitat

Composition

Dougal stony sandy loam and similar inclusions—55 percent
Bruncan stony sandy loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Dougal Soil

Position on landscape: Convex summits
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 48 degrees F
Frost-free period—85 to 110 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown stony sandy loam
4 to 8 inches—pale brown sandy loam
8 to 16 inches—light yellowish brown sandy clay loam
16 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Bruncan Soil

Position on landscape: Concave summits
Slope range: 2 to 10 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 48 degrees F
Frost-free period—85 to 110 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown and light brownish gray stony sandy loam
4 to 6 inches—very pale brown sandy loam
6 to 10 inches—light yellowish brown gravelly clay loam
10 to 13 inches—hardpan
13 inches—bedrock
Depth class: Very shallow to a hardpan
Drainage class: Well drained
Runoff: Medium
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Contrasting Inclusions

• Rock outcrop—10 percent or less
• Hardtrigger soils that are on mounds and support basin big sagebrush and bluebunch wheatgrass—10 percent or less
• Soils that are similar to Hardtrigger soils but are moderately deep, do not contain lime, and support basin big sagebrush and bluebunch wheatgrass—5 percent or less
• Rubbleland—small areas
• Gariper soils that are in swales and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Dougal soil: VIs, nonirrigated
Bruncan soil: VIe, nonirrigated
Map unit (complex): VIs, nonirrigated

52—Dranyon-Dehana gravelly loams, 2 to 40 percent slopes

Setting

Major landform: Mountains
Elevation: 5,850 to 7,600 feet
Major uses: Woodland and wildlife habitat

Composition

Dranyon gravelly loam and similar inclusions—70 percent
Dehana gravelly loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Dranyon Soil

Position on landscape: North-facing side slopes and toe slopes
Slope range: 4 to 40 percent
Climatic data (average annual):
Precipitation—20 inches or more
Air temperature—36 to 40 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Quaking aspen
Typical profile:
1 inch to 0—partially decomposed leaves and twigs
0 to 8 inches—very dark grayish brown gravelly loam
8 to 18 inches—dark grayish brown gravelly loam
18 to 28 inches—dark brown gravelly clay loam
28 to 35 inches—brown gravelly clay loam
35 to 60 inches—pale brown gravelly loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Dehana Soil

Position on landscape: Side slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—36 to 40 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 7 inches—dark brown gravelly loam
7 to 20 inches—dark brown gravelly loam
20 to 42 inches—brown gravelly loam
42 to 60 inches—light yellowish brown gravelly clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very high
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Parkay soils that are on side slopes and support quaking aspen—10 percent or less
- Rock outcrop—small areas

Land Capability Classification

Dranyon soil: VIs, nonirrigated
Dehana soil: VIe, nonirrigated
Map unit (complex): VIs, nonirrigated

53—Duco-Chinabutte-Dougal complex, 5 to 45 percent slopes

Setting

Major landform: Foothills
Elevation: 4,000 to 5,350 feet
Major uses: Rangeland and wildlife habitat

Composition

Duco gravelly loam and similar inclusions—35 percent
Chinabutte cobbly loam and similar inclusions—25 percent
Dougal very stony loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Duco Soil

Position on landscape: Summits and side slopes
Slope range: 10 to 45 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 115 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown gravelly loam
4 to 8 inches—brown gravelly clay loam
8 to 16 inches—brown very gravelly clay loam
16 inches—bedrock
Depth class: Shallow

Drainage class: Well drained
Runoff: Rapid or very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Chinabutte Soil

Position on landscape: North-facing side slopes
Slope range: 12 to 45 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 115 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—brown and dark brown cobbly loam
6 to 10 inches—brown very gravelly clay loam
10 to 18 inches—dark yellowish brown extremely gravelly clay loam
18 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Rapid or very rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Slight

Dougal Soil

Position on landscape: Ridges
Slope range: 5 to 20 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 115 days
Vegetal climax association: Low sagebrush and bluegrass
Typical profile:
0 to 2 inches—yellowish brown very stony loam
2 to 7 inches—dark yellowish brown gravelly clay loam
7 inches—bedrock
Depth class: Very shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Deshler soils but are deep, are on north-facing side slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
- Rubbleland—5 percent or less
- Rock outcrop—5 percent or less
- Soils that are similar to Ruclick soils but have less clay, are on south-facing side slopes, and support basin big sagebrush and bluebunch wheatgrass—5 percent or less
- Alibi soils that are on north-facing side slopes and support low sagebrush and Idaho fescue—small areas

Land Capability Classification

Duco soil: VIs, nonirrigated
Chinabutte soil: VIs, nonirrigated
Dougal soil: VIs, nonirrigated
Map unit (complex): VIs, nonirrigated

54—Escalante sandy loam, 1 to 12 percent slopes

Setting

Major landform: Fan terraces
Elevation: 2,300 to 3,400 feet
Major uses: Rangeland, cropland, and wildlife habitat

Composition

Escalante sandy loam and similar inclusions—75 percent
Contrasting inclusions—25 percent

Escalante Soil

Position on landscape: Summits
Slope range: 1 to 12 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—50 to 52 degrees F
Frost-free period—125 to 150 days
Vegetal climax association: Wyoming big sagebrush and Indian ricegrass
Typical profile:
0 to 8 inches—pale brown sandy loam
8 to 13 inches—pale brown fine sandy loam
13 to 36 inches—pale brown sandy loam
36 to 60 inches—light brownish gray loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow to medium
Permeability: Moderately rapid
Available water capacity: High

Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Contrasting Inclusions

- Orovada soils that are on fan terraces and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Badlands—5 percent or less
- McKeeth soils that are on shoulder slopes and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—5 percent or less
- Soils that are similar to McKeeth soils but are more moist, are on summits and side slopes, and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less

Land Capability Classification

IIIe, irrigated, and VIe, nonirrigated

55—Escalante-Tindahay-Ornea complex, 1 to 12 percent slopes

Setting

Major landform: Fan terraces
Elevation: 2,300 to 3,400 feet
Major uses: Cropland, rangeland, and wildlife habitat

Composition

Escalante sandy loam and similar inclusions—55 percent
Tindahay loamy fine sand and similar inclusions—15 percent
Ornea loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Escalante Soil

Position on landscape: Summits and side slopes
Slope range: 1 to 12 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—51 to 52 degrees F
Frost-free period—125 to 150 days
Vegetal climax association: Wyoming big sagebrush and Indian ricegrass
Typical profile:
0 to 8 inches—pale brown sandy loam
8 to 13 inches—pale brown fine sandy loam
13 to 36 inches—pale brown sandy loam
36 to 60 inches—light brownish gray loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow to medium
Permeability: Moderately rapid
Available water capacity: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Tindahay Soil

Position on landscape: Summits and side slopes
Slope range: 1 to 12 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—51 to 53 degrees F
Frost-free period—125 to 150 days
Vegetal climax association: Fourwing saltbush and Indian ricegrass
Typical profile:
0 to 14 inches—light brownish gray loamy fine sand
14 to 24 inches—pale brown fine sandy loam
24 to 30 inches—light gray loamy sand
30 to 42 inches—light gray sand
42 to 60 inches—light gray fine gravelly coarse sand
Depth class: Very deep
Drainage class: Somewhat excessively drained
Runoff: Very slow to medium
Permeability: Moderately rapid
Available water capacity: Medium
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Ornea Soil

Position on landscape: Summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—51 to 53 degrees F
Frost-free period—125 to 150 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Typical profile:
0 to 3 inches—pale brown loam
3 to 7 inches—very pale brown gravelly silt loam
7 to 12 inches—very pale brown gravelly clay loam
12 to 16 inches—light yellowish brown gravelly loam
16 to 54 inches—white and very pale brown extremely gravelly loamy sand
54 to 60 inches—very pale brown gravelly loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow
Permeability: Moderately slow over very rapid

Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Orovada soils that are on fan terraces and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Soils that are similar to Vickery soils but have less clay, are on summits, and support Wyoming big sagebrush and Indian ricegrass—5 percent or less
- Wholan soils that are on summits and toe slopes and support winterfat and Indian ricegrass—small areas

Land Capability Classification

Escalante soil: IIIe, irrigated, and VIe, nonirrigated
Tindahay soil: IVe, irrigated, and VIIe, nonirrigated
Ornea soil: IIIe, irrigated, and VIIe, nonirrigated
Map unit (complex): IIIe, irrigated, and VIe, nonirrigated

56—Fairylawn-Perla association, 2 to 25 percent slopes

Setting

Major landform: Structural benches
Elevation: 4,300 to 5,150 feet
Major uses: Rangeland and wildlife habitat

Composition

Fairylawn stony silt loam and similar inclusions—65 percent
Perla loam and similar inclusions—15 percent
Contrasting inclusions—20 percent

Fairylawn Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 25 percent
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—light brownish gray stony silt loam
5 to 7 inches—light brownish gray silt loam
7 to 19 inches—dark yellowish brown and yellowish brown clay
19 to 24 inches—pale brown clay loam
24 to 29 inches—very pale brown loam
29 to 32 inches—hardpan
32 inches—bedrock
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 5 to 12 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Perla Soil

Position on landscape: Summits and south-facing side slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—12 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—grayish brown loam
3 to 8 inches—dark brown clay loam
8 to 16 inches—brown clay
16 to 23 inches—pale brown gravelly clay loam
23 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Barkley soils but are warmer, are on north-facing side slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
- Loomis soils that are on rims and shoulder slopes and support low sagebrush and bluegrass—5 percent or less
- Rock outcrop—5 percent or less

Land Capability Classification

Fairylawn soil: IVe, nonirrigated
Perla soil: IVe, nonirrigated

57—Fairylawn-Schnipper silt loams, 1 to 8 percent slopes

Setting

Major landform: Tablelands
Elevation: 4,450 to 5,400 feet
Major uses: Rangeland and wildlife habitat

Composition

Fairylawn silt loam and similar inclusions—55 percent
Schnipper silt loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Fairylawn Soil

Position on landscape: Summits
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—45 to 48 degrees F
Frost-free period—85 to 105 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—pale brown silt loam
8 to 20 inches—brown clay
20 to 25 inches—light brown loam
25 to 40 inches—hardpan
40 inches—bedrock
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 5 to 12 inches
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Very slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Schnipper Soil

Position on landscape: Mounds
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—12 to 13 inches
Air temperature—45 to 58 degrees F
Frost-free period—85 to 110 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 12 inches—yellowish brown and brown silt loam
12 to 26 inches—yellowish brown and light yellowish brown silty clay loam
26 to 36 inches—light yellowish brown loam
36 to 60 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Loomis soils that are in swales and support low sagebrush and bluegrass—5 percent or less
- Hotcreek soils that are in intermound areas and support low sagebrush and bluegrass— 5 percent or less
- Soils that are similar to Fryingpan soils but are warmer, are on low mounds, and support low sagebrush and Idaho fescue—5 percent or less
- Piline soils that are on alluvial flats and support silver sagebrush and bluegrass—5 percent or less

Land Capability Classification

Fairylawn soil: IVe, nonirrigated
Schnipper soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

58—Foxmount-Povey-Rubbleland complex, 10 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 6,200 to 8,300 feet
Major uses: Wildlife habitat and rangeland

Composition

Foxmount very gravelly loam and similar inclusions—45 percent
Povey very gravelly loam and similar inclusions—20 percent
Rubbleland and similar inclusions—15 percent
Contrasting inclusions—20 percent

Foxmount Soil

Position on landscape: Ridges and upper south-facing side slopes
Slope range: 10 to 50 percent
Climatic data (average annual):
Precipitation—16 to 22 inches

Air temperature—36 to 40 degrees F
Frost-free period—30 to 50 days
Vegetal climax association: Curlleaf mountainmahogany and mountain snowberry
Typical profile:
1 inch to 0—partially decomposed leaves and twigs
0 to 11 inches—dark brown and brown very gravelly loam
11 to 20 inches—light brown very gravelly loam
20 to 36 inches—light brown extremely cobbly loam
36 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Moderate or severe
Hazard of erosion by wind: Moderate

Povey Soil

Position on landscape: Lower south-facing side slopes
Slope range: 15 to 50 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—35 to 38 degrees F
Frost-free period—30 to 55 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—dark grayish brown very gravelly loam
6 to 17 inches—dark grayish brown gravelly loam
17 to 25 inches—brown very gravelly loam
25 to 32 inches—dark yellowish brown extremely cobbly loam
32 to 60 inches—yellowish brown extremely cobbly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Rubbleland

Position on landscape: Cliff bases and very steep, exposed side slopes
Description of areas: Barren sheets and masses of loose, angular rhyolitic rock fragments; masses formed mainly as a result of falling, rolling, or sliding rock
Runoff: Rapid

Contrasting Inclusions

- Povey soils that are on north-facing side slopes and support snowbrush ceanothus—10 percent or less
- Wareagle soils that are on north-facing side slopes and support Douglas fir and mountain snowberry—5 percent or less
- Rock outcrop—5 percent or less

Land Capability Classification

Foxmount soil: VIIe, nonirrigated
Povey soil: VIe, nonirrigated
Rubbleland: VIII
Map unit (complex): VIIe, nonirrigated

59—Freshwater-Larioscamp-Dishpan complex, 1 to 20 percent slopes

Setting

Major landform: Foothills
Elevation: 5,300 to 5,950 feet
Major uses: Rangeland and wildlife habitat

Composition

Freshwater stony silt loam and similar inclusions—35 percent
Larioscamp loam and similar inclusions—30 percent
Dishpan loam and similar inclusions—15 percent
Contrasting inclusions—20 percent

Freshwater Soil

Position on landscape: Summits and shoulder slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown stony silt loam
4 to 12 inches—very pale brown gravelly clay loam
12 to 30 inches—hardpan
30 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Slight

Larioscamp Soil

Position on landscape: Side slopes and swales
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—12 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—pale brown loam
3 to 9 inches—yellowish brown clay loam
9 to 15 inches—yellowish brown clay
15 to 25 inches—very pale brown very cobbly sandy loam
25 to 29 inches—hardpan
29 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Slight

Dishpan Soil

Position on landscape: Fan terraces
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown loam
4 to 16 inches—brown and light yellowish brown clay loam
16 to 28 inches—very pale brown very cobbly fine sandy loam
28 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Cottle soils but are cooler, are on summits, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Rubbleland—5 percent or less
- Rock outcrop—5 percent or less
- Slickspots—small areas

Land Capability Classification

Freshwater soil: VIe, nonirrigated
Larioscamp soil: IVe, nonirrigated
Dishpan soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

60—Fryingpan-Hat-Nipintuck complex, 1 to 30 percent slopes

Setting

Major landform: Structural benches
Elevation: 5,300 to 5,700 feet
Major uses: Rangeland and wildlife habitat

Composition

Fryingpan stony loam and similar inclusions—40 percent
Hat gravelly loam and similar inclusions—25 percent
Nipintuck stony coarse sandy loam and similar inclusions—15 percent
Contrasting inclusions—20 percent

Fryingpan Soil

Position on landscape: Summits and south-facing side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—pale brown stony loam
3 to 16 inches—light yellowish brown clay loam
16 to 18 inches—light brown loam
18 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow

Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Hat Soil

Position on landscape: Mounds and north-facing side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 5 inches—pale brown gravelly loam
5 to 12 inches—pale brown gravelly clay loam
12 to 19 inches—brown very gravelly clay loam
19 to 24 inches—yellowish brown extremely cobbly clay loam
24 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Nipintuck Soil

Position on landscape: Knolls and rims
Slope range: 2 to 30 percent
Climatic data (average annual):
Precipitation—10 to 14 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Low sagebrush and bluegrass
Typical profile:
0 to 2 inches—yellowish brown stony coarse sandy loam
2 to 6 inches—yellowish brown very cobbly loam
6 inches—bedrock
Depth class: Very shallow
Drainage class: Somewhat excessively drained
Runoff: Medium to very rapid
Permeability: Moderate
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Wagonbox soils that are on summits and support alkali sagebrush and Idaho fescue—10 percent or less
- Rock outcrop—10 percent or less

Land Capability Classification

Fryingpan soil: VIs, nonirrigated
Hat soil: IVe, nonirrigated
Nipintuck soil: VIIs, nonirrigated
Map unit (complex): VIs, nonirrigated

61—Fulcrum-Monasterio stony sandy loams, 1 to 20 percent slopes

Setting

Major landform: Extrusive domes
Elevation: 5,700 to 6,200 feet
Major uses: Rangeland and wildlife habitat

Composition

Fulcrum stony sandy loam and similar inclusions—70 percent
Monasterio stony sandy loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Fulcrum Soil

Position on landscape: Side slopes
Slope range: 3 to 15 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—40 to 43 degrees F
Frost-free period—65 to 80 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 3 inches—dark brown stony sandy loam
3 to 11 inches—dark brown gravelly sandy loam
11 to 21 inches—brown very gravelly sandy loam
21 to 28 inches—yellowish brown extremely cobbly loamy sand
28 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Runoff: Slow or medium
Permeability: Moderately rapid
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Monasterio Soil

Position on landscape: Side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—40 to 43 degrees F
Frost-free period—60 to 80 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown stony sandy loam
8 to 11 inches—brown gravelly sandy loam
11 to 17 inches—dark yellowish brown very gravelly sandy loam
17 to 25 inches—brown very cobbly sandy clay loam
25 to 28 inches—brown extremely cobbly sandy clay loam
28 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderate
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Squawcreek soils that are on ridges and support low sagebrush and Idaho fescue—5 percent or less
- Cleavage soils that are on knolls and support low sagebrush and Idaho fescue—5 percent or less
- Zola soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Fulcrum soil: IVe, nonirrigated
Monasterio soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

62—Gaib-Wareagle-Rock outcrop association, 2 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 5,050 to 6,400 feet
Major uses: Woodland, rangeland, mines, and wildlife habitat

Composition

Gaib stony loam and similar inclusions—35 percent
Wareagle very gravelly loam and similar inclusions—30 percent
Rock outcrop—15 percent
Contrasting inclusions—20 percent

Gaib Soil

Position on landscape: South-facing upper side slopes
Slope range: 2 to 30 percent
Climatic data (average annual):
Precipitation—15 to 18 inches
Air temperature—40 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Curlleaf mountainmahogany and mountain snowberry with common western juniper
Typical profile:
0 to 3 inches—dark grayish brown stony loam
3 to 7 inches—grayish brown loam
7 to 11 inches—brown very gravelly loam
11 to 18 inches—brown very gravelly clay loam
18 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Wareagle Soil

Position on landscape: North-facing side slopes
Slope range: 15 to 50 percent
Climatic data (average annual):
Precipitation—22 to 32 inches
Air temperature—35 to 39 degrees F
Frost-free period—less than 60 days
Vegetal climax association: Douglas fir and mountain snowberry
Typical profile:
2 inches to 0—partially decomposed organic material
0 to 7 inches—dark brown very gravelly loam
7 to 15 inches—brown and dark brown very gravelly loam
15 to 60 inches—very pale brown extremely gravelly loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid

Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Rock Outcrop

Position on landscape: Ridges and cliffs
Description of areas: Exposed hard welded rhyolitic tuff
Vegetation: Western juniper commonly rooted in fractures
Runoff: Very rapid

Contrasting Inclusions

- Hat soils that are on side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper—10 percent or less
- Nipintuck soils that are on ridges and support low sagebrush and bluegrass—5 percent or less
- Doodlelink soils that are on north-facing side slopes and support mountain big sagebrush and Idaho fescue—5 percent or less
- Soils that are similar to Povey soils but have less rock fragments, are on toe slopes, and support quaking aspen—small areas

Land Capability Classification

Gaib soil: VIs, nonirrigated
Wareagle soil: VIe, nonirrigated
Rock outcrop: VIII

63—Gooding-Gariper loams, 2 to 20 percent slopes

Setting

Major landform: Fan terraces
Elevation: 3,500 to 4,900 feet
Major uses: Rangeland and wildlife habitat

Composition

Gooding loam and similar inclusions—50 percent
Gariper loam and similar inclusions—25 percent
Contrasting inclusions—25 percent

Gooding Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—47 to 50 degrees F
Frost-free period—95 to 120 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown loam
4 to 7 inches—light gray loam
7 to 17 inches—pale brown clay
17 to 30 inches—pale brown clay loam
30 to 57 inches—white clay loam
57 to 60 inches—hardpan
Depth class: Deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 3 to 8 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: Very high
Shrink-swell potential: High
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Gariper Soil

Position on landscape: Summits
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—47 to 50 degrees F
Frost-free period—95 to 120 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 9 inches—light brownish gray and pale brown loam
9 to 18 inches—yellowish brown clay
18 to 22 inches—light yellowish brown clay loam
22 to 47 inches—very pale brown gravelly sandy loam
47 to 60 inches—hardpan
Depth class: Deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 4 to 10 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Succor soils that are on north-facing side slopes and support low sagebrush and Idaho fescue—10 percent or less

• Soils that are similar to Brunzell soils but are warmer, are on north-facing side slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—5 percent or less
• Soils that are similar to Gariper soils but are moderately deep, are on south-facing side slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
• Badlands—5 percent or less
• Chilcott soils that are on summits and support Wyoming big sagebrush and bluebunch wheatgrass—small areas
• Slickspots—small areas
• Soils that are similar to Goose Creek soils but are somewhat poorly drained, have a thinner surface layer, are on stream terraces, and support basin big sagebrush and bluebunch wheatgrass—small areas

Land Capability Classification

Gooding soil: VIs, nonirrigated
Gariper soil: VIe, nonirrigated
Map unit (complex): VIs, nonirrigated

64—Goose Creek loam, 1 to 3 percent slopes

Setting

Major landform: Bottom land
Elevation: 4,200 to 5,350 feet
Major uses: Hayland, rangeland, and wildlife habitat

Composition

Goose Creek loam and similar inclusions—75 percent
Contrasting inclusions—25 percent

Goose Creek Soil

Position on landscape: Stream terraces
Slope range: 1 to 3 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—95 to 115 days
Vegetal climax association: Basin big sagebrush, bluegrass, and basin wildrye
Typical profile:
0 to 17 inches—dark gray loam
17 to 33 inches—dark gray and gray clay loam
33 to 40 inches—dark gray loam
40 to 60 inches—grayish brown loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 40 to 60 inches
Drainage class: Moderately well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate
Frequency of flooding: Rare

Contrasting Inclusions

• Soils that are similar to Beetville soils but are somewhat poorly drained, are on lower alluvial terraces, and support sedge and bluegrass—10 percent or less
• Troughs soils that are on side slopes and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
• Chilcott soils that are on upper fan terraces and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
• Rock outcrop—5 percent or less
• Soils that are similar to Beetville soils but have a light colored surface layer, are on fluvial bottoms, and support willows—small areas

Land Capability Classification

IIc, irrigated, and VIc, nonirrigated

65—Graveya-Ratsnest-Rock outcrop association, 3 to 35 percent slopes

Setting

Major landform: Foothills
Elevation: 2,350 to 3,600 feet
Major uses: Rangeland, mines, and wildlife habitat

Composition

Graveya stony loam and similar inclusions—40 percent
Ratsnest gravelly silt loam and similar inclusions—20 percent
Rock outcrop—15 percent
Contrasting inclusions—25 percent

Graveya Soil

Position on landscape: North-facing side slopes
Slope range: 8 to 35 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—50 to 52 degrees F
Frost-free period—125 to 145 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:

0 to 3 inches—pale brown stony loam
3 to 8 inches—pale brown gravelly loam
8 to 14 inches—light yellowish brown gravelly clay loam
14 to 22 inches—very pale brown very gravelly clay loam
22 to 42 inches—very pale brown very gravelly sandy loam
42 to 60 inches—very pale brown extremely gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Ratsnest Soil

Position on landscape: Saddles, toe slopes, and south-facing side slopes
Slope range: 3 to 12 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—50 to 52 degrees F
Frost-free period—125 to 145 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Typical profile:
0 to 2 inches—light gray gravelly silt loam
2 to 4 inches—pale brown silty clay loam
4 to 10 inches—light yellowish brown clay
10 to 33 inches—light yellowish brown and pale yellow silty clay loam
33 to 39 inches—light gray silt loam
39 inches—soft bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Rock Outcrop

Position on landscape: Ridges and cliffs
Kind of material: Barren, exposed, hard welded rhyolitic tuff
Runoff: Very rapid

Contrasting Inclusions

- Eroded Plush soils that are on lower side slopes and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—10 percent or less
- Willhill soils that are on summits and shoulder slopes and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Veta soils that are on concave slopes and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- McKeeth soils that are on fan terraces and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—small areas
- Soils that are similar to Beetville soils but are well drained, are on fluvial bottoms, and support fourwing saltbush and Indian ricegrass—small areas
- Loomis soils that are on ridges and knolls and support Wyoming big sagebrush and bluebunch wheatgrass—small areas

Land Capability Classification

Graveya soil: VIe, nonirrigated
Ratsnest soil: VIe, nonirrigated
Rock outcrop: VIII

66—Graylock-Takeuchi association, 3 to 60 percent slopes

Setting

Major landform: Mountains
Elevation: 5,000 to 7,600 feet
Major uses: Woodland and wildlife habitat

Composition

Graylock bouldery loamy sand and similar inclusions—60 percent
Takeuchi fine gravelly coarse sandy loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Graylock Soil

Position on landscape: North-facing side slopes
Slope range: 20 to 60 percent
Climatic data (average annual):
Precipitation—25 to 40 inches
Air temperature—34 to 42 degrees F
Frost-free period—30 to 70 days
Vegetal climax association: Douglas fir and mountain snowberry
Typical profile:

1 inch to 0—undecomposed organic material
0 to 4 inches—dark grayish brown bouldery loamy sand
4 to 7 inches—grayish brown bouldery sandy loam
7 to 41 inches—pale brown and light yellowish brown very gravelly loamy sand
41 to 56 inches—very pale brown extremely stony loamy coarse sand
56 inches—bedrock
Depth class: Deep
Drainage class: Somewhat excessively drained
Runoff: Medium or rapid
Permeability: Very rapid
Available water capacity: Very low
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Takeuchi Soil

Position on landscape: North-facing side slopes
Slope range: 3 to 45 percent
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—40 to 44 degrees F
Frost-free period—55 to 85 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 12 inches—dark grayish brown fine gravelly coarse sandy loam
12 to 26 inches—brown and dark brown fine gravelly coarse sandy loam
26 to 36 inches—weathered bedrock
36 inches—bedrock
Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Runoff: Medium or rapid
Permeability: Moderately rapid
Available water capacity: Very low
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Contrasting Inclusions

- Nazaton soils that are on north-facing side slopes and support Douglas fir and mountain snowberry—10 percent or less
- Soils that are similar to Naz soils but are moderately deep, are on north-facing side slopes, and support Douglas fir and mountain snowberry—10 percent or less
- Rock outcrop that has curlleaf mountainmahogany rooted in some fractures—5 percent or less
- Soils that are similar to the Graylock soil but are moderately well drained, are on concave slopes, and support subalpine fir—small areas

Land Capability Classification

Graylock soil: VIIe, nonirrigated
Takeuchi soil: VIe, nonirrigated

67—Hades-Sharesnout complex, 5 to 35 percent slopes

Setting

Major landform: Mountain draws and valleys
Elevation: 5,000 to 6,500 feet
Major uses: Rangeland, hayland, mines, and wildlife habitat

Composition

Hades loam and similar inclusions—45 percent
Sharesnout gravelly loam and similar inclusions—35 percent
Contrasting inclusions—20 percent

Hades Soil

Position on landscape: Side slopes
Slope range: 5 to 30 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—38 to 41 degrees F
Frost-free period—50 to 80 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—dark brown loam
5 to 20 inches—very dark grayish brown loam
20 to 40 inches—brown clay loam
40 to 60 inches—yellowish brown clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Sharesnout Soil

Position on landscape: Ridges and upper side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—40 to 46 degrees F
Frost-free period—55 to 80 days

Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—grayish brown gravelly loam
4 to 10 inches—brown gravelly clay loam
10 to 15 inches—brown very gravelly clay loam
15 to 22 inches—yellowish brown extremely cobbly clay
22 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Coser soils but are poorly drained, are on toe slopes, and support low sagebrush, Idaho fescue, and mulesear wyethia—10 percent or less
- Tucker soils that are on stream terraces and support sedge and bluegrass—5 percent or less
- Dehana soils that are on concave slopes and support snowbank aspen—5 precent or less
- Upcreek soils that are on fluvial bottoms and support basin big sagebrush, bluegrass, and basin wildrye—small areas
- Southmount soils that are on north-facing shoulder slopes and support Douglas fir and mountain snowberry—small areas
- Cleavage soils that are on side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—small areas

Land Capability Classification

Hades soil: IVe, nonirrigated
Sharesnout soil: VIe, nonirrigated
Map unit (complex): IVe, nonirrigated

68—Hardtrigger-Arbidge complex, 2 to 12 percent slopes

Setting

Major landform: Fan terraces
Elevation: 3,250 to 4,300 feet
Major uses: Rangeland and wildlife habitat

Composition

Hardtrigger gravelly loam and similar inclusions—40 percent
Arbidge loam and similar inclusions—35 percent
Contrasting inclusions—25 percent

Hardtrigger Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 51 degrees F
Frost-free period—110 to 130 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 6 inches—brown and light yellowish brown gravelly loam
6 to 14 inches—very pale brown clay loam
14 to 29 inches—very pale brown very gravelly sandy loam
29 to 60 inches—light yellowish brown and very pale brown very gravelly loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Arbidge Soil

Position on landscape: Summits and toe slopes
Slope range: 2 to 6 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—48 to 51 degrees F
Frost-free period—110 to 130 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 4 inches—pale brown loam
4 to 20 inches—pale brown and very pale brown clay loam
20 to 34 inches—very pale brown gravelly sandy loam
34 to 36 inches—hardpan
36 to 60 inches—very pale brown very gravelly loamy sand
Depth class: Moderately deep to a hardpan

Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- McKeeth soils that are on summits at lower elevations and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—10 percent or less
- Soils that are similar to Alzola soils but are warmer, are on summits and side slopes, and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Gariper soils that are on toe slopes and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Babbington soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas
- Slickspots—small areas

Land Capability Classification

Hardtrigger soil: VIe, nonirrigated
Arbidge soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

69—Hardtrigger-Briabbit-Tindahay complex, 1 to 15 percent slopes

Setting

Major landform: Structural benches and fan terraces
Elevation: 2,450 to 4,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Hardtrigger gravelly sandy loam and similar inclusions—40 percent
Briabbit fine sandy loam and similar inclusions—20 percent
Tindahay loamy fine sand and similar inclusions—15 percent
Contrasting inclusions—25 percent

Hardtrigger Soil

Position on landscape: North-facing side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 52 degrees F
Frost-free period—105 to 145 days
Vegetal climax association: Wyoming big sagebrush and Indian ricegrass
Typical profile:
0 to 3 inches—pale brown gravelly sandy loam
3 to 14 inches—light yellowish gray and light yellowish brown gravelly sandy clay loam
14 to 21 inches—light yellowish brown gravelly sandy clay loam
21 to 49 inches—very pale brown gravelly coarse sandy loam
49 to 60 inches—multicolored very gravelly loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Briabbit Soil

Position on landscape: Side slopes
Slope range: 3 to 15 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 52 degrees F
Frost-free period—105 to 145 days
Vegetal climax association: Wyoming big sagebrush and Indian ricegrass
Typical profile:
0 to 10 inches—brown fine sandy loam
10 to 22 inches—pale brown cobbly sandy loam
22 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately rapid
Available water capacity: Low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: High

Tindahay Soil

Position on landscape: North-facing side slopes and fan terraces
Slope range: 1 to 12 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 52 degrees F
Frost-free period—105 to 145 days
Vegetal climax association: Fourwing saltbush and Indian ricegrass
Typical profile:

0 to 14 inches—light brownish gray loamy fine sand
14 to 24 inches—pale brown fine sandy loam
24 to 30 inches—light gray loamy sand
30 to 42 inches—light gray sand
42 to 60 inches—light gray fine gravelly coarse sand

Depth class: Very deep
Drainage class: Somewhat excessively drained
Runoff: Very slow to medium
Permeability: Moderately rapid
Available water capacity: Medium
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Contrasting Inclusions

- Soils that are similar to Sugarcreek soils but are very deep, are on north-facing side slopes and upper fan terraces, and support Wyoming big sagebrush and Indian ricegrass—10 percent or less
- Murphill soils that are on knolls and shoulder slopes and support Wyoming big sagebrush and Indian ricegrass—5 percent or less
- McKeeth soils that are on fan terraces and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—5 percent or less
- Badlands—5 percent or less
- Soils that are similar to Gariper soils but are highly saline, are on concave toe slopes, and support Wyoming big sagebrush and Thurber needlegrass with common black greasewood—small areas

Land Capability Classification

Hardtrigger soil: VIe, nonirrigated
Briabbit soil: VIe, nonirrigated
Tindahay soil: VIIe, nonirrigated
Map unit (complex): VIe, nonirrigated

70—Hardtrigger-Cottle-Midraw complex, 3 to 35 percent slopes

Setting

Major landform: Landslide deposits
Elevation: 3,200 to 4,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Hardtrigger bouldery loam and similar inclusions—40 percent
Cottle stony loam and similar inclusions—20 percent
Midraw stony loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Hardtrigger Soil

Position on landscape: Side slopes
Slope range: 8 to 35 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—47 to 50 degrees F
Frost-free period—100 to 130 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 9 inches—light brownish gray bouldery loam
9 to 14 inches—light gray gravelly clay loam
14 to 47 inches—brown and yellowish brown gravelly clay loam
47 to 60 inches—light gray clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Cottle Soil

Position on landscape: Summits and south-facing side slopes
Slope range: 4 to 35 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—47 to 51 degrees F
Frost-free period—100 to 125 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown stony loam
4 to 8 inches—light yellowish brown very gravelly clay loam
8 to 12 inches—very pale brown extremely gravelly clay loam
12 to 17 inches—very pale brown extremely gravelly loam
17 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Midraw Soil

Position on landscape: Side slopes
Slope range: 3 to 20 percent
Climatic data (average annual):
Precipitation—11 to 12 inches
Air temperature—47 to 50 degrees F
Frost-free period—100 to 125 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—light brownish gray stony loam
3 to 8 inches—pale brown gravelly clay loam
8 to 15 inches—light brownish gray gravelly clay
15 to 18 inches—pale brown gravelly clay loam
18 to 21 inches—hardpan
21 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Succor soils that are on north-facing side slopes and support low sagebrush and Idaho fescue—10 percent or less
- Rock outcrop—5 percent or less
- Gooding soils that are on summits and south-facing side slopes and support low sagebrush and bluebunch wheatgrass—5 percent or less
- Soils that are similar to Deshler soils but are deep, are on north-facing side slopes, and support basin big sagebrush, bluegrass, and basin wildrye—small areas
- Succor soils that are on stream terraces and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—small areas

Land Capability Classification

Hardtrigger soil: VIe, nonirrigated
Cottle soil: VIe, nonirrigated
Midraw soil: VIs, nonirrigated
Map unit (complex): VIe, nonirrigated

71—Hardtrigger-Enko complex, 2 to 15 percent slopes

Setting

Major landforms: Alluvial fans and fan terraces
Elevation: 2,700 to 5,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Hardtrigger gravelly sandy loam and similar inclusions—60 percent
Enko sandy loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Hardtrigger Soil

Position on landscape: Summits
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—9 to 11 inches
Air temperature—46 to 52 degrees F
Frost-free period—90 to 140 days
Vegetal climax association: Wyoming big sagebrush and Indian ricegrass
Typical profile:
0 to 3 inches—pale brown gravelly sandy loam
3 to 14 inches—light yellowish gray and light yellowish brown gravelly sandy clay loam
14 to 21 inches—light yellowish brown gravelly sandy clay loam
21 to 49 inches—very pale brown gravelly coarse sandy loam
49 to 60 inches—multicolored very gravelly loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Enko Soil

Position on landscape: Summits
Slope range: 2 to 10 percent
Climatic data (average annual):
Precipitation—9 to 11 inches
Air temperature—46 to 52 degrees F
Frost-free period—90 to 140 days
Vegetal climax association: Wyoming big sagebrush and Indian ricegrass
Typical profile:
0 to 5 inches—pale brown and brown sandy loam
5 to 14 inches—pale brown loam
14 to 18 inches—light yellowish brown sandy loam
18 to 32 inches—very pale brown sandy loam
32 to 60 inches—light yellowish brown gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained

Runoff: Slow or medium
Permeability: Slow
Available water capacity: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Contrasting Inclusions

- Soils that are similar to Takeuchi soils but are warmer and drier, are on knolls and upper side slopes, and support basin big sagebrush and bluebunch wheatgrass—10 percent or less
- Rock outcrop—5 percent or less
- Soils that are similar to Acrelane soils but have a light-colored surface layer, are on ridges and south-facing side slopes, and support Wyoming big sagebrush and Indian ricegrass—5 percent or less
- Tindahay soils that support basin big sagebrush, bluegrass, and basin wildrye—small areas
- Soils that are similar to Loomis soils but are moderately deep, are on shoulder slopes, and support Wyoming big sagebrush and Thurber needlegrass—small areas

Land Capability Classification

Hardtrigger soil: VIe, nonirrigated
Enko soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

72—Hardtrigger-Gariper-Diawell complex, 2 to 20 percent slopes

Setting

Major landform: Fan terraces
Elevation: 3,700 to 4,300 feet
Major uses: Rangeland, hayland, and wildlife habitat

Composition

Hardtrigger gravelly sandy loam and similar inclusions—30 percent
Gariper loam and similar inclusions—30 percent
Diawell gravelly sandy clay loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Hardtrigger Soil

Position on landscape: Side slopes and toe slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—9 to 12 inches
Air temperature—48 to 50 degrees F
Frost-free period—110 to 125 days
Vegetal climax association: Wyoming big sagebrush and Indian ricegrass
Typical profile:
0 to 3 inches—pale brown gravelly sandy loam
3 to 14 inches—light yellowish gray and light yellowish brown gravelly sandy clay loam
14 to 21 inches—light yellowish brown gravelly sandy clay loam
21 to 49 inches—very pale brown gravelly coarse sandy loam
49 to 60 inches—multicolored very gravelly loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Gariper Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—48 to 50 degrees F
Frost-free period—110 to 125 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 9 inches—light brownish gray and pale brown loam
9 to 18 inches—yellowish brown clay
18 to 22 inches—light yellowish brown clay loam
22 to 47 inches—very pale brown gravelly sandy loam
47 to 60 inches—hardpan
Depth class: Deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 4 to 10 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Diawell Soil

Position on landscape: Side slopes and shoulder slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—9 to 11 inches
Air temperature—48 to 50 degrees F

Frost-free period—110 to 125 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 6 inches—pale brown gravelly sandy clay loam
6 to 11 inches—light yellowish brown gravelly sandy clay loam
11 to 20 inches—very pale brown gravelly fine sandy loam
20 to 22 inches—hardpan
22 to 30 inches—light yellowish brown gravelly sandy loam
30 to 50 inches—light yellowish brown gravelly loamy sand
50 to 60 inches—light yellowish brown very gravelly loamy sand
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Diawell soils but have more clay, are on summits, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Beetville soils but have more clay, have a light-colored surface layer, are on fluvial bottoms, and support basin big sagebrush and basin wildrye—5 percent or less
- Soils that are similar to the Hardtrigger soil but are moderately deep, are on steep side slopes, and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Goose Creek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Hardtrigger soil: IVe, irrigated, and VIe, nonirrigated
Gariper soil: IVe, irrigated, and VIe, nonirrigated
Diawell soil: VIe, irrigated, and VIs, nonirrigated
Map unit (complex): IVe, irrigated, and VIe, nonirrigated

73—Hardtrigger-Goose Creek loams, 1 to 5 percent slopes

Setting

Major landform: Bottom land and fan terraces
Elevation: 2,350 to 4,150 feet
Major use: Hayland

Composition

Hardtrigger loam and similar inclusions—50 percent
Goose Creek loam and similar inclusions—35 percent
Contrasting inclusions—15 percent

Hardtrigger Soil

Position on landscape: Upper terraces
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—8 to 11 inches
Air temperature—47 to 51 degrees F
Frost-free period—110 to 140 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 6 inches—pale brown loam
6 to 18 inches—very pale brown clay loam
18 to 60 inches—very pale brown sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Goose Creek Soil

Position on landscape: Lower terraces
Slope range: 1 to 3 percent
Climatic data (average annual):
Precipitation—8 to 11 inches
Air temperature—47 to 51 degrees F
Frost-free period—110 to 140 days
Vegetal climax association: Basin big sagebrush, bluegrass, and basin wildrye
Typical profile:
0 to 17 inches—dark gray loam
17 to 33 inches—dark gray and gray clay loam

33 to 40 inches—dark gray loam
40 to 60 inches—grayish brown loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 40 to 60 inches
Drainage class: Moderately well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate
Frequency of flooding: Rare

Contrasting Inclusions

- Soils that are similar to Beetville soils but have more silt and clay, are on lower alluvial terraces, and support sedge and bluegrass—10 percent or less
- Soils that are similar to Beetville soils but are drier, are on upper fan terraces, and support fourwing saltbush and Indian ricegrass—5 percent or less
- Riverwash—small areas

Land Capability Classification

Hardtrigger soil: IIe, irrigated, and VIe, nonirrigated
Goose Creek soil: IIc, irrigated, and VIc, nonirrigated
Map unit (complex): IIe, irrigated, and VIe, nonirrigated

74—Hardtrigger-Scism complex, 1 to 5 percent slopes

Setting

Major landform: Draws
Elevation: 4,100 to 5,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Hardtrigger loam and similar inclusions—55 percent
Scism silt loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Hardtrigger Soil

Position on landscape: Fan terraces
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—9 to 11 inches
Air temperature—46 to 49 degrees F
Frost-free period—90 to 115 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 6 inches—pale brown loam
6 to 18 inches—very pale brown clay loam
18 to 60 inches—very pale brown sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Scism Soil

Position on landscape: Fan terraces
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—9 to 11 inches
Air temperature—46 to 49 degrees F
Frost-free period—100 to 120 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 6 inches—yellowish brown and light yellowish brown silt loam
6 to 21 inches—light yellowish brown and very pale brown silt loam
21 to 34 inches—hardpan
34 to 60 inches—white sandy loam
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Moderate
Hazard of erosion by wind: High

Contrasting Inclusions

- Orovada soils that are on lower fan terraces and support basin big sagebrush and basin wildrye—10 percent or less
- Rubbleland—5 percent or less
- Loomis soils that are in swales and support low sagebrush and bluebunch wheatgrass—5 percent or less
- Diawell soils that are on toe slopes of hills and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less

Land Capability Classification

Hardtrigger soil: VIe, nonirrigated
Scism soil: VIs, nonirrigated
Map unit (complex): VIe, nonirrigated

75—Hardtrigger-Snowmore-Vickery complex, 1 to 5 percent slopes

Setting

Major landform: Calderas
Elevation: 4,700 to 5,100 feet
Major uses: Rangeland and wildlife habitat

Composition

Hardtrigger loam and similar inclusions—40 percent
Snowmore loam and similar inclusions—30 percent
Vickery silt loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Hardtrigger Soil

Position on landscape: Smooth and convex slopes
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 48 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 6 inches—pale brown loam
6 to 18 inches—very pale brown clay loam
18 to 60 inches—very pale brown sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Snowmore Soil

Position on landscape: Smooth slopes
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 48 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 8 inches—pale brown loam
8 to 19 inches—pale brown clay loam
19 to 34 inches—very pale brown gravelly fine sandy loam
34 to 38 inches—hardpan
38 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Vickery Soil

Position on landscape: Smooth and concave slopes
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 48 degrees F
Frost-free period—100 to 110 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 4 inches—pale brown silt loam
4 to 12 inches—pale brown silt loam
12 to 25 inches—very pale brown silt loam
25 to 40 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Slickspots—10 percent or less
- Orovada soils that are in swales and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Hardtrigger soil: VIe, nonirrigated
Snowmore soil: VIe, nonirrigated
Vickery soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

76—Hat-Avtable-Monasterio complex, 1 to 20 percent slopes

Setting

Major landform: Foothills
Elevation: 5,000 to 6,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Hat gravelly loam and similar inclusions—50 percent
Avtable stony loam and similar inclusions—20 percent
Monasterio stony sandy loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Hat Soil

Position on landscape: Convex side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with occasional western juniper
Typical profile:
0 to 5 inches—pale brown gravelly loam
5 to 12 inches—pale brown gravelly clay loam
12 to 19 inches—brown very gravelly clay loam
19 to 24 inches—yellowish brown extremely cobbly clay loam
24 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Avtable Soil

Position on landscape: Summits
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—yellowish brown stony loam
4 to 10 inches—yellowish brown gravelly loam
10 to 19 inches—light yellowish brown extremely stony clay loam
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Monasterio Soil

Position on landscape: Concave side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with occasional western juniper
Typical profile:
0 to 8 inches—dark grayish brown stony sandy loam
8 to 11 inches—brown gravelly sandy loam
11 to 17 inches—dark yellowish brown very gravelly sandy loam
17 to 25 inches—brown very cobbly sandy clay loam
25 to 28 inches—brown extremely cobbly sandy clay loam
28 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderate
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Booford soils that are on south-facing foot slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less
- Rock outcrop that commonly has western juniper rooted in fractures—5 precent or less
- Soils that are similar to Doodlelink soils but are deep, are on north-facing concave side slopes, and support mountain big sagebrush and Idaho fescue—5 percent or less
- Saturday soils that are on north-facing shoulder slopes and support curlleaf mountainmahogany and mountain snowberry with occasional western juniper—small areas
- Blackwell soils that are on fluvial bottoms and support sedge and bluegrass—small areas

Land Capability Classification

Hat soil: IVe, nonirrigated
Avtable soil: VIs, nonirrigated

Monasterio soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

77—Hat-Nagitsy-Rock outcrop complex, 5 to 50 percent slopes

Setting

Major landform: Foothills and mountains
Elevation: 5,200 to 6,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Hat very gravelly loam and similar inclusions—35 percent
Nagitsy gravelly loam and similar inclusions—20 percent
Rock outcrop—20 percent
Contrasting inclusions—25 percent

Hat Soil

Position on landscape: Summits and side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—13 to 18 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper
Typical profile:
0 to 16 inches—yellowish brown very gravelly loam
16 to 24 inches—light yellowish brown extremely gravelly clay loam
24 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Nagitsy Soil

Position on landscape: North-facing side slopes
Slope range: 10 to 50 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—35 to 38 degrees F
Frost-free period—40 to 55 days
Vegetal climax association: Mountain big sagebrush, mountain snowberry, and mountain brome
Typical profile:
2 inches to 0—partially decomposed leaves and twigs
0 to 9 inches—very dark grayish brown gravelly loam
9 to 17 inches—dark brown gravelly loam
17 to 22 inches—dark yellowish brown very gravelly loam
22 to 35 inches—yellowish brown extremely gravelly loam
35 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Rock Outcrop

Position on landscape: Ridges and cliffs
Kind of material: Exposed hard welded rhyolitic tuff
Vegetation: Western juniper commonly rooted in fractures
Runoff: Very rapid

Contrasting Inclusions

- Hat soils that are on shoulder slopes and south-facing side slopes and support curlleaf mountainmahogany and mountain snowberry—10 percent or less
- Nipintuck soils that are on knolls and ridges and support low sagebrush and bluegrass with occasional western juniper—5 percent or less
- Avtable soils that are on knolls and south-facing side slopes and support low sagebrush and Idaho fescue—5 percent or less
- Dehana soils that are in swales and on north-facing side slopes and support mountain big sagebrush and Idaho fescue—5 percent or less
- Nagitsy soils that are on upper north-facing side slopes and support snowbrush ceanothus—small areas
- Soils that are similar to Povey soils but have less rock fragments, are on concave slopes, and support quaking aspen—small areas

Land Capability Classification

Hat soil: IVe, nonirrigated
Nagitsy soil: VIe, nonirrigated

Rock outcrop: VIII
Map unit (complex): VIe, nonirrigated

78—Hat-Rock outcrop-Nipintuck complex, 2 to 35 percent slopes

Setting

Major landform: Foothills
Elevation: 4,800 to 6,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Hat very gravelly loam and similar inclusions—40 percent
Rock outcrop—25 percent
Nipintuck stony coarse sandy loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Hat Soil

Position on landscape: South-facing side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—13 to 18 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper
Typical profile:
0 to 16 inches—yellowish brown very gravelly loam
16 to 24 inches—light yellowish brown extremely gravelly clay loam
24 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Rock Outcrop

Position on landscape: Ridges and cliffs
Kind of material: Exposed hard welded rhyolitic tuff
Vegetation: Western juniper commonly rooted in fractures
Runoff: Very rapid

Nipintuck Soil

Position on landscape: Ridges and shoulder slopes
Slope range: 2 to 30 percent
Climatic data (average annual):
Precipitation—10 to 14 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Low sagebrush and bluegrass with occasional western juniper
Typical profile:
0 to 2 inches—yellowish brown stony coarse sandy loam
2 to 6 inches—yellowish brown very cobbly loam
6 inches—bedrock
Depth class: Very shallow
Drainage class: Somewhat excessively drained
Runoff: Medium to very rapid
Permeability: Moderate
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Hat soils that are on shoulder slopes and side slopes and support curlleaf mountainmahogany and mountain snowberry—10 percent or less
- Zecanyon soils that are on toe slopes and support low sagebrush and Idaho fescue—5 percent or less
- Soils that are similar to Fulcrum soils but have a light-colored surface layer, are on south-facing breaks, and support western juniper—small areas
- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Hat soil: IVe, nonirrigated
Rock outcrop: VIII
Nipintuck soil: VIIs, nonirrigated
Map unit (complex): VIIs, nonirrigated

79—Hat-Zecanyon complex, 1 to 20 percent slopes

Setting

Major landform: Foothills
Elevation: 5,200 to 5,700 feet
Major uses: Rangeland and wildlife habitat

Composition

Hat gravelly loam and similar inclusions—55 percent
Zecanyon loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Hat Soil

Position on landscape: Summits and shoulder slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 5 inches—pale brown gravelly loam
5 to 12 inches—pale brown gravelly clay loam
12 to 19 inches—brown very gravelly clay loam
19 to 24 inches—yellowish brown extremely cobbly clay loam
24 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Zecanyon Soil

Position on landscape: Side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 5 inches—pale brown loam
5 to 9 inches—brown loam
9 to 13 inches—yellowish brown gravelly clay loam
13 to 20 inches—brown gravelly clay
20 to 28 inches—reddish yellow extremely gravelly sandy clay loam
28 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Yatahoney soils that are in saddles and swales and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
- Zecanyon soils that are on summits and support alkali sagebrush and Idaho fescue—5 percent or less
- Paynecreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Hat soil: IVe, nonirrigated
Zecanyon soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

80—Haw-Renslow association, 0 to 4 percent slopes

Setting

Major landform: Stream terraces
Elevation: 4,850 to 5,300 feet
Major uses: Rangeland and wildlife habitat

Composition

Haw loam and similar inclusions—55 percent
Renslow silt loam and similar inclusions—30 percent
Contrasting inclusions—15 percent

Haw Soil

Position on landscape: Mounds and upper terraces
Slope range: 1 to 4 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 47 degrees F
Frost-free period—85 to 105 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—brown loam
6 to 9 inches—yellowish brown loam
9 to 15 inches—yellowish brown clay loam
15 to 21 inches—light yellowish brown clay loam
21 to 60 inches—very pale brown sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: Very high

Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Renslow Soil

Position on landscape: Lower terraces
Slope range: 0 to 2 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 105 days
Vegetal climax association: Basin big sagebrush, bluegrass, and basin wildrye
Typical profile:
0 to 6 inches—brown silt loam
6 to 18 inches—yellowish brown silt loam
18 to 38 inches—light yellowish brown silt loam
38 to 60 inches—very pale brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow
Permeability: Moderate
Available water capacity: Very high
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Frenchjohn soils that are in swales and support low sagebrush and Idaho fescue—5 percent or less
- Soils that are similar to Buncelvoir soils but do not contain lime, are on lower stream terraces, and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Soils that are similar to Ruclick soils but are drier, are on lower fan terraces, and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Rubbleland—small areas

Land Capability Classification

Haw soil: VIc, nonirrigated
Renslow soil: IVc, nonirrigated

81—Heckison-Bigflat silt loams, 1 to 10 percent slopes

Setting

Major landform: Calderas
Elevation: 5,200 to 5,700 feet
Major uses: Rangeland and wildlife habitat

Composition

Heckison silt loam and similar inclusions—70 percent
Bigflat silt loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Heckison Soil

Position on landscape: Smooth and convex slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 95 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown silt loam
4 to 19 inches—yellowish brown silty clay loam
19 to 29 inches—very pale brown silt loam
29 to 35 inches—hardpan
35 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Bigflat Soil

Position on landscape: Fan terraces
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—brown silt loam
6 to 9 inches—pale brown silt loam
9 to 19 inches—yellowish brown and light yellowish brown silty clay
19 to 40 inches—very pale brown loam
40 to 48 inches—very pale brown fine sandy loam
48 to 60 inches—white extremely gravelly loamy sand
Depth class: Very deep
Restriction to rooting depth: Abrupt textural change at a depth of 5 to 10 inches
Drainage class: Well drained
Runoff: Slow or medium

Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Slickspots—10 percent or less
- Insidert soils that are on concave slopes and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less

Land Capability Classification

Heckison soil: IVe, nonirrigated
Bigflat soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

82—Heckison-Freshwater complex, 1 to 20 percent slopes

Setting

Major landform: Plug domes
Elevation: 5,300 to 5,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Heckison silt loam and similar inclusions—75 percent
Freshwater stony silt loam and similar inclusions—20 percent
Contrasting inclusions—5 percent

Heckison Soil

Position on landscape: Summits and side slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown silt loam
4 to 19 inches—yellowish brown silty clay loam
19 to 29 inches—very pale brown silt loam
29 to 35 inches—hardpan
35 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Freshwater Soil

Position on landscape: Shoulder slopes and convex side slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown stony silt loam
4 to 12 inches—very pale brown gravelly clay loam
12 to 30 inches—hardpan
30 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Rock outcrop—5 percent or less

Land Capability Classification

Heckison soil: IVe, nonirrigated
Freshwater soil: VIs, nonirrigated
Map unit (complex): IVe, nonirrigated

83—Heckison-Insidert-Bigflat silt loams, 1 to 10 percent slopes

Setting

Major landform: Calderas
Elevation: 5,300 to 5,650 feet
Major uses: Rangeland and wildlife habitat

Composition

Heckison silt loam and similar inclusions—40 percent
Insidert silt loam and similar inclusions—30 percent
Bigflat silt loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Heckison Soil

Position on landscape: Convex slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown silt loam
4 to 19 inches—yellowish brown silty clay loam
19 to 29 inches—very pale brown silt loam
29 to 35 inches—hardpan
35 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Insidert Soil

Position on landscape: Smooth and convex slopes
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—yellowish brown silt loam
6 to 9 inches—brown clay
9 to 17 inches—light yellowish brown and pale brown clay
17 to 24 inches—white very gravelly sandy loam
24 to 27 inches—hardpan
27 inches—bedrock
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 3 to 9 inches
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Bigflat Soil

Position on landscape: Smooth and concave slopes
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—brown silt loam
6 to 9 inches—pale brown silt loam
9 to 19 inches—yellowish brown and light yellowish brown silty clay
19 to 40 inches—very pale brown loam
40 to 48 inches—very pale brown fine sandy loam
48 to 60 inches—white extremely gravelly loamy sand
Depth class: Very deep
Restriction to rooting depth: Abrupt textural change at a depth of 5 to 10 inches
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Freshwater soils that are on ridges and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Dishpan soils that are on stream terraces and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Slickspots—5 percent or less
- Merlin soils that are in swales and support low sagebrush and Idaho fescue—small areas

Land Capability Classification

Heckison soil: IVe, nonirrigated
Insidert soil: IVe, nonirrigated
Bigflat soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

84—Hotcreek-Troughs association, 1 to 15 percent slopes

Setting

Major landform: Foothills
Elevation: 3,900 to 4,550 feet
Major uses: Rangeland and wildlife habitat

Composition

Hotcreek very stony sandy loam and similar inclusions—45 percent
Troughs stony loam and similar inclusions—35 percent
Contrasting inclusions—20 percent

Hotcreek Soil

Position on landscape: Summits and upper side slopes
Slope range: 1 to 15 percent
Climatic data (average annual):
Precipitation—9 to 12 inches
Air temperature—48 to 50 degrees F
Frost-free period—105 to 120 days
Vegetal climax association: Black sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—light brownish gray very stony sandy loam
2 to 7 inches—light brownish gray very gravelly clay loam
7 to 11 inches—hardpan
11 inches—bedrock
Depth class: Very shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Troughs Soil

Position on landscape: Lower side slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 50 degrees F
Frost-free period—105 to 120 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—pale brown stony loam
2 to 6 inches—very pale brown gravelly clay loam
6 to 12 inches—very pale brown extremely cobbly loam
12 to 20 inches—hardpan
20 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Sugarcreek soils that are on side slopes and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Plush soils that are on escarpments and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Rock outcrop—5 percent or less
- Slickspots—small areas
- Orovada soils that are on stream terraces and support basin big sagebrush and basin wildrye—small areas

Land Capability Classification

Hotcreek soil: VIIs, nonirrigated
Troughs soil: VIe, nonirrigated

85—Hurryback-Hat-Avtable association, 1 to 40 percent slopes

Setting

Major landform: Foothills
Elevation: 5,000 to 6,300 feet
Major uses: Rangeland and wildlife habitat

Composition

Hurryback loam and similar inclusions—35 percent
Hat gravelly loam and similar inclusions—25 percent
Avtable stony loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Hurryback Soil

Position on landscape: North-facing side slopes
Slope range: 8 to 40 percent
Climatic data (average annual):
Precipitation—13 to 16 inches

Air temperature—41 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with occasional western juniper
Typical profile:
0 to 6 inches—dark brown loam
6 to 24 inches—brown clay loam
24 to 35 inches—dark yellowish brown gravelly clay loam
35 to 60 inches—yellowish brown clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Hat Soil

Position on landscape: South-facing side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper
Typical profile:
0 to 5 inches—pale brown gravelly loam
5 to 12 inches—pale brown gravelly clay loam
12 to 19 inches—brown very gravelly clay loam
19 to 24 inches—yellowish brown extremely cobbly clay loam
24 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Avtable Soil

Position on landscape: Summits and south-facing side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue with occasional western juniper
Typical profile:
0 to 4 inches—yellowish brown stony loam
4 to 10 inches—yellowish brown gravelly loam
10 to 19 inches—light yellowish brown extremely stony clay loam
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Nipintuck soils that are on ridges and breaks and support low sagebrush and bluegrass with occasional western juniper—10 percent or less
- Rock outcrop that commonly has western juniper rooted in fractures—10 percent or less
- Soils that are similar to Doodlelink soils but have less rock fragments, are on upper north-facing concave side slopes, and support mountain big sagebrush and Idaho fescue—5 percent or less
- Yatahoney soils that are on toe slopes and support alkali sagebrush and Idaho fescue with occasional western juniper—small areas
- Saturday soils that are on ridges and north-facing shoulder slopes and support curlleaf mountainmahogany and mountain snowberry with occasional western juniper—small areas

Land Capability Classification

Hurryback soil: IVe, nonirrigated
Hat soil: IVe, nonirrigated
Avtable soil: VIs, nonirrigated

Figure 6.—Typical area of Hurryback-Wickahoney association, 3 to 45 percent slopes. Wickahoney-Budlewis complex, 1 to 10 percent slopes, on nearly level tableland in upper right.

86—Hurryback-Wickahoney association, 3 to 45 percent slopes

Setting

Major landform: Tableland escarpments (fig. 6)
Elevation: 5,100 to 6,150 feet
Major uses: Rangeland and wildlife habitat

Composition

Hurryback stony loam and similar inclusions—40 percent
Wickahoney stony loam and similar inclusions—35 percent
Contrasting inclusions—25 percent

Hurryback Soil

Position on landscape: Concave side slopes
Slope range: 8 to 40 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown stony loam
8 to 33 inches—dark brown and brown clay loam
33 to 45 inches—light yellowish brown clay loam
45 to 60 inches—pale yellow sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Wickahoney Soil

Position on landscape: Convex side slopes
Slope range: 3 to 45 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—light brownish gray stony loam
5 to 12 inches—pale brown cobbly clay loam
12 to 19 inches—dark yellowish brown very cobbly clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Rubbleland—10 percent or less
- Rock outcrop that has occasional western juniper rooted in fractures—10 percent or less
- Soils that are similar to Tucker soils but have occasional vertical cracks, are on foot slopes, and support sedge and bluegrass—5 percent or less

Land Capability Classification

Hurryback soil: IVe, nonirrigated
Wickahoney soil: VIe, nonirrigated

87—Igert-Willhill-Hardtrigger gravelly loams, 1 to 25 percent slopes

Setting

Major landform: Foothills
Elevation: 3,500 to 5,400 feet
Major uses: Rangeland and wildlife habitat

Composition

Igert gravelly loam and similar inclusions—50 percent
Willhill gravelly loam and similar inclusions—25 percent

Hardtrigger gravelly loam and similar inclusions—15 percent
Contrasting inclusions—10 percent

Igert Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 20 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 130 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 12 inches—pale brown gravelly loam
12 to 18 inches—yellowish brown gravelly loam
18 to 23 inches—light yellowish brown gravelly loam
23 to 39 inches—very pale brown weakly cemented extremely gravelly loam
39 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Willhill Soil

Position on landscape: Side slopes
Slope range: 3 to 25 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 50 degrees F
Frost-free period—85 to 125 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 5 inches—light brownish gray gravelly loam
5 to 9 inches—brown gravelly clay loam
9 to 13 inches—yellowish brown very gravelly clay loam
13 to 28 inches—light yellowish brown extremely cobbly loam
28 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Hardtrigger Soil

Position on landscape: Foot slopes
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 125 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown gravelly loam
4 to 8 inches—very pale brown gravelly loam
8 to 15 inches—very pale brown clay loam
15 to 20 inches—very pale brown gravelly clay loam
20 to 28 inches—white gravelly sandy loam
28 to 60 inches—white very gravelly loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Cottle soils that are on ridges and shoulder slopes and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Rock outcrop—small areas

Land Capability Classification

Igert soil: VIe, nonirrigated
Willhill soil: VIe, nonirrigated
Hardtrigger soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

88—Insidert-Tanner complex, 1 to 8 percent slopes

Setting

Major landform: Calderas
Elevation: 5,600 to 5,900 feet
Major uses: Rangeland and wildlife habitat

Composition

Insidert silt loam and similar inclusions—60 percent
Tanner loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Insidert Soil

Position on landscape: Smooth and concave slopes
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 44 degrees F
Frost-free period—75 to 85 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—yellowish brown silt loam
6 to 9 inches—brown clay
9 to 17 inches—pale brown and light yellowish brown clay
17 to 24 inches—white very gravelly sandy loam
24 to 27 inches—hardpan
27 inches—bedrock
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 3 to 9 inches
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Tanner Soil

Position on landscape: Convex slopes
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 44 degrees F
Frost-free period—75 to 85 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown loam
4 to 11 inches—brown silty clay loam
11 to 16 inches—pale brown silty clay
16 to 21 inches—very pale brown gravelly sandy loam
21 to 42 inches—hardpan
42 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Heckison soils that are on knolls and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Dishpan soils but have more clay, are in swales, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Rock outcrop—small areas

Land Capability Classification

Insidert soil: IVe, nonirrigated
Tanner soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

89—Jumpcreek-Frenchjohn complex, 3 to 30 percent slopes

Setting

Major landform: Structural benches
Elevation: 4,250 to 4,700 feet
Major uses: Rangeland and wildlife habitat

Composition

Jumpcreek gravelly loam and similar inclusions—60 percent
Frenchjohn gravelly silt loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Jumpcreek Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 30 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—47 to 49 degrees F
Frost-free period—95 to 115 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—grayish brown gravelly loam
6 to 12 inches—brown very gravelly loam
12 to 21 inches—yellowish brown very gravelly clay loam
21 to 30 inches—brown extremely gravelly clay
30 to 36 inches—very pale brown, weakly cemented extremely gravelly sandy loam
36 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow

Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Frenchjohn Soil

Position on landscape: Saddles and concave side slopes
Slope range: 3 to 25 percent
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—47 to 49 degrees F
Frost-free period—95 to 115 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 11 inches—grayish brown and brown gravelly silt loam
11 to 22 inches—yellowish brown very gravelly clay
22 to 29 inches—light yellowish brown very gravelly clay loam
29 to 36 inches—very pale brown extremely gravelly sandy loam
36 inches—bedrock
Depth class: Moderately deep
Restriction to rooting depth: Abrupt textural change at a depth of 8 to 12 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Haw soils but are more moist, do not contain lime, are on north-facing side slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
- Chilcott soils that are on toe slopes and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Rock outcrop—5 percent or less
- Soils that are similar to Cottle soils but have a dark-colored surface layer, are on ridges, and support low sagebrush and bluebunch wheatgrass—5 percent or less

Land Capability Classification

Jumpcreek soil: IVe, nonirrigated
Frenchjohn soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

90—Kanlee-Ola-Quicksilver association, 3 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 4,800 to 6,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Kanlee fine gravelly coarse sandy loam and similar inclusions—45 percent
Ola coarse sandy loam and similar inclusions—25 percent
Quicksilver bouldery coarse sandy loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Kanlee Soil

Position on landscape: Summits and side slopes
Slope range: 4 to 40 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper
Typical profile:
0 to 10 inches—very dark grayish brown fine gravelly coarse sandy loam
10 to 14 inches—brown fine gravelly coarse sandy loam
14 to 32 inches—brown fine gravelly sandy clay loam
32 to 45 inches—weathered granite
45 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate

Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Ola Soil

Position on landscape: North-facing side slopes
Slope range: 8 to 20 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue with occasional western juniper
Typical profile:
0 to 5 inches—brown coarse sandy loam
5 to 18 inches—brown sandy loam
18 to 28 inches—brown coarse sandy loam
28 to 35 inches—pale brown gravelly coarse sandy loam
35 to 38 inches—weathered bedrock
38 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: High

Quicksilver Soil

Position on landscape: Summits and south-facing side slopes
Slope range: 3 to 50 percent
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 95 days
Vegetal climax association: Curlleaf mountainmahogany and mountain snowberry with common western juniper
Typical profile:
0 to 4 inches—brown bouldery coarse sandy loam
4 to 15 inches—brown and pale brown gravelly coarse sandy loam
15 to 18 inches—pale brown very gravelly coarse sandy loam
18 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately rapid
Available water capacity: Very low
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Rock outcrop—10 percent or less
- Bauscher soils that are on concave north-facing side slopes and support mountain big sagebrush and Idaho fescue—5 percent or less

Land Capability Classification

Kanlee soil: IVe, nonirrigated
Ola soil: IVe, nonirrigated
Quicksilver soil: VIe, nonirrigated

91—Kanlee-Poisoncreek-Ola association, 1 to 45 percent slopes

Setting

Major landform: Mountains
Elevation: 5,000 to 6,400 feet
Major uses: Rangeland and wildlife habitat

Composition

Kanlee fine gravelly coarse sandy loam and similar inclusions—50 percent
Poisoncreek gravelly coarse sandy loam and similar inclusions—30 percent
Ola coarse sandy loam and similar inclusions—15 percent
Contrasting inclusions—5 percent

Kanlee Soil

Position on landscape: Side slopes
Slope range: 4 to 40 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 10 inches—very dark grayish brown fine gravelly coarse sandy loam
10 to 14 inches—brown fine gravelly coarse sandy loam
14 to 32 inches—brown fine gravelly sandy clay loam
32 to 45 inches—weathered bedrock
45 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Low

Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Poisoncreek Soil

Position on landscape: Summits, shoulder slopes, and south-facing side slopes
Slope range: 1 to 45 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—grayish brown gravelly coarse sandy loam
3 to 6 inches—brown very gravelly sandy clay loam
6 to 12 inches—yellowish brown extremely gravelly sandy clay loam
12 to 16 inches—weathered bedrock
16 inches—bedrock
Depth class: Shallow
Drainage class: Somewhat excessively drained
Runoff: Slow to very rapid
Permeability: Moderate
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Ola Soil

Position on landscape: North-facing side slopes
Slope range: 8 to 20 percent
Climatic data (average annual):
Precipitation—16 to 18 inches
Air temperature—40 to 45 degrees F
Frost-free period—55 to 90 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—brown coarse sandy loam
5 to 18 inches—brown sandy loam
18 to 28 inches—brown coarse sandy loam
28 to 35 inches—pale brown gravelly coarse sandy loam
35 to 38 inches—weathered bedrock
38 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: High

Contrasting Inclusions

- Soils that are similar to Upcreek soils but are well drained, have less clay in the lower part, are on stream terraces, and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Kanlee soils that are in saddles and on south-facing side slopes and support low sagebrush and Idaho fescue—small areas

Land Capability Classification

Kanlee soil: IVe, nonirrigated
Poisoncreek soil: VIs, nonirrigated
Ola soil: IVe, nonirrigated

92—Kiyi-Sharesnout-Hades complex, 3 to 40 percent slopes

Setting

Major landform: Foothills and mountains
Elevation: 5,300 to 6,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Kiyi gravelly loam and similar inclusions—30 percent
Sharesnout stony loam and similar inclusions—25 percent
Hades loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Kiyi Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 40 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—39 to 44 degrees F
Frost-free period—60 to 85 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown and grayish brown gravelly loam
8 to 16 inches—grayish brown gravelly clay loam
16 to 25 inches—brown very gravelly clay loam
25 to 40 inches—pale brown gravelly clay
40 to 60 inches—very pale brown very cobbly clay
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: High

Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Sharesnout Soil

Position on landscape: Toe slopes and south-facing side slopes
Slope range: 3 to 35 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—38 to 44 degrees F
Frost-free period—55 to 85 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 4 inches—dark brown stony loam
4 to 12 inches—brown stony loam
12 to 21 inches—pale brown very gravelly clay loam
21 to 30 inches—pale brown very cobbly clay loam
30 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Hades Soil

Position on landscape: North-facing side slopes
Slope range: 5 to 30 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—38 to 41 degrees F
Frost-free period—50 to 80 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—dark brown loam
5 to 20 inches—very dark grayish brown loam
20 to 40 inches—brown clay loam
40 to 60 inches—yellowish brown clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Nagitsy soils that are on north-facing side slopes and support mountain big sagebrush, mountain snowberry, and mountain brome—10 percent or less
- Soils that are similar to Coser soils but are poorly drained, are on toe slopes, and support low sagebrush, Idaho fescue, and mulesear wyethia—10 percent or less
- Tucker soils that are on fluvial bottoms and support sedge and bluegrass—small areas
- Saturday soils that are on ridges and support curlleaf mountainmahogany and mountain snowberry with occasional western juniper—small areas
- Rock outcrop—small areas

Land Capability Classification

Kiyi soil: IVe, nonirrigated
Sharesnout soil: VIe, nonirrigated
Hades soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

93—Larioscamp-Dishpan-Brace loams, 1 to 12 percent slopes

Setting

Major landform: Calderas
Elevation: 5,400 to 5,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Larioscamp loam and similar inclusions—40 percent
Dishpan loam and similar inclusions—30 percent
Brace loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Larioscamp Soil

Position on landscape: Smooth and concave slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—12 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—pale brown loam
3 to 9 inches—yellowish brown clay loam

9 to 15 inches—yellowish brown clay
15 to 25 inches—very pale brown very cobbly sandy loam
25 to 29 inches—hardpan
29 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Dishpan Soil

Position on landscape: Swales
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—12 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown loam
4 to 16 inches—brown and light yellowish brown clay loam
16 to 28 inches—very pale brown very cobbly fine sandy loam
28 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Brace Soil

Position on landscape: Convex slopes
Slope range: 1 to 12 percent
Climatic data (average annual):
Precipitation—12 to 13 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—light brownish gray loam
6 to 19 inches—pale brown gravelly clay loam
19 to 23 inches—pale brown cobbly clay loam
23 to 26 inches—hardpan
26 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

• Soils that are similar to Insidert soils but have a light-colored surface layer, are on concave slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less

Land Capability Classification

Larioscamp soil: IVe, nonirrigated
Dishpan soil: IVe, nonirrigated
Brace soil: VIe, nonirrigated
Map unit (complex): IVe, nonirrigated

94—Larioscamp-Freshwater complex, 1 to 15 percent slopes

Setting

Major landform: Structural benches
Elevation: 5,350 to 5,550 feet
Major uses: Rangeland and wildlife habitat

Composition

Larioscamp loam and similar inclusions—40 percent
Freshwater stony loam and similar inclusions—40 percent
Contrasting inclusions—20 percent

Larioscamp Soil

Position on landscape: Summits
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—pale brown loam
3 to 9 inches—yellowish brown clay loam
9 to 15 inches—yellowish brown clay
15 to 25 inches—very pale brown very cobbly sandy loam
25 to 29 inches—hardpan
29 inches—bedrock

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Freshwater Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—44 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 5 inches—pale brown stony loam
5 to 13 inches—pale brown clay loam
13 to 18 inches—light yellowish brown clay loam
18 to 22 inches—hardpan
22 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Insidert soils that are on structural benches and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Kanlee soils but are drier, are on summits, and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Soils that are similar to Dougal soils but are cooler, are in swales, and support low sagebrush and bluebunch wheatgrass—5 percent or less

Land Capability Classification

Larioscamp soil: IVe, nonirrigated
Freshwater soil: VIs, nonirrigated
Map unit (complex): VIs, nonirrigated

95—Longcreek-Hurryback-Succor complex, 3 to 40 percent slopes

Setting

Major landform: Structural benches and foothills
Elevation: 4,600 to 5,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Longcreek very cobbly loam and similar inclusions—30 percent
Hurryback loam and similar inclusions—25 percent
Succor gravelly loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Longcreek Soil

Position on landscape: Summits and south-facing side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 115 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 5 inches—brown very cobbly loam
5 to 11 inches—yellowish brown very cobbly clay loam
11 to 19 inches—light brown very cobbly clay
19 inches—bedrock
Characteristics outside range for series: Elevation and frost-free period (differences do not affect use and management)
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Hurryback Soil

Position on landscape: North-facing side slopes
Slope range: 8 to 40 percent

Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 95 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 6 inches—dark brown loam
6 to 24 inches—brown clay loam
24 to 35 inches—dark yellowish brown gravelly clay loam
35 to 60 inches—yellowish brown clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Succor Soil

Position on landscape: North-facing side slopes and toe slopes
Slope range: 3 to 35 percent
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 115 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—grayish brown gravelly loam
5 to 18 inches—brown clay
18 to 22 inches—light yellowish brown clay loam
22 to 33 inches—pale brown sandy loam
33 to 60 inches—light gray loam
Depth class: Very deep
Restriction to rooting depth: Abrupt textural change at a depth of 5 to 14 inches
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very high
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Sharesnout soils but are warmer, are on south-facing side slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
- Rock outcrop—5 percent or less
- Soils that are similar to Cottle soils but are very shallow, are on ridges and knolls, and support low sagebrush and bluegrass—5 percent or less
- Soils that are similar to Perla soils but are more moist, are on south-facing side slopes, and support low sagebrush and Idaho fescue—5 percent or less
- Rubbleland—small areas

Land Capability Classification

Longcreek soil: VIs, nonirrigated
Hurryback soil: IVe, nonirrigated
Succor soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

96—Loomis-Fairylawn complex, 1 to 15 percent slopes

Setting

Major landform: Tablelands
Elevation: 4,650 to 5,100 feet
Major uses: Rangeland and wildlife habitat

Composition

Loomis very stony loam and similar inclusions—55 percent
Fairylawn silt loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Loomis Soil

Position on landscape: Summits
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 105 days
Vegetal climax association: Low sagebrush and bluegrass
Typical profile:
0 to 3 inches—light yellowish brown very stony loam
3 to 7 inches—brown very cobbly clay loam
7 to 14 inches—pale brown extremely cobbly clay
14 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow

Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Fairylawn Soil

Position on landscape: Summits
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 105 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—pale brown silt loam
8 to 20 inches—brown clay
20 to 25 inches—light brown loam
25 to 40 inches—hardpan
40 inches—bedrock
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 5 to 12 inches
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Very slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Schnipper soils that are on mounds and support basin big sagebrush and bluebunch wheatgrass—5 percent or less
- Piline soils that are on alluvial flats and support silver sagebrush and bluegrass—5 percent or less
- Rubbleland—5 percent or less
- Rock outcrop that has occasional western juniper rooted in fractures—5 percent or less

Land Capability Classification

Loomis soil: VIs, nonirrigated
Fairylawn soil: IVe, nonirrigated
Map unit (complex): VIs, nonirrigated

97—Loomis-Haw association, 2 to 35 percent slopes

Setting

Major landform: Fan terraces
Elevation: 4,000 to 5,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Loomis stony loam and similar inclusions—45 percent
Haw sandy loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Loomis Soil

Position on landscape: Convex summits and shoulder slopes
Slope range: 2 to 35 percent
Climatic data (average annual):
Precipitation—11 to 12 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 115 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—light brownish gray stony loam
4 to 7 inches—pale brown very gravelly clay loam
7 to 14 inches—yellowish brown very cobbly clay
14 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Haw Soil

Position on landscape: Swales
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—11 to 12 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 115 days
Vegetal climax association: Wyoming big sagebrush and Indian ricegrass
Typical profile:
0 to 4 inches—pale brown sandy loam
4 to 18 inches—brown sandy loam
18 to 32 inches—brown and light yellowish brown sandy clay loam
32 to 60 inches—very pale brown loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: High

Contrasting Inclusions

• Kanlee soils that are on upper north-facing side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
• Soils that are similar to Cottle soils but are underlain by soft bedrock, are on eroded slopes, and support black sagebrush and Thurber needlegrass—10 percent or less
• Rock outcrop—5 percent or less
• Soils that are similar to Tindahay soils but have more clay, are on stream terraces, and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Loomis soil: VIs, nonirrigated
Haw soil: VIe, nonirrigated

98—Lostvalley-Budlewis complex, 1 to 10 percent slopes

Setting

Major landform: Calderas
Elevation: 5,700 to 6,200 feet
Major uses: Rangeland and wildlife habitat

Composition

Lostvalley stony silt loam and similar inclusions—50 percent
Budlewis silt loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Lostvalley Soil

Position on landscape: Smooth and concave slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 44 degrees F
Frost-free period—70 to 85 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—brown stony silt loam
6 to 20 inches—pale brown cobbly clay
20 to 26 inches—very pale brown cobbly clay loam
26 inches—bedrock
Depth class: Moderately deep
Restriction to rooting depth: Abrupt textural change at a depth of 4 to 10 inches
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Budlewis Soil

Position on landscape: Smooth and convex slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 43 degrees F
Frost-free period—70 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 14 inches—brown silty clay loam
14 to 24 inches—light yellowish brown clay
24 to 29 inches—very pale brown gravelly loam
29 to 30 inches—hardpan
30 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

• Soils that are similar to Bigflat soils but are more moist, are in swales, and support low sagebrush and Idaho fescue—10 percent or less
• Soils that are similar to Ruclick soils but are more moist, contain lime, are on rims and in draws, and support low sagebrush and Idaho fescue—10 percent or less

Land Capability Classification

Lostvalley soil: IVe, nonirrigated
Budlewis soil: IVs, nonirrigated
Map unit (complex): IVe, nonirrigated

99—Mackey-Cottle association, 10 to 45 percent slopes

Setting

Major landform: Foothills
Elevation: 3,000 to 4,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Mackey stony loam and similar inclusions—50 percent
Cottle stony loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Mackey Soil

Position on landscape: North-facing side slopes
Slope range: 15 to 45 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—47 to 51 degrees F
Frost-free period—100 to 130 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—pale brown stony loam
6 to 12 inches—yellowish brown very gravelly loam
12 to 26 inches—light yellowish brown extremely gravelly sandy loam
26 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Rapid or very rapid
Permeability: Moderately rapid
Available water capacity: Very low
Hazard of erosion by water: Moderate to severe
Hazard of erosion by wind: Slight

Cottle Soil

Position on landscape: Ridges and south-facing side slopes
Slope range: 10 to 40 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—47 to 51 degrees F
Frost-free period—95 to 130 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 5 inches—light brownish gray stony loam
5 to 8 inches—light brownish gray very gravelly loam
8 to 11 inches—pale brown very gravelly loam
11 to 16 inches—brown extremely gravelly clay loam
16 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Rapid or very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Rubbleland—10 percent or less
- Plush soils that are on steep side slopes and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Rock outcrop—5 percent or less
- Plush soils that are on concave slopes and support basin big sagebrush and bluebunch wheatgrass—small areas
- Acrelane soils that are on side slopes and support Wyoming big sagebrush and bluebunch wheatgrass—small areas

Land Capability Classification

Mackey soil: VIe, nonirrigated
Cottle soil: VIe, nonirrigated

100—McKeeth-Veta gravelly loams, 2 to 15 percent slopes

Setting

Major landform: Fan piedmonts
Elevation: 2,400 to 3,800 feet
Major uses: Rangeland and wildlife habitat

Composition

McKeeth gravelly loam and similar inclusions—65 percent
Veta gravelly loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

McKeeth Soil

Position on landscape: Summits
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—50 to 52 degrees F
Frost-free period—120 to 150 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Typical profile:
0 to 5 inches—light gray gravelly loam
5 to 12 inches—very pale brown gravelly clay loam
12 to 16 inches—light yellowish brown gravelly loam
16 to 20 inches—discontinuous, strongly

cemented very pale brown very gravelly sandy loam
20 to 60 inches—dark yellowish brown extremely gravelly loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Veta Soil

Position on landscape: Swales
Slope range: 4 to 15 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—50 to 53 degrees F
Frost-free period—120 to 150 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 10 inches—pale brown and very pale brown gravelly loam
10 to 31 inches—very pale brown and light yellowish brown very gravelly fine sandy loam
31 to 60 inches—stratified very pale brown sandy loam to very gravelly loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately rapid
Available water capacity: Medium
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Ornea soils that are on summits and side slopes and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—10 percent or less
- Soils that are similar to Chilcott soils but are drier, are on shoulder slopes and side slopes, and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—5 percent or less
- Wholan soils that are on foot slopes and support winterfat and Indian ricegrass—small areas
- Badlands—small areas
- Slickspots—small areas

Land Capability Classification

McKeeth soil: VIIe, nonirrigated
Veta soil: VIe, nonirrigated
Map unit (complex): VIIe, nonirrigated

101—Merlin-Lostvalley-Chayson complex, 1 to 12 percent slopes

Setting

Major landform: Tablelands
Elevation: 5,450 to 6,050 feet
Major uses: Rangeland and wildlife habitat

Composition

Merlin very stony loam and similar inclusions—40 percent
Lostvalley stony silt loam and similar inclusions—25 percent
Chayson silt loam and similar inclusions—15 percent
Contrasting inclusions—20 percent

Merlin Soil

Position on landscape: Swales and concave slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 44 degrees F
Frost-free period—50 to 85 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—grayish brown very stony loam
4 to 9 inches—brown clay loam
9 to 19 inches—yellowish brown clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Lostvalley Soil

Position on landscape: Summits
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—brown stony silt loam

6 to 20 inches—pale brown cobbly clay
20 to 26 inches—very pale brown cobbly clay loam
26 inches—bedrock
Depth class: Moderately deep
Restriction to rooting depth: Abrupt textural change at a depth of 4 to 10 inches
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Chayson Soil

Position on landscape: Mounds and north-facing slopes
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—42 to 44 degrees F
Frost-free period—70 to 85 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 4 inches—dark grayish brown silt loam
4 to 27 inches—brown and dark brown clay loam
27 to 37 inches—pale brown gravelly loam
37 to 45 inches—hardpan
45 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Budlewis soils that are on convex slopes and support low sagebrush and Idaho fescue—10 percent or less
- Rock outcrop—5 percent or less
- Soils that are similar to Hatpeak soils but do not contain lime, are on upper north-facing concave slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—5 percent or less

Land Capability Classification

Merlin soil: VIs, nonirrigated
Lostvalley soil: IVe, nonirrigated
Chayson soil: IVe, nonirrigated
Map unit (complex): VIs, nonirrigated

102—Minveno-Roseworth silt loams, 1 to 5 percent slopes

Setting

Major landform: Structural benches
Elevation: 4,250 to 4,750 feet
Major uses: Rangeland and wildlife habitat

Composition

Minveno silt loam and similar inclusions—55 percent
Roseworth silt loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Minveno Soil

Position on landscape: Lower summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—47 to 49 degrees F
Frost-free period—100 to 120 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 12 inches—brown and yellowish brown silt loam
12 to 16 inches—pale brown silt loam
16 to 19 inches—very pale brown loam
19 to 39 inches—hardpan
39 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium
Permeability: Moderate
Available water capacity: Low
Hazard of erosion by water: Moderate
Hazard of erosion by wind: High

Roseworth Soil

Position on landscape: Upper summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—47 to 49 degrees F
Frost-free period—95 to 120 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:

0 to 4 inches—pale brown silt loam
4 to 13 inches—light yellowish brown silt loam
13 to 16 inches—hardpan
16 to 31 inches—very pale brown weakly cemented sandy loam
31 to 60 inches—hardpan
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Sugarcreek soils that are on side slopes and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Slickspots—10 percent or less
- Soils that are similar to Diawell soils but are moderately deep, are on foot slopes, and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Rock outcrop—small areas
- Orovada soils that are on toe slopes and support basin big sagebrush and basin wildrye—small areas

Land Capability Classification

Minveno soil: VIs, nonirrigated
Roseworth soil: VIs, nonirrigated
Map unit (complex): VIs, nonirrigated

103—Mollic Haploxeralfs-Pachic Argixerolls complex, steep

Setting

Major landform: Tableland escarpments
Elevation: 4,400 to 6,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Mollic Haploxeralfs and similar inclusions—40 percent
Pachic Argixerolls and similar inclusions—35 percent
Contrasting inclusions—25 percent

Mollic Haploxeralfs

Position on landscape: Convex side slopes
Slope range: 15 to 50 percent
Climatic data (average annual):
Precipitation—12 to 17 inches
Air temperature—40 to 48 degrees F
Frost-free period—60 to 110 days
Vegetal climax association: Low sagebrush and Idaho fescue
Sample profile:
0 to 5 inches—light brownish gray cobbly loam
5 to 9 inches—brown gravelly clay loam
9 to 21 inches—yellowish brown clay
21 to 38 inches—yellowish brown very gravelly clay loam
38 inches—weathered bedrock
Depth class: Moderately deep and deep
Drainage class: Well drained
Runoff: Rapid and very rapid
Permeability: Moderately slow and slow
Available water capacity: Very high
Shrink-swell potential: High
Hazard of erosion by water: Moderate and high
Hazard of erosion by wind: Moderate

Pachic Argixerolls

Position on landscape: Slightly concave side slopes
Slope range: 20 to 50 percent
Climatic data (average annual):
Precipitation—13 to 18 inches
Air temperature—38 to 49 degrees F
Frost-free period—60 to 120 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Sample profile:
0 to 10 inches—dark grayish brown stony loam
10 to 20 inches—dark grayish brown very cobbly loam
20 to 60 inches—brown very cobbly clay loam
Depth class: Deep and very deep
Drainage class: Well drained
Runoff: Very rapid
Permeability: Moderate and slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate and high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Rubbleland—10 percent or less
- Rock outcrop—10 percent or less
- Soils that have a hardpan, are on less steep slopes, and support alkali sagebrush and Idaho fescue—5 percent or less
- Soils that are more moist, are on concave slopes, and support mountain big sagebrush and Idaho fescue—small areas
- Soils that are similar to Boulder Lake soils but are frequently flooded for very long periods and are on intermittent lakebeds—small areas

Land Capability Classification

Mollic Haploxeralfs: VIe, nonirrigated
Pachic Argixerolls: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

104—Monasterio-Chayson-Budlewis complex, 1 to 15 percent slopes

Setting

Major landform: Structural benches
Elevation: 5,450 to 5,650 feet
Major uses: Rangeland and wildlife habitat

Composition

Monasterio very stony sandy loam and similar inclusions—40 percent
Chayson loam and similar inclusions—30 percent
Budlewis silt loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Monasterio Soil

Position on landscape: Summits
Slope range: 1 to 15 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—42 to 44 degrees F
Frost-free period—70 to 85 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 6 inches—dark grayish brown very stony sandy loam
6 to 11 inches—grayish brown very gravelly sandy clay loam
11 to 19 inches—yellowish brown very cobbly sandy clay loam
19 to 24 inches—brown extremely cobbly sandy clay loam
24 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderate
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Chayson Soil

Position on landscape: Lower side slopes
Slope range: 2 to 10 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 44 degrees F
Frost-free period—75 to 85 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 5 inches—brown loam
5 to 10 inches—brown gravelly loam
10 to 18 inches—pale brown and light yellowish brown gravelly clay loam
18 to 23 inches—very pale brown very gravelly loam
23 to 50 inches—hardpan
50 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Budlewis Soil

Position on landscape: Upper side slopes and shoulder slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 44 degrees F
Frost-free period—80 to 85 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 14 inches—brown silty clay loam
14 to 24 inches—light yellowish brown clay
24 to 29 inches—very pale brown gravelly loam
29 to 30 inches—hardpan
30 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Rock outcrop—10 percent or less
- Soils that are similar to Cleavage soils but have less

rock fragments, are on ridges, and support low sagebrush and Idaho fescue—5 percent or less
• Soils that are similar to Fulcrum soils but have less rock fragments, are on summits, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—small areas

Land Capability Classification

Monasterio soil: VIs, nonirrigated
Chayson soil: IVe, nonirrigated
Budlewis soil: IVs, nonirrigated
Map unit (complex): IVs, nonirrigated

105—Monasterio-Cleavage-Saturday association, 1 to 25 percent slopes

Setting

Major landform: Foothills
Elevation: 5,900 to 6,350 feet
Major uses: Rangeland and wildlife habitat

Composition

Monasterio stony sandy loam and similar inclusions—45 percent
Cleavage very stony loam and similar inclusions—30 percent
Saturday stony loam and similar inclusions—15 percent
Contrasting inclusions—10 percent

Monasterio Soil

Position on landscape: Side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—39 to 42 degrees F
Frost-free period—60 to 75 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown stony sandy loam
8 to 11 inches—brown gravelly sandy loam
11 to 17 inches—dark yellowish brown very gravelly sandy loam
17 to 25 inches—brown very cobbly sandy clay loam
25 to 28 inches—brown extremely cobbly sandy clay loam
28 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderate
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Cleavage Soil

Position on landscape: Ridges and shoulder slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 43 degrees F
Frost-free period—65 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 9 inches—brown very stony loam
9 to 16 inches—brown very gravelly clay loam
16 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Saturday Soil

Position on landscape: North-facing side slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—40 to 43 degrees F
Frost-free period—65 to 80 days
Vegetal climax association: Curlleaf mountainmahogany and mountain snowberry with occasional western juniper
Typical profile:
1 inch to 0—undecomposed organic matter
0 to 9 inches—very dark grayish brown and very dark brown stony loam
9 to 24 inches—yellowish brown very gravelly loam
24 to 56 inches—reddish brown extremely cobbly sandy loam
56 inches—bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow or medium

Permeability: Moderate
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Rock outcrop—5 percent or less
- Soils that are similar to the Saturday soil but have less rock fragments, are on concave north-facing side slopes, and support mountain big sagebrush and Idaho fescue—5 percent or less
- Squawcreek soils that are on south-facing side slopes and support low sagebrush and Idaho fescue—small areas

Land Capability Classification

Monasterio soil: IVe, nonirrigated
Cleavage soil: VIs, nonirrigated
Saturday soil: IVe, nonirrigated

106—Monasterio-Cleavage-Thacker complex, 1 to 35 percent slopes

Setting

Major landform: Foothills
Elevation: 4,800 to 6,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Monasterio stony sandy loam and similar inclusions—35 percent
Cleavage stony loam and similar inclusions—25 percent
Thacker stony silt loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Monasterio Soil

Position on landscape: North-facing side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 95 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper
Typical profile:
0 to 8 inches—dark grayish brown stony sandy loam
8 to 11 inches—brown gravelly sandy loam
11 to 17 inches—dark yellowish brown very gravelly sandy loam
17 to 25 inches—brown very cobbly sandy clay loam
25 to 28 inches—brown extremely cobbly sandy clay loam
28 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderate
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Cleavage Soil

Position on landscape: Ridges and south-facing side slopes
Slope range: 2 to 35 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—39 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue with occasional western juniper
Typical profile:
0 to 3 inches—grayish brown stony loam
3 to 8 inches—brown very gravelly loam
8 to 18 inches—yellowish brown very gravelly clay loam
18 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Thacker Soil

Position on landscape: Side slopes and toe slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue with occasional western juniper
Typical profile:

0 to 3 inches—light brownish gray stony silt loam
3 to 12 inches—pale brown silt loam
12 to 26 inches—pale brown and light yellowish brown clay
26 to 39 inches—light yellowish brown loam
39 to 56 inches—hardpan
56 to 60 inches—light yellowish brown sandy loam

Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 7 to 15 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Rock outcrop that commonly has western juniper rooted in fractures—10 percent or less
- Hurryback soils that are on north-facing side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with occasional western juniper—5 percent or less
- Soils that are similar to Dougal soils but have a dark-colored surface layer, are on canyon rims, and support low sagebrush and bluegrass—5 percent or less
- Lostvalley soils that are on lower side slopes and foot slopes and support low sagebrush and Idaho fescue—small areas
- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Monasterio soil: IVe, nonirrigated
Cleavage soil: VIs, nonirrigated
Thacker soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

107—Monasterio-Wickahoney complex, 1 to 20 percent slopes

Setting

Major landform: Foothills
Elevation: 5,450 to 6,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Monasterio stony sandy loam and similar inclusions—75 percent
Wickahoney stony loam and similar inclusions—15 percent
Contrasting inclusions—10 percent

Monasterio Soil

Position on landscape: Side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—40 to 44 degrees F
Frost-free period—65 to 85 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown stony sandy loam
8 to 11 inches—brown gravelly sandy loam
11 to 17 inches—dark yellowish brown very gravelly sandy loam
17 to 25 inches—brown very cobbly sandy clay loam
25 to 28 inches—brown extremely cobbly sandy clay loam
28 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderate
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Wickahoney Soil

Position on landscape: Summits and side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 44 degrees F
Frost-free period—75 to 85 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—light brownish gray stony loam
5 to 12 inches—pale brown cobbly clay loam

12 to 19 inches—dark yellowish brown very cobbly clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Yatahoney soils that are on alluvial flats and support alkali sagebrush and Idaho fescue—5 percent or less
- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Monasterio soil: IVe, nonirrigated
Wickahoney soil: VIe, nonirrigated
Map unit (complex): IVe, nonirrigated

108—Mulshoe very stony sandy loam, 4 to 25 percent slopes

Setting

Major landform: Mountains
Elevation: 5,500 to 6,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Mulshoe very stony sandy loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Mulshoe Soil

Position on landscape: North-facing side slopes
Slope range: 4 to 25 percent
Climatic data (average annual):
Precipitation—15 to 17 inches
Air temperature—40 to 43 degrees F
Frost-free period—60 to 80 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper
Typical profile:
0 to 9 inches—grayish brown and dark grayish brown very stony sandy loam
9 to 21 inches—yellowish brown very cobbly clay loam
21 to 24 inches—weathered bedrock
24 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Saturday soils but have less rock fragments, are on north-facing mountainsides, and support mountain big sagebrush and Idaho fescue—10 percent or less
- Gaib soils that are on shoulder slopes and support curlleaf mountainmahogany and mountain snowberry—5 percent or less
- Blackwell soils that are on fluvial bottoms and support sedge and bluegrass with occasional western juniper—small areas

Land Capability Classification

VIs, nonirrigated

109—Mulshoe-Squawcreek-Gaib association, 2 to 30 percent slopes

Setting

Major landform: Mountains
Elevation: 5,200 to 6,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Mulshoe very stony sandy loam and similar inclusions—30 percent
Squawcreek stony loam and similar inclusions—25 percent
Gaib stony loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Mulshoe Soil

Position on landscape: North-facing side slopes
Slope range: 4 to 25 percent
Climatic data (average annual):
Precipitation—15 to 17 inches
Air temperature—40 to 44 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper
Typical profile:

0 to 9 inches—grayish brown and dark grayish brown very stony sandy loam
9 to 21 inches—yellowish brown very cobbly clay loam
21 to 24 inches—weathered bedrock
24 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Squawcreek Soil

Position on landscape: South-facing side slopes and summits
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue with occasional western juniper
Typical profile:
0 to 4 inches—pale brown stony loam
4 to 14 inches—pale brown clay loam
14 to 19 inches—light yellowish brown clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Gaib Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 30 percent
Climatic data (average annual):
Precipitation—15 to 18 inches
Air temperature—41 to 44 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Curlleaf mountainmahogany and mountain snowberry with common western juniper
Typical profile:
0 to 3 inches—dark grayish brown stony loam
3 to 7 inches—grayish brown loam
7 to 11 inches—brown very gravelly loam
11 to 18 inches—brown very gravelly clay loam
18 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Rock outcrop that commonly has western juniper rooted in fractures—10 percent or less
- Hades soils that are on north-facing side slopes and support mountain big sagebrush and Idaho fescue with common western juniper—5 percent or less
- Soils that are similar to Hat soils but have less clay, are on south-facing breaks, and support western juniper—5 percent or less
- Blackwell soils that are on fluvial bottoms and support sedge and bluegrass—small areas

Land Capability Classification

Mulshoe soil: VIs, nonirrigated
Squawcreek soil: VIs, nonirrigated
Gaib soil: VIs, nonirrigated

110—Nagitsy-Rock outcrop-Parkay complex, 3 to 30 percent slopes

Setting

Major landform: Mountain summits
Elevation: 6,300 to 8,400 feet
Major uses: Wildlife habitat, rangeland, and mines

Composition

Nagitsy very gravelly loam and similar inclusions—30 percent
Rock outcrop—30 percent
Parkay gravelly loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Nagitsy Soil

Position on landscape: South-facing shoulder slopes
Slope range: 3 to 30 percent
Climatic data (average annual):
Precipitation—15 to 18 inches
Air temperature—34 to 37 degrees F
Frost-free period—25 to 50 days
Vegetal climax association: Low sagebrush, Idaho fescue, and bluegrass

Typical profile:
0 to 7 inches—dark brown very gravelly loam
7 to 20 inches—brown very gravelly loam
20 to 37 inches—pale brown and light yellowish brown extremely gravelly loam
37 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: Low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Rock Outcrop

Position on landscape: Ridges
Kind of material: Barren, exposed hard extrusive flow rock
Runoff: Very rapid

Parkay Soil

Position on landscape: Concave side slopes and saddles
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—36 to 39 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—brown gravelly loam
4 to 10 inches—grayish brown gravelly loam
10 to 35 inches—brown and grayish brown cobbly loam
35 to 45 inches—brown very cobbly clay loam
45 inches—bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Eroded Nagitsy soils that are on north-facing side slopes, support forbs, and commonly are covered by snowdrifts—10 percent or less
- Foxmount soils that are on concave south-facing shoulder slopes and support curlleaf mountainmahogany and mountain snowberry—5 percent or less
- Rubbleland—5 percent or less
- Soils that are similar to Cleavage soils but are cooler, are on ridges, and support low sagebrush and Idaho fescue—5 percent or less
- Soils that are similar to Booneville soils but have a thinner surface layer, are on shoulder slopes, and support mountain big sagebrush, mountain snowberry, and mountain brome—small areas
- Dehana soils that are on shoulder slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—small areas

Land Capability Classification

Nagitsy soil: VIe, nonirrigated
Rock outcrop: VIII
Parkay soil: VIe, nonirrigated
Map unit (complex): VIIs, nonirrigated

111—Nazaton-Naz complex, 10 to 60 percent slopes

Setting

Major landform: Mountains
Elevation: 6,000 to 7,400 feet
Major uses: Woodland and wildlife habitat

Composition

Nazaton stony loam and similar inclusions—50 percent
Naz loam and similar inclusions—40 percent
Contrasting inclusions—10 percent

Nazaton Soil

Position on landscape: North-facing side slopes
Slope range: 20 to 60 percent
Climatic data (average annual):
Precipitation—24 to 30 inches
Air temperature—38 to 40 degrees F
Frost-free period—45 to 60 days
Vegetal climax association: Douglas fir and mountain snowberry
Typical profile:
1 inch to 0—partially decomposed organic material
0 to 5 inches—dark grayish brown stony loam
5 to 15 inches—dark grayish brown gravelly loam
15 to 34 inches—grayish brown and brown very cobbly loam
34 to 60 inches—pale brown very cobbly loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Rapid
Permeability: Moderately rapid
Available water capacity: High

Hazard of erosion by water: Moderate or severe
Hazard of erosion by wind: Slight

Naz Soil

Position on landscape: North-facing side slopes
Slope range: 10 to 60 percent
Climatic data (average annual):
Precipitation—25 to 35 inches
Air temperature—34 to 39 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Douglas fir and mountain snowberry
Typical profile:
2 inches to 1 inch—undecomposed litter
1 inch to 0—partially decomposed organic material
0 to 5 inches—very dark grayish brown loam
5 to 24 inches—very dark grayish brown loam
24 to 45 inches—dark grayish brown coarse sandy loam
45 to 50 inches—pale brown gravelly coarse sandy loam
50 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately rapid
Available water capacity: High
Hazard of erosion by water: Slight to severe
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Dranyon soils that are on foot slopes and support quaking aspen—10 percent or less
- Blackwell soils that are on fluvial bottoms and support sedge and bluegrass—small areas
- Rock outcrop—small areas

Land Capability Classification

Nazaton soil: VIIe, nonirrigated
Naz soil: VIIe, nonirrigated
Map unit (complex): VIIe, nonirrigated

112—Nipintuck-Rock outcrop complex, 2 to 30 percent slopes

Setting

Major landform: Breaks
Elevation: 5,100 to 6,750 feet
Major uses: Wildlife habitat and rangeland

Composition

Nipintuck stony coarse sandy loam and similar inclusions—45 percent
Rock outcrop—45 percent
Contrasting inclusions—10 percent

Nipintuck Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 30 percent
Climatic data (average annual):
Precipitation—10 to 14 inches
Air temperature—40 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Low sagebrush and bluegrass with occasional western juniper
Typical profile:
0 to 2 inches—yellowish brown stony coarse sandy loam
2 to 6 inches—yellowish brown very cobbly loam
6 inches—bedrock
Depth class: Very shallow
Drainage class: Somewhat excessively drained
Runoff: Medium to very rapid
Permeability: Moderate
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Rock Outcrop

Position on landscape: Cliffs and ridges
Kind of material: Exposed hard welded rhyolitic tuff
Vegetation: Western juniper commonly rooted in fractures
Runoff: Very rapid

Contrasting Inclusions

- Squawcreek soils that are on low mounds and support low sagebrush and Idaho fescue—10 percent or less
- Hat soils that are on side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper—small areas
- Paynecreek soils that are on toe slopes and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Nipintuck soil: VIIs, nonirrigated
Rock outcrop: VIII
Map unit (complex): VIIs, nonirrigated

Figure 7.—Typical area of Nipintuck-Squawcreek-Rock outcrop complex, 2 to 30 percent slopes. Squawcreek soil is on mound in foreground, and Nipintuck soil is in center. Western juniper in an area of Hat-Avtable-Monasterio complex, 1 to 20 percent slopes, in background.

113—Nipintuck-Squawcreek-Rock outcrop complex, 2 to 30 percent slopes

Setting

Major landform: Foothills and structural benches (fig. 7)
Elevation: 5,000 to 6,650 feet
Major uses: Rangeland and wildlife habitat

Composition

Nipintuck stony coarse sandy loam and similar inclusions—40 percent
Squawcreek stony loam and similar inclusions—30 percent
Rock outcrop—15 percent
Contrasting inclusions—15 percent

Nipintuck Soil

Position on landscape: Eroded summits and side slopes
Slope range: 2 to 30 percent
Climatic data (average annual):
Precipitation—10 to 14 inches
Air temperature—40 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Low sagebrush and bluegrass with occasional western juniper
Typical profile:
0 to 2 inches—yellowish brown stony coarse sandy loam
2 to 6 inches—yellowish brown very cobbly loam
6 inches—bedrock
Depth class: Very shallow
Drainage class: Somewhat excessively drained
Runoff: Medium to very rapid
Permeability: Moderate
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Squawcreek Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—pale brown stony loam
4 to 14 inches—pale brown clay loam
14 to 19 inches—light yellowish brown clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Rock Outcrop

Position on landscape: Ridges
Kind of material: Exposed hard welded rhyolitic tuff
Vegetation: Western juniper commonly rooted in fractures
Runoff: Very rapid

Contrasting Inclusions

- Hat soils that are on mounds and support low sagebrush and Idaho fescue—10 percent or less
- Soils that are similar to Mulshoe soils but have less rock fragments, are on north-facing side slopes, and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less

Land Capability Classification

Nipintuck soil: VIIs, nonirrigated
Squawcreek soil: VIs, nonirrigated
Rock outcrop: VIII
Map unit (complex): VIIs, nonirrigated

114—Northcastle-Bluecreek-Yatahoney loams, 1 to 10 percent slopes

Setting

Major landform: Fan terraces
Elevation: 5,300 to 5,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Northcastle loam and similar inclusions—45 percent
Bluecreek loam and similar inclusions—30 percent
Yatahoney loam and similar inclusions—15 percent
Contrasting inclusions—10 percent

Northcastle Soil

Position on landscape: Upper summits
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 16 inches—dark grayish brown loam
16 to 34 inches—yellowish brown gravelly clay loam
34 to 60 inches—hardpan
60 to 72 inches—very pale brown gravelly sandy loam
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Bluecreek Soil

Position on landscape: Mounds
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 8 inches—light brownish gray and brown loam
8 to 20 inches—light yellowish brown and pale brown clay
20 to 31 inches—light yellowish brown sandy loam
31 to 41 inches—hardpan
41 to 60 inches—light yellowish brown gravelly loamy sand
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Yatahoney Soil

Position on landscape: Swales
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—44 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Alkali sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—brown and pale brown loam
6 to 21 inches—pale brown and light brown clay
21 to 23 inches—yellow gravelly sandy clay loam
23 to 32 inches—hardpan
32 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Nicholflat soils that are on alluvial flats and support low sagebrush and Idaho fescue—10 percent or less
- Boulder Lake soils that are on alluvial flats and support silver sagebrush and bluegrass—small areas

Land Capability Classification

Northcastle soil: IVe, nonirrigated
Bluecreek soil: IVe, nonirrigated
Yatahoney soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

115—Northcastle-Wagonbox-Fryingpan complex, 1 to 15 percent slopes

Setting

Major landform: Structural benches
Elevation: 5,100 to 5,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Northcastle loam and similar inclusions—30 percent
Wagonbox very stony loam and similar inclusions—25 percent
Fryingpan stony loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Northcastle Soil

Position on landscape: Toe slopes and foot slopes
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 16 inches—dark grayish brown loam
16 to 34 inches—yellowish brown gravelly clay loam
34 to 60 inches—hardpan
60 to 72 inches—very pale brown gravelly sandy loam
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Wagonbox Soil

Position on landscape: Summits
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—light brownish gray very stony loam
5 to 9 inches—pale brown very cobbly clay loam
9 to 17 inches—pale brown very cobbly clay
17 to 18 inches—hardpan
18 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Fryingpan Soil

Position on landscape: Shoulder slopes and south-facing side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—pale brown stony loam
3 to 16 inches—light yellowish brown clay loam
16 to 18 inches—light brown loam
18 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Hat soils that are on north-facing side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with occasional western juniper—10 percent or less
- Barkley soils that are on foot slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less
- Rock outcrop that commonly has western juniper and curlleaf mountainmahogany rooted in fractures—5 percent or less
- Rubbleland—small areas
- Zecanyon soils that are on south-facing side slopes and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—small areas

Land Capability Classification

Northcastle soil: IVe, nonirrigated
Wagonbox soil: VIs, nonirrigated
Fryingpan soil: VIs, nonirrigated
Map unit (complex): VIs, nonirrigated

116—Ola-Earcree association, 10 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 5,500 to 6,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Ola coarse sandy loam and similar inclusions—45 percent
Earcree gravelly coarse sandy loam and similar inclusions—35 percent
Contrasting inclusions—20 percent

Ola Soil

Position on landscape: Lower south-facing side slopes
Slope range: 20 to 50 percent
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—40 to 44 degrees F
Frost-free period—65 to 80 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 5 inches—brown coarse sandy loam
5 to 18 inches—brown sandy loam
18 to 28 inches—brown coarse sandy loam
28 to 35 inches—pale brown gravelly coarse sandy loam
35 to 38 inches—weathered bedrock
38 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Rapid or very rapid
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: High

Earcree Soil

Position on landscape: Upper north-facing side slopes
Slope range: 10 to 40 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—37 to 40 degrees F
Frost-free period—50 to 65 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown gravelly coarse sandy loam
8 to 34 inches—grayish brown gravelly coarse sandy loam
34 to 60 inches—light yellowish brown gravelly loamy coarse sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately rapid
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Contrasting Inclusions

- Soils that are similar to Takeuchi soils but have more rock fragments, are on south-facing side slopes, and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper—10 percent or less
- Povey soils that are on upper north-facing side slopes and support snowbank aspen—5 percent or less
- Soils that are similar to the Ola soil but are very deep, are on south-facing foot slopes, and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less
- Naz soils that are on north-facing side slopes and support Douglas fir and mountain snowberry—small areas
- Rock outcrop that commonly has curlleaf mountainmahogany rooted in fractures—small areas

Land Capability Classification

Ola soil: VIe, nonirrigated
Earcree soil: IVe, nonirrigated

117—Orovada-Roseworth-Wholan complex, 1 to 5 percent slopes

Setting

Major landform: Draws
Elevation: 3,800 to 5,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Orovada very fine sandy loam and similar inclusions—50 percent

Roseworth silt loam and similar inclusions—25 percent
Wholan silt loam and similar inclusions—15 percent
Contrasting inclusions—10 percent

Orovada Soil

Position on landscape: Fan terraces and stream terraces
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 50 degrees F
Frost-free period—100 to 125 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 5 inches—pale brown very fine sandy loam
5 to 18 inches—light yellowish brown loam
18 to 60 inches—very pale brown gravelly loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderate
Available water capacity: Very high
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Roseworth Soil

Position on landscape: Toe slopes of hills
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—46 to 50 degrees F
Frost-free period—95 to 120 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 4 inches—pale brown silt loam
4 to 13 inches—light yellowish brown silt loam
13 to 16 inches—hardpan
16 to 31 inches—weakly cemented very pale brown sandy loam
31 to 60 inches—hardpan
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Wholan Soil

Position on landscape: Fan terraces
Slope range: 1 to 4 percent
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—46 to 51 degrees F
Frost-free period—100 to 120 days
Vegetal climax association: Winterfat and Indian ricegrass
Typical profile:
0 to 12 inches—very pale brown silt loam
12 to 60 inches—very pale brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderate
Available water capacity: Very high
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate
Sodicity: Moderate

Contrasting Inclusions

- Troughs soils that are on rims and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Jenor soils that are on alluvial flats and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—5 percent or less
- Soils that are similar to the Wholan soil but are steeper, are on side slopes, and support winterfat and Indian ricegrass—small areas

Land Capability Classification

Orovada soil: VIe, nonirrigated
Roseworth soil: VIs, nonirrigated
Wholan soil: VIIc, nonirrigated
Map unit (complex): VIe, nonirrigated

118—Owsel-Coonskin-Orovada complex, 1 to 5 percent slopes

Setting

Major landform: Structural benches
Elevation: 4,150 to 4,900 feet
Major uses: Rangeland and wildlife habitat

Composition

Owsel silt loam and similar inclusions—30 percent
Coonskin silt loam and similar inclusions—30 percent

Orovada very fine sandy loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Owsel Soil

Position on landscape: Summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 49 degrees F
Frost-free period—95 to 115 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 6 inches—light yellowish brown silt loam
6 to 15 inches—light yellowish brown silty clay loam
15 to 18 inches—very pale brown loam
18 to 60 inches—very pale brown fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Coonskin Soil

Position on landscape: Summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 49 degrees F
Frost-free period—95 to 120 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 7 inches—pale brown and light yellowish brown silt loam
7 to 16 inches—very pale brown cobbly silt loam
16 to 30 inches—white very cobbly fine sandy loam
30 to 40 inches—hardpan
40 to 60 inches—intermittent layers of hardpan and soil material
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow
Permeability: Moderately slow
Available water capacity: Medium
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Orovada Soil

Position on landscape: Summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 49 degrees F
Frost-free period—100 to 115 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 5 inches—pale brown very fine sandy loam
5 to 18 inches—light yellowish brown loam
18 to 60 inches—very pale brown gravelly loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderate
Available water capacity: Very high
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Contrasting Inclusions

- Slickspots—10 percent or less
- Vickery soils that are in swales and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Bruncan soils that are on knolls and ridges and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Orovada soils that are in draws and support basin big sagebrush and basin wildrye—small areas

Land Capability Classification

Owsel soil: VIe, nonirrigated
Coonskin soil: VIe, nonirrigated
Orovada soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

119—Parkay gravelly silt loam, 10 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 5,400 to 7,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Parkay gravelly silt loam and similar inclusions—75 percent
Contrasting inclusions—25 percent

Parkay Soil

Position on landscape: Side slopes
Slope range: 10 to 50 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—36 to 40 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown gravelly silt loam
8 to 24 inches—very dark grayish brown very gravelly clay loam
24 to 48 inches—very dark grayish brown very gravelly loam
48 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Itca soils that are on narrow benches and support low sagebrush and Idaho fescue—10 percent or less
- Cleavage soils that are on narrow benches and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Povey soils that are on concave slopes and support snowbrush ceanothus—5 percent or less
- Rubbleland—small areas
- Rock outcrop—small areas

Land Capability Classification

VIe, nonirrigated

120—Parkay-Bregar complex, 5 to 25 percent slopes

Setting

Major landform: Mountains
Elevation: 6,300 to 7,350 feet
Major uses: Rangeland and wildlife habitat

Composition

Parkay gravelly loam and similar inclusions—55 percent
Bregar stony loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Parkay Soil

Position on landscape: Summits and side slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—36 to 39 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—brown gravelly loam
4 to 10 inches—grayish brown gravelly loam
10 to 35 inches—brown and grayish brown cobbly loam
35 to 45 inches—brown very cobbly clay loam
45 inches—bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Bregar Soil

Position on landscape: South-facing side slopes and ridges
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—39 to 43 degrees F
Frost-free period—60 to 75 days
Vegetal climax association: Low sagebrush and bluegrass
Typical profile:
0 to 4 inches—yellowish brown stony loam
4 to 8 inches—light yellowish brown extremely gravelly loam
8 inches—bedrock
Depth class: Very shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Itca soils but are cooler, are on ridges, and support low sagebrush, Idaho fescue, and bluegrass—10 percent or less
- Povey soils that are on concave side slopes and support snowbrush ceanothus—5 percent or less
- Soils that are similar to Coser soils but are poorly drained, are on toe slopes, and support low sagebrush, Idaho fescue, and mulesear wyethia—5 percent or less
- Dehana soils that are on upper north-facing side slopes and support snowbank aspen—small areas
- Blackwell soils that are on fluvial bottoms and support sedge and bluegrass—small areas
- Soils that are similar to Naz soils but are moderately deep, have less organic matter, are on north-facing side slopes, and support subalpine fir—small areas
- Eroded Nagitsy soils that are on upper north-facing side slopes, support forbs, and commonly are covered by snowdrifts—small areas

Land Capability Classification

Parkay soil: VIe, nonirrigated
Bregar soil: VIIs, nonirrigated
Map unit (complex): VIe, nonirrigated

121—Parkay-Dehana association, 5 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 5,700 to 7,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Parkay gravelly silt loam and similar inclusions—45 percent
Dehana gravelly loam and similar inclusions—35 percent
Contrasting inclusions—20 percent

Parkay Soil

Position on landscape: Shoulder slopes and south-facing side slopes
Slope range: 10 to 50 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—36 to 41 degrees F
Frost-free period—35 to 60 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown gravelly silt loam
8 to 24 inches—very dark grayish brown very gravelly clay loam
24 to 48 inches—very dark grayish brown very gravelly loam
48 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Dehana Soil

Position on landscape: North-facing side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—20 to 25 inches
Air temperature—36 to 40 degrees F
Frost-free period—35 to 60 days
Vegetal climax association: Snowbank aspen
Typical profile:
0 to 14 inches—dark gray gravelly loam
14 to 60 inches—brown gravelly loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very high
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Nagitsy soils that are on upper side slopes and support snowbrush ceanothus—10 percent or less
- Cleavage soils that are on ridges and convex slopes and support low sagebrush and Idaho fescue—5 percent
- Vipont soils that are on summits and south-facing shoulder slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less
- Blackwell soils that are on fluvial bottoms and support sedge and bluegrass—small areas
- Rock outcrop that commonly has curlleaf mountainmahogany rooted in fractures—small areas
- Soils that are similar to the Parkay soil but have a thinner surface layer, are on small benches, and support mountain big sagebrush, mountain snowberry, and mountain brome—small areas

Land Capability Classification

Parkay soil: VIe, nonirrigated
Dehana soil: VIe, nonirrigated

122—Parkay-Dehana-Booneville association, 5 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 5,200 to 7,300 feet
Major uses: Woodland, rangeland, and wildlife habitat

Composition

Parkay gravelly silt loam and similar inclusions—35 percent
Dehana gravelly loam and similar inclusions—25 percent
Booneville loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Parkay Soil

Position on landscape: South-facing side slopes
Slope range: 10 to 50 percent
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—36 to 39 degrees F
Frost-free period—35 to 60 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown gravelly silt loam
8 to 24 inches—very dark grayish brown very gravelly clay loam
24 to 48 inches—very dark grayish brown very gravelly loam
48 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Dehana Soil

Position on landscape: Concave north-facing side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—20 to 25 inches
Air temperature—36 to 40 degrees F
Frost-free period—35 to 60 days
Vegetal climax association: Snowbank aspen
Typical profile:
0 to 14 inches—dark gray gravelly loam
14 to 60 inches—brown gravelly loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very high
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Booneville Soil

Position on landscape: North-facing side slopes
Slope range: 8 to 40 percent
Climatic data (average annual):
Precipitation—22 to 32 inches
Air temperature—35 to 39 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Douglas fir and mountain snowberry
Typical profile:
2 inches to 0—undecomposed organic material
0 to 5 inches—dark brown loam
5 to 14 inches—dark brown gravelly loam
14 to 30 inches—yellowish brown very cobbly loam
30 to 60 inches—brown extremely cobbly clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to the Parkay soil but are more acid, are on upper side slopes, and support snowbrush ceanothus—10 percent or less
- Naz soils that are on lower side slopes and support Douglas fir and mountain snowberry—5 percent or less
- Cleavage soils that are on ridges and shoulder slopes and support low sagebrush and Idaho fescue—5 percent or less
- Vipont soils that are on south-facing side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less

Land Capability Classification

Parkay soil: VIe, nonirrigated
Dehana soil: VIe, nonirrigated
Booneville soil: VIe, nonirrigated

123—Parkay-Povey complex, 5 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 6,800 to 7,700 feet
Major uses: Rangeland and wildlife habitat

Composition

Parkay gravelly loam and similar inclusions—60 percent
Povey very gravelly loam and similar inclusions—25 percent
Contrasting inclusions—15 percent

Parkay Soil

Position on landscape: Summits and side slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—36 to 38 degrees F
Frost-free period—30 to 50 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—brown gravelly loam
4 to 10 inches—grayish brown gravelly loam
10 to 35 inches—brown and grayish brown cobbly loam
35 to 45 inches—brown very cobbly clay loam
45 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Povey Soil

Position on landscape: Summits and side slopes
Slope range: 15 to 50 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—35 to 37 degrees F
Frost-free period—30 to 50 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—dark grayish brown very gravelly loam
6 to 17 inches—dark grayish brown gravelly loam
17 to 25 inches—brown very gravelly loam
25 to 32 inches—dark yellowish brown extremely cobbly loam
32 to 60 inches—yellowish brown extremely cobbly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Nagitsy soils that are on ridges and shoulder slopes and support low sagebrush, Idaho fescue, and bluegrass—10 percent or less
- Rock outcrop—5 percent or less
- Soils that are similar to Earcree soils but have more volcanic glass, are on upper north-facing side slopes, and support snowbrush ceanothus—small areas

Land Capability Classification

Parkay soil: VIe, nonirrigated
Povey soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

124—Parkay-Wickahoney association, 2 to 30 percent slopes

Setting

Major landform: Tableland escarpments
Elevation: 5,600 to 7,000 feet
Major uses: Wildlife habitat and rangeland

Composition

Parkay gravelly loam and similar inclusions—45 percent
Wickahoney extremely stony silt loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Parkay Soil

Position on landscape: North-facing side slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—36 to 41 degrees F
Frost-free period—40 to 70 days

Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—brown gravelly loam
4 to 10 inches—grayish brown gravelly loam
10 to 35 inches—brown and grayish brown cobbly loam
35 to 45 inches—brown very cobbly clay loam
45 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Wickahoney Soil

Position on landscape: Convex slopes and narrow benches
Slope range: 2 to 30 percent
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—39 to 42 degrees F
Frost-free period—60 to 75 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—pale brown extremely stony silt loam
4 to 12 inches—brown very stony clay loam
12 to 18 inches—yellowish brown very cobbly clay
18 to 20 inches—light brown very cobbly clay loam
20 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Parkay soils that are on upper north-facing side slopes and support snowbank aspen—10 percent or less
- Boulder Lake soils that are on toe slopes and support silver sagebrush and bluegrass—10 percent or less
- Soils that are similar to Tucker soils but have occasional vertical cracks, are on fluvial bottoms, and support sedge and bluegrass—5 percent or less
- Lostvalley soils that are on toe slopes and support low sagebrush and Idaho fescue—small areas
- Rock outcrop—small areas

Land Capability Classification

Parkay soil: VIe, nonirrigated
Wickahoney soil: VIIs, nonirrigated

125—Paynecreek gravelly sandy loam, 1 to 5 percent slopes

Setting

Major landform: Stream terraces
Elevation: 5,300 to 5,700 feet
Major use: Hayland

Composition

Paynecreek gravelly sandy loam and similar inclusions—80 percent
Contrasting inclusions—20 percent

Paynecreek Soil

Position on landscape: Summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown gravelly sandy loam
4 to 8 inches—brown gravelly sandy clay loam
8 to 14 inches—yellowish brown sandy clay loam
14 to 29 inches—light yellowish brown gravelly sandy clay loam
29 to 60 inches—light yellowish brown very gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Contrasting Inclusions

- Welch soils that are on fluvial bottoms and support sedge and bluegrass—10 percent or less
- Upcreek soils that are on lower stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less

• Soils that are similar to Babbington soils but are cooler, are on summits, and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less

Land Capability Classification

IIIe, irrigated and nonirrigated

126—Paynecreek-Barkley-Chayson loams, 1 to 10 percent slopes

Setting

Major landforms: Fan terraces and stream terraces
Elevation: 5,500 to 5,900 feet
Major uses: Rangeland, hayland, and wildlife habitat

Composition

Paynecreek loam and similar inclusions—40 percent
Chayson loam and similar inclusions—20 percent
Barkley loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Paynecreek Soil

Position on landscape: Stream terraces
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—41 to 44 degrees F
Frost-free period—60 to 85 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 11 inches—brown loam
11 to 17 inches—yellowish brown clay loam
17 to 25 inches—light yellowish brown loam
25 to 42 inches—light yellowish brown sandy loam
42 inches—soft bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Barkley Soil

Position on landscape: Lower fan terraces
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—41 to 44 degrees F
Frost-free period—60 to 85 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 17 inches—light brownish gray and pale brown loam
17 to 35 inches—light yellowish brown clay loam
35 to 43 inches—pink, weakly cemented very gravelly sandy loam
43 to 60 inches—light yellowish brown gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Very slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Chayson Soil

Position on landscape: Upper fan terraces
Slope range: 2 to 10 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—42 to 44 degrees F
Frost-free period—70 to 85 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 5 inches—brown loam
5 to 10 inches—brown gravelly loam
10 to 18 inches—pale brown and light yellowish brown gravelly clay loam
18 to 23 inches—very pale brown very gravelly loam
23 to 50 inches—hardpan
50 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

• Soils that are similar to Upcreek soils but are well drained, are on lower stream terraces, and support basin big sagebrush, bluegrass, and basin wildrye—10 percent or less
• Yatahoney soils that are on escarpments and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—5 percent or less

• Chayson soils that are on shoulder slopes and support low sagebrush and Idaho fescue—5 percent or less
• Zola soils that are on fluvial bottoms and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Paynecreek soil: IVe, irrigated and nonirrigated
Barkley soil: IVe, irrigated and nonirrigated
Chayson soil: IIIe, irrigated, and IVe, nonirrigated
Map unit (complex): IVe, irrigated and nonirrigated

127—Paynecreek-Northcastle complex, 1 to 8 percent slopes

Setting

Major landform: Stream terraces
Elevation: 5,300 to 5,450 feet
Major uses: Rangeland, wildlife habitat, and hayland

Composition

Paynecreek gravelly sandy loam and similar inclusions—55 percent
Northcastle sandy loam and similar inclusions—30 percent
Contrasting inclusions—15 percent

Paynecreek Soil

Position on landscape: Lower summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—44 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown gravelly sandy loam
4 to 8 inches—brown gravelly sandy clay loam
8 to 14 inches—yellowish brown sandy clay loam
14 to 29 inches—light yellowish brown gravelly sandy clay loam
29 to 60 inches—light yellowish brown very gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Northcastle Soil

Position on landscape: Upper summits
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 10 inches—light brownish gray and brown sandy loam
10 to 34 inches—pale brown and very pale brown sandy clay loam
34 to 40 inches—hardpan
40 to 60 inches—gray gravelly loamy sand
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Contrasting Inclusions

• Paynecreek soils that are in swales and support basin big sagebrush, bluegrass, and basin wildrye—10 percent or less
• Bluecreek soils that are on upper stream terraces and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—5 percent or less

Land Capability Classification

Paynecreek soil: IIIe, irrigated and nonirrigated
Northcastle soil: IIIe, irrigated, and IVe, nonirrigated
Map unit (complex): IIIe, irrigated and nonirrigated

128—Paynecreek-Northcastle-Blackwell association, 0 to 8 percent slopes

Setting

Major landforms: Stream terraces and bottom lands
Elevation: 5,100 to 5,900 feet
Major uses: Rangeland, hayland, and wildlife habitat

Composition

Paynecreek loam and similar inclusions—50 percent
Northcastle loam and similar inclusions—15 percent

Blackwell loam and similar inclusions—15 percent
Contrasting inclusions—20 percent

Paynecreek Soil

Position on landscape: Upper terraces
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with occasional western juniper
Typical profile:
0 to 11 inches—brown loam
11 to 17 inches—yellowish brown clay loam
17 to 25 inches—light yellowish brown loam
25 to 42 inches—light yellowish brown sandy loam
42 inches—soft bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Northcastle Soil

Position on landscape: Lower terraces
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 16 inches—dark grayish brown loam
16 to 34 inches—yellowish brown gravelly clay loam
34 to 60 inches—hardpan
60 to 72 inches—very pale brown gravelly sandy loam
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Blackwell Soil

Position on landscape: Flood plains
Slope range: 0 to 3 percent
Climatic data (average annual):
Precipitation—15 to 18 inches
Air temperature—40 to 42 degrees F
Frost-free period—50 to 70 days
Vegetal climax association: Sedge and bluegrass
Typical profile:
0 to 15 inches—dark gray and very dark gray loam
15 to 25 inches—light brownish gray gravelly sandy clay loam
25 to 60 inches—light gray, stratified gravelly coarse sandy loam to clay loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 0 to 30 inches
Drainage class: Poorly drained
Runoff: Slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate
Frequency of flooding: Frequent

Contrasting Inclusions

- Upcreek soils that are on fluvial bottoms and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Nicholflat soils that are on lower terraces and support low sagebrush and Idaho fescue—5 percent or less
- Soils that are similar to Cleavage soils but have less rock fragments, are on low ridges, and support low sagebrush and Idaho fescue—5 percent or less
- Soils that are similar to Upcreek soils but are well drained, are on upper terraces, and support mountain big sagebrush and Idaho fescue—5 percent or less
- Rock outcrop—small areas
- Soils that are similar to Dranyon soils but have less clay, are on toe slopes, and support quaking aspen and curlleaf mountainmahogany—small areas

Land Capability Classification

Paynecreek soil: IVe, irrigated and nonirrigated
Northcastle soil: IIIe, irrigated, and IVe, nonirrigated
Blackwell soil: Vw, irrigated and nonirrigated

129—Perla-Ruclick complex, 2 to 12 percent slopes

Setting

Major landform: Tablelands
Elevation: 4,000 to 4,950 feet
Major uses: Rangeland and wildlife habitat

Composition

Perla loam and similar inclusions—65 percent
Ruclick cobbly loam and similar inclusions—15 percent
Contrasting inclusions—20 percent

Perla Soil

Position on landscape: Summits
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—46 to 59 degrees F
Frost-free period—90 to 120 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—grayish brown loam
3 to 8 inches—dark brown clay loam
8 to 16 inches—brown clay
16 to 23 inches—pale brown gravelly clay loam
23 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Ruclick Soil

Position on landscape: Summits
Slope range: 2 to 5 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—46 to 49 degrees F
Frost-free period—90 to 120 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 5 inches—brown cobbly loam
5 to 10 inches—brown cobbly clay loam
10 to 21 inches—pale brown very gravelly clay
21 to 29 inches—pale brown extremely gravelly clay
29 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Hardtrigger soils that are on summits and support basin big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Dougal soils but are underlain by soft bedrock, are on summits, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Ruclick soils that are on escarpments and support basin big sagebrush and bluebunch wheatgrass—small areas
- Schnipper soils that are on summits and support basin big sagebrush and bluebunch wheatgrass—small areas

Land Capability Classification

Perla soil: IVe, nonirrigated
Ruclick soil: IVs, nonirrigated
Map unit (complex): IVe, nonirrigated

130—Pits, gravel

Major landforms: Fan terraces and outwash terraces
Elevation: 2,200 to 6,000 feet
Major use: Mines
Kind of material: Lake and stream deposits of sand, gravel, cobbles, and stones that range in age from Pliocene to Holocene
Vegetation: Little, if any
Land capability classification: VIII

131—Pits and Dumps, mine

Major landform: Mountains
Elevation: 5,700 to 6,500 feet
Major uses: Mines
Description of areas: Pits—open excavations from which soil material and bedrock have been removed; dumps—accumulations of waste rock

Kind of rock: Hard rhyolite and welded tuff of the Miocene
Vegetation: Little, if any, unless reclaimed
Land capability classification: VIII

132—Pixley-Barkley complex, 2 to 10 percent slopes

Setting

Major landform: Fan terraces
Elevation: 4,900 to 5,450 feet
Major uses: Rangeland and wildlife habitat

Composition

Pixley silt loam and similar inclusions—45 percent
Barkley loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Pixley Soil

Position on landscape: Slightly concave slopes
Slope range: 2 to 10 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—44 to 45 degrees F
Frost-free period—80 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—light brownish gray and brown silt loam
6 to 9 inches—brown silty clay loam
9 to 18 inches—light gray gravelly clay loam
18 to 60 inches—hardpan
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Barkley Soil

Position on landscape: Slightly convex slopes
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—44 to 45 degrees F
Frost-free period—80 to 95 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 17 inches—light brownish gray and pale brown loam
17 to 35 inches—light yellowish brown clay loam
35 to 43 inches—pink, weakly cemented very gravelly sandy loam
43 to 60 inches—light yellowish brown gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Very slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Bluecreek soils that are on toe slopes of higher terraces and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Soils that are similar to Blackleg soils but are shallow, have less rock fragments, are on higher remnant terraces, and support low sagebrush and Idaho fescue—5 percent or less
- Soils that are similar to Arbidge soils but are cooler, are on mounds, and support basin big sagebrush and bluebunch wheatgrass—5 percent or less
- Welch soils that are on fluvial bottoms and support sedge and bluegrass—small areas
- Badlands that are on escarpments of higher terraces—small areas

Land Capability Classification

Pixley soil: VIs, nonirrigated
Barkley soil: IVe, nonirrigated
Map unit (complex): VIs, nonirrigated

133—Playas-Duric Natrargids association, nearly level

Setting

Major landform: Closed basins of calderas and tablelands
Elevation: 4,000 to 5,300 feet
Major use: Wildlife habitat

Composition

Playas—80 percent
Duric Natrargids and similar inclusions—20 percent

Playas

Position on landscape: Flats
Slope range: 0 to 2 percent
Description of areas: Puddled or crusted, nearly impervious surface underlain by dense silty clay loam or silty clay
Depth class: Very deep
Drainage class: Poorly drained
Runoff: Ponded
Permeability: Very slow
Shrink-swell potential: High
Sodicity: High

Duric Natrargids

Position on landscape: Edges of flats
Slope range: 0 to 2 percent
Climatic data (average annual):
Precipitation—8 to 12 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 120 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Sample profile:
0 to 4 inches—light gray silt loam
4 to 15 inches—light gray silty clay
15 to 22 inches—light gray silty clay loam
22 to 60 inches—white silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Runoff: Ponded
Permeability: Very slow
Available water capacity: Very high
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate
Salinity: High
Sodicity: High

Land Capability Classification

Playas: VIII
Duric Natrargids: VIIs, nonirrigated

134—Plush-Rubbleland-Rock outcrop association, 25 to 50 percent slopes

Setting

Major landform: Breaks (fig. 8)

Figure 8.—Typical area of Plush-Rubbleland-Rock outcrop association, 25 to 50 percent slopes. Graveya-Ratsnest-Rock outcrop association, 3 to 35 percent slopes, in foreground.

Elevation: 3,000 to 5,250 feet
Major uses: Wildlife habitat

Composition

Plush very stony sandy loam and similar inclusions—40 percent
Rubbleland—30 percent
Rock outcrop—20 percent
Contrasting inclusions—10 percent

Plush Soil

Position on landscape: Side slopes
Slope range: 25 to 50 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 51 degrees F
Frost-free period—90 to 135 days

Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown very stony sandy loam
4 to 11 inches—light yellowish brown gravelly loam
11 to 20 inches—light yellowish brown very gravelly clay loam
20 to 48 inches—very pale brown extremely gravelly loam
48 inches—bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Rapid or very rapid
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate to high
Hazard of erosion by wind: Slight

Rubbleland

Position on landscape: Cliff bases
Description of areas: Barren masses of loose, angular fragments of welded rhyolitic tuff; masses formed mainly as a result falling, rolling, or sliding rock
Runoff: Rapid

Rock Outcrop

Position on landscape: Cliffs and rims
Kind of rock: Exposed hard welded rhyolitic tuff
Runoff: Very rapid

Contrasting Inclusions

• Cottle soils that are on shoulder slopes and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less

Land Capability Classification

Plush soil: VIs, nonirrigated
Rubbleland: VIII
Rock outcrop: VIII

135—Poisoncreek-Kanlee association, 4 to 45 percent slopes

Setting

Major landform: Mountains
Elevation: 5,600 to 6,900 feet
Major uses: Rangeland and wildlife habitat

Composition

Poisoncreek stony coarse sandy loam and similar inclusions—55 percent
Kanlee fine gravelly coarse sandy loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Poisoncreek Soil

Position on landscape: Summits and convex side slopes
Slope range: 5 to 45 percent
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—39 to 44 degrees F
Frost-free period—60 to 85 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—grayish brown stony coarse sandy loam
5 to 12 inches—yellowish brown very cobbly clay loam
12 to 15 inches—weathered bedrock
15 inches—bedrock
Depth class: Shallow
Drainage class: Somewhat excessively drained
Runoff: Medium to very rapid
Permeability: Moderate
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Kanlee Soil

Position on landscape: Side slopes
Slope range: 4 to 40 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—40 to 44 degrees F
Frost-free period—65 to 80 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 10 inches—very dark grayish brown fine gravelly coarse sandy loam
10 to 14 inches—brown fine gravelly coarse sandy loam
14 to 32 inches—brown fine gravelly sandy clay loam

32 to 45 inches—weathered bedrock
45 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Contrasting Inclusions

- Parkay soils that are on north-facing side slopes and support mountain big sagebrush and Idaho fescue—10 percent or less
- Rock outcrop—5 percent or less
- Soils that are similar to Naz soils but have more clay, are on upper north-facing concave side slopes, and support snowbank aspen—5 percent or less
- Soils that are similar to Earcree soils but have more clay, are in draws, and support black cottonwood—small areas

Land Capability Classification

Poisoncreek soil: VIs, nonirrigated
Kanlee soil: IVe, nonirrigated

136—Poisoncreek-Kanlee-Bauscher association, 4 to 45 percent slopes

Setting

Major landform: Mountains
Elevation: 4,700 to 7,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Poisoncreek stony coarse sandy loam and similar inclusions—40 percent
Kanlee fine gravelly coarse sandy loam and similar inclusions—25 percent
Bauscher sandy loam, dry, and similar inclusions—15 percent
Contrasting inclusions—20 percent

Poisoncreek Soil

Position on landscape: Convex side slopes
Slope range: 5 to 45 percent
Climatic data (average annual):
Precipitation—13 to 18 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—grayish brown stony coarse sandy loam
5 to 12 inches—yellowish brown very cobbly clay loam
12 to 15 inches—weathered bedrock
15 inches—bedrock
Depth class: Shallow
Drainage class: Somewhat excessively drained
Runoff: Medium to very rapid
Permeability: Moderate
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Kanlee Soil

Position on landscape: Side slopes and toe slopes
Slope range: 4 to 40 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 10 inches—very dark grayish brown fine gravelly coarse sandy loam
10 to 14 inches—brown fine gravelly coarse sandy loam
14 to 32 inches—brown fine gravelly sandy clay loam
32 to 45 inches—weathered bedrock
45 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Bauscher Soil, Dry

Position on landscape: North-facing side slopes
Slope range: 5 to 20 percent
Climatic data (average annual):
Precipitation—14 to 17 inches

Air temperature—39 to 45 degrees F
Frost-free period—60 to 95 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 12 inches—grayish brown sandy loam
12 to 45 inches—brown and yellowish brown sandy clay loam
45 to 54 inches—light yellowish brown gravelly coarse sandy loam
54 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Contrasting Inclusions

- Rock outcrop—10 percent or less
- Soils that are similar to Dougal soils but are cooler, are on ridges and shoulder slopes, and support low sagebrush and bluebunch wheatgrass—10 percent or less

Land Capability Classification

Poisoncreek soil: VIs, nonirrigated
Kanlee soil: IVe, nonirrigated
Bauscher soil: IVe, nonirrigated

137—Povey-Dehana complex, 4 to 40 percent slopes

Setting

Major landform: Mountains
Elevation: 6,500 to 7,700 feet
Major uses: Wildlife habitat

Composition

Povey loam and similar inclusions—60 percent
Dehana gravelly loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Povey Soil

Position on landscape: North-facing side slopes
Slope range: 4 to 40 percent
Climatic data (average annual):
Precipitation—18 to 24 inches
Air temperature—35 to 38 degrees F
Frost-free period—30 to 55 days
Vegetal climax association: Snowbank aspen
Typical profile:
1 inch to 0—decomposed organic material
0 to 7 inches—dark grayish brown loam
7 to 22 inches—dark grayish brown and dark brown loam
22 to 35 inches—brown very cobbly loam
35 to 50 inches—yellowish brown extremely cobbly loam
50 inches—bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Dehana Soil

Position on landscape: North-facing side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—36 to 39 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Snowbank aspen
Typical profile:
0 to 14 inches—dark gray gravelly loam
14 to 60 inches—brown gravelly loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very high
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Rock outcrop—10 percent or less
- Soils that are similar to Earcree soils but have more volcanic glass, are on shoulder slopes, and support snowbrush ceanothus—10 percent or less

Land Capability Classification

Povey soil: VIe, nonirrigated
Dehana soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

138—Povey-Earcree complex, 10 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 6,000 to 7,800 feet
Major uses: Rangeland, wildlife habitat, and mines

Composition

Povey very gravelly loam and similar inclusions—45 percent
Earcree gravelly coarse sandy loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Povey Soil

Position on landscape: Side slopes
Slope range: 15 to 50 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—34 to 39 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—dark grayish brown very gravelly loam
6 to 17 inches—dark grayish brown gravelly loam
17 to 25 inches—brown very gravelly loam
25 to 32 inches—dark yellowish brown extremely cobbly loam
32 to 60 inches—yellowish brown extremely cobbly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Earcree Soil

Position on landscape: Side slopes and toe slopes
Slope range: 10 to 40 percent
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—36 to 39 degrees F
Frost-free period—45 to 60 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown gravelly coarse sandy loam
8 to 34 inches—grayish brown gravelly coarse sandy loam
34 to 60 inches—light yellowish brown gravelly loamy coarse sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately rapid
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Contrasting Inclusions

- Dehana soils that are on side slopes and support mountain big sagebrush and Idaho fescue—10 percent or less
- Ola soils that are on side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Rock outcrop—5 percent or less
- Blackwell soils that are on fluvial bottoms and support sedge and bluegrass—small areas

Land Capability Classification

Povey soil: VIe, nonirrigated
Earcree soil: IVe, nonirrigated
Map unit (complex): VIe, nonirrigated

139—Povey-Nagitsy association, 4 to 60 percent slopes

Setting

Major landform: Mountains
Elevation: 5,600 to 7,700 feet
Major use: Wildlife habitat

Composition

Povey loam and similar inclusions—55 percent
Nagitsy loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Povey Soil

Position on landscape: Upper north-facing side slopes
Slope range: 4 to 40 percent
Climatic data (average annual):
Precipitation—18 to 24 inches
Air temperature—35 to 39 degrees F
Frost-free period—30 to 65 days
Vegetal climax association: Snowbank aspen
Typical profile:
1 inch to 0—decomposed organic material
0 to 7 inches—dark grayish brown loam

7 to 22 inches—dark grayish brown and dark brown loam
22 to 35 inches—brown very cobbly loam
35 to 50 inches—yellowish brown extremely cobbly loam
50 inches—bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Nagitsy Soil

Position on landscape: Upper north-facing side slopes
Slope range: 8 to 60 percent
Climatic data (average annual):
Precipitation—16 to 25 inches
Air temperature—34 to 39 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Snowbrush ceanothus
Typical profile:
2 inches to 1/2 inch—undecomposed leaves and twigs
1/2 inch to 0—decomposed organic material
0 to 10 inches—dark grayish brown loam
10 to 32 inches—brown and very pale brown very gravelly loam
32 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Slight to severe
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Naz soils that are on lower side slopes and support Douglas fir and mountain snowberry—10 percent or less
- Parkay soils that are on upper, north-facing side slopes and support snowbank aspen—10 percent or less
- Soils that are similar to Earcree soils but have more clay, are on south-facing side slopes, and support mountain big sagebrush and Idaho fescue—5 percent or less
- Rock outcrop—small areas
- Eroded Nagitsy soils that are on upper north-facing side slopes, support forbs, and commonly are covered by snowdrifts—small areas

Land Capability Classification

Povey soil: VIe, nonirrigated
Nagitsy soil: VIe, nonirrigated

140—Quicksilver-Takeuchi-Rock outcrop association, 3 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 5,200 to 6,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Quicksilver bouldery coarse sandy loam and similar inclusions—30 percent
Takeuchi fine gravelly coarse sandy loam and similar inclusions—25 percent
Rock outcrop—25 percent
Contrasting inclusions—20 percent

Quicksilver Soil

Position on landscape: Ridges and south-facing side slopes
Slope range: 3 to 50 percent
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 95 days
Vegetal climax association: Curlleaf mountainmahogany and mountain snowberry with common western juniper
Typical profile:
0 to 4 inches—brown bouldery coarse sandy loam
4 to 15 inches—brown and pale brown gravelly coarse sandy loam
15 to 18 inches—pale brown very gravelly coarse sandy loam
18 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately rapid
Available water capacity: Very low
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Takeuchi Soil

Position on landscape: North-facing side slopes
Slope range: 3 to 45 percent
Climatic data (average annual):
Precipitation—14 to 18 inches

Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with occasional western juniper
Typical profile:
0 to 12 inches—dark grayish brown fine gravelly coarse sandy loam
12 to 26 inches—brown fine gravelly coarse sandy loam
26 to 36 inches—weathered bedrock
36 inches—bedrock
Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Runoff: Medium or rapid
Permeability: Moderately rapid
Available water capacity: Very low
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Rock Outcrop

Position on landscape: Random areas
Kind of rock: Exposed hard intermediate intrusive rock
Vegetation: Western juniper commonly rooted in fractures
Runoff: Very rapid

Contrasting Inclusions

- Nipintuck soils that are on south-facing side slopes and support curlleaf mountainmahogany and mountain snowberry—10 percent or less
- Graylock soils that are on north-facing foot slopes and support Douglas fir and mountain snowberry—5 percent or less
- Kanlee soils that are on north-facing side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less

Land Capability Classification

Quicksilver soil: VIe, nonirrigated
Takeuchi soil: VIe, nonirrigated
Rock outcrop: VIII

141—Ratsnest-Ornea complex, 1 to 12 percent slopes

Setting

Major landform: Pediments
Elevation: 2,400 to 3,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Ratsnest gravelly silt loam and similar inclusions—50 percent
Ornea loam and similar inclusions—25 percent
Contrasting inclusions—25 percent

Ratsnest Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 12 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—51 to 53 degrees F
Frost-free period—135 to 150 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Typical profile:
0 to 2 inches—light gray gravelly silt loam
2 to 4 inches—pale brown silty clay loam
4 to 10 inches—light yellowish brown clay
10 to 33 inches—light yellowish brown and pale yellow silty clay loam
33 to 39 inches—light gray silt loam
39 inches—soft bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Ornea Soil

Position on landscape: Summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—51 to 53 degrees F
Frost-free period—135 to 150 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Typical profile:
0 to 3 inches—pale brown loam
3 to 7 inches—very pale brown gravelly silt loam
7 to 12 inches—very pale brown gravelly clay loam
12 to 16 inches—light yellowish brown gravelly loam
16 to 60 inches—white and very pale brown extremely gravelly loamy sand

Depth class: Very deep
Drainage class: Well drained
Runoff: Slow
Permeability: Moderately slow over very rapid
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate
Salinity: Moderate

Contrasting Inclusions

- Orovada soils that are on north-facing side slopes and in swales and support Wyoming big sagebrush and Indian ricegrass—10 percent or less
- Badlands—5 percent or less
- Slickspots—5 percent or less
- Soils that are similar to the Ratsnest soil but are more moist, are on alluvial terraces, and support basin big sagebrush and basin wildrye with common black greasewood—5 percent or less
- Wholan soils that are on fan terraces and support winterfat and Indian ricegrass—small areas
- Rock outcrop—small areas

Land Capability Classification

Ratsnest soil: VIe, nonirrigated
Ornea soil: VIIe, nonirrigated
Map unit (complex): VIe, nonirrigated

142—Roca-Freshwater stony loams, 2 to 20 percent slopes

Setting

Major landform: Structural benches
Elevation: 5,200 to 5,850 feet
Major uses: Rangeland and wildlife habitat

Composition

Roca stony loam and similar inclusions—50 percent
Freshwater stony loam and similar inclusions—25 percent
Contrasting inclusions—25 percent

Roca Soil

Position on landscape: Summits and side slopes
Slope range: 4 to 20 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—pale brown stony loam
3 to 6 inches—brown gravelly clay loam
6 to 13 inches—yellowish brown very gravelly clay loam
13 to 22 inches—yellowish brown very cobbly clay
22 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Freshwater Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 5 inches—pale brown stony loam
5 to 13 inches—pale brown clay loam
13 to 18 inches—light yellowish brown clay loam
18 to 22 inches—hardpan
22 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Gooding soils but are cooler, are in swales, and support low sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Mackey soils but are cooler, are on side slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less

• Soils that are similar to Larioscamp soils but are very deep to bedrock, are on side slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
• Alzola soils that are on fan terraces and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
• Rock outcrop—small areas
• Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Roca soil: VIe, nonirrigated
Freshwater soil: VIs, nonirrigated
Map unit (complex): VIe, nonirrigated

143—Rock outcrop-Xerollic Haplargids complex, very steep

Setting

Major landform: Canyons
Elevation: 2,300 to 6,000 feet
Major uses: Wildlife habitat and recreation

Composition

Rock outcrop—65 percent
Xerollic Haplargids and similar inclusions—20 percent
Contrasting inclusions—15 percent

Rock Outcrop

Position on landscape: Rims, cliffs, and pinnacles
Kind of rock: Exposed hard extrusive flow rock
Runoff: Very rapid

Xerollic Haplargids

Position on landscape: Side slopes
Slope range: 15 to 60 percent
Climatic data (average annual):
Precipitation—8 to 13 inches
Air temperature—40 to 50 degrees F
Frost-free period—70 to 140 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Sample profile:
0 to 6 inches—pale brown stony loam
6 to 12 inches—pale brown very gravelly loam
12 to 17 inches—very pale brown very gravelly sandy loam
17 to 60 inches—very pale brown gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate and moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Contrasting Inclusions

• Rubbleland—10 percent or less
• Soils that have a dark-colored surface layer, are moderately well drained, are on nearly level alluvial terraces, and support mixed riparian vegetation—5 percent or less

Land Capability Classification

Rock outcrop: VIII
Xerollic Haplargids: VIIe, nonirrigated
Map unit (complex): VIII

144—Rubbleland-Rock outcrop-Pachic Argixerolls complex, very steep

Setting

Major landform: Canyons
Elevation: 4,600 to 6,750 feet
Major uses: Recreation and wildlife habitat

Composition

Rubbleland—40 percent
Rock outcrop—25 percent
Pachic Argixerolls and similar inclusions—25 percent
Contrasting inclusions—10 percent

Rubbleland

Position on landscape: Cliff bases
Description of areas: Barren masses of loose, angular fragments of extrusive rock; masses formed mainly as a result of falling, rolling, or sliding rock
Runoff: Rapid

Rock Outcrop

Position on landscape: Rims, cliffs, and pinnacles
Kind of rock: Exposed hard extrusive flow rock
Runoff: Very rapid

Pachic Argixerolls

Position on landscape: Side slopes
Slope range: 20 to 50 percent
Climatic data (average annual):
Precipitation—13 to 18 inches
Air temperature—38 to 47 degrees F
Frost-free period—60 to 100 days

Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with occasional western juniper
Sample profile:
0 to 10 inches—dark grayish brown stony loam
10 to 20 inches—dark grayish brown very cobbly loam
20 to 60 inches—brown very cobbly clay loam
Depth class: Deep and very deep
Drainage class: Well drained
Runoff: Very rapid
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate and high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Riverwash—5 percent or less
- Soils that are somewhat poorly drained, are on nearly level alluvial terraces, and support mixed riparian vegetation—5 percent or less

Land Capability Classification

Rubbleland: VIII
Rock outcrop: VIII
Pachic Argixerolls: VIe, nonirrigated
Map unit (complex): VIII

145—Salisbury-Gacey-Barnard complex, 2 to 12 percent slopes

Setting

Major landform: Fan terraces
Elevation: 4,400 to 5,050 feet
Major uses: Rangeland and wildlife habitat

Composition

Salisbury loam and similar inclusions—40 percent
Gacey stony loam and similar inclusions—25 percent
Barnard silt loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Salisbury Soil

Position on landscape: Slightly convex slopes
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 10 inches—grayish brown loam
10 to 16 inches—brown clay
16 to 24 inches—yellowish brown clay loam
24 to 30 inches—light yellowish brown loam
30 to 60 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Gacey Soil

Position on landscape: Intermound areas and toe slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—grayish brown stony loam
4 to 9 inches—light brownish gray cobbly clay loam
9 to 16 inches—light yellowish brown very cobbly clay
16 to 27 inches—hardpan
27 to 60 inches—multicolored extremely gravelly loamy sand
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Barnard Soil

Position on landscape: Mounds
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—brown silt loam
6 to 11 inches—brown silty clay loam
11 to 23 inches—pale brown clay

23 to 27 inches—fractured hardpan
27 to 40 inches—hardpan
40 to 60 inches—pale brown very gravelly loam
Depth class: Moderately deep to hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Soils that are similar to Jumpcreek soils but are very deep, are on higher terraces, and support basin big sagebrush and bluebunch wheatgrass—5 percent or less
- Soils that are similar to Booford soils but contain lime, are on side slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—5 percent or less
- Tucker soils that are on fluvial bottoms and support sedge and bluegrass—small areas

Land Capability Classification

Salisbury soil: IVs, nonirrigated
Gacey soil: VIs, nonirrigated
Barnard soil: IVs, nonirrigated
Map unit (complex): IVs, nonirrigated

146—Saturday-Mulshoe complex, 4 to 25 percent slopes

Setting

Major landform: Mountains
Elevation: 5,700 to 6,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Saturday stony loam and similar inclusions—45 percent
Mulshoe very stony sandy loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Saturday Soil

Position on landscape: Summits and side slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—39 to 43 degrees F
Frost-free period—60 to 80 days
Vegetal climax association: Curlleaf mountainmahogany and mountain snowberry with occasional western juniper
Typical profile:
1 inch to 0—undecomposed organic matter
0 to 9 inches—very dark grayish brown and very dark brown stony loam
9 to 24 inches—yellowish brown very gravelly loam
24 to 56 inches—reddish brown extremely cobbly sandy loam
56 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderate
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Mulshoe Soil

Position on landscape: Side slopes
Slope range: 4 to 25 percent
Climatic data (average annual):
Precipitation—15 to 17 inches
Air temperature—40 to 43 degrees F
Frost-free period—60 to 80 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 9 inches—grayish brown and dark grayish brown very stony sandy loam
9 to 21 inches—yellowish brown very cobbly clay loam
21 to 24 inches—weathered bedrock
24 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Rock outcrop that commonly has western juniper rooted in fractures—10 percent or less
- Soils that are similar to Gaib soils but have more clay, are on summits and side slopes, and support low sagebrush and Idaho fescue—10 percent or less

• Doodlelink soils that are on concave side slopes and support mountain big sagebrush and Idaho fescue—5 percent or less
• Blackwell soils that are on fluvial bottoms and support sedge and bluegrass—small areas
• Soils that are similar to the Mulshoe soil but have less clay, are on south-facing breaks, and support western juniper—small areas

Land Capability Classification

Saturday soil: IVe, nonirrigated
Mulshoe soil: VIs, nonirrigated
Map unit (complex): IVe, nonirrigated

147—Scism silt loam, 5 to 20 percent slopes

Setting

Major landform: Calderas
Elevation: 4,100 to 5,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Scism silt loam and similar inclusions—75 percent
Contrasting inclusions—25 percent

Scism Soil

Position on landscape: North-facing side slopes of ridges
Slope range: 5 to 20 percent
Climatic data (average annual):
Precipitation—9 to 11 inches
Air temperature—46 to 49 degrees F
Frost-free period—100 to 120 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 6 inches—yellowish brown and light yellowish brown silt loam
6 to 21 inches—light yellowish brown and very pale brown silt loam
21 to 34 inches—hardpan
34 to 60 inches—white sandy loam
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: High

Contrasting Inclusions

• Owsel soils that are on concave foot slopes and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
• Orovada soils that are on north-facing side slopes of ridges and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
• Coonskin soils that are on toe slopes and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
• Rock outcrop—small areas

Land Capability Classification

VIe, nonirrigated

148—Scism very fine sandy loam, 1 to 12 percent slopes

Setting

Major landform: Tablelands
Elevation: 2,800 to 3,250 feet
Major uses: Cropland (fig. 9), rangeland, and wildlife habitat

Figure 9.—Sprinkler-irrigated wheat in an area of Scism very fine sandy loam, 1 to 12 percent slopes.

Composition

Scism very fine sandy loam and similar inclusions—75 percent
Contrasting inclusions—25 percent

Scism Soil

Position on landscape: Summits
Slope range: 1 to 12 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—51 to 52 degrees F
Frost-free period—130 to 145 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—light gray very fine sandy loam
2 to 7 inches—pale yellow silt loam
7 to 24 inches—pale yellow very fine sandy loam
24 to 40 inches—hardpan
40 to 60 inches—white loam
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Moderate
Hazard of erosion by wind: High

Contrasting Inclusions

- Soils that are similar to Royal soils but have more silt, are on summits, and support winterfat and Indian ricegrass—10 percent or less
- Orovada soils that are on summits and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Soils that are similar to Coonskin soils but have less rock fragments, are on summits, and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

IIIe, irrigated, and VIe, nonirrigated

149—Scism-Coonskin complex, 1 to 20 percent slopes

Setting

Major landforms: Tablelands and plug domes
Elevation: 2,800 to 3,350 feet
Major uses: Rangeland and wildlife habitat

Composition

Scism very fine sandy loam and similar inclusions—55 percent
Coonskin stony silt loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Scism Soil

Position on landscape: Side slopes and toe slopes
Slope range: 1 to 12 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—51 to 52 degrees F
Frost-free period—125 to 145 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—light gray very fine sandy loam
2 to 7 inches—pale yellow silt loam
7 to 24 inches—pale yellow very fine sandy loam
24 to 40 inches—hardpan
40 to 60 inches—white loam
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Moderate
Hazard of erosion by wind: High

Coonskin Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—51 to 52 degrees F
Frost-free period—125 to 145 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 3 inches—pale brown stony silt loam
3 to 7 inches—very pale brown silt loam
7 to 22 inches—very pale brown very cobbly loam
22 to 40 inches—hardpan
40 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Sugarcreek soils that are on south-facing side slopes and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Soils that are similar to Royal soils but have more silt, are on north-facing side slopes, and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Soils that are similar to Escalante soils but are moderately deep, have more rock fragments, are on canyon rims, shoulder slopes, and south-facing side slopes, and support fourwing saltbush and Indian ricegrass—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Scism soil: VIe, nonirrigated
Coonskin soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

150—Sharesnout-Bregar complex, 5 to 35 percent slopes

Setting

Major landform: Foothills
Elevation: 5,000 to 5,550 feet
Major uses: Rangeland and wildlife habitat

Composition

Sharesnout gravelly loam and similar inclusions—40 percent
Bregar stony loam and similar inclusions—35 percent
Contrasting inclusions—25 percent

Sharesnout Soil

Position on landscape: Summits and side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—grayish brown gravelly loam
4 to 10 inches—brown gravelly clay loam
10 to 15 inches—brown very gravelly clay loam
15 to 22 inches—yellowish brown extremely cobbly clay
22 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Bregar Soil

Position on landscape: Eroded summits and side slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Low sagebrush and bluegrass
Typical profile:
0 to 4 inches—yellowish brown stony loam
4 to 8 inches—light yellowish brown extremely gravelly loam
8 inches—bedrock
Depth class: Very shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Booford soils that are on mounds and support low sagebrush and Idaho fescue with occasional western juniper—10 percent or less
- Soils that are similar to Paynecreek soils but are moderately deep, are on mounds and shoulder slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
- Pixley soils that are on toe slopes and support low sagebrush and Idaho fescue—5 percent or less
- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Sharesnout soil: VIe, nonirrigated
Bregar soil: VIIs, nonirrigated
Map unit (complex): VIe, nonirrigated

151—Sharesnout-Bregar-Coser complex, 5 to 35 percent slopes

Setting

Major landform: Foothills
Elevation: 4,800 to 6,400 feet
Major uses: Rangeland and wildlife habitat

Composition

Sharesnout stony loam and similar inclusions—30 percent
Bregar stony loam and similar inclusions—30 percent
Coser gravelly loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Sharesnout Soil

Position on landscape: Summits and side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—38 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—dark brown stony loam
6 to 10 inches—brown extremely gravelly clay loam
10 to 30 inches—yellowish brown extremely gravelly clay
30 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Bregar Soil

Position on landscape: Ridges and shoulder slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—39 to 43 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Low sagebrush and bluegrass
Typical profile:
0 to 4 inches—yellowish brown stony loam
4 to 8 inches—yellowish brown extremely gravelly sandy loam
8 inches—bedrock
Depth class: Very shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Coser Soil

Position on landscape: Foot slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—dark grayish brown gravelly loam
4 to 13 inches—brown clay
13 to 19 inches—yellowish brown clay
19 to 31 inches—light yellowish brown gravelly clay loam
31 inches—weathered bedrock
Depth class: Moderately deep
Restriction to rooting depth: Abrupt textural change at a depth of 3 to 8 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Hurryback soils that are on concave side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Nagitsy soils that are on upper north-facing side slopes and support mountain big sagebrush, mountain snowberry, and mountain brome—5 percent or less
- Rock outcrop—5 percent or less
- Hades soils that are on concave north-facing side slopes and support mountain big sagebrush and Idaho fescue—5 percent or less

- Rubbleland—small areas
- Zola soils that are on fluvial bottoms and support sedge and bluegrass—small areas
- Goose Creek soils that are on stream terraces and support basin big sagebrush and basin wildrye—small areas

Land Capability Classification

Sharesnout soil: VIe, nonirrigated
Bregar soil: VIIs, nonirrigated
Coser soil: VIs, nonirrigated
Map unit (complex): VIs, nonirrigated

152—Sharesnout-Budlewis complex, 1 to 15 percent slopes

Setting

Major landform: Foothills
Elevation: 5,600 to 6,300 feet
Major uses: Rangeland and wildlife habitat

Composition

Sharesnout gravelly loam and similar inclusions—45 percent
Budlewis silt loam and similar inclusions—35 percent
Contrasting inclusions—20 percent

Sharesnout Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 15 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—38 to 43 degrees F
Frost-free period—55 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—grayish brown gravelly loam
4 to 10 inches—brown gravelly clay loam
10 to 15 inches—brown very gravelly clay loam
15 to 22 inches—yellowish brown extremely cobbly clay
22 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Budlewis Soil

Position on landscape: Summits and side slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 43 degrees F
Frost-free period—70 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 14 inches—brown silty clay loam
14 to 24 inches—light yellowish brown clay
24 to 29 inches—very pale brown gravelly loam
29 to 30 inches—hardpan
30 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Coser soils that are on toe slopes and support low sagebrush and Idaho fescue—10 percent or less
- Chayson soils that are on summits and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less
- Soils that are similar to Blackleg soils but are moderately deep to bedrock, are in swales, and support low sagebrush and Idaho fescue—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Sharesnout soil: VIe, nonirrigated
Budlewis soil: IVs, nonirrigated
Map unit (complex): VIe, nonirrigated

Figure 10.—Typical area of Sharesnout-Coser-Threek complex, 5 to 35 percent slopes. Vipont-Bauscher association, 8 to 60 percent slopes, on hillsides in background.

153—Sharesnout-Coser-Threek complex, 5 to 35 percent slopes

Setting

Major landform: Foothills (fig. 10)
Elevation: 4,800 to 5,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Sharesnout stony loam and similar inclusions—50 percent
Coser gravelly loam and similar inclusions—20 percent
Threek stony loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Sharesnout Soil

Position on landscape: Summits and side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
- Precipitation—13 to 17 inches
- Air temperature—42 to 45 degrees F
- Frost-free period—75 to 95 days

Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
- 0 to 6 inches—dark brown stony loam
- 6 to 10 inches—brown extremely gravelly clay loam
- 10 to 30 inches—yellowish brown extremely gravelly clay
- 30 inches—bedrock

Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Coser Soil

Position on landscape: Side slopes and foot slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
- Precipitation—13 to 16 inches
- Air temperature—42 to 45 degrees F
- Frost-free period—75 to 95 days

Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
- 0 to 4 inches—dark grayish brown gravelly loam
- 4 to 13 inches—brown clay
- 13 to 19 inches—yellowish brown clay
- 19 to 31 inches—light yellowish brown gravelly clay loam
- 31 inches—weathered bedrock

Depth class: Moderately deep
Restriction to rooting depth: Abrupt textural change at a depth of 3 to 8 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Threek Soil

Position on landscape: Side slopes and shoulder slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
- Precipitation—13 to 16 inches
- Air temperature—41 to 45 degrees F
- Frost-free period—70 to 95 days

Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
- 0 to 4 inches—dark brown stony loam
- 4 to 12 inches—brown very gravelly clay loam

12 to 24 inches—brown extremely gravelly clay
24 to 34 inches—brown fine sandy loam
34 to 60 inches—brown loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Hurryback soils that are on north-facing concave side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Soils that are similar to Tucker soils but have wide cracks, are on toe slopes, and support mountain big sagebrush and Idaho fescue—5 percent or less
- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas
- Rock outcrop—small areas
- Welch soils that are on north-facing concave foot slopes and support snowbank aspen—small areas

Land Capability Classification

Sharesnout soil: VIe, nonirrigated
Coser soil: VIs, nonirrigated
Threek soil: IVe, nonirrigated
Map unit (complex): VIe, nonirrigated

154—Sharesnout-Monasterio-Pixley complex, 1 to 20 percent slopes

Setting

Major landform: Foothills (fig. 11)
Elevation: 4,800 to 5,400 feet
Major uses: Rangeland and wildlife habitat

Composition

Sharesnout gravelly loam and similar inclusions—30 percent
Monasterio stony sandy loam and similar inclusions—25 percent
Pixley silt loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Figure 11.—Typical area of Sharesnout-Monasterio-Pixley complex, 1 to 20 percent slopes, in foregound and right center. Rubbleland-Rock outcrop-Pachic Argixerolls complex, very steep, in canyons.

Sharesnout Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 15 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—44 to 45 degrees F
Frost-free period—85 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—grayish brown gravelly loam
4 to 10 inches—brown gravelly clay loam
10 to 15 inches—brown very gravelly clay loam
15 to 22 inches—yellowish brown extremely cobbly clay
22 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Monasterio Soil

Position on landscape: Summits and side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 95 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with occasional western juniper
Typical profile:
0 to 8 inches—dark grayish brown stony sandy loam
8 to 11 inches—brown gravelly sandy loam
11 to 17 inches—dark yellowish brown very gravelly sandy loam
17 to 25 inches—brown very cobbly sandy clay loam
25 to 28 inches—brown extremely cobbly sandy clay loam
28 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderate
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Pixley Soil

Position on landscape: Foot slopes
Slope range: 2 to 10 percent
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—44 to 45 degrees F
Frost-free period—80 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—light brownish gray and brown silt loam
6 to 9 inches—brown silty clay loam
9 to 18 inches—light gray gravelly clay loam
18 to 60 inches—hardpan
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Bregar soils that are on ridges and support low sagebrush and bluegrass—10 percent or less
- Rock outcrop—10 percent or less
- Thacker soils that are on north-facing foot slopes and support low sagebrush and Idaho fescue—5 percent or less
- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas
- Hades soils that are on north-facing side slopes and support mountain big sagebrush and Idaho fescue—small areas

Land Capability Classification

Sharesnout soil: VIe, nonirrigated
Monasterio soil: IVe, nonirrigated
Pixley soil: VIs, nonirrigated
Map unit (complex): VIe, nonirrigated

155—Shoofly gravelly loam, 0 to 4 percent slopes

Setting

Major landform: Fan piedmonts
Elevation: 3,400 to 4,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Shoofly gravelly loam and similar inclusions—75 percent
Contrasting inclusions—25 percent

Shoofly Soil

Position on landscape: Summits
Slope range: 0 to 4 percent
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—49 to 51 degrees F
Frost-free period—115 to 130 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Typical profile:
0 to 7 inches—pale brown and very pale brown gravelly loam

7 to 12 inches—light yellowish brown gravelly clay loam
12 to 14 inches—hardpan
14 to 39 inches—intermittent layers of hardpan and very pale brown extremely gravelly coarse sand
39 to 60 inches—sand and gravel
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- McKeeth soils that are on summits and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—10 percent or less
- Veta soils that are on side slopes and in swales and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Ornea soils that are on summits and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—5 percent or less
- Slickspots—5 percent or less

Land Capability Classification

VIIs, nonirrigated

156—Snell-Kiyi association, 3 to 40 percent slopes

Setting

Major landforms: Foothills and mountains
Elevation: 5,100 to 6,300 feet
Major uses: Rangeland and wildlife habitat

Composition

Snell stony loam and similar inclusions—50 percent
Kiyi gravelly loam and similar inclusions—25 percent
Contrasting inclusions—25 percent

Snell Soil

Position on landscape: Summits and south-facing side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—40 to 44 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 10 inches—dark grayish brown stony loam
10 to 22 inches—dark grayish brown very gravelly clay loam
22 to 39 inches—brown very cobbly clay loam
39 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Kiyi Soil

Position on landscape: North-facing side slopes
Slope range: 3 to 40 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown and grayish brown gravelly loam
8 to 16 inches—grayish brown gravelly clay loam
16 to 25 inches—brown very gravelly clay loam
25 to 40 inches—pale brown gravelly clay
40 to 60 inches—very pale brown very cobbly clay
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Coser soils but are poorly drained, are on toe slopes, and support low sagebrush, Idaho fescue, and mulesear wyethia—10 percent or less
- Strickland soils that are on north-facing side slopes and support mountain big sagebrush, mountain snowberry, and mountain brome—5 percent or less
- Saturday soils that are on ridges and support curlleaf mountainmahogany and mountain snowberry with occasional western juniper—5 percent or less
- Rock outcrop—5 percent or less

• Cleavage soils that are on ridges and support low sagebrush and Idaho fescue—small areas

Land Capability Classification

Snell soil: VIe, nonirrigated
Kiyi soil: IVe, nonirrigated

157—Snell-Sharesnout complex, 5 to 40 percent slopes

Setting

Major landform: Foothills and mountains
Elevation: 4,800 to 6,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Snell stony loam and similar inclusions—55 percent
Sharesnout gravelly loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Snell Soil

Position on landscape: Side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—40 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with occasional western juniper
Typical profile:
0 to 10 inches—dark grayish brown stony loam
10 to 22 inches—dark grayish brown very gravelly clay loam
22 to 39 inches—brown very cobbly clay loam
39 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Sharesnout Soil

Position on landscape: Convex side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—15 to 17 inches
Air temperature—38 to 45 degrees F
Frost-free period—55 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—grayish brown gravelly loam
4 to 10 inches—brown gravelly clay loam
10 to 15 inches—brown very gravelly clay loam
15 to 22 inches—yellowish brown extremely cobbly clay
22 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

• Soils that are similar to Hades soils but are moderately deep, are on toe slopes and north-facing side slopes, and support mountain big sagebrush and Idaho fescue—10 percent or less
• Cleavage soils that are on summits and south-facing side slopes and support low sagebrush and Idaho fescue—5 percent or less
• Bregar soils that are on ridges and shoulder slopes and support low sagebrush and bluegrass—5 percent or less
• Welch soils that are on north-facing concave foot slopes and support snowbank aspen—5 percent or less
• Welch soils that are on fluvial bottoms and support sedge and bluegrass—small areas
• Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Snell soil: VIe, nonirrigated
Sharesnout soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

158—Snowmore-Igert-Bruncan complex, 1 to 12 percent slopes

Setting

Major landform: Calderas
Elevation: 5,200 to 5,400 feet
Major uses: Rangeland and wildlife habitat

Composition

Snowmore stony silt loam and similar inclusions—40 percent
Igert loam and similar inclusions—30 percent
Bruncan silt loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Snowmore Soil

Position on landscape: South-facing slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 3 inches—pale brown stony silt loam
3 to 6 inches— brown loam
6 to 11 inches—yellowish brown clay loam
11 to 31 inches—light yellowish brown and very pale brown gravelly fine sandy loam
31 to 36 inches—hardpan
36 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Igert Soil

Position on landscape: North-facing slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 46 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 5 inches—pale brown loam
5 to 15 inches—light yellowish brown clay loam
15 to 18 inches—light yellowish brown gravelly clay loam
18 to 29 inches—light yellowish brown gravelly loam
29 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Bruncan Soil

Position on landscape: Concave slopes
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 46 degrees F
Frost-free period—85 to 95 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—pale brown silt loam
6 to 15 inches—light yellowish brown silt loam
15 to 19 inches—very pale brown very cobbly silt loam
19 to 24 inches—hardpan
24 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Owsel soils but have less silt, are on ridges, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Loomis soils but are moderately deep, are in swales, and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Snowmore soil: VIe, nonirrigated
Igert soil: VIe, nonirrigated
Bruncan soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

159—Snowmore-Troughs complex, 1 to 10 percent slopes

Setting

Major landform: Calderas
Elevation: 4,900 to 5,200 feet
Major uses: Rangeland and wildlife habitat

Composition

Snowmore stony silt loam and similar inclusions—60 percent
Troughs very stony loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Snowmore Soil

Position on landscape: Smooth slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 105 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 3 inches—pale brown stony silt loam
3 to 6 inches— brown loam
6 to 11 inches—yellowish brown clay loam
11 to 31 inches—light yellowish brown and very pale brown gravelly fine sandy loam
31 to 36 inches—hardpan
36 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Troughs Soil

Position on landscape: Convex slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—8 to 11 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 105 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—very pale brown very stony loam
2 to 8 inches—pale brown cobbly clay loam
8 to 15 inches—very pale brown extremely cobbly loam
15 to 30 inches—hardpan
30 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Hardtrigger soils but are moderately deep, are in swales, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Willhill soils that are on north-facing side slopes and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Slickspots—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Snowmore soil: VIe, nonirrigated
Troughs soil: VIs, nonirrigated
Map unit (complex): VIe, nonirrigated

160—Snowmore-Willhill association, 2 to 25 percent slopes

Setting

Major landform: Foothills
Elevation: 4,900 to 5,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Snowmore silt loam and similar inclusions—70 percent
Willhill gravelly loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Snowmore Soil

Position on landscape: Summits and north-facing side slopes
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days

Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown silt loam
4 to 13 inches—light yellowish brown and very pale brown clay loam
13 to 23 inches—very pale brown cobbly loam
23 to 28 inches—hardpan
28 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Willhill Soil

Position on landscape: Ridges and south-facing side slopes
Slope range: 3 to 25 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 47 degrees F
Frost-free period—85 to 100 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 5 inches—light brownish gray gravelly loam
5 to 9 inches—brown gravelly clay loam
9 to 13 inches—yellowish brown very gravelly clay loam
13 to 28 inches—light yellowish brown extremely cobbly loam
28 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Midraw soils that are in swales and support low sagebrush and bluebunch wheatgrass—10 percent or less
- Rock outcrop—5 percent or less

Land Capability Classification

Snowmore soil: VIe, nonirrigated
Willhill soil: VIe, nonirrigated

161—Southmount-Booneville complex, 5 to 40 percent slopes

Setting

Major landform: Mountains
Elevation: 5,800 to 7,400 feet
Major uses: Woodland and wildlife habitat

Composition

Southmount silt loam and similar inclusions—40 percent
Booneville loam and similar inclusions—40 percent
Contrasting inclusions—20 percent

Southmount Soil

Position on landscape: North-facing side slopes and foot slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—22 to 36 inches
Air temperature—35 to 38 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Douglas fir and mountain snowberry
Typical profile:
1 inch to 0—partially decomposed organic matter
0 to 5 inches—dark brown silt loam
5 to 13 inches—dark brown cobbly silt loam
13 to 18 inches—brown gravelly clay loam
18 to 42 inches—brownish yellow gravelly clay loam
42 to 60 inches—light yellowish brown sandy loam
Depth class: Very deep
Restriction to rooting depth: Seasonally saturated at a depth of 40 to 60 inches
Drainage class: Moderately well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Booneville Soil

Position on landscape: North-facing side slopes
Slope range: 8 to 40 percent
Climatic data (average annual):
Precipitation—22 to 32 inches
Air temperature—35 to 39 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Douglas fir and mountain snowberry
Typical profile:

2 inches to 0—undecomposed organic material
0 to 5 inches—dark brown loam
5 to 14 inches—dark brown gravelly loam
14 to 30 inches—yellowish brown very cobbly loam
30 to 60 inches—brown extremely cobbly clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Povey soils that are on north-facing side slopes and support snowbank aspen—5 percent or less
- Povey soils that are on north-facing side slopes and support mountain big sagebrush, mountain snowberry, and mountain brome—5 percent or less
- Soils that are similar to Strickland soils but are deep, are on concave slopes, and support quaking aspen—5 percent or less
- Soils that are similar to the Southmount soil but have more clay, are in saddles and on narrow benches, and support mountain big sagebrush, mountain snowberry, and mountain brome—5 percent or less
- Povey soils that are on convex side slopes and support mountain big sagebrush and Idaho fescue—small areas

Land Capability Classification

Southmount soil: VIe, nonirrigated
Booneville soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

162—Squawcreek-Avtable-Wagonbox complex, 1 to 15 percent slopes

Setting

Major landform: Structural benches
Elevation: 5,150 to 5,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Squawcreek very stony silt loam and similar inclusions—40 percent
Avtable stony loam and similar inclusions—25 percent
Wagonbox very stony loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Squawcreek Soil

Position on landscape: Summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—pale brown very stony silt loam
4 to 12 inches—yellowish brown gravelly clay loam
12 to 18 inches—yellowish brown gravelly clay
18 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Avtable Soil

Position on landscape: Summits
Slope range: 2 to 15 percent

Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—yellowish brown stony loam
4 to 10 inches—yellowish brown gravelly loam
10 to 19 inches—light yellowish brown extremely stony clay loam
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Wagonbox Soil

Position on landscape: Summits
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days

Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—light brownish gray very stony loam
5 to 9 inches—pale brown very cobbly clay loam
9 to 17 inches—pale brown very cobbly clay
17 to 18 inches—hardpan
18 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Hat soils that are on mounds and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper—5 percent or less
- Rubbleland—5 percent or less
- Rock outcrop that commonly has western juniper rooted in fractures—5 percent or less

Land Capability Classification

Squawcreek soil: VIs, nonirrigated
Avtable soil: VIs, nonirrigated
Wagonbox soil: VIs, nonirrigated
Map unit (complex): VIs, nonirrigated

163—Squawcreek-Wickahoney stony loams, 1 to 20 percent slopes

Setting

Major landforms: Foothills and structural benches
Elevation: 4,900 to 5,900 feet
Major uses: Rangeland and wildlife habitat

Composition

Squawcreek stony loam and similar inclusions—50 percent
Wickahoney stony loam and similar inclusions—25 percent
Contrasting inclusions—25 percent

Squawcreek Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—pale brown stony loam
4 to 14 inches—pale brown clay loam
14 to 19 inches—light yellowish brown clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Wickahoney Soil

Position on landscape: Summits and side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue with occasional western juniper
Typical profile:
0 to 5 inches—light brownish gray stony loam
5 to 12 inches—pale brown cobbly clay loam
12 to 19 inches—dark yellowish brown very cobbly clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Nipintuck soils that are on summits and side slopes and support low sagebrush and bluegrass with occasional western juniper—10 percent or less
- Rock outcrop that has occasional western juniper rooted in fractures—10 percent or less
- Soils that are similar to Hat soils but have less rock

fragments, are on mounds, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—5 percent or less

Land Capability Classification

Squawcreek soil: VIs, nonirrigated
Wickahoney soil: VIe, nonirrigated
Map unit (complex): VIs, nonirrigated

164—Squawcreek-Zecanyon association, 2 to 20 percent slopes

Setting

Major landform: Structural benches
Elevation: 4,950 to 5,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Squawcreek stony loam and similar inclusions—50 percent
Zecanyon stony silt loam and similar inclusions—35 percent
Contrasting inclusions—15 percent

Squawcreek Soil

Position on landscape: Intermound areas and side slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—pale brown stony loam
4 to 14 inches—pale brown clay loam
14 to 19 inches—light yellowish brown clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Zecanyon Soil

Position on landscape: Mounds and swales
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 95 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 8 inches—brown and pale brown stony silt loam
8 to 17 inches—pale brown and light yellowish brown clay loam
17 to 30 inches—light brown cobbly clay loam
30 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Wagonbox soils but have a dark-colored surface layer, are on summits, and support low sagebrush and Idaho fescue—10 percent or less
- Soils that are similar to Cleavage soils but have less rock fragments, are on summits, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Squawcreek soil: VIs, nonirrigated
Zecanyon soil: IVe, nonirrigated

165—Strickland-Dehana-Parkay association, 5 to 35 percent slopes

Setting

Major landform: Mountains
Elevation: 6,300 to 7,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Strickland loam and similar inclusions—30 percent
Dehana gravelly loam and similar inclusions—30 percent
Parkay gravelly loam and similar inclusions—25 percent
Contrasting inclusions—15 percent

Strickland Soil

Position on landscape: Shoulder slopes
Slope range: 5 to 30 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—35 to 40 degrees F
Frost-free period—30 to 50 days
Vegetal climax association: Mountain big sagebrush, mountain snowberry, and mountain brome
Typical profile:
0 to 14 inches—very dark grayish brown and dark brown loam
14 to 20 inches—dark brown loam
20 to 29 inches—yellowish brown loam
29 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Dehana Soil

Position on landscape: Upper side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—36 to 39 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Snowbank aspen
Typical profile:
0 to 14 inches—dark gray gravelly loam
14 to 60 inches—brown gravelly loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very high
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Parkay Soil

Position on landscape: Side slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—36 to 39 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—brown gravelly loam
4 to 10 inches—grayish brown gravelly loam
10 to 35 inches—brown and grayish brown cobbly loam
35 to 45 inches—brown very cobbly clay loam
45 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Dranyon soils that are on upper concave side slopes and support quaking aspen—10 percent or less
- Wickahoney soils that are on ridges and support low sagebrush and Idaho fescue—5 percent or less
- Soils that are similar to Tucker soils but have occasional vertical cracks, are on fluvial bottoms, and support sedge and bluegrass—small areas

Land Capability Classification

Strickland soil: VIe, nonirrigated
Dehana soil: VIe, nonirrigated
Parkay soil: VIe, nonirrigated

166—Succor-Gooding-Deshler complex, 2 to 35 percent slopes

Setting

Major landform: Pediments
Elevation: 4,250 to 5,200 feet
Major uses: Rangeland and wildlife habitat

Composition

Succor gravelly loam and similar inclusions—45 percent
Gooding loam and similar inclusions—15 percent
Deshler silt loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Succor Soil

Position on landscape: Summits and north-facing side slopes
Slope range: 3 to 35 percent
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:

0 to 5 inches—grayish brown gravelly loam
5 to 18 inches—brown clay
18 to 22 inches—light yellowish brown clay loam
22 to 33 inches—pale brown sandy loam
33 to 60 inches—light gray loam
Depth class: Very deep
Restriction to rooting depth: Abrupt textural change at a depth of 5 to 14 inches
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very high
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Gooding Soil

Position on landscape: South-facing side slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 105 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown loam
4 to 7 inches—light gray loam
7 to 17 inches—pale brown clay
17 to 30 inches—pale brown clay loam
30 to 57 inches—white clay loam
57 to 60 inches—hardpan
Depth class: Deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 3 to 8 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: Very high
Shrink-swell potential: High
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Deshler Soil

Position on landscape: Side slopes
Slope range: 3 to 15 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 120 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 15 inches—grayish brown and dark grayish brown silt loam
15 to 18 inches—grayish brown silty clay loam
18 to 30 inches—grayish brown clay
30 to 39 inches—light gray silty clay loam
39 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Haw soils but are deep, are on foot slopes, and support basin big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Dougal soils but have a darker colored surface layer, are on knolls and ridges, and support low sagebrush and bluegrass—5 percent or less
- Soils that are similar to Bieber soils but are moderately deep, are on upper terraces, and support low sagebrush and bluebunch wheatgrass—5 percent or less
- Soils that are similar to the Succor soil but are shallow, are on foot slopes, and support low sagebrush and Idaho fescue—5 percent or less
- Badlands—small areas
- Tucker soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas
- Soils that are similar to Brunzell soils but are darker, are on north-facing side slopes, and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—small areas

Land Capability Classification

Succor soil: IVe, nonirrigated
Gooding soil: VIs, nonirrigated
Deshler soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

167—Sugarcreek gravelly loam, 3 to 30 percent slopes

Setting

Major landform: Structural benches
Elevation: 4,100 to 4,450 feet
Major uses: Rangeland and wildlife habitat

Composition

Sugarcreek gravelly loam and similar inclusions—80 percent
Contrasting inclusions—20 percent

Sugarcreek Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 30 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 49 degrees F
Frost-free period—105 to 120 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 13 inches—yellowish brown gravelly loam
13 to 21 inches—pale brown gravelly loam
21 to 28 inches—white, weakly cemented very gravelly sandy loam
28 to 39 inches—white extremely gravelly loamy sand
39 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: Low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Minveno soils that are on summits and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Rock outcrop—10 percent or less

Land Capability Classification

VIe, nonirrigated

168—Takeuchi-Earcree-Rock outcrop association, 10 to 60 percent slopes

Setting

Major landform: Mountains (fig. 12)
Elevation: 5,800 to 7,600 feet
Major uses: Rangeland, mines, and wildlife habitat

Figure 12.—Typical area of Takeuchi-Earcree-Rock outcrop association, 10 to 60 percent slopes.

Composition

Takeuchi bouldery coarse sandy loam and similar inclusions—35 percent
Earcree gravelly coarse sandy loam and similar inclusions—25 percent
Rock outcrop—20 percent
Contrasting inclusions—20 percent

Takeuchi Soil

Position on landscape: South-facing side slopes
Slope range: 10 to 60 percent
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—40 to 43 degrees F
Frost-free period—55 to 80 days
Vegetal climax association: Curlleaf mountainmahogany and mountain snowberry with common western juniper
Typical profile:
0 to 13 inches—brown and grayish brown bouldery coarse sandy loam
13 to 20 inches—pale brown gravelly coarse sandy loam
20 to 26 inches—very pale brown very gravelly coarse sandy loam
26 to 34 inches—weathered bedrock
34 inches—bedrock
Depth class: Moderately deep
Drainage class: Somewhat excessively drained

Runoff: Medium to very rapid
Permeability: Moderately rapid
Available water capacity: Very low
Hazard of erosion by water: Moderate to severe
Hazard of erosion by wind: Moderate

Earcree Soil

Position on landscape: North-facing side slopes
Slope range: 10 to 40 percent
Climatic data (average annual):
Precipitation—16 to 18 inches
Air temperature—36 to 40 degrees F
Frost-free period—30 to 60 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue with common western juniper
Typical profile:
0 to 8 inches—dark grayish brown gravelly coarse sandy loam
8 to 34 inches—grayish brown gravelly coarse sandy loam
34 to 60 inches—light yellowish brown gravelly loamy coarse sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately rapid
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Rock Outcrop

Position on landscape: Random areas
Kind of rock: Exposed hard intermediate intrusive rock
Vegetation: Western juniper commonly rooted in fractures
Runoff: Very rapid

Contrasting Inclusions

- Dollarhide soils that are on ridges and support curlleaf mountainmahogany and mountain snowberry—10 percent or less
- Graylock soils that are on north-facing side slopes and support Douglas fir and mountain snowberry—5 percent or less
- Soils that are similar to Dranyon soils but are moderately deep, are on north-facing side slopes, and support mountain big sagebrush and Idaho fescue—5 percent or less

Land Capability Classification

Takeuchi soil: VIe, nonirrigated
Earcree soil: IVe, nonirrigated
Rock outcrop: VIII

169—Takeuchi-Kanlee-Poisoncreek association, 1 to 45 percent slopes

Setting

Major landform: Mountains
Elevation: 4,600 to 6,200 feet
Major uses: Rangeland and wildlife habitat

Composition

Takeuchi fine gravelly coarse sandy loam and similar inclusions—30 percent
Kanlee fine gravelly coarse sandy loam and similar inclusions—30 percent
Poisoncreek gravelly coarse sandy loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Takeuchi Soil

Position on landscape: Foot slopes
Slope range: 3 to 45 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 95 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 12 inches—dark grayish brown fine gravelly coarse sandy loam
12 to 26 inches—brown fine gravelly coarse sandy loam
26 to 36 inches—weathered bedrock
36 inches—bedrock
Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Runoff: Medium or rapid
Permeability: Moderately rapid
Available water capacity: Very low
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Kanlee Soil

Position on landscape: Side slopes and saddles
Slope range: 4 to 40 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 10 inches—very dark grayish brown fine gravelly coarse sandy loam

10 to 14 inches—brown fine gravelly coarse sandy loam
14 to 32 inches—brown fine gravelly sandy clay loam
32 to 45 inches—weathered bedrock
45 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Poisoncreek Soil

Position on landscape: Summits and convex side slopes
Slope range: 1 to 45 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—grayish brown gravelly coarse sandy loam
3 to 6 inches—brown very gravelly sandy clay loam
6 to 12 inches—yellowish brown extremely gravelly sandy clay loam
12 to 16 inches—weathered bedrock
16 inches—bedrock
Depth class: Shallow
Drainage class: Somewhat excessively drained
Runoff: Slow to very rapid
Permeability: Moderate
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Contrasting Inclusions

- Kanlee soils that are on summits and convex side slopes and support low sagebrush and Idaho fescue—10 percent or less
- Rock outcrop—5 percent or less
- Soils that are similar to Upcreek soils but are well drained, have more clay in the lower part, are on stream terraces, and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Ola soils that are on north-facing concave side slopes and support mountain big sagebrush and Idaho fescue—5 percent or less

Land Capability Classification

Takeuchi soil: VIe, nonirrigated
Kanlee soil: IVe, nonirrigated
Poisoncreek soil: VIs, nonirrigated

170—Takeuchi-Quicksilver association, 3 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 4,600 to 6,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Takeuchi fine gravelly coarse sandy loam and similar inclusions—45 percent
Quicksilver bouldery coarse sandy loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Takeuchi Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 45 percent
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 95 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper
Typical profile:
0 to 12 inches—dark grayish brown fine gravelly coarse sandy loam
12 to 26 inches—brown fine gravelly coarse sandy loam
26 to 36 inches—weathered bedrock
36 inches—bedrock
Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Runoff: Medium or rapid
Permeability: Moderately rapid
Available water capacity: Very low
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: High

Quicksilver Soil

Position on landscape: Summits and south-facing side slopes
Slope range: 3 to 50 percent

Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Curlleaf mountainmahogany and mountain snowberry with common western juniper
Typical profile:
0 to 4 inches—brown bouldery coarse sandy loam
4 to 15 inches—brown and pale brown gravelly coarse sandy loam
15 to 18 inches—pale brown very gravelly coarse sandy loam
18 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately rapid
Available water capacity: Very low
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Ola soils that are on north-facing side slopes and support mountain big sagebrush and Idaho fescue with occasional western juniper—10 percent or less
- Rock outcrop that commonly has western juniper rooted in fractures—10 percent or less
- Poisoncreek soils that are on side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less
- Nazaton soils that are on north-facing side slopes and support Douglas fir and mountain snowberry—small areas

Land Capability Classification

Takeuchi soil: VIe, nonirrigated
Quicksilver soil: VIe, nonirrigated

171—Tanner silt loam, 2 to 8 percent slopes

Setting

Major landform: Plug domes
Elevation: 5,250 to 5,750 feet
Major uses: Rangeland and wildlife habitat

Composition

Tanner silt loam and similar inclusions—80 percent
Contrasting inclusions—20 percent

Tanner Soil

Position on landscape: Side slopes
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—12 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 95 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—brown silt loam
3 to 10 inches—brown silty clay loam
10 to 20 inches—pale brown silty clay
20 to 36 inches—very pale brown silt loam
36 to 51 inches—hardpan
51 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Insidert soils that are on toe slopes and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Merlin soils that are in swales and support low sagebrush and Idaho fescue—5 percent or less
- Bigflat soils that are on summits and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less

Land Capability Classification

IVe, nonirrigated

172—Tanner-Dishpan loams, 1 to 8 percent slopes

Setting

Major landform: Calderas
Elevation: 5,600 to 5,850 feet
Major uses: Rangeland and wildlife habitat

Composition

Tanner loam and similar inclusions—60 percent
Dishpan loam and similar inclusions—30 percent
Contrasting inclusions—10 percent

Tanner Soil

Position on landscape: Smooth and convex slopes
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 44 degrees F
Frost-free period—75 to 85 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown loam
4 to 11 inches—brown silty clay loam
11 to 16 inches—pale brown silty clay
16 to 21 inches—very pale brown gravelly loam
21 to 42 inches—hardpan
42 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Dishpan Soil

Position on landscape: Concave slopes
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 44 degrees F
Frost-free period—75 to 85 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—brown loam
4 to 16 inches—brown and light yellowish brown clay loam
16 to 28 inches—very pale brown very cobbly fine sandy loam
28 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

• Soils that are similar to Igert soils but are cooler, have more clay, are on ridges and knolls, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
• Rock outcrop—small areas

Land Capability Classification

Tanner soil: IVe, nonirrigated
Dishpan soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

173—Thacker-Cleavage-Bigflat association, 1 to 12 percent slopes

Setting

Major landform: Foothills
Elevation: 5,800 to 6,100 feet
Major uses: Rangeland and wildlife habitat

Composition

Thacker stony silt loam and similar inclusions—55 percent
Cleavage very stony loam and similar inclusions—20 percent
Bigflat silt loam and similar inclusions—20 percent
Contrasting inclusions—5 percent

Thacker Soil

Position on landscape: Foot slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—40 to 42 degrees F
Frost-free period—65 to 75 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—light brownish gray stony silt loam
3 to 12 inches—pale brown silt loam
12 to 26 inches—pale brown and light yellowish brown clay
26 to 39 inches—light yellowish brown loam
39 to 56 inches—hardpan
56 to 60 inches—light yellowish brown sandy loam
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 7 to 15 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Cleavage Soil

Position on landscape: Summits and south-facing side slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—39 to 44 degrees F
Frost-free period—75 to 85 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 9 inches—brown very stony loam
9 to 16 inches—brown very gravelly clay loam
16 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Bigflat Soil

Position on landscape: Side slopes
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 44 degrees F
Frost-free period—75 to 85 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 6 inches—brown silt loam
6 to 9 inches—pale brown silt loam
9 to 19 inches—yellowish brown and light yellowish brown silty clay
19 to 40 inches—very pale brown loam
40 to 48 inches—very pale brown fine sandy loam
48 to 60 inches—white extremely gravelly loamy sand
Depth class: Very deep
Restriction to rooting depth: Abrupt textural change at a depth of 5 to 10 inches
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to the Bigflat soil but are deep, are in swales, and support basin big sagebrush and bluebunch wheatgrass—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Thacker soil: IVe, nonirrigated
Cleavage soil: VIs, nonirrigated
Bigflat soil: IVe, nonirrigated

174—Thacker-Cleavage-Sharesnout complex, 2 to 40 percent slopes

Setting

Major landform: Foothills
Elevation: 5,500 to 6,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Thacker stony silt loam and similar inclusions—35 percent
Cleavage very gravelly loam and similar inclusions—30 percent
Sharesnout gravelly loam and similar inclusions—15 percent
Contrasting inclusions—20 percent

Thacker Soil

Position on landscape: Side slopes and toe slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—40 to 43 degrees F
Frost-free period—65 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—light brownish gray stony silt loam
3 to 12 inches—pale brown silt loam
12 to 26 inches—pale brown and light yellowish brown clay
26 to 39 inches—light yellowish brown loam
39 to 56 inches—hardpan
56 to 60 inches—light yellowish brown sandy loam
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 7 to 15 inches
Drainage class: Well drained

Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Cleavage Soil

Position on landscape: Summits, shoulder slopes, and south-facing side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—38 to 43 degrees F
Frost-free period—70 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—brown very gravelly loam
5 to 15 inches—yellowish brown extremely gravelly clay loam
15 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Sharesnout Soil

Position on landscape: North-facing side slopes
Slope range: 3 to 15 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—38 to 43 degrees F
Frost-free period—55 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—grayish brown gravelly loam
4 to 10 inches—brown gravelly clay loam
10 to 15 inches—brown very gravelly clay loam
15 to 22 inches—yellowish brown extremely cobbly clay
22 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Jumpcreek soils but are more moist, are cooler, are in saddles and on north-facing side slopes, and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Monasterio soils that are on toe slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less
- Rock outcrop—5 percent or less
- Nipintuck soils that are on ridges and support low sagebrush and bluegrass—small areas

Land Capability Classification

Thacker soil: IVe, nonirrigated
Cleavage soil: VIs, nonirrigated
Sharesnout soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

175—Thacker-Monasterio-Cleavage association, 1 to 40 percent slopes

Setting

Major landform: Foothills
Elevation: 5,650 to 6,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Thacker stony silt loam and similar inclusions—35 percent
Monasterio stony sandy loam and similar inclusions—35 percent
Cleavage very gravelly loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Thacker Soil

Position on landscape: Side slopes and toe slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—41 to 43 degrees F
Frost-free period—65 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—light brownish gray stony silt loam
3 to 12 inches—pale brown silt loam
12 to 26 inches—pale brown and light yellowish brown clay
26 to 39 inches—light yellowish brown loam
39 to 56 inches—hardpan

56 to 60 inches—light yellowish brown sandy loam
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 7 to 15 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Monasterio Soil

Position on landscape: Concave side slopes and swales
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—39 to 43 degrees F
Frost-free period—60 to 80 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown stony sandy loam
8 to 11 inches—brown gravelly sandy loam
11 to 17 inches—dark yellowish brown very gravelly sandy loam
17 to 25 inches—brown very cobbly sandy clay loam
25 to 28 inches—brown extremely cobbly sandy clay loam
28 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderate
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Cleavage Soil

Position on landscape: Summits, shoulder slopes, and south-facing side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—38 to 43 degrees F
Frost-free period—70 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—brown very gravelly loam
5 to 15 inches—yellowish brown extremely gravelly clay loam
15 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Blackleg soils but are drier, have less clay, are in saddles and on lower foot slopes, and support basin big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Deshler soils but are very deep, are on stream terraces, and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Thacker soil: IVe, nonirrigated
Monasterio soil: IVe, nonirrigated
Cleavage soil: VIs, nonirrigated

176—Threek-Barkley-Blackleg complex, 2 to 30 percent slopes

Setting

Major landform: Outwash terraces
Elevation: 5,050 to 5,950 feet
Major uses: Rangeland and wildlife habitat

Composition

Threek gravelly loam and similar inclusions—35 percent
Barkley loam and similar inclusions—25 percent
Blackleg gravelly loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Threek Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 95 days
Vegetal climax association: Mountain big sagebrush,

bluebunch wheatgrass, and Idaho fescue with occasional western juniper
Typical profile:
0 to 7 inches—grayish brown and dark grayish brown gravelly loam
7 to 13 inches—brown very gravelly clay loam
13 to 31 inches—light yellowish brown very gravelly clay
31 to 60 inches—brownish yellow, weakly cemented extremely gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Barkley Soil

Position on landscape: Side slopes
Slope range: 8 to 30 percent
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass with occasional western juniper
Typical profile:
0 to 4 inches—dark brown loam
4 to 15 inches—brown and light yellowish brown sandy clay loam
15 to 37 inches—very pale brown fine sandy loam
37 to 60 inches—pink weakly cemented very gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Blackleg Soil

Position on landscape: Summits and shoulder slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue with occasional western juniper
Typical profile:
0 to 8 inches—grayish brown gravelly loam
8 to 13 inches—brown gravelly clay loam
13 to 22 inches—light yellowish brown very gravelly clay
22 to 29 inches—light brown very gravelly clay loam
29 to 42 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Kiyi soils but have a thinner surface layer, are on slightly concave slopes, and support mountain big sagebrush and Idaho fescue—10 percent or less
- Soils that are similar to Booford soils but are deep, are on steeper side slopes, and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper—10 percent or less
- Bauscher soils that are on north-facing side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less
- Soils that are similar to Booford soils but are deep, are cooler, are on north-facing side slopes, and support mountain big sagebrush, mountain snowberry, and mountain brome—small areas

Land Capability Classification

Threek soil: IVe, nonirrigated
Barkley soil: IVe, nonirrigated
Blackleg soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

177—Threek-Blackleg-Hatpeak complex, 2 to 20 percent slopes

Setting

Major landform: Outwash terraces
Elevation: 5,500 to 6,150 feet
Major uses: Rangeland and wildlife habitat

Composition

Threek gravelly loam and similar inclusions—45 percent
Blackleg gravelly loam and similar inclusions—25 percent

Hatpeak loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Threek Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 20 percent
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—39 to 44 degrees F
Frost-free period—60 to 85 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 7 inches—grayish brown and dark grayish brown gravelly loam
7 to 13 inches—brown very gravelly clay loam
13 to 31 inches—light yellowish brown very gravelly clay
31 to 60 inches—reddish yellow, weakly cemented extremely gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Blackleg Soil

Position on landscape: Ridges and upper shoulder slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—40 to 44 degrees F
Frost-free period—65 to 85 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—grayish brown gravelly loam
8 to 13 inches—brown gravelly clay loam
13 to 22 inches—light yellowish brown very gravelly clay
22 to 29 inches—light brown very gravelly clay loam
29 to 42 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Hatpeak Soil

Position on landscape: Lower side slopes and toe slopes
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 6 inches—grayish brown loam
6 to 15 inches—brown silty clay loam
15 to 22 inches—yellowish brown clay
22 to 26 inches—light yellowish brown clay loam
26 to 60 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Blackleg soils that are on lower shoulder slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Booford soils that are on steeper side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—small areas
- Barkley soils that are on side slopes and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—small areas

Land Capability Classification

Threek soil: IVe, nonirrigated
Blackleg soil: IVe, nonirrigated
Hatpeak soil: IVs, nonirrigated
Map unit (complex): IVe, nonirrigated

178—Tindahay-Royal-Badlands complex, 1 to 90 percent slopes

Setting

Major landform: Fan terraces
Elevation: 2,300 to 3,350 feet
Major uses: Rangeland, cropland, and wildlife habitat

Composition

Tindahay loamy fine sand and similar inclusions—35 percent
Royal very fine sandy loam and similar inclusions—25 percent
Badlands—15 percent
Contrasting inclusions—25 percent

Tindahay Soil

Position on landscape: Side slopes, toe slopes, and fan terraces
Slope range: 1 to 12 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—51 to 53 degrees F
Frost-free period—125 to 150 days
Vegetal climax association: Fourwing saltbush and Indian ricegrass
Typical profile:
0 to 14 inches—light brownish gray loamy fine sand
14 to 24 inches—pale brown fine sandy loam
24 to 30 inches—light gray loamy sand
30 to 42 inches—light gray sand
42 to 60 inches—light gray fine gravelly coarse sand
Depth class: Very deep
Drainage class: Somewhat excessively drained
Runoff: Very slow to medium
Permeability: Moderately rapid
Available water capacity: Medium
Hazard of erosion by water: Slight
Hazard of erosion by wind: High

Royal Soil

Position on landscape: Toe slopes and fan terraces
Slope range: 1 to 15 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—51 to 53 degrees F
Frost-free period—125 to 150 days
Vegetal climax association: Wyoming big sagebrush and Indian ricegrass
Typical profile:
0 to 4 inches—pale brown very fine sandy loam
4 to 36 inches—pale brown and very pale brown very fine sandy loam
36 to 60 inches—very pale brown loamy very fine sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately rapid
Available water capacity: Very high
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: High

Badlands

Position on landscape: Exposed escarpments
Slope range: 15 to 90 percent
Description of areas: Barren areas of soft lacustrine material dissected by many intermittent drainageways
Depth class: Very shallow
Runoff: Rapid or very rapid

Contrasting Inclusions

- McKeeth soils that are on summits and shoulder slopes and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—10 percent or less
- Soils that are similar to Ornea soils but are more moist, are on shoulder slopes, and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Wholan soils that are on side slopes and support winterfat and Indian ricegrass—5 percent or less

Land Capability Classification

Tindahay soil: IVe, irrigated, and VIIe, nonirrigated
Royal soil: IVe, irrigated, and VIe, nonirrigated
Badlands: VIII
Map unit (complex): IVe, irrigated, and VIIe, nonirrigated

179—Troughs-Arbidge association, 2 to 12 percent slopes

Setting

Major landform: Structural benches
Elevation: 4,800 to 5,250 feet
Major uses: Rangeland and wildlife habitat

Composition

Troughs stony loam and similar inclusions—55 percent
Arbidge loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Troughs Soil

Position on landscape: Summits and side slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass

Typical profile:
0 to 2 inches—pale brown stony loam
2 to 6 inches—very pale brown gravelly clay loam
6 to 12 inches—very pale brown extremely cobbly loam
12 to 20 inches—hardpan
20 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Arbidge Soil

Position on landscape: Toe slopes and swales
Slope range: 2 to 6 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 4 inches—pale brown loam
4 to 20 inches—pale brown and very pale brown clay loam
20 to 34 inches—very pale brown gravelly sandy loam
34 to 36 inches—hardpan
36 to 60 inches—very pale brown very gravelly loamy sand
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Rock outcrop—10 percent or less
- Hardtrigger soils that are on lower fan terraces and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Cottle soils that are on side slopes and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less

Land Capability Classification

Troughs soil: VIe, nonirrigated
Arbidge soil: VIe, nonirrigated

180—Troughs-Jenor-Laped association, 1 to 10 percent slopes

Setting

Major landform: Calderas
Elevation: 3,850 to 5,200 feet
Major uses: Rangeland and wildlife habitat

Composition

Troughs very stony loam and similar inclusions—35 percent
Jenor very fine sandy loam and similar inclusions—30 percent
Laped stony silt loam and similar inclusions—25 percent
Contrasting inclusions—10 percent

Troughs Soil

Position on landscape: Smooth and convex slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—8 to 11 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 120 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—very pale brown very stony loam
2 to 8 inches—pale brown cobbly clay loam
8 to 15 inches—very pale brown extremely cobbly loam
15 to 30 inches—hardpan
30 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Jenor Soil

Position on landscape: Concave slopes
Slope range: 1 to 4 percent

Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—45 to 50 degrees F
Frost-free period—95 to 120 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Typical profile:
0 to 5 inches—very pale brown very fine sandy loam
5 to 21 inches—very pale brown fine sandy loam
21 to 60 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow
Permeability: Moderately rapid
Available water capacity: Low
Hazard of erosion by water: Moderate
Hazard of erosion by wind: High
Sodicity: Moderate

Laped Soil

Position on landscape: Knolls and ridges
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 120 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Typical profile:
0 to 3 inches—light gray stony silt loam
3 to 8 inches—very pale brown gravelly silt loam
8 to 16 inches—light yellowish brown gravelly silty clay loam
16 to 19 inches—very pale brown gravelly loam
19 to 22 inches—hardpan
22 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Wholan soils that are on alluvial flats and support winterfat and Indian ricegrass—10 percent or less
- Rock outcrop—small areas
- Slickspots—small areas

Land Capability Classification

Troughs soil: VIs, nonirrigated
Jenor soil: VIIe, nonirrigated
Laped soil: VIIe, nonirrigated

181—Troughs-Owsel complex, 1 to 10 percent slopes

Setting

Major landform: Calderas
Elevation: 5,000 to 5,300 feet
Major uses: Rangeland and wildlife habitat

Composition

Troughs very stony loam and similar inclusions—60 percent
Owsel silt loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Troughs Soil

Position on landscape: Smooth and convex slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—9 to 11 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—very pale brown very stony loam
2 to 8 inches—pale brown cobbly clay loam
8 to 15 inches—very pale brown extremely cobbly loam
15 to 30 inches—hardpan
30 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Owsel Soil

Position on landscape: Swales
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days

Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 6 inches—light yellowish brown silt loam
6 to 15 inches—light yellowish brown silty clay loam
15 to 18 inches—very pale brown loam
18 to 60 inches—very pale brown fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow or slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Chilcott soils that are on stream terraces and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Bruncan soils that are on knolls and rims and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Laped soils that are on concave slopes and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—5 percent or less
- Slickspots—small areas
- Loomis soils that are in draws and support Wyoming big sagebrush and bluebunch wheatgrass—small areas

Land Capability Classification

Troughs soil: VIs, nonirrigated
Owsel soil: VIe, nonirrigated
Map unit (complex): VIs, nonirrigated

182—Troughs-Sugarcreek association, 2 to 15 percent slopes

Setting

Major landform: Structural benches
Elevation: 3,500 to 5,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Troughs stony loam and similar inclusions—60 percent
Sugarcreek stony loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Troughs Soil

Position on landscape: Summits
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 50 degrees F
Frost-free period—90 to 125 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 2 inches—pale brown stony loam
2 to 6 inches—very pale brown gravelly clay loam
6 to 12 inches—very pale brown extremely cobbly loam
12 to 20 inches—hardpan
20 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Sugarcreek Soil

Position on landscape: Side slopes
Slope range: 4 to 15 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 50 degrees F
Frost-free period—90 to 125 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 3 inches—brown stony loam
3 to 8 inches—pale brown very gravelly loam
8 to 16 inches—white, weakly cemented very gravelly sandy loam
16 to 28 inches—very pale brown very gravelly sandy loam
28 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Cottle soils that are on rims and ridges and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Arbidge soils that are on fan terraces and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Rock outcrop—5 percent or less
- Orovada soils that are on north-facing side slopes and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less

Land Capability Classification

Troughs soil: VIe, nonirrigated
Sugarcreek soil: VIe, nonirrigated

183—Tucker-Zola silt loams, 0 to 4 percent slopes

Setting

Major landform: Bottom lands
Elevation: 4,600 to 5,850 feet
Major use: Hayland

Composition

Tucker silt loam and similar inclusions—65 percent
Zola silt loam and similar inclusions—15 percent
Contrasting inclusions—20 percent

Tucker Soil

Position on landscape: Fluvial bottoms
Slope range: 1 to 4 percent
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Sedge and bluegrass
Typical profile:
0 to 5 inches—dark grayish brown silt loam
5 to 16 inches—dark gray silty clay loam
16 to 32 inches—dark grayish brown and grayish brown silty clay
32 to 60 inches—light brownish gray clay loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 18 to 36 inches
Drainage class: Somewhat poorly drained
Runoff: Slow
Permeability: Slow
Available water capacity: Very high
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate
Frequency of flooding: Occasional

Zola Soil

Position on landscape: Stream terraces
Slope range: 0 to 2 percent
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Basin big sagebrush, bluegrass, and basin wildrye
Typical profile:
2 inches to 0—undecomposed and partially decomposed grass and other organic material
0 to 4 inches—brown silt loam
4 to 13 inches—dark grayish brown silt loam
13 to 41 inches—grayish brown and pale brown clay loam
41 to 60 inches—pale brown loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 36 to 60 inches
Drainage class: Moderately well drained
Runoff: Very slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate
Frequency of flooding: Rare

Contrasting Inclusions

- Soils that are similar to Boulder Lake soils but are somewhat poorly drained, have a darker colored surface layer, are on stream terraces, and support silver sagebrush and bluegrass—10 percent or less
- Soils that are similar to Welch soils but have more silt, are on fluvial bottoms, and support sedge and bluegrass—5 percent or less
- Soils that are similar to Upcreek soils but have a thinner surface layer, have more clay, are on fluvial bottoms, and support sedge and bluegrass—5 percent or less

Land Capability Classification

Tucker soil: Vw, irrigated and nonirrigated
Zola soil: IIIw, irrigated and nonirrigated
Map unit (complex): Vw, irrigated and nonirrigated

184—Typic Haploxerolls-Pachic Argixerolls-Badlands complex, very steep

Setting

Major landform: Fan piedmont escarpments
Elevation: 3,500 to 5,300 feet
Major use: Wildlife habitat

Composition

Typic Haploxerolls and similar inclusions—35 percent
Pachic Argixerolls and similar inclusions—25 percent
Badlands—20 percent
Contrasting inclusions—20 percent

Typic Haploxerolls

Position on landscape: Upper side slopes
Slope range: 25 to 60 percent
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—44 to 50 degrees F
Frost-free period—85 to 120 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Sample profile:
0 to 3 inches—dark brown very gravelly loamy sand
3 to 10 inches—dark brown gravelly sandy clay loam
10 to 22 inches—light yellowish brown very cobbly sandy clay loam
22 inches—weathered bedrock
Depth class: Moderately deep and deep
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately rapid
Available water capacity: Low
Hazard of erosion by water: Moderate and high
Hazard of erosion by wind: High

Pachic Argixerolls

Position on landscape: North-facing side slopes
Slope range: 20 to 50 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—44 to 49 degrees F
Frost-free period—85 to 120 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Sample profile:
0 to 10 inches—dark grayish brown stony loam
10 to 20 inches—dark grayish brown very cobbly loam
20 to 60 inches—brown very cobbly clay loam
Depth class: Deep and very deep
Drainage class: Well drained
Runoff: Very rapid
Permeability: Slow and moderate
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate and high
Hazard of erosion by wind: Moderate

Badlands

Position on landscape: South-facing, convex side slopes and ridges
Slope range: 15 to 90 percent
Description of areas: Barren areas of soft lacustrine material dissected by many intermittent drainageways
Depth class: Very shallow
Runoff: Rapid or very rapid

Contrasting Inclusions

- Soils that are drier, are on upper side slopes, and support low sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are drier, are shallow, are on less steep side slopes, and support basin big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are drier, have an abrupt textural change, are on foot slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—small areas

Land Capability Classification

Typic Haploxerolls: VIIe, nonirrigated
Pachic Argixerolls: VIe, nonirrigated
Badlands: VIII
Map unit (complex): VIIe, nonirrigated

185—Typic Torripsamments-Typic Torrifluvents complex, gently sloping

Setting

Major landform: Bottom lands
Elevation: 2,200 to 4,100 feet
Major uses: Wildlife habitat, rangeland, hayland, and recreation

Composition

Typic Torripsamments and similar inclusions—40 percent
Typic Torrifluvents and similar inclusions—35 percent
Contrasting inclusions—25 percent

Typic Torripsamments

Position on landscape: Upper terraces
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—49 to 53 degrees F
Frost-free period—115 to 150 days
Vegetal climax association: Fourwing saltbush and Indian ricegrass
Sample profile:
0 to 60 inches—light yellowish brown loamy fine sand
Depth class: Very deep
Drainage class: Somewhat excessively drained
Runoff: Very slow and slow
Permeability: Very rapid
Available water capacity: Low
Hazard of erosion by water: Slight
Hazard of erosion by wind: High
Sodicity: Moderate

Typic Torrifluvents

Position on landscape: Lower terraces
Slope range: 1 to 4 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—49 to 53 degrees F
Frost-free period—115 to 150 days
Vegetal climax association: Fourwing saltbush and Indian ricegrass
Sample profile:
0 to 8 inches—brown and pale brown sandy loam
8 to 13 inches— pale brown fine sandy loam
13 to 23 inches—pale brown very gravelly loamy sand
23 to 36 inches—pale brown very cobbly loamy sand
36 to 45 inches—pale brown very gravelly loamy coarse sand
45 to 60 inches—brown very gravelly loamy sand
Depth class: Very deep
Drainage class: Well drained
Runoff: Very slow and slow
Permeability: Moderately rapid to very rapid
Available water capacity: Medium
Hazard of erosion by water: Slight
Hazard of erosion by wind: High
Frequency of flooding: Occasional
Sodicity: Moderate

Contrasting Inclusions

- Soils that are silty, are on upper terraces, and support winterfat and Indian ricegrass—10 percent or less
- Soils that are calcareous at the surface, are on nearly level low terraces, and support basin big sagebrush and basin wildrye—10 percent or less
- Riverwash—5 percent or less

Land Capability Classification

Typic Torripsamments: IIIe, irrigated, and VIIs, nonirrigated
Typic Torrifluvents: IIIs, irrigated, and VIs, nonirrigated
Map unit (complex): IIIs, irrigated, and VIIs, nonirrigated

186—Typic Torripsamments-Typic Torriorthents complex, undulating

Setting

Major landform: Structural benches
Elevation: 2,400 to 2,800 feet
Major use: Wildlife habitat

Composition

Typic Torripsamments and similar inclusions—55 percent
Typic Torriorthents and similar inclusions—35 percent
Contrasting inclusions—10 percent

Typic Torripsamments

Position on landscape: Hummocks
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—8 to 9 inches
Air temperature—52 to 53 degrees F
Frost-free period—140 to 150 days
Vegetal climax association: Fourwing saltbush and Indian ricegrass
Sample profile:
0 to 60 inches—light yellowish brown loamy fine sand
Depth class: Moderately deep and deep
Drainage class: Somewhat excessively drained
Runoff: Very slow and slow
Permeability: Very rapid
Available water capacity: Low
Hazard of erosion by water: Slight
Hazard of erosion by wind: High
Sodicity: Moderate

Typic Torriorthents

Position on landscape: Lower lying areas
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—8 to 9 inches
Air temperature—52 to 53 degrees F

Frost-free period—140 to 150 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Sample profile:
0 to 8 inches—light gray fine sandy loam
8 to 12 inches—light brownish gray loamy very fine sand
12 to 21 inches—very pale brown silt loam
21 inches—weathered bedrock
Depth class: Moderately deep and deep
Drainage class: Well drained
Runoff: Slow and medium
Permeability: Moderately rapid
Available water capacity: Low
Hazard of erosion by water: Slight
Hazard of erosion by wind: High
Sodicity: Moderate

Contrasting Inclusions

- Rock outcrop—10 percent or less
- Badlands—small areas
- Soils that are more moist and steeper, are on side slopes of gulches, and support Wyoming big sagebrush and Thurber needlegrass—small areas

Land Capability Classification

Typic Torripsamments: VIIs, nonirrigated
Typic Torriorthents: VIIe, nonirrigated
Map unit (complex): VIIs, nonirrigated

187—Upcreek-Riverwash complex, 0 to 4 percent slopes

Setting

Major landform: Bottom lands
Elevation: 4,400 to 5,250 feet
Major uses: Hayland (fig. 13), recreation, and minesComposition
Upcreek loam and similar inclusions—65 percent
Riverwash—15 percent
Contrasting inclusions—20 percent

Figure 13.—Grass hay in an area of Upcreek-Riverwash complex, 0 to 4 percent slopes. Gaib-Wareagle-Rock outcrop association, 2 to 50 percent slopes, on hillside.

Upcreek Soil

Position on landscape: Stream terraces
Slope range: 1 to 3 percent
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 95 days
Vegetal climax association: Basin big sagebrush, bluegrass, and basin wildrye
Typical profile:
0 to 5 inches—grayish brown loam
5 to 16 inches—dark grayish brown clay loam
16 to 29 inches—grayish brown loam
29 to 33 inches—light brownish gray gravelly sand
33 to 60 inches—light brownish gray and light gray very gravelly loamy sand
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 18 to 36 inches
Drainage class: Somewhat poorly drained
Runoff: Slow
Permeability: Moderately slow
Available water capacity: High

Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate
Frequency of flooding: Occasional

Riverwash

Position on landscape: Stream channels
Slope range: 0 to 4 percent
Description of areas: Barren, unstabilized sand and gravel that is washed and reworked frequently
Depth class: Very deep
Drainage class: Somewhat poorly drained
Runoff: Slow
Permeability: Rapid
Frequency of flooding: Frequent

Contrasting Inclusions

- Soils that are similar to Beetville soils but are cooler and somewhat poorly drained, are on lower stream terraces, and support basin big sagebrush, bluegrass, and basin wildrye—10 percent or less
- Zola soils that are on upper stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less
- Soils that are similar to Beetville soils but are cooler and poorly drained, have a light-colored surface layer, are on fluvial bottoms, and support sedge and bluegrass—5 percent or less

Land Capability Classification

Upcreek soil: VIc, irrigated and nonirrigated
Riverwash: VIII
Map unit (complex): VIc, irrigated and nonirrigated

188—Vickery-Snowmore complex, 1 to 5 percent slopes

Setting

Major landform: Calderas
Elevation: 4,850 to 5,050 feet
Major uses: Rangeland and wildlife habitat

Composition

Vickery silt loam and similar inclusions—50 percent
Snowmore loam and similar inclusions—35 percent
Contrasting inclusions—15 percent

Vickery Soil

Position on landscape: Smooth and convex slopes
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 47 degrees F
Frost-free period—100 to 110 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 4 inches—pale brown silt loam
4 to 12 inches—pale brown silt loam
12 to 25 inches—very pale brown silt loam
25 to 40 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Snowmore Soil

Position on landscape: Smooth and convex slopes
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 47 degrees F
Frost-free period—90 to 105 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Typical profile:
0 to 8 inches—pale brown loam
8 to 19 inches—pale brown clay loam
19 to 34 inches—very pale brown gravelly fine sandy loam
34 to 38 inches—hardpan
38 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Slickspots—10 percent or less
- Rock outcrop—5 percent or less

Land Capability Classification

Vickery soil: VIe, nonirrigated
Snowmore soil: VIe, nonirrigated
Map unit (complex): VIe, nonirrigated

189—Vipont-Bauscher association, 8 to 60 percent slopes

Setting

Major landforms: Mountains and foothills
Elevation: 5,000 to 6,150 feet
Major uses: Rangeland and wildlife habitat

Composition

Vipont stony loam and similar inclusions—40 percent
Bauscher sandy loam and similar inclusions—40 percent
Contrasting inclusions—20 percent

Vipont Soil

Position on landscape: Shoulder slopes and south-facing side slopes
Slope range: 15 to 60 percent
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 4 inches—dark grayish brown stony loam
4 to 10 inches—grayish brown gravelly loam
10 to 21 inches—olive brown very cobbly clay loam
21 to 36 inches—yellowish brown extremely cobbly sandy clay loam
36 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Moderate

Bauscher Soil

Position on landscape: Summits and north-facing side slopes
Slope range: 8 to 35 percent
Climatic data (average annual):
Precipitation—16 to 18 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue with occasional western juniper
Typical profile:
0 to 3 inches—dark grayish brown sandy loam
3 to 8 inches—very dark grayish brown sandy loam
8 to 30 inches—brown and dark yellowish brown sandy clay loam
30 to 42 inches—light yellowish brown gravelly coarse sandy loam
42 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: High

Contrasting Inclusions

- Soils that are similar to Kanlee soils but have less clay, are on convex slopes, and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Rock outcrop—5 percent or less
- Vitale soils that are on steep, south-facing side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less

Land Capability Classification

Vipont soil: VIe, nonirrigated
Bauscher soil: IVe, nonirrigated

190—Vitale very stony loam, 5 to 40 percent slopes

Setting

Major landform: Foothills
Elevation: 6,000 to 6,900 feet
Major uses: Rangeland and wildlife habitat

Composition

Vitale very stony loam and similar inclusions—80 percent
Contrasting inclusions—20 percent

Vitale Soil

Position on landscape: Side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—15 to 18 inches
Air temperature—39 to 43 degrees F
Frost-free period—55 to 80 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue

Typical profile:
0 to 5 inches—dark grayish brown very stony loam
5 to 16 inches—dark grayish brown very gravelly sandy loam
16 to 28 inches—light yellowish brown very cobbly clay loam
28 to 34 inches—very pale brown extremely cobbly loam
34 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Dehana soils that are on draws and support mountain big sagebrush and Idaho fescue—10 percent or less
- Cleavage soils that are on ridges and knolls and support low sagebrush and Idaho fescue—5 percent or less
- Rock outcrop—5 percent or less

Land Capability Classification

VIs, nonirrigated

191—Vitale-Cleavage-Bauscher complex, 5 to 50 percent slopes

Setting

Major landform: Foothills and mountains
Elevation: 4,800 to 6,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Vitale very stony loam and similar inclusions—40 percent
Cleavage very stony loam and similar inclusions—20 percent
Bauscher sandy loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Vitale Soil

Position on landscape: South-facing side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with occasional western juniper
Typical profile:
0 to 5 inches—dark grayish brown very stony loam
5 to 16 inches—dark grayish brown very gravelly loam
16 to 28 inches—light yellowish brown very cobbly clay loam
28 to 34 inches—very pale brown extremely cobbly loam
34 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Cleavage Soil

Position on landscape: Ridges and south-facing side slopes
Slope range: 5 to 50 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—38 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue with occasional western juniper
Typical profile:
0 to 9 inches—brown very stony loam
9 to 16 inches—brown very gravelly clay loam
16 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Bauscher Soil

Position on landscape: North-facing side slopes
Slope range: 8 to 35 percent
Climatic data (average annual):
Precipitation—16 to 18 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 95 days

Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—dark grayish brown sandy loam
3 to 8 inches—very dark grayish brown sandy loam
8 to 30 inches—brown and dark yellowish brown sandy clay loam
30 to 42 inches—light yellowish brown gravelly coarse sandy loam
42 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: High

Contrasting Inclusions

- Rock outcrop that has occasional western juniper rooted in fractures—10 percent or less
- Saturday soils that are on shoulder slopes and support curlleaf mountainmahogany and mountain snowberry—5 percent or less
- Nagitsy soils that are on upper north-facing side slopes and support mountain big sagebrush, mountain snowberry, and mountain brome with occasional western juniper—5 percent or less
- Rubbleland—5 percent or less
- Wareagle soils that are on north-facing side slopes and support Douglas fir and mountain snowberry—small areas
- Povey soils that are on concave side slopes and support quaking aspen—small areas

Land Capability Classification

Vitale soil: VIs, nonirrigated
Cleavage soil: VIs, nonirrigated
Bauscher soil: IVe, nonirrigated
Map unit (complex): VIs, nonirrigated

192—Vitale-Itca-Rubbleland complex, 2 to 60 percent slopes

Setting

Major landform: Mountains and foothills
Elevation: 4,600 to 6,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Vitale stony loam and similar inclusions—30 percent
Itca very stony loam and similar inclusions—25 percent
Rubbleland—20 percent
Contrasting inclusions—25 percent

Vitale Soil

Position on landscape: North-facing side slopes
Slope range: 20 to 60 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—grayish brown stony loam
5 to 29 inches—brown, pale brown, and light brownish gray very gravelly clay loam
29 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Rapid or very rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Moderate or high
Hazard of erosion by wind: Slight

Itca Soil

Position on landscape: Summits and south-facing side slopes
Slope range: 2 to 40 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—grayish brown very stony loam
4 to 13 inches—brown very cobbly clay loam
13 to 16 inches—brown extremely cobbly clay
16 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate

Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Rubbleland

Position on landscape: Cliff bases and very steep, exposed side slopes
Description of areas: Barren sheets and masses of loose, angular fragments of rhyolitic rock; masses formed mainly as a result of falling, rolling, or sliding rock
Runoff: Rapid

Contrasting Inclusions

- Soils that are similar to Gooding soils but are moderately deep, are cooler, are on summits and saddles, and support low sagebrush and bluebunch wheatgrass—10 percent or less
- Vitale soils that are on north-facing side slopes and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less
- Rock outcrop—5 percent or less
- Bregar soils that are on ridges and knolls and support low sagebrush and bluegrass—5 percent or less
- Soils that are similar to Doodlelink soils but have less rock fragments, are on concave side slopes, and support mountain big sagebrush and Idaho fescue—small areas

Land Capability Classification

Vitale soil: VIIs, nonirrigated
Itca soil: VIs, nonirrigated
Rubbleland: VIII
Map unit (complex): VIIs, nonirrigated

193—Vitale-Mulshoe-Itca complex, 2 to 40 percent slopes

Setting

Major landform: Foothills
Elevation: 5,700 to 6,900 feet
Major uses: Rangeland and wildlife habitat

Composition

Vitale very stony loam and similar inclusions—40 percent
Mulshoe very stony sandy loam and similar inclusions—20 percent
Itca very stony loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Vitale Soil

Position on landscape: Side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—13 to 18 inches
Air temperature—39 to 44 degrees F
Frost-free period—55 to 85 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 5 inches—dark grayish brown very stony loam
5 to 16 inches—dark grayish brown very gravelly sandy loam
16 to 28 inches—light yellowish brown very cobbly clay loam
28 to 34 inches—very pale brown extremely cobbly loam
34 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Mulshoe Soil

Position on landscape: Summits and side slopes
Slope range: 4 to 25 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—40 to 43 degrees F
Frost-free period—60 to 80 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 9 inches—grayish brown and dark grayish brown very stony sandy loam
9 to 21 inches—yellowish brown very cobbly clay loam
21 to 24 inches—weathered bedrock
24 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Medium
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Itca Soil

Position on landscape: Summits and rims
Slope range: 2 to 40 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 43 degrees F
Frost-free period—60 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—grayish brown very stony loam
4 to 13 inches—brown very cobbly clay loam
13 to 16 inches—brown extremely cobbly clay
16 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Dehana soils that are on north-facing side slopes and in swales and support mountain big sagebrush and Idaho fescue—10 percent or less
- Rock outcrop that has occasional curlleaf mountainmahogany rooted in fractures—10 percent or less
- Saturday soils that are on ridges, rims, and knolls and support curlleaf mountainmahogany and mountain snowberry—5 percent or less

Land Capability Classification

Vitale soil: VIs, nonirrigated
Mulshoe soil: VIs, nonirrigated
Itca soil: VIs, nonirrigated
Map unit (complex): VIs, nonirrigated

194—Vitale-Rock outcrop complex, 5 to 40 percent slopes

Setting

Major landform: Mountains
Elevation: 4,800 to 6,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Vitale very stony loam and similar inclusions—60 percent
Rock outcrop—15 percent
Contrasting inclusions—25 percent

Vitale Soil

Position on landscape: Summits and side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with common western juniper
Typical profile:
0 to 5 inches—dark grayish brown very stony loam
5 to 16 inches—dark grayish brown very gravelly loam
16 to 28 inches—light yellowish brown very cobbly clay loam
28 to 34 inches—very pale brown extremely cobbly loam
34 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Rock Outcrop

Position on landscape: Ridges and cliffs
Kind of rock: Exposed hard welded tuff
Vegetation: Western juniper commonly rooted in fractures
Runoff: Very rapid

Contrasting Inclusions

- Nipintuck soils that are on breaks and support western juniper and Idaho fescue—10 percent or less
- Sharesnout soils that are on side slopes and toe slopes and support low sagebrush and Idaho fescue—5 percent or less

• Gaib soils that are on shoulder slopes and support curlleaf mountainmahogany and mountain snowberry with common western juniper—5 percent or less
• Bregar soils that are on ridges and support low sagebrush and bluebunch wheatgrass—5 percent or less
• Wareagle soils that are on north-facing side slopes and support Douglas fir and mountain snowberry—small areas

Land Capability Classification

Vitale soil: VIs, nonirrigated
Rock outcrop: VIII
Map unit (complex): VIIs, nonirrigated

195—Wagonbox-Deunah-Hatpeak complex, 1 to 8 percent slopes

Setting

Major landform: Tablelands
Elevation: 5,300 to 5,500 feet
Major uses: Rangeland and wildlife habitat

Composition

Wagonbox very stony loam and similar inclusions—35 percent
Deunah stony silt loam and similar inclusions—35 percent
Hatpeak loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Wagonbox Soil

Position on landscape: Summits
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—light brownish gray very stony loam
5 to 9 inches—pale brown very cobbly clay loam
9 to 17 inches—pale brown very cobbly clay
17 to 18 inches—hardpan
18 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Deunah Soil

Position on landscape: Summits
Slope range: 2 to 4 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Alkali sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—pale brown stony silt loam
4 to 9 inches—light yellowish brown silt loam
9 to 27 inches—light yellowish brown and light brown clay
27 to 30 inches—hardpan
30 inches—bedrock
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 2 to 12 inches
Drainage class: Well drained
Runoff: Medium
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Hatpeak Soil

Position on landscape: Mounds and swales
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—44 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 6 inches—grayish brown loam
6 to 15 inches—brown silty clay loam
15 to 22 inches—yellowish brown clay
22 to 26 inches—light yellowish brown clay loam
26 to 60 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow

Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Northcastle soils that are on north-facing side slopes and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—5 percent or less
- Rubbleland—5 percent or less
- Rock outcrop—small areas
- Squawcreek soils that are on knolls and support low sagebrush and Idaho fescue—small areas

Land Capability Classification

Wagonbox soil: VIs, nonirrigated
Deunah soil: IVe, nonirrigated
Hatpeak soil: IVs, nonirrigated
Map unit (complex): IVs, nonirrigated

196—Wareagle-Povey association, 15 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 5,700 to 8,200 feet
Major uses: Woodland, mines, wildlife habitat, and rangeland

Composition

Wareagle very gravelly loam and similar inclusions—55 percent
Povey very gravelly loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Wareagle Soil

Position on landscape: North-facing side slopes
Slope range: 15 to 50 percent
Climatic data (average annual):
Precipitation—22 to 32 inches
Air temperature—34 to 37 degrees F
Frost-free period—less than 60 days
Vegetal climax association: Douglas fir and mountain snowberry
Typical profile:
2 inches to 0—partially decomposed organic material
0 to 7 inches—dark brown very gravelly loam
7 to 15 inches—brown and dark brown very gravelly loam
15 to 60 inches—very pale brown extremely gravelly loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Povey Soil

Position on landscape: Side slopes
Slope range: 15 to 50 percent
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—35 to 40 degrees F
Frost-free period—30 to 70 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—dark grayish brown very gravelly loam
6 to 17 inches—dark grayish brown gravelly loam
17 to 25 inches—brown very gravelly loam
25 to 32 inches—dark yellowish brown extremely cobbly loam
32 to 60 inches—yellowish brown extremely cobbly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderate
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Booneville soils but have a light-colored surface layer, are on upper north-facing concave side slopes, and support subalpine fir—10 percent or less
- Nagitsy soils that are on south-facing side slopes and support mountain big sagebrush, mountain snowberry, and mountain brome—10 percent or less
- Rock outcrop—5 percent or less
- Nagitsy soils that are on ridges and support low sagebrush, Idaho fescue, and bluegrass—small areas
- Foxmount soils that are on south-facing side slopes and support curlleaf mountainmahogany and mountain snowberry—small areas

Land Capability Classification

Wareagle soil: VIe, nonirrigated
Povey soil: VIe, nonirrigated

197—Weash-Ruclick complex, 5 to 35 percent slopes

Setting

Major landform: Foothills
Elevation: 4,500 to 5,050 feet
Major uses: Rangeland and wildlife habitat

Composition

Weash loam and similar inclusions—50 percent
Ruclick cobbly loam and similar inclusions—25 percent
Contrasting inclusions—25 percent

Weash Soil

Position on landscape: Side slopes
Slope range: 5 to 35 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—light gray loam
3 to 12 inches—light brownish gray loam
12 inches—weathered bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Ruclick Soil

Position on landscape: Side slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 110 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 5 inches—grayish brown cobbly loam
5 to 11 inches—gray very gravelly clay loam
11 to 29 inches—grayish brown very gravelly clay
29 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Succor soils that are in saddles and swales and support low sagebrush and Idaho fescue—10 percent or less
- Soils that are similar to Deshler soils but have more rock fragments, are on north-facing side slopes, and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
- Eroded Weash soils that are on ridges and shoulder slopes and support Wyoming big sagebrush and Indian ricegrass—5 percent or less
- Rock outcrop—small areas
- Babbington soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Weash soil: VIe, nonirrigated
Ruclick soil: IVe, nonirrigated
Map unit (complex): VIe, nonirrigated

198—Weash-Schnipper complex, 1 to 8 percent slopes

Setting

Major landform: Lacustrine terraces
Elevation: 4,800 to 5,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Weash loam and similar inclusions—55 percent
Schnipper silt loam and similar inclusions—30 percent
Contrasting inclusions—15 percent

Weash Soil

Position on landscape: Side slopes
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—12 to 13 inches

Air temperature—45 to 46 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—light gray loam
3 to 12 inches—light brownish gray loam
12 inches—weathered bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Schnipper Soil

Position on landscape: Summits
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—12 to 13 inches
Air temperature—45 to 46 degrees F
Frost-free period—90 to 100 days
Vegetal climax association: Basin big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 12 inches—yellowish brown and brown silt loam
12 to 26 inches—yellowish brown and light yellowish brown silty clay loam
26 to 36 inches—light yellowish brown loam
36 to 60 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Welch soils that are on fluvial bottoms and support sedge and bluegrass—5 percent or less
- Hardtrigger soils that are on fan terraces and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Orovada soils that are in swales and support basin big sagebrush and basin wildrye—5 percent or less
- Fairylawn soils that are on summits and support low sagebrush and Idaho fescue—small areas
- Rock outcrop—small areas

Land Capability Classification

Weash soil: VIs, nonirrigated
Schnipper soil: IVe, nonirrigated
Map unit (complex): VIs, nonirrigated

199—Welch loam, 0 to 1 percent slopes

Setting

Major landform: Bottom lands
Elevation: 5,300 to 5,350 feet
Major use: Hayland

Composition

Welch loam and similar inclusions—75 percent
Contrasting inclusions—25 percent

Welch Soil

Position on landscape: Fluvial bottoms
Slope range: 0 to 1 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—41 to 44 degrees F
Frost-free period—50 to 80 days
Vegetal climax association: Sedge and bluegrass
Typical profile:
0 to 9 inches—gray loam
9 to 30 inches—grayish brown clay loam
30 to 42 inches—light gray loam
42 to 51 inches—light grayish brown sandy loam
51 to 60 inches—grayish brown gravelly coarse sandy loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 12 to 18 inches
Drainage class: Poorly drained
Runoff: Very slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight
Frequency of flooding: Frequent

Contrasting Inclusions

- Zola soils that are on upper stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—10 percent or less
- Upcreek soils that are on fluvial bottoms and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less

• Paynecreek soils that are on fan terraces and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—5 percent or less
• Water—5 percent or less

Land Capability Classification

Vw, irrigated and nonirrigated

200—Welch-Upcreek loams, 0 to 3 percent slopes

Setting

Major landform: Bottom lands
Elevation: 4,900 to 6,400 feet
Major uses: Hayland, recreation, and wildlife habitat

Composition

Welch loam and similar inclusions—45 percent
Upcreek loam and similar inclusions—35 percent
Contrasting inclusions—20 percent

Welch Soil

Position on landscape: Fluvial bottoms
Slope range: 0 to 1 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—40 to 44 degrees F
Frost-free period—45 to 90 days
Vegetal climax association: Sedge and bluegrass
Typical profile:
0 to 9 inches—gray loam
9 to 30 inches—grayish brown clay loam
30 to 42 inches—light gray loam
42 to 51 inches—light grayish brown sandy loam
51 to 60 inches—grayish brown gravelly coarse sandy loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 12 to 18 inches
Drainage class: Poorly drained
Runoff: Very slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight
Frequency of flooding: Frequent

Upcreek Soil

Position on landscape: Stream terraces
Slope range: 1 to 3 percent
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—60 to 90 days
Vegetal climax association: Basin big sagebrush, bluegrass, and basin wildrye
Typical profile:
0 to 5 inches—grayish brown loam
5 to 16 inches—dark grayish brown clay loam
16 to 29 inches—grayish brown loam
29 to 33 inches—light brownish gray gravelly sand
33 to 60 inches—light brownish gray and light gray very gravelly loamy sand
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 18 to 36 inches
Drainage class: Somewhat poorly drained
Runoff: Slow
Permeability: Moderately slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate
Frequency of flooding: Occasional

Contrasting Inclusions

• Zola soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—10 percent or less
• Tucker soils that are on fluvial bottoms and support sedge and bluegrass—5 percent or less
• Paynecreek soils that are on upper stream terraces and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—5 percent or less

Land Capability Classification

Welch soil: Vw, irrigated and nonirrigated
Upcreek soil: IVc, irrigated and nonirrigated
Map unit (complex): Vw, irrigated and nonirrigated

201—Wickahoney-Blackleg-Thacker association, 2 to 30 percent slopes

Setting

Major landform: Mountains
Elevation: 5,700 to 7,100 feet
Major uses: Rangeland and wildlife habitat

Composition

Wickahoney extremely stony silt loam and similar inclusions—35 percent

Blackleg stony loam and similar inclusions—30 percent
Thacker stony silt loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Wickahoney Soil

Position on landscape: Summits
Slope range: 2 to 30 percent
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—39 to 42 degrees F
Frost-free period—60 to 75 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—pale brown extremely stony silt loam
4 to 12 inches—brown very stony clay loam
12 to 18 inches—yellowish brown very cobbly clay
18 to 20 inches—light brown very cobbly clay loam
20 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Blackleg Soil

Position on landscape: Side slopes
Slope range: 3 to 30 percent
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—38 to 43 degrees F
Frost-free period—50 to 80 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 6 inches—brown stony loam
6 to 13 inches—brown loam
13 to 23 inches—brown cobbly clay loam
23 to 29 inches—yellowish brown very cobbly clay
29 to 36 inches—yellowish brown very cobbly clay
36 to 50 inches—hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Thacker Soil

Position on landscape: Foot slopes
Slope range: 2 to 12 percent
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—39 to 43 degrees F
Frost-free period—60 to 80 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—light brownish gray stony silt loam
3 to 12 inches—pale brown silt loam
12 to 26 inches—pale brown and light yellowish brown clay
26 to 39 inches—light yellowish brown loam
39 to 56 inches—hardpan
56 to 60 inches—light yellowish brown sandy loam
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 7 to 15 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Boulder Lake soils that are on alluvial flats and support silver sagebrush and bluegrass—5 percent or less
- Rock outcrop—5 percent or less
- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—5 percent or less

Land Capability Classification

Wickahoney soil: VIIs, nonirrigated
Blackleg soil: IVe, nonirrigated
Thacker soil: IVe, nonirrigated

202—Wickahoney-Budlewis complex, 1 to 10 percent slopes

Setting

Major landform: Tablelands
Elevation: 5,000 to 6,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Wickahoney extremely stony silt loam and similar inclusions—45 percent
Budlewis silt loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Wickahoney Soil

Position on landscape: Intermound areas
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—pale brown extremely stony silt loam
4 to 12 inches—brown very stony clay loam
12 to 18 inches—yellowish brown very cobbly clay
18 to 20 inches—light brown very cobbly clay loam
20 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Budlewis Soil

Position on landscape: Mounds
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 95 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 14 inches—brown silty clay loam
14 to 24 inches—light yellowish brown clay
24 to 29 inches—very pale brown gravelly loam
29 to 30 inches—hardpan
30 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Deunah soils but are shallow, are on edges of mounds, and support low sagebrush and Idaho fescue—10 percent or less
- Sharesnout soils that are on mounds and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue with occasional western juniper—10 percent or less
- Rock outcrop that has occasional western juniper rooted in fractures—5 percent or less
- Boulder Lake soils that are on fluvial bottoms and support silver sagebrush and bluegrass—small areas

Land Capability Classification

Wickahoney soil: VIIs, nonirrigated
Budlewis soil: IVs, nonirrigated
Map unit (complex): VIs, nonirrigated

203—Wickahoney-Doodlelink association, 3 to 45 percent slopes

Setting

Major landform: Mountains
Elevation: 5,100 to 6,700 feet
Major uses: Rangeland and wildlife habitat

Composition

Wickahoney stony loam and similar inclusions—60 percent
Doodlelink gravelly loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Wickahoney Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 45 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—light brownish gray stony loam
5 to 12 inches—pale brown cobbly clay loam
12 to 19 inches—dark yellowish brown very cobbly clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained

Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Doodlelink Soil

Position on landscape: Concave upper side slopes
Slope range: 5 to 40 percent
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—40 to 43 degrees F
Frost-free period—60 to 85 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—dark grayish brown gravelly loam
6 to 25 inches—dark brown and grayish brown very gravelly loam
25 to 40 inches—pale brown very gravelly clay loam
40 to 60 inches—light yellowish brown extremely gravelly clay loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Medium
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Soils that are similar to Itca soils but are drier, are on south-facing side slopes, and support low sagebrush and bluebunch wheatgrass—10 percent or less
- Vitale soils that are on north-facing side slopes and support low sagebrush and Idaho fescue—5 percent or less
- Rock outcrop—5 percent or less
- Saturday soils that are on upper side slopes and support snowbrush ceanothus—5 percent or less
- Rubbleland—small areas

Land Capability Classification

Wickahoney soil: VIe, nonirrigated
Doodlelink soil: IVe, nonirrigated

204—Wickahoney-Monasterio-Yatahoney association, 1 to 20 percent slopes

Composition

Major landform: Foothills
Elevation: 5,350 to 6,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Wickahoney stony loam and similar inclusions—40 percent
Monasterio stony sandy loam and similar inclusions—35 percent
Yatahoney silt loam and similar inclusions—15 percent
Contrasting inclusions—10 percent

Wickahoney Soil

Position on landscape: Summits and side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—light brownish gray stony loam
5 to 12 inches—pale brown cobbly clay loam
12 to 19 inches—dark yellowish brown very cobbly clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Monasterio Soil

Position on landscape: Side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—40 to 44 degrees F
Frost-free period—65 to 85 days

Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown stony sandy loam
8 to 11 inches—brown gravelly sandy loam
11 to 17 inches—dark yellowish brown very gravelly sandy loam
17 to 25 inches—brown very cobbly sandy clay loam
25 to 28 inches—brown extremely cobbly sandy clay loam
28 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderate
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Yatahoney Soil

Position on landscape: Foot slopes
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Alkali sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—light yellowish brown silt loam
3 to 9 inches—light yellowish brown loam
9 to 22 inches—yellowish brown clay loam
22 to 26 inches—yellowish brown clay
26 to 38 inches—hardpan
38 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Doodlelink soils that are on north-facing side slopes and support mountain big sagebrush and Idaho fescue—5 percent or less
- Rubbleland—5 percent or less
- Rock outcrop—small areas
- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—small areas

Land Capability Classification

Wickahoney soil: VIe, nonirrigated
Monasterio soil: IVe, nonirrigated
Yatahoney soil: IVe, nonirrigated

205—Wickahoney-Parkay-Bregar complex, 3 to 50 percent slopes

Setting

Major landform: Mountains
Elevation: 5,700 to 7,350 feet
Major uses: Rangeland and wildlife habitat

Composition

Wickahoney stony loam and similar inclusions—40 percent
Parkay gravelly silt loam and similar inclusions—30 percent
Bregar stony loam and similar inclusions—25 percent
Contrasting inclusions—5 percent

Wickahoney Soil

Position on landscape: Convex side slopes
Slope range: 3 to 45 percent
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—39 to 42 degrees F
Frost-free period—60 to 75 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—light brownish gray stony loam
5 to 12 inches—pale brown cobbly clay loam
12 to 19 inches—dark yellowish brown very cobbly clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Parkay Soil

Position on landscape: Concave side slopes
Slope range: 10 to 50 percent
Climatic data (average annual):
Precipitation—18 to 22 inches

Air temperature—36 to 39 degrees F
Frost-free period—35 to 60 days
Vegetal climax association: Mountain big sagebrush and Idaho fescue
Typical profile:
0 to 8 inches—dark grayish brown gravelly silt loam
8 to 24 inches—very dark grayish brown very gravelly clay loam
24 to 48 inches—very dark grayish brown very gravelly loam
48 inches—weathered bedrock
Depth class: Deep
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Bregar Soil

Position on landscape: Ridges and shoulder slopes
Slope range: 5 to 25 percent
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—39 to 43 degrees F
Frost-free period—60 to 80 days
Vegetal climax association: Low sagebrush and bluegrass
Typical profile:
0 to 4 inches—yellowish brown stony loam
4 to 8 inches—light yellowish brown extremely gravelly loam
8 inches—bedrock
Depth class: Very shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Dehana soils but have a thicker surface layer, are on concave slopes, and support mountain big sagebrush, mountain snowberry, and mountain brome—5 percent or less
- Rock outcrop—small areas
- Soils that are similar to Naz soils but are moderately deep, have less organic matter, are on north-facing side slopes, and support Douglas fir, mountain snowberry, and commonly subalpine fir—small areas

Land Capability Classification

Wickahoney soil: VIe, nonirrigated
Parkay soil: VIe, nonirrigated
Bregar soil: VIIs, nonirrigated
Map unit (complex): VIe, nonirrigated

206—Wickahoney-Wagonbox-Rubbleland complex, 1 to 8 percent slopes

Setting

Major landform: Tablelands
Elevation: 5,350 to 6,300 feet
Major uses: Rangeland and wildlife habitat

Composition

Wickahoney extremely stony loam and similar inclusions—40 percent
Wagonbox extremely stony loam and similar inclusions—25 percent
Rubbleland—15 percent
Contrasting inclusions—20 percent

Wickahoney Soil

Position on landscape: Summits
Slope range: 2 to 8 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Alkali sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—brown extremely stony loam
4 to 6 inches—brown very stony clay loam
6 to 15 inches—brown and light brown very cobbly clay
15 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Wagonbox Soil

Position on landscape: Summits
Slope range: 1 to 8 percent
Climatic data (average annual):

Precipitation—13 to 15 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Alkali sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—yellowish brown extremely stony loam
3 to 8 inches—yellowish brown very stony clay loam
8 to 14 inches—brown very stony clay
14 to 20 inches—hardpan
20 inches—bedrock
Depth class: Shallow to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Rubbleland

Position on landscape: Rims and knolls
Description of areas: Barren residual masses of loose, angular basalt fragments underlain by bedrock
Runoff: Rapid

Contrasting Inclusions

- Soils that are similar to Deunah soils but are shallow, are on summits, and support low sagebrush and Idaho fescue—10 percent or less
- Zecanyon soils that are on north-facing side slopes and support alkali sagebrush and Idaho fescue—5 percent or less
- Rock outcrop—5 percent or less

Land Capability Classification

Wickahoney soil: VIIs, nonirrigated
Wagonbox soil: VIIs, nonirrigated
Rubbleland: VIII
Map unit (complex): VIIs, nonirrigated

207—Wickahoney-Zecanyon complex, 3 to 45 percent slopes

Setting

Major landform: Foothills
Elevation: 5,350 to 6,050 feet
Major uses: Rangeland and wildlife habitat

Composition

Wickahoney stony loam and similar inclusions—55 percent
Zecanyon gravelly loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Wickahoney Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 45 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—light brownish gray stony loam
5 to 12 inches—pale brown cobbly clay loam
12 to 19 inches—dark yellowish brown very cobbly clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Moderate

Zecanyon Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Alkali sagebrush and Idaho fescue
Typical profile:
0 to 3 inches—light brownish gray gravelly loam
3 to 10 inches—pale brown gravelly loam
10 to 18 inches—light yellowish brown gravelly clay loam
18 to 24 inches—yellowish brown cobbly clay
24 to 37 inches—light yellowish brown extremely gravelly clay loam
37 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained

Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Monasterio soils that are on toe slopes and mounds and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Deunah soils that are in swales and support alkali sagebrush and Idaho fescue—10 percent or less
- Rubbleland—5 percent or less
- Rock outcrop—small areas

Land Capability Classification

Wickahoney soil: VIe, nonirrigated
Zecanyon soil: IVe, nonirrigated
Map unit (complex): VIe, nonirrigated

208—Wickahoney-Zecanyon-Hat association, 1 to 20 percent slopes

Setting

Major landform: Foothills
Elevation: 5,300 to 5,850 feet
Major uses: Rangeland and wildlife habitat

Composition

Wickahoney stony loam and similar inclusions—40 percent
Zecanyon loam and similar inclusions—35 percent
Hat gravelly loam and similar inclusions—15 percent
Contrasting inclusions—10 percent

Wickahoney Soil

Position on landscape: Summits and shoulder slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 5 inches—light brownish gray stony loam
5 to 12 inches—pale brown cobbly clay loam
12 to 19 inches—dark yellowish brown very cobbly clay
19 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Zecanyon Soil

Position on landscape: Saddles and side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 5 inches—pale brown loam
5 to 9 inches—brown loam
9 to 13 inches—yellowish brown gravelly clay loam
13 to 20 inches—brown gravelly clay
20 to 28 inches—reddish yellow extremely gravelly sandy clay loam
28 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Hat Soil

Position on landscape: Summits and side slopes
Slope range: 1 to 20 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 5 inches—pale brown gravelly loam
5 to 12 inches—pale brown gravelly clay loam
12 to 19 inches—brown very gravelly clay loam
19 to 24 inches—yellowish brown extremely cobbly clay loam
24 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low

Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Deunah soils that are in swales and support alkali sagebrush and Idaho fescue—10 percent or less
- Rubbleland—small areas
- Rock outcrop—small areas

Land Capability Classification

Wickahoney soil: VIe, nonirrigated
Zecanyon soil: IVe, nonirrigated
Hat soil: IVe, nonirrigated

209—Willhill-Bedstead complex, 2 to 25 percent slopes

Setting

Major landform: Foothills
Elevation: 3,600 to 4,800 feet
Major uses: Rangeland and wildlife habitat

Composition

Willhill stony loam and similar inclusions—60 percent
Bedstead extremely stony silt loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Willhill Soil

Position on landscape: Summits and side slopes
Slope range: 3 to 25 percent
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—47 to 51 degrees F
Frost-free period—100 to 130 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—pale brown stony loam
3 to 7 inches—light yellowish brown gravelly clay loam
7 to 10 inches—very pale brown very gravelly clay loam
10 to 15 inches—very pale brown extremely gravelly loam
15 to 22 inches—white extremely cobbly loam
22 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Bedstead Soil

Position on landscape: Shoulder slopes and concave side slopes
Slope range: 2 to 15 percent
Climatic data (average annual):
Precipitation—12 to 13 inches
Air temperature—47 to 51 degrees F
Frost-free period—100 to 130 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Typical profile:
0 to 1 inch—pale brown extremely stony silt loam
1 inch to 6 inches—brown stony silt loam
6 to 11 inches—pale brown cobbly silt loam
11 to 18 inches—brown extremely stony clay
18 to 21 inches—brown extremely stony clay loam
21 to 22 inches—hardpan
22 inches—bedrock
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 6 to 12 inches
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: High
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Soils that are similar to Catchell soils but do not have a continuous hardpan, are on side slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Cottle soils but have a dark-colored surface layer, are on ridges and shoulder slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Rock outcrop—5 percent or less
- Rubbleland—small areas

Land Capability Classification

Willhill soil: VIe, nonirrigated
Bedstead soil: VIIs, nonirrigated
Map unit (complex): VIe, nonirrigated

210—Willhill-Cottle association, 3 to 35 percent slopes

Setting

Major landform: Foothills
Elevation: 2,800 to 5,100 feet
Major uses: Rangeland and wildlife habitat

Composition

Willhill stony loam and similar inclusions—45 percent
Cottle stony loam and similar inclusions—35 percent
Contrasting inclusions—20 percent

Willhill Soil

Position on landscape: Side slopes
Slope range: 3 to 25 percent
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 51 degrees F
Frost-free period—90 to 140 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—pale brown stony loam
3 to 7 inches—light yellowish brown gravelly clay loam
7 to 10 inches—very pale brown very gravelly clay loam
10 to 15 inches—very pale brown extremely gravelly loam
15 to 22 inches—white extremely cobbly loam
22 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Cottle Soil

Position on landscape: Summits and shoulder slopes
Slope range: 4 to 35 percent
Climatic data (average annual):
Precipitation—9 to 12 inches
Air temperature—46 to 52 degrees F
Frost-free period—95 to 140 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown stony loam
4 to 8 inches—light yellowish brown very gravelly clay loam
8 to 12 inches—very pale brown extremely gravelly clay loam
12 to 17 inches—very pale brown extremely gravelly loam
17 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Contrasting Inclusions

- Orovada soils that are on toe slopes and in draws and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Bruncan soils that are on toe slopes and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Rock outcrop—5 percent or less
- Soils that are similar to Orovada soils but are steeper, are on north-facing side slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—5 percent or less
- Wholan soils that are on foot slopes and support winterfat and Indian ricegrass—small areas

Land Capability Classification

Willhill soil: VIe, nonirrigated
Cottle soil: VIe, nonirrigated

211—Willhill-Cottle-Longcreek complex, 3 to 35 percent slopes

Setting

Major landform: Foothills
Elevation: 2,800 to 5,100 feet
Major uses: Rangeland and wildlife habitat

Composition

Willhill stony loam and similar inclusions—35 percent
Cottle stony loam and similar inclusions—20 percent
Longcreek cobbly loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Willhill Soil

Position on landscape: South-facing side slopes
Slope range: 3 to 25 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—46 to 51 degrees F
Frost-free period—95 to 140 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—pale brown stony loam
3 to 7 inches—light yellowish brown gravelly clay loam
7 to 10 inches—very pale brown very gravelly clay loam
10 to 15 inches—very pale brown extremely gravelly loam
15 to 22 inches—white extremely cobbly loam
22 inches—weathered bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Cottle Soil

Position on landscape: North-facing side slopes
Slope range: 4 to 35 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—46 to 52 degrees F
Frost-free period—95 to 135 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 4 inches—pale brown stony loam
4 to 8 inches—light yellowish brown very gravelly clay loam
8 to 12 inches—very pale brown extremely gravelly clay loam
12 to 17 inches—very pale brown extremely gravelly loam
17 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderately slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Slight

Longcreek Soil

Position on landscape: Summits and shoulder slopes
Slope range: 3 to 15 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—46 to 51 degrees F
Frost-free period—95 to 135 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Typical profile:
0 to 3 inches—brown cobbly loam
3 to 17 inches—brown very stony clay
17 inches—bedrock
Depth class: Shallow
Drainage class: Well drained
Runoff: Medium or rapid
Permeability: Slow
Available water capacity: Very low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight or moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Rock outcrop—10 percent or less
- Owsel soils that are on north-facing side slopes and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Soils that are similar to Nipintuck soils but are warmer, are on south-facing side slopes, and support Wyoming big sagebrush and Thurber needlegrass—5 percent or less
- Ornea soils that are on flats and support shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass—small areas
- Rubbleland—small areas

Land Capability Classification

Willhill soil: VIe, nonirrigated
Cottle soil: VIe, nonirrigated
Longcreek soil: VIIs, nonirrigated
Map unit (complex): VIe, nonirrigated

212—Xeric Torriorthents-Typic Torriorthents-Badlands complex, very steep

Setting

Major landform: Butte escarpments
Elevation: 2,250 to 3,300 feet
Major use: Wildlife habitat

Composition

Xeric Torriorthents and similar inclusions—45 percent
Typic Torriorthents and similar inclusions—20 percent
Badlands—15 percent
Contrasting inclusions—20 percent

Xeric Torriorthents

Position on landscape: Concave side slopes
Slope range: 10 to 45 percent
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—51 to 53 degrees F
Frost-free period—125 to 150 days
Vegetal climax association: Wyoming big sagebrush and Thurber needlegrass
Sample profile:
0 to 4 inches—brown stony loam
4 to 15 inches—very pale brown fine sandy loam
15 to 30 inches—very pale brown very fine sandy loam
30 to 60 inches—extremely cobbly very fine sandy loam
Depth class: Moderately deep to very deep
Drainage class: Well drained
Runoff: Medium to very rapid
Permeability: Moderate
Available water capacity: Medium
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Typic Torriorthents

Position on landscape: Convex side slopes and foot slopes
Slope range: 5 to 60 percent
Climatic data (average annual):
Precipitation—8 to 9 inches
Air temperature—51 to 53 degrees F
Frost-free period—125 to 150 days
Vegetal climax association: Shadscale, bud sagebrush, Indian ricegrass, and Thurber needlegrass
Sample profile:
0 to 45 inches—very pale brown silt loam
45 inches—weathered bedrock
Depth class: Moderately deep and deep
Drainage class: Somewhat excessively drained
Runoff: Slow to very rapid
Permeability: Moderately slow
Available water capacity: High
Hazard of erosion by water: Moderate to high
Hazard of erosion by wind: Moderate
Salinity: Moderate
Sodicity: Moderate

Badlands

Position on landscape: South-facing, convex slopes and ridges
Slope range: 15 to 90 percent
Description of areas: Barren areas of soft lacustrine material dissected by many intermittent drainageways
Depth class: Very shallow
Runoff: Rapid or very rapid

Contrasting Inclusions

- Soils that are shallow, are on side slopes, and support Wyoming big sagebrush and Thurber needlegrass—10 percent or less
- Rock outcrop—5 percent or less
- Rubbleland—5 percent or less

Land Capability Classification

Xeric Torriorthents: VIIe, nonirrigated
Typic Torriorthents: VIIe, nonirrigated
Badlands: VIII
Map unit (complex): VIIe, nonirrigated

213—Xerollic Haplargids-Xerollic Paleargids-Rubbleland complex, steep

Setting

Major landform: Tableland escarpments
Elevation: 3,600 to 5,950 feet
Major uses: Rangeland and wildlife habitat

Composition

Xerollic Haplargids and similar inclusions—40 percent
Xerollic Paleargids and similar inclusions—30 percent
Rubbleland—15 percent
Contrasting inclusions—15 percent

Xerollic Haplargids

Position on landscape: Upper side slopes
Slope range: 15 to 60 percent
Climatic data (average annual):
Precipitation—9 to 13 inches
Air temperature—43 to 49 degrees F
Frost-free period—80 to 125 days
Vegetal climax association: Wyoming big sagebrush and bluebunch wheatgrass
Sample profile:
0 to 6 inches—dark brown very stony loam
6 to 12 inches—pale brown very gravelly loam
12 to 17 inches—very pale brown very gravelly sandy loam

17 to 60 inches—very pale brown gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Runoff: Medium and rapid
Permeability: Moderate to moderately slow
Available water capacity: Low
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight to high
Hazard of erosion by wind: Slight

Xerollic Paleargids

Position on landscape: Lower side slopes
Slope range: 8 to 35 percent
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—43 to 49 degrees F
Frost-free period—80 to 125 days
Vegetal climax association: Low sagebrush and bluebunch wheatgrass
Sample profile:
0 to 4 inches—pale brown very stony silt loam
4 to 7 inches—pale brown gravelly clay loam
7 to 22 inches—very pale brown very gravelly clay
22 inches—bedrock
Depth class: Moderately deep to very deep
Restriction to rooting depth: Abrupt textural change at a depth of 3 to 10 inches
Drainage class: Well drained
Runoff: Rapid and very rapid
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate and high
Hazard of erosion by wind: Slight

Rubbleland

Position on landscape: Bases of rimrock
Description of areas: Barren masses of loose, angular basalt fragments; masses formed mainly as a result of falling, rolling, or sliding rock
Runoff: Rapid

Contrasting Inclusions

- Soils that have a hardpan, are on concave foot slopes, and support Wyoming big sagebrush and bluebunch wheatgrass—10 percent or less
- Rock outcrop—5 percent or less

Land Capability Classification

Xerollic Haplargids: VIIe, nonirrigated
Xerollic Paleargids: VIs, nonirrigated
Rubbleland: VIII
Map unit (complex): VIIe, nonirrigated

214—Yatahoney-Nicholflat association, 1 to 10 percent slopes

Setting

Major landform: Alluvial fans and terraces
Elevation: 5,300 to 5,600 feet
Major uses: Rangeland and wildlife habitat

Composition

Yatahoney loam and similar inclusions—60 percent
Nicholflat silt loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Yatahoney Soil

Position on landscape: Summits
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Alkali sagebrush and Idaho fescue
Typical profile:
0 to 6 inches—brown and pale brown loam
6 to 21 inches—pale brown and light brown clay
21 to 23 inches—yellow gravelly sandy clay loam
23 to 32 inches—hardpan
32 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Medium
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Nicholflat Soil

Position on landscape: Swales and alluvial flats
Slope range: 1 to 8 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Low sagebrush and Idaho fescue
Typical profile:
0 to 7 inches—light brownish gray silt loam
7 to 18 inches—yellowish brown clay
18 to 60 inches—hardpan
Depth class: Shallow to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 5 to 10 inches

Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Bluecreek soils that are on mounds and fan terraces and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—10 percent or less
- Paynecreek soils that are on stream terraces and support basin big sagebrush, Idaho fescue, and bluebunch wheatgrass—5 percent or less
- Boulder Lake soils that are on lower alluvial flats and support silver sagebrush and bluegrass—5 percent or less
- Slickspots—small areas
- Soils that are similar to Lostvalley soils but are shallow, are on knolls, and support alkali sagebrush and Idaho fescue—small areas

Land Capability Classification

Yatahoney soil: IVe, nonirrigated
Nicholflat soil: IVe, nonirrigated

215—Yatahoney-Zecanyon-Deunah complex, 1 to 10 percent slopes

Setting

Major landform: Tablelands
Elevation: 5,200 to 6,000 feet
Major uses: Rangeland and wildlife habitat

Composition

Yatahoney stony loam and similar inclusions—40 percent
Zecanyon stony loam and similar inclusions—20 percent
Deunah stony silt loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Yatahoney Soil

Position on landscape: Smooth and convex summits
Slope range: 1 to 10 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Basin big sagebrush, Idaho fescue, and bluebunch wheatgrass
Typical profile:
0 to 3 inches—pale brown stony loam
3 to 6 inches—brown clay loam
6 to 15 inches—brown clay
15 to 35 inches—yellowish brown gravelly clay loam
35 to 36 inches—hardpan
36 inches—bedrock
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Runoff: Slow to rapid
Permeability: Slow
Available water capacity: High
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Zecanyon Soil

Position on landscape: Concave summits
Slope range: 1 to 5 percent
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days
Vegetal climax association: Mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue
Typical profile:
0 to 5 inches—brown stony loam
5 to 14 inches—light yellowish brown clay
14 to 21 inches—light yellowish brown cobbly clay
21 to 24 inches—light yellowish brown very cobbly clay loam
24 inches—bedrock
Depth class: Moderately deep
Drainage class: Well drained
Runoff: Slow or medium
Permeability: Slow
Available water capacity: Low
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight

Deunah Soil

Position on landscape: Convex summits
Slope range: 2 to 4 percent
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days
Vegetal climax association: Alkali sagebrush and Idaho fescue
Typical profile:
0 to 4 inches—pale brown stony silt loam
4 to 9 inches—light yellowish brown silt loam

9 to 27 inches—light yellowish brown and light brown clay
27 to 30 inches—hardpan
30 inches—bedrock
Depth class: Moderately deep to a hardpan
Restriction to rooting depth: Abrupt textural change at a depth of 2 to 10 inches
Drainage class: Well drained
Runoff: Medium
Permeability: Very slow
Available water capacity: High
Shrink-swell potential: High
Hazard of erosion by water: Moderate
Hazard of erosion by wind: Moderate

Contrasting Inclusions

- Lostvalley soils that are in swales and support mountain big sagebrush, bluebunch wheatgrass, and Idaho fescue—10 percent or less
- Merlin soils that are on rims and support low sagebrush and Idaho fescue—5 percent or less
- Rock outcrop—5 percent or less
- Soils that are similar to Boulder Lake soils but have less clay, do not have vertical cracks, are on alluvial flats, and support basin big sagebrush and saltgrass—small areas

Land Capability Classification

Yatahoney soil: IVe, nonirrigated
Zecanyon soil: IVe, nonirrigated
Deunah soil: IVe, nonirrigated
Map unit (complex): IVe, nonirrigated

216—Zola-Welch complex, 0 to 2 percent slopes

Setting

Major landform: Bottom lands
Elevation: 4,400 to 5,100 feet
Major use: Hayland

Composition

Zola silt loam and similar inclusions—55 percent
Welch loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Zola Soil

Position on landscape: Stream terraces
Slope range: 0 to 2 percent
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 95 days
Vegetal climax association: Basin big sagebrush, bluegrass, and basin wildrye
Typical profile:
2 inches to 0—undecomposed and partially decomposed grass and other organic material
0 to 4 inches—brown silt loam
4 to 13 inches—dark grayish brown silt loam
13 to 41 inches—grayish brown and pale brown clay loam
41 to 60 inches—pale brown loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 36 to 60 inches
Drainage class: Moderately well drained
Runoff: Very slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: High
Hazard of erosion by water: Slight
Hazard of erosion by wind: Moderate
Frequency of flooding: Rare

Welch Soil

Position on landscape: Fluvial bottoms
Slope range: 0 to 1 percent
Climatic data (average annual):
Precipitation—12 to 13 inches
Air temperature—43 to 44 degrees F
Frost-free period—45 to 90 days
Vegetal climax association: Sedge and bluegrass
Typical profile:
0 to 9 inches—gray loam
9 to 30 inches—grayish brown clay loam
30 to 42 inches—light gray loam
42 to 51 inches—light grayish brown sandy loam
51 to 60 inches—grayish brown gravelly coarse sandy loam
Depth class: Very deep
Restriction to rooting depth: Seasonal high water table at a depth of 12 to 18 inches
Drainage class: Poorly drained
Runoff: Slow
Permeability: Moderately slow
Available water capacity: Very high
Shrink-swell potential: Moderate
Hazard of erosion by water: Slight
Hazard of erosion by wind: Slight
Frequency of flooding: Frequent

Contrasting Inclusions

- Upcreek soils that are on stream terraces and support basin big sagebrush, bluegrass, and basin wildrye—10 percent or less

- Tucker soils that are on fluvial bottoms and support sedge and bluegrass—5 percent or less
- Riverwash—5 percent or less
- Arness soils that are on stream terraces and support low sagebrush and Idaho fescue—small areas

Land Capability Classification

Zola soil: IIIw, irrigated and nonirrigated
Welch soil: Vw, irrigated and nonirrigated
Map unit (complex): IVw, irrigated and nonirrigated

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 82,207 acres, or nearly 2 percent of the survey area, would meet the requirements for prime farmland if an adequate and dependable supply of irrigation water were available.

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

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

The map units that meet the requirements for prime farmland are:

11	Babbington-Beetville loams, 0 to 3 percent slopes (where irrigated)
19	Bluecreek sandy loam, 1 to 10 percent slopes
64	Goose Creek loam, 1 to 3 percent slopes (where irrigated)
73	Hardtrigger-Goose Creek loams, 1 to 5 percent slopes (where irrigated)
80	Haw-Renslow association, 0 to 4 percent slopes (where irrigated)
125	Paynecreek gravelly sandy loam, 1 to 5 percent slopes
126	Paynecreek-Barkley-Chayson loams, 1 to 10 percent slopes
127	Paynecreek-Northcastle complex, 1 to 8 percent slopes
128	Paynecreek-Northcastle-Blackwell association, 0 to 8 percent slopes (where protected from flooding or not frequently flooded during the growing season)
183	Tucker-Zola silt loams, 0 to 4 percent slopes (where protected from flooding or not frequently flooded during the growing season)
187	Upcreek-Riverwash complex, 0 to 4 percent slopes (where protected from flooding or not frequently flooded during the growing season)

188 Vickery-Snowmore complex, 1 to 5 percent slopes (where irrigated)
198 Weash-Schnipper complex, 1 to 8 percent slopes (where irrigated)
199 Welch loam, 0 to 1 percent slopes (where protected from flooding or not frequently flooded during the growing season)
200 Welch-Upcreek loams, 0 to 3 percent slopes (where protected from flooding or not frequently flooded during the growing season)
216 Zola-Welch complex, 0 to 2 percent slopes (where protected from flooding or not frequently flooded during the growing season)

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and 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 in harmony with the natural soil.

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

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

Crops and Pasture

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

About 11,000 acres of cultivated cropland is on the Snake River Plain, along the northern edge of the survey area. If irrigated, the soils are suitable for production of most climatically adapted crops, including potatoes, sugar beets, small grain, beans, specialty seed crops, alfalfa hay, and silage corn. Under a high level of management, the estimated average yields per acre of the main irrigated crops are 320 to 390 bushels of potatoes, 25 to 30 hundredweight of sugar beets, 75 to 110 bushels of wheat, and 4.5 to 7.0 tons of alfalfa hay.

Good management of the areas of cropland is needed to reduce wind erosion, control irrigation-induced erosion, and conserve the supply of irrigation water. Use of conservation tillage, which includes practices such as no-till farming, strip tilling, stubble mulching, and chiseling, is increasing in the survey area and is effective in managing the areas of cropland.

The Scism, Tindahay, Escalante, and Royal soils are particularly susceptible to wind erosion. High-residue crop rotation and conservation tillage are needed to keep the surface of these soils covered while maintaining tilth and organic matter content. Wind erosion can be controlled by leaving on the surface at least the equivalent of 1,000 pounds of small grain per acre. Windbreaks of shrubs and trees reduce the risk of wind erosion, protect crops, hold snow on the fields, and provide food and cover for wildlife.

Sprinkler irrigation systems generally are best suited to the soils in this survey area, but furrow and corrugation systems can be used in nearly level areas. Application of irrigation water should be regulated to control runoff, reduce erosion, and limit the leaching of nutrients below the root zone.

Irrigation water should be applied at regular intervals to maintain the soil moisture content. Suitable intervals vary according to the needs of the crop grown and the soil. For maximum efficiency, irrigation water should be applied when about one-third to one-half of the stored water has been used by the plants. For example, the Scism soil holds about 5 inches of water in the root zone. If alfalfa is grown, irrigation water should be applied when about 2.5 inches of the

available water has been used. Irrigation systems should replace water at a rate that provides a stable water supply for the crop grown that requires the highest amount of water. The system used should minimize water erosion, runoff, and deep percolation and provide uniform distribution of water.

Loss of the surface layer through erosion commonly is a serious problem in the gently sloping to moderately steep areas of cropland. Productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially critical for soils that have alkaline layers in the upper part of the profile, such as those of the Escalante, McKeeth, Ornea, and Scism series. Erosion in areas of cropland results in sedimentation of streams and thus reduces the quality of water for fish and wildlife, municipal use, and recreation.

High amounts of nutrients, particularly nitrogen and phosphorus, are removed when crops are harvested. Returning all crop residue to the soil and adding feedlot manure and commercial fertilizers increase the amount of nutrients in the soil. Most of the soils in the survey area that are used for crops have a low content of organic matter in the surface layer and weak structure. Besides being an important source of nitrogen for crops, organic matter also helps to increase the water intake rate, reduce soil losses from erosion, and promote good tilth. Regular additions of manure and other organic material help to improve soil structure and prevent the formation of a crust. Leaving crop residue on the surface also helps to prevent the formation of a crust. Soil tests are needed to determine the kinds and amounts of fertilizer to apply for specific crops.

About 45,000 acres of pastureland and hayland are along creeks throughout the survey area. This relatively lush bottom land provides winter feed and shelter for local livestock operations. The bottom land commonly is characterized by native meadow grasses and sedges grading to basin big sagebrush and basin wildrye as the depth to the high water table increases. Under irrigation and a high level of management, these areas can be expected to yield about 2.5 to 4.0 tons of hay or 6 to 10 animal-unit-months of forage.

The estimated yields mentioned in the preceding paragraphs were based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations were also considered. In any given year, yields may be higher or lower than those indicated because of variations in rainfall and other climatic factors. Yields are likely to increase as new production technology is developed; however, the productivity of a given soil compared with that of other soils is not likely to change.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include erosion control and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium and secondary and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

Crops other than those mentioned in the preceding paragraphs are grown in the survey area, but estimated yields are not listed because the acreage of such crops is very small. The local offices of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Generally, production at elevations above 5,000 feet is limited by a short frost-free period. Areas that have slopes of more than 3 percent are limited mainly by a hazard of water erosion. Corrugation irrigation systems should be placed on the contour or across the slope to control erosion, and the application of irrigation water should be regulated to control runoff.

Because of the fluvial nature of the bottom land, the texture of the lower layers of the profile commonly greatly contrasts the loamy texture of the surface layer. Some of these contrasting layers are clay, as in the Tucker soils, but more commonly they are sand and gravel, as in the Upcreek soils. To avoid exposing these hard-to-manage contrasting layers, land smoothing should include only shallow cuts.

Flooding and poor drainage are major management factors for the Blackwell and Welch soils. The seasonal high water table provides supplemental moisture, but it limits the choice of plants and the period of cutting and grazing of hay. Only hay and pasture plants that tolerate periodic inundation and seasonal wetness should be seeded. Grazing should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock. If pesticides are used in areas subject to flooding, care should be taken to avoid contaminating streams. The rate and time of application are important considerations. Similar

management of the Beetville, Tucker, and Upcreek soils may be needed, but these soils are flooded less frequently and have a lower seasonal high water table. Water-control structures can reduce the risk of flooding, and open ditches or tile drains may be needed to remove excess water. Adjusting the application of irrigation water to the available water capacity, the water intake rate, and the needs of the plant grown minimizes the leaching of plant nutrients.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil in the section “Detailed Soil Map Units.” Specific information can be obtained from the local offices of the Natural Resources Conservation Service or the Cooperative Extension Service.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes. (*13*)

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 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 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 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 Grazeable Woodland

Rangeland and grazeable woodland make up about 3,627,000 acres, or about 98 percent, of the survey area. This acreage is used for grazing by livestock and wildlife and as recreation and watershed. About 88 percent of this land is publicly owned and is managed by the Bureau of Land Management or the State of Idaho.

Livestock operations contribute significantly to the economy of the area. Cow-calf and yearling operations are dominant. A few sheep operations are headquartered in the area. Typically, the livestock feed in winter on cut meadow hay and on hay aftermath left standing in fields. As spring growth begins, livestock are allowed to graze the areas of rangeland at the lower elevations. They are moved to the higher elevations as the production of forage increases. Early in October to mid-October the livestock are rounded up, calves are weaned, and the brood cow herd is moved back to the home range and wintering areas. Calving normally occurs during the winter feed period of January through March.

In areas of spring and winter range at the lower elevations, much of the native vegetation has been depleted as a result of heavy grazing in the late 1800’s

and early 1900's. Much of the original bunchgrass has been replaced by annual bromes and undesirable weeds. Large areas have been seeded to crested wheatgrass as a result of fire rehabilitation projects. Except in areas that have been invaded by juniper, the areas of rangeland and open woodland at the higher elevations commonly have a good stand of native vegetation.

The production of forage in areas of woodland depends mainly on the amount of light that reaches the understory vegetation. After harvesting or fire, there is a large increase in the production of understory plants for a number of years. As the canopy closes, the production of understory decreases. In many kinds of woodland, the density of the tree canopy that provides for maximum wood production allows for only sparse understory growth.

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

Table 5 shows, for each soil that supports rangeland vegetation and woodland suitable for grazing, the range site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. An explanation of the column headings in the table follows.

A *range site* is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other range sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was ascertained during this survey; thus, range sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table are also important.

Range site numbers, given in table 5, are used to identify the range sites in the area. Range site numbers are used mainly to coordinate range sites within and between states. 025XY019I is an example. This identifies the range site as located in major land resource area 025. Some areas have further subdivisions of the resource areas; however, if not, XY appears in the next position. The 019 indicates the coordinated range site number. The letter I represents the state of Idaho. Land resource area subdivision maps are available at the local offices of the Natural Resources Conservation Service.

Total production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

Dry weight is the total annual yield per acre 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.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

The goal of management applied to the areas of rangeland and grazeable woodland should result in the optimum production of vegetation in order to meet the various demands for conservation of water and control of erosion. A range management program should

include a variety of practices to achieve or maintain the desired plant community. The primary management practice is the use of planned grazing systems that allow plants to achieve adequate growth in spring to withstand grazing pressure, allow the soils to dry out in spring to minimize damage from trampling, allow for periodic rest or deferment to maintain or improve the vigor of forage species, and allow for removal of the grazing animals when the desired amount of herbage has been removed. Practices such as constructing water developments, fencing, salting, managing brush, range seeding, and properly distributing livestock can be used to facilitate the grazing system and allow for changes in the plant community. The suitability of a given area for specific practices depends on the characteristics of the soil and site.

Woodland

The woodland is in the more mountainous parts of the survey area. It comprises about 20,000 acres, most of which is Federal and State land. The location, extent, and plant communities are directly related to precipitation. Aspect and elevation are the main factors that influence precipitation and effective moisture.

At the lower elevations, quaking aspen and Douglas fir are restricted to concave, protected areas. As elevation increases and the related precipitation increases, these trees cover the north- and east-facing side slopes. Moderately extensive stands of Douglas fir are in the slightly drier and warmer, convex areas at elevations above 7,000 feet. Subalpine fir occupies the cooler and more moist, concave areas at the higher elevations.

The more extensive areas of woodland are on the Silver City Range, in the northwestern part of the survey area; on South Mountain, near the west-central boundary; and on Elk Mountain, in the extreme southeastern corner. The Silver City Range supports the most extensive areas of timber.

In the early development of the area, the areas of woodland provided lumber for local construction, firewood, and a considerable quantity of mine shores. There is still some logging in the area, but it is severely limited by the distance to sawmills or pole plants. At present, most of the timber is used locally for firewood and fencing.

The Dranyon soils are suited to the production of quaking aspen. The Bonneville, Graylock, Naz, Nazaton, Southmount, and Wareagle soils are suited to the production of Douglas fir. Generally, only these species are suitable for planting on these soils. Site indexes and yields for these species have not been estimated.

Erosion control is needed during logging and road construction in the steeper areas. Excessive erosion can be avoided by carefully planning the construction and maintenance of logging roads, skid trails, and landings. Cuts and fills should be seeded, and water bars and culverts should be installed. High-lead or other cable logging systems help to minimize disturbance of the soils.

The steepness of slope limits the kinds of equipment that can be used for harvesting timber. Large stones and boulders on the surface of the Graylock soils cause breakage of timber and hinder yarding. The upper part of the Graylock soils is loose when dry, which limits the use of wheeled and tracked equipment.

Seedling mortality is a concern on the droughty Graylock and Wareagle soils. Available water capacity is limited by the sandy texture of the Graylock soils and by the rock fragments in the Wareagle soils. If openings are made in the canopy, undesirable plants invade and can delay reforestation on the Bonneville, Graylock, Nazaton, and Wareagle soils. Unless the Dranyon, Naz, and Southmount soils are irrigated, plant competition prevents natural or planted regeneration. Regeneration should be managed to reduce the competition of less desirable plants and to provide shade for seedlings.

Disturbed Land Reclamation

Reclamation of disturbed land is the rehabilitation of a damaged area to the appearance, use, and stability similar to that of the natural ecosystem and landscape. Disturbed land is reclaimed to control erosion and restore productivity and aesthetic value. Common activities that cause soil-landscape disturbances include roadbuilding, mineral exploration and mining, installation of pipelines, construction of stock ponds and reservoirs, and excavation or filling of waste disposal sites. Accelerated soil erosion can also result from other activities such as overgrazing or recreational use or from natural events such as fire or flooding.

Soil is the basic resource that sustains the productivity of the land. Thorough knowledge of the properties and productive capacity of soils is fundamental to developing a plan to reclaim disturbed areas. Slope and climatic conditions also influence the types of reclamation practices that can be used successfully. Typically, reclamation involves the replacement or reconstruction of soils and

the reestablishment of plant cover and biological activity.

Inherent soil properties commonly determine the success or failure of disturbed land reclamation. Each soil has unique characteristics that are the products of parent material interacting with climate, biological activity, and topography over time. Layers, or horizons, of organic matter, clay, and carbonates accumulate as the soils form. Soils can have many horizons, such as those of the Succor series, or only a couple, such as those of the Bregar series. Each horizon can range from less than 1 inch thick, such as the duripan, or Bkqm horizon, in the Bedstead soils, to several feet thick, such as the argillic, or Bt, horizon in the Booneville soils.

Topsoil is defined as the surface layer, or A horizon. Humified organic matter accumulation and microbial activity are highest in this layer. The A horizon has the best tilth and provides the most oxygen and nutrients for plants. The subsoil, or B horizon, commonly is a layer of accumulated clay and sometimes iron, aluminum, carbonates, and silica. Carbonates and silica cement the matrix in some soils and thereby limit the rooting depth. The A and B horizons make up the solum, or the part of the soil profile that largely sustains plant growth and in which the processes of soil formation are most active. The solum of the Dehana soils is more than 60 inches thick and supports quaking aspen, but that of the Plush soils is only 20 inches thick and supports sagebrush.

When reclaiming disturbed land, texture, structure, consistency, bulk density, porosity, and depth are physical properties of soils that should be considered. These properties influence aeration, root penetration, permeability, water infiltration, runoff, available water capacity, and tilth. For example, sandy soils, such as those of the Tindahay series, have large, continuous pore spaces and are characterized by rapid rates of water infiltration and permeability and by low available water capacity. In contrast, clayey soils, such as those of the Tucker series, can hold much more water, but the small pores transmit air and water more slowly. The best balance of water retention and air and water movement is in medium-textured soils, such as those that are loam, clay loam, and silt loam. Chemical properties of soils that should be considered include mineralogy, organic matter content, alkalinity, salinity, and reaction (pH). These properties affect water infiltration, hydrology, fertility, and biological activity. Table 11 gives various physical and chemical properties of the soils in this survey area, and table 13 gives various soil features.

Rehabilitation should be considered before and during the time of disturbance so that reclamation and revegetation can be achieved quicker, can have a greater chance of success, and can be more cost effective. Typically, the solum must be replaced, primarily to provide a suitable medium for plant growth. Vegetation and biological activity can then be reestablished successfully at the site. Topsoil should be selectively removed and stockpiled before the disturbance. Once the subsoil or fill material has been replaced, the area should be graded and contoured to the surrounding landscape. Next, topsoil should be spread and smoothed and the seedbed prepared. Table 8 gives information on the suitability of the soils as a source of topsoil.

The first step in seedbed preparation is conditioning, which can include loosening compacted layers by chiseling, disking, or plowing. The configuration of the soil surface can be modified by furrowing or gouging to reduce the risks of wind and water erosion and to increase water storage in depressional areas and catchments, creating a more favorable microsite for seedling establishment. The type of conditioning required to rehabilitate an area depends on the soil texture, soil compaction, salinity, drainage, surface stoniness, slope, climate, and seeding method.

Revegetation is a vital part of the rehabilitation process. Protection of the soil is the primary consideration in species selection. Selected species should be adapted to the specific site and suited to the present soil, climatic, and topographic conditions. Increased production, consistent viability, higher quality, and improved cover are secondary considerations that benefit livestock and wildlife. Native or introduced species can be used, although native plants generally adapt best to environmental extremes. Table 5 gives the characteristic vegetation for each soil in the survey area. Introduced species are suitable for revegetation only if they can provide stabilizing cover quickly, are compatible with the native species in the region, and are not overly aggressive or undesirable competitors.

Soil limitations such as alkalinity, salinity, very gravelly textures, shallow rooting depth, and high clay content should be considered, as well as the ability of a plant to tolerate droughtiness and other adverse environmental conditions. Topographic characteristics including aspect, slope gradient, and position on the slope affect the runoff, drainage, moisture content, temperature, erosion hazard, and stability. For example, plants seeded in areas of strongly sloping soils, such as those of the Nazaton and Foxmount series, must be able to hold the soil securely in place as well as survive on a limited amount of moisture if the soils are on south-facing slopes.

Timing is an important factor in determining the method of seeding or planting. Seeding or planting should be done just prior to the longest period of favorable growing conditions, when the soil temperature is warm enough to allow germination but not high enough to inhibit growth and when the content of moisture in the soil is adequate. The soil should be seeded or planted as soon after seedbed preparation as possible to prevent weedy species from invading. Seeding by drilling or broadcasting generally is less costly than planting, which requires putting whole live plants or parts of live plants into the soil.

Mulching can be done before, during, or after seeding. Covering the soil surface with a layer of mulch reduces evaporation, controls erosion, and insulates the soil. Mulch protects the soil from water erosion by intercepting raindrops and thereby reducing splashing and puddling and allows for greater water infiltration and decreased runoff by slowing the movement of water droplets. Mulch also reduces the wind velocity at the soil surface. Insulating the top layer of the soil protects against excessive heat or cold, which is critical for successful germination of seeds and establishment of plants. Mulch can consist of small grain straw, grass hay, wood fibers, or manufactured blankets. Manure, an organic mulch, commonly is used because it also adds nutrients to the soil. If an organic mulch is used, additional nitrogen may be needed to compensate for the nitrogen that is tied up in the decomposition of the mulch.

Practices such as the application of supplemental water (irrigation), nutrients (fertilization), herbicides for weed control, or inoculates and mycorrhizas commonly are needed for the establishment, growth, and survival of plants.

Rehabilitation is considered successful when the soils are stabilized and the vegetation can sustain itself and reproduce within the ecosystem.

Wildlife Habitat

By Alan Sands, biologist, Bureau of Land Management.

The survey area supports 158 resident species of wildlife and 183 migratory species. These include 71 species of mammals, 243 species of birds, 19 species of reptiles, and 8 species of amphibians. The area also supports 26 species of fish.

Big game animals include mule deer, pronghorn antelope, California bighorn sheep, and an occasional elk. Native sage grouse and introduced chukars, pheasants, gray partridge, and California quail are common. Mountain quail were abundant in the foothills of the Owyhee Mountains, but now they are quite rare. Mammal predators include mountain lion, bobcat, coyote, river otter, mink, and weasel.

Common birds of prey that nest in the area include golden eagle, prairie falcon, red-tailed hawk, ferruginous hawk, Swainson's hawk, northern harrier, kestrel, great horned owl, short-eared owl, long-eared owl, and burrowing owl. Rough-legged hawk and bald eagle winter at the lower elevations. Parts of the survey area along the Snake River are within the boundaries of the Snake River Birds of Prey Area, an internationally significant raptor concentration area managed by the Bureau of Land Management.

Red band trout, a desert-adapted species related to rainbow trout, are in many of the streams in the survey area. Rainbow trout are in some of the larger streams and rivers and in most reservoirs. Warmwater game fish, including largemouth bass, smallmouth bass, bluegill, crappie, and catfish, are in the Snake River and a few other locations. Sturgeon also are in the Snake River. Before dams blocked their route, salmon and steelhead trout annually migrated to the area to spawn.

Recreation related to fish and wildlife has become a major part of the economy in the Great Basin and Rocky Mountain states. Hunting and fishing in the survey area contributes more than $1 million annually to the economy of Idaho. This amount is expected to increase in the future because of the ever-increasing urban populations that create a greater demand for these resources from extensive areas of public land that are largely undeveloped.

The wide array of wildlife in the survey area is supported by the variety of habitats present. Upland habitat ranges from fourwing saltbush and shadscale types along the Snake River to juniper woodland and areas of aspen, mountain brush, and Douglas fir at the higher elevations. Expanses of sagebrush and bunchgrass are at the intermediate elevations. Springs and wet meadows are scattered throughout the area and riparian, or streamside, vegetation occurs as linear ribbons, frequently extending through two or more major types of upland habitat. Aquatic habitat is provided by the Snake, Owyhee, Bruneau, and Jarbidge Rivers, many perennial streams, and several reservoirs, such as Sinker, Succor, and Juniper Basin Reservoirs. Agricultural habitats are primarily along the Snake River, but smaller areas are along Reynolds, Jordan, Cherry, Blue, and Three Creeks.

Each type of habitat varies in its ability to support different kinds and populations of wildlife, depending on the supply of food, cover, and water. Some types of habitat, such as riparian areas, have a much greater capacity to meet these essential needs for a variety of

species. The location of habitat types in relation to each other also influences the diversity of wildlife occupying an area, since a single type of habitat rarely can meet all of the life requirements for a species. For example, the proximity of native perennial grasses, which provide food, to cliffs and rocks, which provide cover, determines the distribution of bighorn sheep.

Many types of wildlife respond to plant community composition and especially to the physical structure of the vegetation. Plant communities, in turn, are controlled by site factors such as soil type, available soil moisture, and disturbances caused by nature or man. Depending upon prior disturbance, a variety of seral vegetation types can occur on the same soil. A plant community may be suitable for a certain kind of wildlife at one stage of plant succession, but at another stage it would not be suitable for the same species. For example, the big sagebrush vegetation type is suitable as habitat for sage grouse when the sagebrush is present, but it is not suitable if the sagebrush has been removed by fire or other means.

Habitat management is the key to wildlife management. Direct measures to control wildlife populations have limited ability to make long-lasting changes in wildlife populations (unless the control method results in extinction). Habitat modifications, however, change the ability of an area to support different kinds and populations of wildlife. These changes usually are long lasting, especially in drier areas.

Modern man has been responsible for major modifications of the habitat in this survey area. Agricultural conversion, range seeding, fire, livestock grazing, and the invasion of exotic plants have had a dramatic effect on the natural vegetation and wildlife. Historically, the most common game species were bighorn sheep, pronghorn antelope, sage grouse, and sharp-tailed grouse. Sharp-tailed grouse are no longer in the area, and the populations of the other species are much lower. Habitat modification, with the possible exception of overhunting of bighorn sheep, has been responsible for these changes.

Conversely, the population of mule deer was relatively small before the arrival of modern man but they are now the most abundant big game animal in the area. Because livestock prefer grasses and fewer fires have occurred, the density of plants such as sagebrush, bitterbrush, and juniper has increased, thereby improving the habitat for mule deer. The development of agricultural cropland has created areas suitable for exotic wildlife species such as pheasant, gray partridge, and California quail. The accidental introduction of exotic annuals such as cheatgrass created habitat for abundant populations of chukar partridge.

Bighorn sheep, considered by many hunters to be the premier North American big game animal, initially were eliminated from Owyhee County in the 1920's. Overharvesting, competition from domestic livestock for forage, and transmission of disease from domestic sheep contributed to their demise. Transplant efforts that began in the early 1960's have resulted in a population of more than 1,100 animals. Bighorn sheep occupy canyonlands and breaks included in many of the general soil map units. They have a bright future through natural expansion and additional transplants; however, like so many species of wildlife, this species exists solely because of man's desire to maintain it.

Springs, wet meadows, and riparian areas provide key habitat for wildlife. Although these areas make up less than 1 percent of the survey area, they occur in all of the general soil map units. These areas support a greater abundance of wildlife and more diverse species than any other habitat type. They are highly attractive to mule deer and upland game animals. Furbearers, such as muskrat, mink, and river otter, are associated with riparian habitat. Waterfowl and many songbirds also are attracted to these areas.

Similar to upland habitat, the condition of riparian habitat can vary. Degraded sites have limited ability to support wildlife, but those that are in good condition support large populations of wildlife. Riparian areas also are highly attractive to livestock, and concentrated use has seriously degraded much of the habitat. Beaver actively modify riparian areas, which generally is considered beneficial to the riparian community. The activity of beaver in combination with overuse by livestock, however, can seriously damage riparian habitat.

Damaged riparian habitat directly impacts associated aquatic habitat. The loss of stabilizing streamside vegetation as a result of trampling and consumption exposes streambanks to serious erosion during periods of high water. Erosion contributes to the deepening and widening of creeks and the corresponding decrease in water depth. Gravel deposited by moving water reduces spawning habitat. Higher stream temperatures in summer because of the limited shade and decreased water depth can make streams uninhabitable by trout.

Riparian habitat, unlike upland habitat, has the ability to recover relatively rapidly if the disturbing influences are removed. Elimination of grazing results in the most rapid recovery, but special grazing management practices also can be used to improve riparian areas. Grazing of these areas by wildlife in spring or when the vegetation is dormant has much

less impact than grazing in the hot summer when livestock also concentrate in these areas. If riparian areas are in good condition, they have a great capacity to support both livestock and wildlife.

The soils in this survey area have been grouped into general soil map units, and wildlife populations can be correlated to these units. Following are some of the major wildlife species in the area and the general soil map units that provide favorable habitat. For mule deer, general soil map unit 10 provides critical winter habitat, units 11 and 13 provide prime winter habitat, units 4 and 12 provide fair winter habitat, unit 16 provides prime summer habitat, canyons and breaks in unit 7 provide good summer habitat, juniper woodland in unit 8 and big sagebrush in unit 14 provide good summer habitat, and unit 15 provides good transitional habitat. For pronghorn antelope, unit 5 provides crucial winter habitat, units 4 and 11 provide good year-round habitat, low sagebrush in units 6 and 7 provides good year-round habitat, and units 12 and 13 provide fair year-round habitat. For sage grouse, units 10 and 11 provide crucial winter habitat, units 6 and 7 provide prime year-round habitat, units 4, 12, and 13 provide fair year-round habitat, and meadows in unit 1 provide important brood-rearing habitat.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the 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.

Building Site Development

Table 6 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, and local roads and streets. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so

unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, slope, 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, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Sanitary Facilities

Table 7 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and,

generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

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 the table, 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 soil series 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 nutrients for plant growth.

Water Management

Table 9 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and 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 for each soil the restrictive features that affect drainage, irrigation, and terraces and diversions.

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 even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper

onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

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 wind erosion 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 about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(3, 9)* and the system adopted by the American Association of State Highway and Transportation Officials *(2)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 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 consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and 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 downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

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; *high*, more than 6 percent; and *very high*, greater than 9 percent.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to wind erosion because of coarse 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 the table, 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 water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). *Common* is used when the occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. 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 observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are the depth to the seasonal high water table; the kind of water table—that is, perched, apparent, or artesian; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone. An *artesian* water table is under hydrostatic head, generally below an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

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. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. “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.

Table 13 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

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 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 mainly to pavements and other rigid structures.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(14)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 14 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 Aridisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Argid (*Arg*, meaning clay, plus *id*, from Aridisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Durargids (*Dur*, meaning duripan, plus *argid*, the suborder of the Aridisols that have an argillic horizon).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Durargids.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is loamy, mixed, mesic, shallow Typic Durargids.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Taxonomic Units and Their Morphology

In this section, each taxonomic unit recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each unit. A pedon, a small three-dimensional area of soil, that is typical of the unit in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(12)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(14)*. Unless otherwise indicated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the unit.

The map units of each taxonomic unit are described in the section "Detailed Soil Map Units."

Acrelane Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic, shallow Aridic Argixerolls

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Landforms: Foothills
Parent material: Kind—residuum and colluvium; source—intermediate intrusive rock
Slope range: 10 to 45 percent
Elevation: 3,000 to 5,200 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 51 degrees F
Frost-free period—90 to 135 days

Typical Pedon Description

A—0 to 3 inches; grayish brown (10YR 5/2) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable; common very fine and fine roots and few medium roots; common fine interstitial pores; 35 percent gravel; slightly acid; clear smooth boundary.
BA—3 to 6 inches; brown (10YR 5/3) gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; few thin clay films on faces of peds; 20 percent gravel; slightly acid; clear smooth boundary.
Bt1—6 to 9 inches; brown (10YR 5/3) very gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; common moderately thick clay films on faces of peds; 35 percent gravel; neutral; clear smooth boundary.
Bt2—9 to 12 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; 60 percent gravel; neutral; clear smooth boundary.
Cr—12 inches; decomposing granite.

Typical Pedon Location

Location in survey area: About 7 1/2 miles southwest of Murphy; in the NW1/4NW1/4 of sec. 31, T. 3 S., R. 2 W.
Map unit in which located: Acrelane-Rock outcrop complex, 10 to 45 percent slopes

Range in Characteristics

Profile:
Depth to weathered bedrock—10 to 20 inches

A horizon:
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Clay content—20 to 30 percent
Rock fragment content—35 to 60 percent

Alibi Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Typic Palexerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landforms: Foothills
Parent material: Kind—slope alluvium and residuum; source—rhyolite and welded rhyolitic tuff
Slope range: 3 to 35 percent
Elevation: 3,700 to 5,250 feet
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 125 days

Typical Pedon Description

A—0 to 4 inches; brown (10YR 5/3) very stony loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and plastic; common very fine and fine roots; many very fine and fine interstitial pores; 35 percent gravel, 5 percent cobbles, and 5 percent stones; slightly acid; clear smooth boundary.
AB—4 to 7 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure parting to strong fine and medium granular; slightly hard, friable, very sticky and plastic; common very fine and fine roots; many very fine tubular pores; common thin clay films on faces of peds; 15 percent gravel and 2 percent cobbles; slightly acid; abrupt smooth boundary.
Bt1—7 to 12 inches; yellowish brown (10YR 5/4) gravelly clay, brown (10YR 4/3) moist; moderate

medium prismatic structure parting to strong fine and medium angular blocky; very hard, very firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores; common pressure faces; many thick clay films on faces of peds and in pores; 15 percent gravel and 2 percent cobbles; neutral; clear smooth boundary.

Bt2—12 to 17 inches; brown (7.5YR 5/4) gravelly clay, dark brown (7.5YR 4/4) moist; strong fine and medium angular blocky structure; hard, firm, sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many thick clay films on faces of peds; 20 percent gravel and 5 percent cobbles; mildly alkaline; clear smooth boundary.

Bq—17 to 23 inches; pink (7.5YR 7/4) very gravelly sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, very friable; few very fine and fine roots; common very fine and fine interstitial and tubular pores; 45 percent gravel and 10 percent cobbles; most rock fragments coated with secondary silica; mildly alkaline; gradual smooth boundary.

R—23 inches; fractured, moderately weathered rhyolite.

Typical Pedon Location

Location in survey area: About 12 miles southeast of Silver City; in the SW$^1/_4$NE$^1/_4$ of sec. 1, T. 6 S., R. 2 W.

Map unit in which located: Chinabutte-Alibi very stony loams, 3 to 45 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—7 to 10 inches
Depth to bedrock—20 to 30 inches

A and AB horizons:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—gravelly clay, clay, or gravelly clay loam
Clay content—35 to 50 percent
Rock fragment content—10 to 35 percent
Reaction—neutral or mildly alkaline

Bq horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly sandy loam, very gravelly sandy clay loam, or very cobbly sandy clay loam
Rock fragment content—35 to 60 percent
Reaction—neutral or mildly alkaline

Alzola Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Durixerollic Haplargids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Outwash terraces and calderas
Parent material: Kind—mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 1 to 20 percent
Elevation: 5,000 to 5,800 feet
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days

Typical Pedon Description

A1—0 to 2 inches; light gray (10YR 7/2) silt loam, brown (10YR 4/3) moist; moderate medium and thick platy structure parting to moderate thin platy; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine, fine, and medium vesicular and interstitial pores and few coarse vesicular and interstitial pores; 15 percent gravel; moderately alkaline; abrupt smooth boundary.

A2—2 to 4 inches; very pale brown (10YR 7/3) silt 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 fine roots and few medium roots; common very fine and fine vesicular pores and few medium vesicular pores; 10 percent gravel; strongly alkaline; abrupt smooth boundary.

Bt—4 to 9 inches; pale brown (10YR 6/3) cobbly silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, very sticky and plastic; common very fine and fine roots and few medium roots; common fine and medium tubular pores; many thin clay films on faces of peds and in pores; 10 percent gravel and 10

percent cobbles; strongly alkaline; clear wavy boundary.
Btkq—9 to 14 inches; light yellowish brown (10YR 6/4) extremely cobbly clay loam, yellowish brown (10YR 5/4) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; few very fine, fine, and medium roots; few fine and medium tubular pores; common thin clay films on faces of peds and in pores; 25 percent gravel and 40 percent cobbles; common thick pendants of silica and calcium carbonates on rock fragments; strongly effervescent; strongly alkaline; clear smooth boundary.
Bkq1—14 to 22 inches; very pale brown (10YR 7/3) weakly cemented extremely cobbly sandy loam, pale brown (10YR 6/3) moist; massive; very hard, firm; few fine roots; common fine interstitial pores; 25 percent gravel and 45 percent cobbles; secondary silica and calcium carbonates commonly completely engulf rock fragments to form medium and coarse discontinuous indurated plates; violently effervescent; very strongly alkaline; clear wavy boundary.
Bkq2—22 to 60 inches; very pale brown (10YR 8/3) extremely cobbly loamy sand, very pale brown (10YR 7/4) moist; single grain; loose; few fine roots; 30 percent gravel and 50 percent cobbles; violently effervescent; very strongly alkaline.

Typical Pedon Location

Location in survey area: About 18 miles southeast of Grasmere; in the SW¼SE¼ of sec. 2, T. 15 S., R. 6 E.
Map unit in which located: Alzola silt loam, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—6 to 15 inches
Depth to weak cementation—14 to 24 inches

A horizon:
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Reaction—mildly alkaline or moderately alkaline

Bt horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—cobbly silty clay loam or cobbly clay loam in the upper part and very cobbly clay loam or extremely cobbly clay loam in the lower part
Clay content—27 to 34 percent
Rock fragment content—35 to 85 percent
Effervescence (lower part)—none to strong
Reaction—mildly alkaline to strongly alkaline

Bkq horizon:
Value—7 or 8 dry, 6 or 7 moist
Chroma—1 to 4 dry or moist
Texture—extremely cobbly sandy loam, extremely cobbly loamy sand, or very cobbly sandy loam
Clay content—5 to 15 percent
Rock fragment content—50 to 90 percent
Reaction—strongly alkaline or very strongly alkaline

Arbidge Series

Classification

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Durargids

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Calderas, fan terraces, plug domes, and tablelands
Parent material: Kind—loess and silty alluvium; source—basalt and volcanic ash
Slope range: 2 to 15 percent
Elevation: 3,250 to 5,500 feet
Climatic data (average annual):
Precipitation—9 to 13 inches
Air temperature—45 to 51 degrees F
Frost-free period—85 to 130 days

Typical Pedon Description

A—0 to 3 inches; grayish brown (10YR 5/2) silt 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 and few medium and coarse roots; many very fine and fine tubular and vesicular pores; 5 percent gravel; neutral; clear smooth boundary.
Bt1—3 to 10 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; weak medium and fine subangular blocky structure; slightly hard, friable, sticky and plastic; many fine roots and common very fine and medium roots; few fine and very fine tubular pores; 5 percent gravel; common moderately thick clay films on faces of peds; neutral; gradual smooth boundary.
Bt2—10 to 20 inches; pale brown (10YR 6/3) clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and fine subangular blocky structure; hard, friable, sticky and plastic; many

fine roots and common very fine and medium roots; common fine tubular pores; 10 percent gravel; many moderately thick clay films on faces of peds; mildly alkaline; clear wavy boundary.

Bkq—20 to 30 inches; pale brown (10YR 6/3) gravelly sandy loam, brown (10YR 5/3) moist; weak medium and fine subangular blocky structure; hard, very friable; common very fine and fine roots; common fine tubular pores; 15 percent gravel; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2Bkqm—30 to 38 inches; very pale brown (10YR 8/3) continuous strongly cemented duripan; platy structure; extremely hard, extremely firm, brittle; violently effervescent; strongly alkaline; clear wavy boundary.

3Ck—38 to 60 inches; very pale brown (10YR 7/3) very gravelly loamy sand; massive; loose; 40 percent fine gravel; violently effervescent; strongly alkaline; clear wavy boundary.

Typical Pedon Location

Location in survey area: About 26 miles west of Riddle; in the NE¼NE¼ of sec. 7, T. 15 S., R. 2 W.
Map unit in which located: Bedstead-Arbidge association, 2 to 15 percent slopes

Range in Characteristics

Profile:
Depth to duripan—20 to 40 inches

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—loam, clay loam, or sandy clay loam
Clay content—20 to 34 percent
Rock fragment content—0 to 10 percent
Reaction—neutral or mildly alkaline

Bkq horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—sandy clay loam, sandy loam, or gravelly sandy loam
Clay content—15 to 25 percent
Rock fragment content—0 to 20 percent
Effervescence—strong or violent
Reaction—mildly alkaline to strongly alkaline

Arness Series

Classification

Taxonomic class: Loamy, mixed, frigid, shallow Aridic Durixerolls

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Fan terraces
Parent material: Kind—mixed alluvium; source—volcanic ash and extrusive rock
Slope range: 1 to 8 percent
Elevation: 5,250 to 5,450 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—70 to 95 days

Typical Pedon Description

A—0 to 4 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; weak medium platy structure parting to moderate fine subangular blocky; soft, very friable, slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine vesicular pores; 5 percent gravel; neutral; clear smooth boundary.

Bt1—4 to 10 inches; yellowish brown (10YR 5/4) loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, sticky and plastic; many very fine and fine roots and few medium roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds and in pores; 10 percent gravel; neutral; clear smooth boundary.

Bt2—10 to 16 inches; light yellowish brown (10YR 6/4) gravelly clay loam, brown (7.5YR 4/4) moist; moderate fine angular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; few very fine and fine tubular pores; many moderately thick clay films on faces of peds and in pores; 15 percent gravel; neutral; abrupt smooth boundary.

Bkq—16 to 19 inches; light yellowish brown (10YR

6/4) gravelly loam, brown (7.5YR 4/4) moist; massive; hard, firm; common very fine and fine roots; few fine interstitial pores; common moderately thick clay films on rock fragments; 25 percent gravel; violently effervescent; mildly alkaline; abrupt smooth boundary.

Bkqm—19 to 33 inches; pink (7.5YR 7/4), continuous, strongly cemented duripan that has an indurated laminar cap; massive; extremely hard, very firm, brittle; violently effervescent; gradual wavy boundary.

R—33 inches; slightly weathered welded tuff.

Typical Pedon Location

Location in survey area: About 5 miles northwest of Three Creek; in the SE¼NE¼ of sec. 13, T. 15 S., R. 10 E.

Map unit in which located: Arness-Humdun complex, 1 to 8 percent slopes

Range in Characteristics

Profile:
Depth to duripan—14 to 20 inches
Depth to bedrock—20 to 40 inches
Reaction—neutral or mildly alkaline

Particle-size control section (weighted average):
Clay content—22 to 34 percent
Rock fragment content—0 to 20 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—loam, clay loam, or gravelly clay loam

Avtable Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Mollic Haploxeralfs

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Structural benches and foothills
Parent material: Kind—residuum and alluvium; source—welded rhyolitic tuff
Slope range: 2 to 15 percent
Elevation: 5,000 to 6,400 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 95 days

Typical Pedon Description

A—0 to 4 inches; yellowish brown (10YR 5/4) stony loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, very friable; many very fine, common fine, and few medium and coarse roots; many very fine and fine vesicular and interstitial pores; 20 percent fine gravel and 3 percent stones; neutral; clear smooth boundary.

Bt1—4 to 10 inches; yellowish brown (10YR 5/4) gravelly loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; many very fine tubular and interstitial pores; few thin clay films bridging sand grains and on faces of peds; 25 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.

Bt2—10 to 19 inches; light yellowish brown (10YR 6/4) extremely stony clay loam, dark yellowish brown (10YR 4/4) moist; strong fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; many very fine tubular pores; common thin clay films on faces of peds; 15 percent gravel, 30 percent cobbles, and 35 percent stones; slightly acid; abrupt irregular boundary.

R—19 inches; fractured welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 21 miles east of Cliffs; in the SW¼SE¼ of sec. 33, T. 9 S., R. 2 W.

Map unit in which located: Hurryback-Hat-Avtable association, 1 to 40 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—14 to 20 inches
Reaction—slightly acid or neutral

A horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry
Chroma—2 to 4 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist

Texture—gravelly loam, very gravelly loam, or cobbly clay loam in the upper part and extremely gravelly loam, very cobbly loam, or extremely stony clay loam in the lower part
Clay content—20 to 30 percent
Rock fragment content—35 to 85 percent

Babbington Series

Classification

Taxonomic class: Fine-loamy, mixed, mesic Aridic Calcic Argixerolls

Setting

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Landforms: Bottomlands and alluvial flats
Parent material: Kind—mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 0 to 3 percent
Elevation: 3,400 to 5,300 feet
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 130 days

Typical Pedon Description

A—0 to 4 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine vesicular and interstitial pores; 5 percent gravel; neutral; abrupt smooth boundary.
Bt1—4 to 13 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; strong medium prismatic structure parting to strong fine angular blocky; very hard, firm, sticky and plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores and few medium tubular pores; continuous moderately thick clay films on faces of peds and in pores; mildly alkaline; clear smooth boundary.
Bt2—13 to 29 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; many very fine and few fine tubular pores; many thin clay films on faces of peds and in pores; few medium-sized slightly effervescent soft masses of lime; moderately alkaline; clear wavy boundary.
Btk—29 to 42 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (2.5Y 4/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine pores; many thin clay films in pores; common lime veins that are moderately effervescent; moderately alkaline; clear wavy boundary.
2C—42 to 60 inches; light brownish gray (2.5Y 6/2) stratified loamy sand and very gravelly sand, grayish brown (2.5Y 5/2) moist; common medium faint light olive brown (2.5Y 5/4) mottles; massive, single grain; few fine roots; few fine tubular pores; 5 to 60 percent gravel; moderately alkaline.

Typical Pedon Location

Location in survey area: About 13 miles west of Reynolds; in the $SW^1/_4NW^1/_4$ of sec. 13, T. 2 S., R. 6 W.
Map unit in which located: Babbington-Beetville loams, 0 to 3 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—12 to 36 inches
Depth to sand and gravel—40 inches or more

Bt horizon:
Hue—10YR or 2.5Y
Chroma—2 or 3 dry or moist
Texture—clay loam or silty clay loam
Clay content—27 to 35 percent
Reaction (upper part)—neutral or mildly alkaline

Btk horizon:
Hue—10YR or 2.5Y
Value—5 or 6 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, loam, or silt loam
Clay content—24 to 32 percent
Rock fragment content—0 to 10 percent
Effervescence—slight or moderate
Reaction—mildly alkaline or moderately alkaline

2C horizon:
Hue—10YR to 5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Mottles—few or common and faint to prominent
Texture—stratified loamy sand to very gravelly sand, commonly with thin layers of medium-textured material

Effervescence—none to slight
Reaction—mildly alkaline or moderately alkaline

Barkley Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Duric Argixerolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Very slow
Landforms: Fan terraces, outwash terraces, and terrace escarpments
Parent material: Kind—residuum and slope alluvium; source—volcaniclastic sediment
Slope range: 2 to 30 percent
Elevation: 4,900 to 6,200 feet
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 95 days

Typical Pedon Description

A—0 to 7 inches; brown (10YR 4/3) stony loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; common very fine and fine vesicular and tubular pores; l0 percent gravel and 5 percent stones; neutral; clear smooth boundary.
Bt—7 to 14 inches; yellowish brown (10YR 5/4) clay loam, dark brown (10YR 3/3) moist; moderate fine angular blocky structure; hard, friable, sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds and in pores; 5 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.
Btq—l4 to 26 inches; light yellowish brown (10YR 6/4) gravelly sandy clay loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; hard, friable; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; common thin clay films on faces of peds and in pores; 15 percent durinodes; l5 percent gravel and 5 percent cobbles; mildly alkaline; clear smooth boundary.
Bq1—26 to 38 inches; yellowish brown (10YR 5/6) gravelly sandy loam, brown (7.5YR 4/4) moist; weak medium subangular blocky structure parting to weak fine granular; slightly hard, very friable; few very fine and fine roots; common very fine and fine interstitial pores; 20 percent durinodes; 25 percent gravel and 5 percent cobbles; mildly alkaline; clear wavy boundary.
2Bq2—38 to 48 inches; pink (7.5YR 8/4) discontinuous weakly cemented very gravelly sandy loam; moderate medium platy structure; extremely hard, firm, brittle; few very fine and fine roots in pockets; 30 percent gravel and 5 percent cobbles; mildly alkaline; abrupt wavy boundary.
2Bkq—48 to 60 inches; pink (7.5YR 8/4) consolidated gravelly sandy loam; massive; 20 percent gravel; slightly effervescent.

Typical Pedon Location

Location in survey area: About 4 1/2 miles east of Three Creek; in the NE 1/4 SE 1/4 of sec. 29, T. 15 S., R. 12 E.
Map unit in which located: Booford-Barkley complex, 8 to 45 percent slopes

Range in Characteristics

Profile:
Depth to weak cementation—20 to 40 inches

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—sandy clay loam or clay loam
Clay content—27 to 35 percent
Rock fragment content—5 to 15 percent
Reaction—neutral or mildly alkaline

Barnard Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Aridic Durixerolls

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Fan terraces
Parent material: Kind—mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 2 to 12 percent
Elevation: 4,400 to 5,050 feet

Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 110 days

Typical Pedon Description

A—0 to 6 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and fine vesicular and interstitial pores and few medium vesicular and interstitial pores; 10 percent gravel; neutral; clear smooth boundary.

Bt1—6 to 11 inches; brown (10YR 5/3) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine, fine, and medium roots; common very fine and fine tubular pores; common moderately thick clay films on faces of peds; 10 percent gravel; neutral; clear smooth boundary.

Bt2—11 to 23 inches; pale brown (10YR 6/3) clay, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate fine and medium angular blocky; hard, firm, very sticky and very plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; continuous thick clay films on faces of peds; 10 percent gravel; neutral; clear smooth boundary.

2Bkq—23 to 27 inches; light yellowish brown (10YR 6/4) fractured duripan; strong thin platy structure; extremely hard, very firm; fractures 1 to 3 centimeters apart; few very fine and fine roots; 35 percent gravel and 5 percent cobbles; mildly alkaline; clear smooth boundary.

2Bkqm—27 to 40 inches; light yellowish brown (10YR 6/4), continuous, strongly cemented duripan that has a thin indurated laminar cap; platy structure; extremely hard, extremely firm, brittle; violently effervescent; mildly alkaline; clear smooth boundary.

3C—40 to 60 inches; pale brown (10YR 6/3) very gravelly loam; massive; slightly sticky and slightly plastic; 40 percent gravel and 5 percent cobbles; mildly alkaline.

Typical Pedon Location

Location in survey area: About 18 miles southwest of Silver City; in the $SE^1/_4NW^1/_4$ of sec. 35, T. 6 S., R. 6 W.

Map unit in which located: Salisbury-Gacey-Barnard complex, 2 to 12 percent slopes

Range in Characteristics

Profile:
Depth to duripan—20 to 40 inches

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—silty clay loam or clay
Clay content—35 to 50 percent
Rock fragment content—0 to 15 percent
Effervescence (lower part)—none or slight
Reaction—neutral or mildly alkaline

Bauscher Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Pachic Ultic Argixerolls

Setting

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains and foothills
Parent material: Kind—residuum and alluvium; source—intermediate intrusive rock
Slope range: 5 to 35 percent
Elevation: 4,700 to 7,100 feet
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 95 days

Typical Pedon Description

A1—0 to 3 inches; dark grayish brown (10YR 4/2) sandy loam, very dark brown (10YR 2/2) moist; moderate thick platy structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and few fine interstitial pores; slightly acid; clear smooth boundary.

A2—3 to 8 inches; very dark grayish brown (10YR 3/2) sandy loam, very dark brown (10YR 2/2) moist;

moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine interstitial pores; few thin clay films on faces of peds; slightly acid; clear smooth boundary.

Bt1—8 to 20 inches; brown (10YR 4/3) sandy clay loam, very dark grayish brown (10YR 3/2) moist, moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common moderately thick clay films on faces of peds and in pores; slightly acid; gradual wavy boundary.

Bt2—20 to 30 inches; dark yellowish brown (10YR 4/4) sandy clay loam, dark brown (10YR 3/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few medium roots and common fine roots; many thin clay films on faces of peds; 5 percent fine gravel; slightly acid; clear wavy boundary.

BC—30 to 42 inches; light yellowish brown (10YR 6/4) gravelly coarse sandy loam, brown (10YR 4/3) moist; massive; few fine and medium roots; 25 percent fine gravel; neutral; clear wavy boundary.

Cr—42 inches; fractured, weathered granite; loamy coarse sand in cracks.

Typical Pedon Location

Location in survey area: About 11 miles northeast of Cliffs; in the NE$^1/_4$NW$^1/_4$ of sec. 26, T. 7 S., R. 5 W.

Map unit in which located: Vipont-Bauscher association, 8 to 60 percent slopes

Range in Characteristics

Profile:
Depth to soft bedrock—40 to 60 inches
Reaction—moderately acid to neutral
Base saturation (upper 30 inches)—50 to 75 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—loam or sandy clay loam
Clay content—18 to 30 percent
Rock fragment content—0 to 15 percent

BC horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—coarse sandy loam or gravelly coarse sandy loam
Clay content—10 to 15 percent
Rock fragment content—10 to 25 percent

Bedstead Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Abruptic Xerollic Durargids

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Tablelands and foothills
Parent material: Kind—silty alluvium; source—extrusive rock and volcanic ash
Slope range: 2 to 15 percent
Elevation: 3,600 to 5,500 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 51 degrees F
Frost-free period—85 to 130 days

Typical Pedon Description

A1—0 to 1 inch; pale brown (10YR 6/3) extremely stony silt loam, dark brown (10YR 3/3) moist; strong thick platy structure; slightly hard, very friable, sticky and slightly plastic; common fine and medium roots; many very fine and fine tubular and vesicular pores and few medium tubular and vesicular pores; 10 percent gravel and 10 percent stones; neutral; abrupt smooth boundary.

A2—1 inch to 6 inches; brown (10YR 5/3) stony silt loam, dark brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine interstitial and tubular pores; 10 percent cobbles and 10 percent stones; neutral; clear smooth boundary.

AB—6 to 11 inches; pale brown (10YR 6/3) cobbly silt loam, dark brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine interstitial and vesicular pores; few thin clay films on faces of peds; 20 percent cobbles and 10 percent stones; neutral; abrupt smooth boundary.

Bt—11 to 18 inches; brown (10YR 5/4) extremely

stony clay, brown (7.5YR 4/4) moist; strong fine and medium angular blocky structure; very hard, firm, sticky and plastic; common fine roots and few medium roots; continuous thick clay films on faces of peds and in pores; 20 percent cobbles and 50 percent stones; mildly alkaline; gradual wavy boundary.

Btk—18 to 21 inches; brown (7.5YR 5/4) extremely stony clay loam, brown (7.5YR 4/4) moist; strong fine subangular blocky structure; very hard, firm, sticky and plastic; few fine and medium roots; common moderately thick clay films on faces of peds; 20 percent cobbles and 50 percent stones; slightly effervescent; mildly alkaline; abrupt wavy boundary.

Bkqm—21 to 22 inches; white (10YR 8/2) continuous indurated duripan; platy structure; extremely hard, very firm, brittle; moderately effervescent; mildly alkaline; abrupt irregular boundary.

2R—22 inches; basalt.

Typical Pedon Location

Location in survey area: About 26 miles southwest of Riddle; in the NW1/4SW1/4 of sec. 8, T. 15 S., R. 2 W.

Map unit in which located: Bedstead-Arbidge association, 2 to 15 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—6 to 12 inches
Depth to calcium carbonates—12 to 24 inches
Depth to duripan—21 to 36 inches
Depth to bedrock—22 to 40 inches

Particle-size control section (weighted average):
Clay content—35 to 50 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Reaction—slightly acid or neutral

Bt and Btk horizons:
Value—4 to 6 dry, 3 to 5 moist
Chroma—4 to 6 dry or moist
Texture—very cobbly clay, extremely stony clay loam, or extremely stony clay
Rock fragment content—35 to 70 percent
Effervescence (lower part)—slight to strong
Reaction—slightly acid to mildly alkaline

Beetville Series

Classification

Taxonomic class: Coarse-loamy, mixed, mesic Fluventic Haploxerolls

Setting

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate
Landforms: Bottomlands
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 0 to 2 percent
Elevation: 3,400 to 4,650 feet
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—47 to 51 degrees F
Frost-free period—100 to 130 days

Typical Pedon Description

A—0 to 13 inches; grayish brown (2.5Y 5/2) loam, very dark grayish brown (2.5Y 3/2) moist; moderate thin platy structure; soft, very friable; many very fine and fine roots and common medium roots; many very fine and fine tubular and vesicular pores; neutral; abrupt smooth boundary.

2C1—13 to 29 inches; light yellowish brown (2.5Y 6/3) silt loam, olive brown (2.5Y 4/3) moist; common medium faint mottles that are dark grayish brown (10YR 4/2) dry; moderate medium platy structure; very hard, firm, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine tubular and vesicular pores; iron stains; neutral; abrupt wavy boundary.

3C2—29 to 44 inches; light gray (2.5Y 7/2) gravelly loamy sand, dark grayish brown (2.5Y 4/2) moist; massive; loose; common medium and fine roots; common very fine and fine tubular and interstitial pores; 20 percent fine gravel; neutral; abrupt smooth boundary.

4C3—44 to 60 inches; light olive brown (2.5Y 5/3) silt loam, olive brown (2.5Y 4/3) moist; few fine and medium distinct dark yellowish brown (10YR 4/4) mottles; massive; slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores and few medium interstitial pores; neutral.

Typical Pedon Location

Location in survey area: About 13 miles west of Reynolds; in the NE¼NW¼ of sec. 24, T. 3 S., R. 6 W.
Map unit in which located: Babbington-Beetville loams, 0 to 3 percent slopes

Range in Characteristics

Profile:
Mottles—distinct or prominent below a depth of 40 inches
Texture—stratified loam, silt loam, sandy loam, and loamy sand
Reaction—neutral to moderately alkaline

Particle-size control section (weighted average):
Clay content—8 to 18 percent
Rock fragment content—0 to 25 percent

A horizon:
Hue—10YR or 2.5Y
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist

C horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry
Chroma—2 or 3 dry or moist

Bieber Series

Classification

Taxonomic class: Clayey, montmorillonitic, mesic, shallow Aridic Durixerolls

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Very slow
Landforms: Fan piedmonts
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 2 to l5 percent
Elevation: 4,600 to 5,200 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 48 degrees F
Frost-free period—85 to 105 days

Typical Pedon Description

A—0 to 4 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 fine roots; 15 percent gravel; slightly acid; clear wavy boundary.
Bt1—4 to 11 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, very sticky and very plastic; few very fine and fine roots; common very fine interstitial pores; many moderately thick clay films on faces of peds; 10 percent gravel; slightly acid; abrupt wavy boundary.
Bt2—11 to 17 inches; yellowish brown (10YR 5/4) clay, brown (10YR 4/3) moist; strong fine and medium prismatic structure; very hard, very firm, very sticky and plastic; few very fine roots; few fine continuous interstitial pores; continuous thick clay films on faces of peds and in pores; 5 percent gravel; neutral; clear wavy boundary.
Bkqm1—17 to 20 inches; very pale brown (10YR 7/4) continuous indurated duripan, dark yellowish brown (10YR 4/4) moist; strong thick platy structure; very hard, extremely firm, brittle; few fine filaments of lime that are slightly effervescent; mildly alkaline; clear smooth boundary.
2Bkqm2—20 to 60 inches; very pale brown (10YR 8/4), continuous, strongly cemented to weakly cemented duripan; massive; slightly effervescent.

Typical Pedon Location

Location in survey area: About 14 miles northwest of Silver City; in the NE¼SE¼ of sec. 6, T. 4 S., R. 5 W.
Map unit in which located: Bieber-Hurryback association, 2 to 40 percent slopes

Range in Characteristics

Profile:
Depth to duripan—8 to 20 inches

Particle-size control section (weighted average):
Clay content—35 to 45 percent
Rock fragment content—5 to 30 percent

A horizon:
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—clay loam, clay, or gravelly clay
Clay content—30 to 45 percent
Rock fragment content—5 to 35 percent
Reaction—slightly acid to moderately alkaline

Bigflat Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Aridic Palexerolls

Setting

Depth class: Deep and very deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Landforms: Calderas and foothills
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 35 percent
Elevation: 5,000 to 6,100 feet
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 95 days

Typical Pedon Description

A—0 to 6 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate fine granular; slightly hard, very friable; many very fine and fine roots; many very fine interstitial and tubular pores; neutral; clear smooth boundary.

E—6 to 9 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine tubular pores; mildly alkaline; abrupt smooth boundary.

Bt1—9 to 14 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/4) moist; strong fine prismatic structure parting to strong fine angular blocky; hard, firm, sticky and plastic; common very fine and fine roots; many very fine tubular pores; continuous thick clay films on faces of peds and in pores; moderately alkaline; clear smooth boundary.

Bt2—14 to 19 inches; light yellowish brown (10YR 6/4) silty clay, dark yellowish brown (10YR 4/4) moist; weak fine prismatic structure parting to strong fine angular blocky; hard, firm, sticky and plastic; common very fine and few fine roots; common very fine tubular pores; continuous thick clay films on faces of peds and in pores; common fine rounded black iron-manganese concretions; moderately alkaline; clear wavy boundary.

Bk1—19 to 40 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; many very fine tubular pores; strongly effervescent; strongly alkaline; clear smooth boundary.

Bk2—40 to 48 inches; very pale brown (10YR 7/3) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable; few very fine and fine roots; common very fine tubular pores; 5 percent gravel; strongly effervescent; strongly alkaline; abrupt wavy boundary.

Bkq—48 to 60 inches; white (10YR 8/2) extremely gravelly loamy sand, very pale brown (10YR 7/3) moist; strong thick platy structure; extremely hard, extremely firm; few very fine and fine matted roots; many very fine and fine interstitial pores; 15 percent cobbles and 50 percent gravel (cemented and indurated duripan fragments); strongly effervescent; strongly alkaline.

Typical Pedon Location

Location in survey area: About 7 miles east of Three Creek; in the NE$^{1}/_{4}$NW$^{1}/_{4}$ of sec. 9, T. 16 S., R. 10 E.
Map unit in which located: Heckison-Bigflat silt loams, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—15 to 30 inches
Depth to abrupt textural change—5 to 10 inches

Particle-size control section (weighted average):
Clay content—40 to 55 percent

A horizon:
Value—2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—clay, silty clay, or cobbly clay
Rock fragment content—0 to 15 percent
Reaction—neutral to moderately alkaline

Bk horizon:
Value—7 or 8 dry, 5 to 7 moist
Chroma—2 to 4 dry or moist

Texture—fine sandy loam, gravelly fine sandy loam, or gravelly loam
Clay content—14 to 24 percent
Rock fragment content—0 to 35 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Bkq horizon:
Value—6 to 8 dry, 5 to 7 moist
Chroma—2 to 6 dry or moist
Texture—very gravelly sandy loam or extremely gravelly loamy sand
Clay content—4 to 14 percent
Rock fragment content—35 to 60 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Blackleg Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Typic Durixerolls

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Outwash terraces and fan terraces
Parent material: Kind—mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 2 to 30 percent
Elevation: 5,000 to 7,100 feet
Climatic data (average annual):
Precipitation—12 to 17 inches
Air temperature—38 to 45 degrees F
Frost-free period—50 to 95 days

Typical Pedon Description

A—0 to 6 inches; brown (10YR 5/3) stony loam, very dark brown (10YR 2/2) moist; weak thin platy structure parting to moderate fine granular; slightly hard, very friable; many very fine and fine roots and common medium and coarse roots; many very fine and fine interstitial pores; 5 percent gravel, 5 percent cobbles, and 1 percent stones; neutral; clear smooth boundary.

BA—6 to 13 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable; slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; common very fine and fine tubular pores; 5 percent gravel and 5 percent cobbles; slightly acid; clear wavy boundary.

Bt1—13 to 23 inches; brown (10YR 5/3) cobbly clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure parting to strong fine granular; hard, firm, sticky and plastic; common very fine, fine, medium, and coarse roots; common fine tubular pores; many moderately thick clay films on faces of peds; 10 percent gravel and 20 percent cobbles; slightly acid; abrupt wavy boundary.

Bt2—23 to 29 inches; yellowish brown (10YR 5/4) very cobbly clay, dark brown (7.5YR 4/4) moist; strong medium and coarse prismatic structure parting to strong medium angular blocky; very hard, very firm, very sticky and very plastic; common fine and medium roots; common fine tubular pores; continuous thick clay films on faces of peds; 10 percent gravel and 25 percent cobbles; neutral; clear wavy boundary.

Btq—29 to 36 inches; yellowish brown (10YR 5/4) very cobbly clay, dark brown (10YR 4/3) moist; strong fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine tubular pores; common moderately thick clay films on faces of peds; 20 percent gravel and 30 percent cobbles; thin pendants of silica on undersides of rock fragments; neutral; clear wavy boundary.

Bqm—36 to 50 inches; light yellowish brown (10YR 6/4) continuous indurated duripan, strong brown (7.5YR 4/6) moist; massive; extremely hard, brittle; neutral.

Typical Pedon Location

Location in survey area: About 9 miles southeast of Riddle; in the SE¼NE¼ of sec. 11, T. 15 S., R. 4 E.
Map unit in which located: Wickahoney-Blackleg-Thacker association, 2 to 30 percent slopes

Range in Characteristics

Profile:
Depth to duripan—20 to 40 inches

Particle-size control section (weighted average):
Clay content—35 to 50 percent
Rock fragment content—35 to 75 percent

A horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt and Btq horizons:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—cobbly clay loam, cobbly clay, or gravelly clay loam in the upper and very cobbly clay, very gravelly clay loam, extremely cobbly clay, very cobbly clay loam, or very gravelly clay in the lower part
Reaction—slightly acid to mildly alkaline

Bqm horizon:
Effervescence—none to strong

Blackwell Series

Classification

Taxonomic class: Fine-loamy, mixed Typic Cryaquolls

Setting

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately slow
Landforms: Bottomlands
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 0 to 3 percent
Elevation: 5,100 to 5,900 feet
Climatic data (average annual):
Precipitation—15 to 18 inches
Air temperature—40 to 42 degrees F
Frost-free period—50 to 70 days

Typical Pedon Description

A1—0 to 5 inches; very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; weak fine subangular blocky structure; slightly hard, very friable; many very fine and fine roots and few medium roots; 5 percent gravel; neutral; clear smooth boundary.
A2—5 to 15 inches; dark gray (10YR 4/1) loam, black (10YR 2/1) moist; weak fine and medium subangular blocky structure; hard, very friable, slightly sticky and plastic; few very fine and fine roots; few very fine and fine interstitial pores; 5 percent gravel; neutral; clear smooth boundary.
Cg—15 to 25 inches; light brownish gray (10YR 6/2) gravelly sandy clay loam, very dark gray (10YR 3/1) moist; few fine distinct mottles that are light yellowish brown (2.5Y 6/4) moist; massive; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few fine tubular pores; 15 percent gravel; slightly acid; gradual smooth boundary.
2C—25 to 60 inches; light gray (10YR 7/2) stratified gravelly coarse sand and clay loam, dark grayish brown (10YR 4/2) moist; massive; few very fine and fine roots; 5 to 20 percent gravel; neutral.

Typical Pedon Location

Location in survey area: About 9 1/2 miles southeast of Cliffs; in the NW1/4NW1/4 of sec. 20, T. 10 S., R. 4 W.
Map unit in which located: Paynecreek-Northcastle-Blackwell association, 0 to 8 percent slopes

Range in Characteristics

Profile:
Texture—loam, silt loam, clay loam, sandy clay loam, or gravelly sandy clay loam
Depth to mottles—15 to 25 inches
Reaction—neutral or slightly acid
Base saturation—50 to 65 percent

Particle-size control section (weighted average):
Clay content—18 to 30 percent

A horizon:
Value—3 or 4 dry, 1 to 3 moist
Chroma—1 or 2 dry or moist

Cg horizon:
Hue—5Y to 10YR
Value—5 to 8 dry, 3 to 6 moist
Chroma—1 to 2 dry or moist

Bluecreek Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Haplic Durixeralfs

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Fan terraces
Parent material: Kind—mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 1 to 10 percent
Elevation: 5,300 to 5,500 feet
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 90 days

Typical Pedon Description

E—0 to 2 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 3/3) moist; moderate medium platy structure; slightly hard, very friable; common very fine roots and few fine and medium roots; many very fine tubular pores; slightly acid; clear smooth boundary.

Bw—2 to 8 inches; brown (10YR 5/3) loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; slightly acid; clear wavy boundary.

Bt1—8 to 16 inches; light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 3/4) moist; moderate fine prismatic structure parting to strong fine and medium subangular blocky; very hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; many very fine and common fine tubular pores; continuous moderately thick clay films on faces of peds and in pores; slightly acid; gradual smooth boundary.

Bt2—16 to 20 inches; pale brown (10YR 6/3) clay, dark yellowish brown (10YR 4/4) moist; strong very fine and fine subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots and common medium roots; common very fine tubular pores; many thick clay films on faces of peds and in pores; slightly acid; clear wavy boundary.

2Bq—20 to 31 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; hard, friable; few very fine roots; common fine interstitial and tubular pores; 20 percent fine and medium durinodes; neutral; abrupt smooth boundary.

2Bkqm—31 to 41 inches; white (10YR 8/2) nearly continuous weakly cemented sandy loam, grayish brown (10YR 5/2) moist; massive; very hard, very firm, brittle; few very fine and fine roots; few very fine interstitial pores; 10 percent gravel; strongly effervescent; seams and soft masses of lime; moderately alkaline; clear smooth boundary.

2Bq′—41 to 60 inches; light yellowish brown (2.5Y 6/4) weakly cemented gravelly loamy sand, olive brown (2.5Y 4/4) moist, common medium faint pale yellow (2.5Y 7/4) mottles; massive; very hard, firm; common very fine interstitial pores; 15 percent fine gravel; mildly alkaline.

Typical Pedon Location

Location in survey area: About 5 1/2 miles northwest of Riddle; in the SW1/4SW1/4 of sec. 10, T. 14 S., R. 2 E.

Map unit in which located: Northcastle-Bluecreek-Yatahoney loams, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to duripan—20 to 40 inches

E horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—clay, sandy clay, or clay loam
Clay content—35 to 50 percent
Rock fragment content—0 to 15 percent
Reaction—slightly acid to mildly alkaline

Bkqm horizon:
Effervescence—none to strong

Bq′ horizon:
Hue—10YR or 2.5Y
Value—5 to 8 dry, 4 or 5 moist
Chroma—2 to 6 dry or moist
Mottles—none to common
Texture—gravelly loamy sand, very gravelly sand, or sand
Rock fragment content—10 to 45 percent
Reaction—neutral or mildly alkaline

Booford Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Typic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landforms: Foothills, fan terraces, and terrace escarpments
Parent material: Kind—alluvium and residuum; source—volcanic ash sediment
Slope range: 2 to 45 percent

Elevation: 5,200 to 6,200 feet
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—40 to 45 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

A1—0 to 4 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine vesicular and interstitial pores; 10 percent gravel; slightly acid; clear smooth boundary.
A2—4 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; common very fine and fine tubular pores and few medium tubular pores; 10 percent gravel, slightly acid; clear smooth boundary.
Bt1—10 to 14 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine angular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores and few medium tubular pores; many moderately thick clay films on faces of peds and in pores; 15 percent gravel; neutral; gradual smooth boundary.
Bt2—14 to 25 inches; pale brown (10YR 6/3) clay, dark yellowish brown (10YR 4/4) moist; moderate fine prismatic structure parting to strong fine and medium angular blocky; extremely hard, very firm, sticky and plastic; common very fine and fine roots; many thick clay films on faces of peds and in pores; neutral; clear smooth boundary.
Cr—25 inches; light gray (10YR 7/2) weathered tuffite; few very fine roots; thin stone line at a depth of 33 inches; violently effervescent.

Typical Pedon Location

Location in survey area: About 2 miles northeast of Three Creek; in the NW$^1/_4$NE$^1/_4$ of sec. 26, T. 15 S., R. 11 E.
Map unit in which located: Booford-Barkley complex, 8 to 45 percent slopes

Range in Characteristics

Profile:
Depth to soft bedrock—20 to 40 inches
Reaction—slightly acid or neutral

A horizon:
Value—4 or 5 dry, 2 or 3 moist

Bt1 horizon:
Hue—7.5YR or 10YR
Value—4 or 5 moist
Chroma—2 to 3 dry or moist
Texture—clay loam or gravelly clay loam
Clay content—35 to 40 percent
Rock fragment content—10 to 25 percent

Bt2 horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—clay or gravelly clay
Clay content—40 to 55 percent
Rock fragment content—0 to 25 percent

Booneville Series

Classification

Taxonomic class: Loamy-skeletal, mixed Argic Pachic Cryoborolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains
Parent material: Kind—slope alluvium and colluvium; source—basalt
Slope range: 8 to 40 percent
Elevation: 5,200 to 7,400 feet
Climatic data (average annual):
Precipitation—22 to 32 inches
Air temperature—35 to 39 degrees F
Frost-free period—30 to 60 days

Typical Pedon Description

Oe—2 inches to 0; partially decomposed needles and twigs.
A1—0 to 5 inches; dark brown (10YR 3/3) loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable; few fine and common medium roots; few very fine and fine vesicular and interstitial pores; 10 percent gravel; slightly acid; clear smooth boundary.
A2—5 to 14 inches; dark brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak medium and coarse subangular blocky structure parting to weak fine and medium granular; soft, very friable; common fine, medium, and coarse roots; few very fine and fine vesicular pores; 15 percent gravel, 10 percent cobbles, and

3 percent stones; slightly acid; clear wavy boundary.
Bt1—14 to 30 inches; yellowish brown (10YR 5/4) very cobbly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, sticky and plastic; few medium and common coarse roots; few very fine, fine, and medium tubular pores; common thin clay films on faces of peds and rock fragments; 15 percent gravel, 25 percent cobbles, and 15 percent stones; slightly acid; gradual wavy boundary.
Bt2—30 to 60 inches; brown (7.5YR 5/4) extremely cobbly clay loam, dark brown (7.5YR 3/4) moist; moderate medium angular blocky structure; hard, very friable, sticky and plastic; few medium roots; few fine and medium tubular pores; common thin clay films on faces of peds and rock fragments; 20 percent gravel, 35 percent cobbles, and 20 percent stones; slightly acid.

Typical Pedon Location

Location in survey area: About 3 miles southwest of Silver City; in the NW¼SW¼ of sec. 11, T. 5 S., R. 4 W.
Map unit in which located: Southmount-Booneville complex, 5 to 40 percent slopes

Range in Characteristics

Particle-size control section (weighted average):
Clay content—22 to 33 percent
Rock fragment content—35 to 60 percent

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—slightly acid or neutral

Bt1 horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—very cobbly loam, very gravelly loam, or very cobbly clay loam
Rock fragment content—35 to 60 percent
Reaction—moderately acid or slightly acid

Bt2 horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—extremely cobbly clay loam, very cobbly clay loam, or very cobbly loam
Rock fragment content—40 to 80 percent
Reaction—moderately acid or slightly acid

Boulder Lake Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Aquic Chromoxererts

Setting

Depth class: Very deep
Drainage class: Very poorly drained
Permeability: Very slow
Landforms: Alluvial flats
Parent material: Kind—alluvium; source—basalt
Slope range: 0 to 2 percent
Elevation: 5,300 to 6,150 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

A1—0 to 2 inches; grayish brown (10YR 5/2) clay, dark grayish brown (10YR 4/2) moist; strong fine and medium granular structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine vesicular pores; neutral; clear smooth boundary.
Bwss1—2 to 10 inches; grayish brown (10YR 5/2) clay, brown (10YR 4/3) moist; strong coarse prismatic structure parting to strong medium angular blocky; very hard, very friable, very sticky and very plastic; common very fine and fine roots and few medium roots; common slickensides on peds; neutral; gradual smooth boundary.
Bwss2—10 to 22 inches; light brownish gray (10YR 6/2) clay, brown (10YR 4/3) moist, few fine distinct mottles that are very dark brown (10YR 2/2) moist; moderate medium prismatic structure parting to strong fine and medium angular blocky; very hard, very firm, very sticky and very plastic; common fine roots and few very fine and medium roots; common slickensides on peds; mildly alkaline; gradual wavy boundary.
Bwss3—22 to 33 inches; pale brown (10YR 6/3) clay, brown (10YR 4/3) moist, few fine distinct mottles that are very dark brown (10YR 2/2) moist; moderate medium angular blocky structure; very hard, very firm, very sticky and very plastic; common fine and few very fine roots; common slickensides on peds; moderately alkaline; gradual smooth boundary.
Bwss4—33 to 45 inches; pale brown (10YR 6/3) clay, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; very hard, firm,

very sticky and plastic; few fine roots; few very fine tubular pores; few slickensides on peds; moderately alkaline; diffuse smooth boundary.
Bk—45 to 60 inches; very pale brown (10YR 7/3) silty clay loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; hard, friable, sticky and plastic; few fine tubular pores; slightly effervescent, few fine soft masses of lime; moderately alkaline.

Typical Pedon Location

Location in survey area: About 14 miles northwest of Riddle; in the NW1/4SW1/4 of sec. 29, T. 13 S., R. 1 E.
Map unit in which located: Boulder Lake-Yatahoney association, 0 to 10 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—30 inches or more
Cracks at surface—3 to 6 inches apart and as much as 2 inches wide

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid to mildly alkaline

Bw horizon:
Value—5 or 6 dry
Chroma—2 to 4 dry or moist
Mottles—few or common and fine or medium
Texture—clay or silty clay
Clay content—40 to 60 percent
Reaction—neutral to moderately alkaline

Brace Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Xerollic Durargids

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Foothills and structural benches
Parent material: Kind—residuum and alluvium; source—welded rhyolitic tuff
Slope range: 1 to 12 percent
Elevation: 5,400 to 6,000 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days

Typical Pedon Description

A—0 to 6 inches; light brownish gray (10YR 6/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many fine vesicular pores; 10 percent gravel; neutral; clear smooth boundary.
BA—6 to 10 inches; pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common fine tubular pores; 15 percent gravel; mildly alkaline; clear smooth boundary.
Bt—10 to 19 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist, moderate fine and medium angular blocky structure; hard, firm, sticky and plastic; few fine, medium, and coarse roots; few fine tubular pores; many thin clay films on faces of peds and in pores; 15 percent gravel and 5 percent cobbles; mildly alkaline; clear wavy boundary.
Bkq—19 to 23 inches; pale brown (10YR 6/3) cobbly clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots; few fine tubular pores; few thin clay films in pores; 15 percent gravel and 15 percent cobbles; common coatings of lime and silica; slightly effervescent; moderately alkaline; abrupt wavy boundary.
Bkqm—23 to 26 inches; white (10YR 8/2) indurated duripan; platy structure; extremely hard, brittle; 65 percent rock fragments; strongly effervescent; strongly alkaline; abrupt wavy boundary.
2R—26 inches; fractured, welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 22 miles southeast of Riddle; in the NE1/4SW1/4 of sec. 36, T. 15 S., R. 6 E.
Map unit in which located: Brace-Freshwater complex, 1 to 15 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—16 to 25 inches
Depth to duripan—20 to 37 inches
Depth to bedrock—22 to 40 inches

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Texture—clay loam or gravelly clay loam
Clay content—27 to 35 percent
Rock fragment content—5 to 35 percent
Reaction—mildly alkaline or moderately alkaline

Bkq horizon:
Value—6 to 8 dry, 4 to 7 moist
Chroma—3 or 4 dry or moist
Texture—gravelly loam, gravelly clay loam, or cobbly clay loam
Rock fragment content—10 to 35 percent
Effervescence—slight to violent
Reaction—moderately alkaline or strongly alkaline

Bregar Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Xerollic Haplargids

Setting

Depth class: Very shallow or shallow
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains and foothills
Parent material: Kind—residuum; source—basalt
Slope range: 5 to 25 percent
Elevation: 5,000 to 7,350 feet
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

A—0 to 4 inches; yellowish brown (10YR 5/4) stony loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable; common very fine and fine roots; 50 percent gravel, 15 percent cobbles, and 1 percent stones; neutral; clear smooth boundary.
Bt—4 to 8 inches; light yellowish brown (10YR 6/4) extremely gravelly loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky; few very fine and fine roots; common thin clay films on faces of peds and on rock fragments; 45 percent gravel and 25 percent cobbles; neutral; abrupt irregular boundary.
R—8 inches; fractured basalt.

Typical Pedon Location

Location in survey area: About 16 miles northwest of Silver City; in the NW¼SW¼ of sec. 16, T. 4 S., R. 4 W.
Map unit in which located: Parkay-Bregar complex, 5 to 25 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—5 to 12 inches
Reaction—slightly acid to mildly alkaline

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly clay loam, extremely gravelly loam, or extremely cobbly loam
Clay content—25 to 35 percent
Rock fragment content—50 to 75 percent

Briabbit Series

Classification

Taxonomic class: Coarse-loamy, mixed, mesic Xerollic Camborthids

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Foothills and structural benches
Parent material: Kind—mixed eolian sand and alluvium; source—vitric tuff and lacustrine deposits
Slope range: 3 to 15 percent
Elevation: 2,300 to 4,500 feet
Climatic data (average annual):
Precipitation—8 to 10 inches

Air temperature—48 to 53 degrees F
Frost-free period—105 to 150 days

Typical Pedon Description

A—0 to 3 inches; brown (10YR 4/3) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure parting to weak fine subangular blocky; soft, very friable; common very fine, fine, and medium roots and few coarse roots; common very fine and fine vesicular pores; 5 percent gravel; neutral; clear smooth boundary.
Bw—3 to 10 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; moderate thick platy structure parting to moderate fine and medium subangular blocky; slightly hard, very friable; few very fine, medium, and coarse roots; common fine tubular pores; 5 percent gravel; mildly alkaline; clear wavy boundary.
Bk—10 to 22 inches; pale brown (10YR 6/3) cobbly sandy loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable; few very fine and fine roots; 10 percent gravel and 10 percent cobbles; coatings of lime on rock fragments; strongly effervescent; strongly alkaline; abrupt irregular boundary.
Cr—22 inches; soft, highly fractured vitric tuff; fractures partly filled with lime.

Typical Pedon Location

Location in survey area: About 5 miles northeast of Murphy; in the NE$^1/_4$SW$^1/_4$ of sec. 12, T. 2 S., R. 3 W.
Map unit in which located: Hardtrigger-Briabbit-Tindahay complex, 1 to 15 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—10 to 20 inches
Depth to soft bedrock—20 to 40 inches

A horizon:
Hue—10YR or 2.5Y
Value—4 to 7 dry, 2 to 5 moist
Chroma—2 to 4 dry or moist

Bw horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam or sandy loam
Clay content—7 to 18 percent
Rock fragment content—0 to 15 percent
Reaction—neutral or mildly alkaline

Bk horizon:
Hue—10YR or 2.5Y
Value—5 to 8 dry, 3 to 6 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, cobbly sandy loam, or gravelly sandy loam
Clay content—4 to 15 percent
Rock fragment content—5 to 25 percent
Effervescence—strong or violent
Reaction—mildly alkaline to strongly alkaline

Bruncan Series

Classification

Taxonomic class: Loamy, mixed, mesic, shallow Xerollic Durargids

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Calderas, structural benches, tablelands, and buttes
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 0 to 15 percent
Elevation: 2,700 to 5,450 feet
Climatic data (average annual):
Precipitation—8 to 13 inches
Air temperature—45 to 52 degrees F
Frost-free period—85 to 145 days

Typical Pedon Description

A—0 to 3 inches; pale brown (10YR 6/3) stony loam, brown (10YR 4/3) moist; weak thin platy structure parting to moderate fine granular; soft, very friable; common very fine and fine roots; common very fine interstitial and vesicular pores; 10 percent gravel and 5 percent stones; moderately alkaline; clear smooth boundary.
Bt—3 to 5 inches; pale brown (10Y 6/3) loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots and few medium roots; common very fine interstitial pores; common thin clay films on faces of peds; 10 percent gravel; moderately alkaline; clear smooth boundary.
Btk1—5 to 8 inches; very pale brown (10YR 7/3) clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots;

common very fine interstitial and tubular pores; common thin clay films on faces of peds; 10 percent gravel; strongly effervescent; moderately alkaline; clear smooth boundary.

Btk2—8 to 11 inches; very pale brown (10YR 7/3) clay 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 roots and few medium roots; few very fine interstitial pores; few thin clay films on faces of peds; 10 percent gravel; violently effervescent; strongly alkaline; clear smooth boundary.

Bkq—11 to 14 inches; very pale brown (10YR 7/3) very cobbly loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable; common very fine roots and few fine and medium roots; 20 percent gravel and 40 percent cobbles; violently effervescent; strongly alkaline; abrupt wavy boundary.

Bkqm—14 to 20 inches; very pale brown (10YR 7/4) to white (10YR 8/2) continuous indurated siliceous laminae 1 millimeter thick over white (10YR 8/1) continuous strongly cemented extremely cobbly loamy sand, light yellowish brown (10YR 6/4) moist; massive; 50 percent cobbles and 25 percent gravel; violently effervescent; abrupt smooth boundary.

2R—20 inches; basalt.

Typical Pedon Location

Location in survey area: About 9 1/2 miles northwest of Grasmere; in the NW1/4SW1/4 of sec. 3, T. 11 S., R. 4 E.

Map unit in which located: Bruncan-Hardtrigger-Buncelvoir complex, 1 to 8 percent slopes

Range in Characteristics

Profile:
Depth to duripan—11 to 20 inches
Depth to bedrock—13 to 32 inches

Particle-size control section (weighted average):
Clay content—18 to 30 percent
Rock fragment content—10 to 35 percent

A horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Reaction—neutral to moderately alkaline

Bt horizon:
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Texture—loam, silt loam, clay loam, silty clay loam, or gravelly clay loam
Clay content—22 to 33 percent
Rock fragment content—5 to 25 percent
Reaction—neutral to strongly alkaline

Bkq horizon:
Value—6 or 7 dry, 5 or 6 moist
Chroma—3 to 6 dry or moist
Texture—very gravelly loam, very cobbly loam, or very cobbly silt loam
Rock fragment content—35 to 60 percent
Effervescence—strong or violent
Reaction—moderately alkaline to very strongly alkaline

Brunzell Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Typic Haploxerolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Outwash terraces
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 3 to 30 percent
Elevation: 5,000 to 5,800 feet
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 95 days

Typical Pedon Description

A1—0 to 3 inches; brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; soft, very friable; many very fine and fine roots and few medium and coarse roots; common very fine and fine vesicular and interstitial pores and few medium vesicular and interstitial pores; 15 percent gravel and 5 percent cobbles; slightly acid; clear smooth boundary.

AB—3 to 9 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; few very fine, fine, and medium tubular pores; 10 percent gravel and 5 percent cobbles; slightly acid; clear smooth boundary.

Bw1—9 to 15 inches; dark yellowish brown (10YR 4/4) very gravelly clay loam, dark brown (10YR 3/3)

moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; few very fine, fine, and medium tubular pores; 25 percent gravel and 10 percent cobbles; slightly acid; clear smooth boundary.

Bw2—15 to 25 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, dark yellowish brown (10YR 3/4) moist, strong fine subangular blocky structure; hard, friable, sticky and plastic; few very fine, fine, and medium roots; common very fine, fine, and medium tubular and interstitial pores; few thin clay films in pores; 30 percent gravel and 15 percent cobbles; neutral; clear wavy boundary.

2C1—25 to 40 inches; white (10YR 8/2) very cobbly sandy loam, light yellowish brown (10YR 6/4) moist; massive; few medium roots; common very fine, fine, medium, and coarse tubular and irregular pores; few thin pressure faces; 30 percent gravel and 20 percent cobbles; slightly acid; clear smooth boundary.

3C2—40 to 60 inches; very pale brown (10YR 7/4) extremely cobbly sandy clay loam, brownish yellow (10YR 6/6) moist; massive; common very fine, fine, and medium irregular pores and few coarse irregular pores; common thin pressure faces; 45 percent gravel and 25 percent cobbles; moderately acid.

Typical Pedon Location

Location in survey area: About 8 1/2 miles west of Silver City; in the NE 1/4 NW 1/4 of sec. 2, T. 5 S., R. 5 W.

Map unit in which located: Brunzell-Doodlelink-Threek complex, 2 to 45 percent slopes

Range in Characteristics

Profile:
Reaction—moderately acid to neutral

Particle-size control section (weighted average):
Clay content—18 to 30 percent
Rock fragment content—5 to 70 percent

A and AB horizons:
Value—4 or 5 dry
Chroma—2 or 3 dry or moist

Bw horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly clay loam, very gravelly sandy clay loam, or very cobbly clay loam
Clay content—24 to 32 percent
Rock fragment content—35 to 60 percent

C horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 to 6 dry or moist
Texture—very cobbly sandy loam, extremely cobbly sandy loam, or extremely cobbly sandy clay loam
Clay content—10 to 22 percent
Rock fragment content—40 to 80 percent

Budlewis Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Typic Durixerolls

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Calderas, tablelands, and foothills
Parent material: Kind—silty alluvium and loess; source—extrusive rock and volcanic ash
Slope range: 1 to 10 percent
Elevation: 5,000 to 6,300 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 95 days

Typical Pedon Description

A—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine vesicular and interstitial pores; 10 percent gravel; neutral; abrupt smooth boundary.

Bt1—9 to 14 inches; brown (10YR 4/3) silty clay loam, dark brown (10YR 3/3) moist; moderate fine and medium angular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular and interstitial pores; common moderately thick clay films on faces of peds and in pores; 10 percent gravel; neutral; clear smooth boundary.

Bt2—14 to 24 inches; light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to strong fine and medium angular blocky; very hard, firm, very sticky and very plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; many thick clay films on faces of peds and in pores; 5 percent gravel

and 5 percent cobbles; mildly alkaline; clear smooth boundary.
Bkq—24 to 29 inches; very pale brown (10YR 7/3) gravelly loam, light yellowish brown (10YR 6/4) moist; platy structure; extremely hard, very firm, slightly sticky and slightly plastic; few very fine and fine roots; 20 percent gravel; strongly effervescent; strongly alkaline; gradual wavy boundary.
Bkqm—29 to 30 inches; slightly fractured indurated duripan; platy structure; extremely hard, extremely firm, brittle; strongly effervescent; clear wavy boundary.
2R—30 inches; welded tuff.

Typical Pedon Location

Location in survey area: About 2 miles southeast of Three Creek; in the SW$^{1}/_{4}$SE$^{1}/_{4}$ of sec. 11, T. 16 S., R. 11 E.
Map unit in which located: Sharesnout-Budlewis complex, 1 to 15 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—4 to 9 inches
Depth to duripan—20 to 39 inches
Depth to bedrock—21 to 40 inches
Depth to calcium carbonates—16 to 29 inches

Particle-size control section (weighted average):
Clay content—35 to 50 percent
Rock fragment content—0 to 15 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—silty clay loam, silty clay, or clay
Clay content—37 to 55 percent
Rock fragment content—0 to 10 percent
Reaction—neutral or mildly alkaline

Bkq horizon:
Value—7 or 8 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—gravelly loam, silty clay loam, or clay loam
Clay content—24 to 35 percent
Rock fragment content—0 to 25 percent
Effervescence—strong or violent
Reaction—mildly alkaline to strongly alkaline

Buncelvoir Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Haplargids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landforms: Calderas and tablelands
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 6 percent
Elevation: 4,800 to 5,400 feet
Climatic data (average annual):
Precipitation—8 to 13 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 105 days

Typical Pedon Description

A—0 to 4 inches; light gray (10YR 7/2) loam, brown (10YR 4/3) moist; weak thin platy structure parting to moderate fine granular; soft, very friable; common very fine and fine roots and few medium roots; common very fine and fine vesicular pores; 10 percent gravel; mildly alkaline; clear smooth boundary.
AB—4 to 7 inches; light gray (10YR 7/2) loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; few thin clay films on faces of peds; 10 percent gravel; mildly alkaline; clear smooth boundary.
Bt—7 to 15 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure parting to strong fine angular blocky; hard, firm, sticky and very plastic; common very fine and fine roots and few medium roots; common very fine tubular pores; continuous moderately thick clay films on faces of peds; 10 percent gravel; mildly alkaline; clear smooth boundary.
Btk—15 to 19 inches; very pale brown (10YR 7/4) clay loam, yellowish brown (10YR 5/6) moist; moderate fine and medium angular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; few very fine tubular pores; common

moderately thick clay films on faces of peds; 10 percent gravel; strongly effervescent; moderately alkaline; clear smooth boundary.
Bkq1—19 to 26 inches; very pale brown (10YR 7/3) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; weak medium subangular blocky structure; slightly hard, friable; few very fine and fine roots; few very fine tubular pores and few fine vesicular pores; 15 percent gravel; 10 percent durinodes; violently effervescent; moderately alkaline; clear wavy boundary.
Bkq2—26 to 60 inches; very pale brown (10YR 7/3) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; few very fine roots; 30 percent gravel; 10 percent durinodes; violently effervescent; strongly alkaline.

Typical Pedon Location

Location in survey area: About 11 miles northwest of Grasmere; in the NW1/4NE1/4 of sec. 33, T. 10 S., R. 4 E.
Map unit in which located: Bruncan-Hardtrigger-Buncelvoir complex, 1 to 8 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—10 to 18 inches

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam, clay, or clay loam
Clay content—35 to 45 percent
Rock fragment content—0 to 10 percent

Btk horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—4 to 6 dry or moist
Texture—silty clay loam or clay loam
Clay content—30 to 40 percent
Rock fragment content—0 to 10 percent
Effervescence—slight or strong

Bkq horizon:
Value—6 or 7 dry, 4 to 7 moist
Chroma—3 to 6 dry or moist
Texture—fine sandy loam, gravelly fine sandy loam, or gravelly sandy loam
Clay content—8 to 18 percent
Rock fragment content—5 to 30 percent
Durinode content—0 to 20 percent
Reaction—moderately alkaline or strongly alkaline

Catchell Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Abruptic Xerollic Durargids

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Very slow
Landforms: Foothills and structural benches
Parent material: Kind—colluvium and alluvium; source—welded rhyolitic tuff
Slope range: 3 to 25 percent
Elevation: 3,800 to 4,900 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—46 to 50 degrees F
Frost-free period—95 to 120 days

Typical Pedon Description

E—0 to 4 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine vesicular and interstitial pores; 10 percent gravel; slightly acid; clear smooth boundary.
BE—4 to 8 inches; grayish brown (10YR 5/2) gravelly loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; many very fine and fine vesicular and interstitial pores; common thin clay films on faces of peds; 15 percent gravel; slightly acid; abrupt smooth boundary.
Bt1—8 to 15 inches; brown (7.5YR 5/4) clay, brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to strong medium angular blocky; very hard, very firm, very sticky and very plastic; common very fine and fine roots and few medium roots; few very fine tubular pores; continuous thick clay films on faces of peds; 10 percent gravel; neutral; clear smooth boundary.
Bt2—15 to 18 inches; reddish yellow (7.5YR 6/6) clay loam, strong brown (7.5YR 4/6) moist; moderate medium subangular blocky structure; hard, firm, sticky and very plastic; few very fine, fine, and medium roots; common very fine tubular pores; continuous thick clay films on faces of peds; 10 percent gravel; neutral; clear smooth boundary.
Bkq—18 to 25 inches; very pale brown (10YR 7/4) gravelly loam, light yellowish brown (10YR 6/4)

moist; massive; few very fine and fine roots; few very fine and fine interstitial pores; 35 percent gravel; violently effervescent; moderately alkaline; gradual smooth boundary.
Bkqm—25 to 26 inches; very pale brown (10YR 8/3), strongly cemented duripan that has a discontinuous laminar cap; massive; very hard, very firm, brittle; violently effervescent; clear wavy boundary.
2R—26 inches; fractured welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 12 miles southeast of Silver City; in the SW¼NE¼ of sec. 36, T. 5 S., R. 2 W.
Map unit in which located: Catchell-Longcreek complex, 3 to 25 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—17 to 21 inches
Depth to duripan—20 to 38 inches
Depth to bedrock—25 to 40 inches

E horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Texture—clay, silty clay, or clay loam
Clay content—35 to 50 percent
Rock fragment content—0 to 10 percent
Reaction—neutral to moderately alkaline

Bkq horizon:
Value—6 or 7 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—loam or gravelly loam
Clay content—10 to 25 percent
Rock fragment content—0 to 35 percent
Effervescence—strong or violent

Chayson Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Typic Durixerolls

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Structural benches, tablelands, plug domes, and fan terraces
Parent material: Kind—alluvium and loess; source—extrusive rock and volcanic ash
Slope range: 2 to 10 percent
Elevation: 5,450 to 6,050 feet
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—42 to 44 degrees F
Frost-free period—70 to 85 days

Typical Pedon Description

A—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate thin platy structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine vesicular and interstitial pores; 5 percent gravel; mildly alkaline; clear smooth boundary.
Bt1—4 to 17 inches; dark brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2) moist; weak fine prismatic structure parting to moderate fine angular blocky; hard, friable, sticky and plastic; common very fine, fine, and medium roots and few coarse roots; common very fine and fine tubular pores and few medium tubular pores; common moderately thick clay films on faces of peds and in pores; 10 percent gravel; mildly alkaline; clear smooth boundary.
Bt2—17 to 27 inches; brown (10YR 5/3) clay loam, dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure parting to weak fine angular blocky; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds and in pores; 10 percent gravel; mildly alkaline; clear smooth boundary.
Bk—27 to 37 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 5/3) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; 15 percent gravel; violently effervescent; moderately alkaline; gradual wavy boundary.
Bkqm—37 to 45 inches; very pale brown (10YR 7/3) continuous indurated duripan with laminar cap; massive; extremely hard, very firm, brittle; 5 percent stones, 15 percent cobbles, and 20 percent gravel; violently effervescent; gradual wavy boundary.
2R—45 inches; moderately weathered basalt.

Typical Pedon Location

Location in survey area: About 9 miles northeast of Three Creek; in the NE¼SE¼ of sec. 19, T. 14 S., R. 12 E.
Map unit in which located: Chayson-Merlin complex, 2 to 12 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—8 to 27 inches
Depth to duripan—20 to 40 inches
Depth to bedrock—45 to 60 inches

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—4 to 6 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, gravelly clay loam, or gravelly loam
Clay content—24 to 34 percent
Rock fragment content—5 to 25 percent
Reaction—mildly alkaline or moderately alkaline

Bk horizon:
Value—5 to 8 dry, 4 to 7 moist
Chroma—2 to 4 dry or moist
Texture—gravelly loam or very gravelly loam
Clay content—20 to 27 percent
Rock fragment content—20 to 40 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Chilcott Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Abruptic Xerollic Durargids

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Calderas, pediments, and fan terraces
Parent material: Kind—loess overlying mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 1 to 12 percent
Elevation: 3,100 to 5,350 feet
Climatic data (average annual):
Precipitation—8 to 12 inches
Air temperature—45 to 51 degrees F
Frost-free period—90 to 130 days

Typical Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) loam; dark brown (10YR 3/3) moist; moderate thick platy structure parting to moderate medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; many very fine roots and common fine and medium roots; many very fine tubular pores; neutral; clear smooth boundary.
E—4 to 7 inches; light gray (10YR 7/2) very fine sandy loam, dark brown (10YR 4/3) moist; moderate coarse subangular blocky structure; hard, very friable, slightly plastic; common very fine and fine roots and few medium roots; many fine and medium vesicular pores; mildly alkaline; abrupt smooth boundary.
Bt—7 to 11 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; moderate fine columnar structure; very hard, firm, sticky and very plastic; common very fine, fine, and medium roots; few very fine tubular pores; continuous thick clay films on faces of peds, in pores, and bridging mineral grains; mildly alkaline; clear smooth boundary.
Btk1—11 to 17 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak fine prismatic structure parting to strong fine angular blocky; very hard, friable, sticky and plastic; common very fine, fine, and medium roots; common very fine tubular pores; continuous thick clay films on faces of peds and in pores; slightly effervescent; moderately alkaline; clear wavy boundary.
2Btk2—17 to 21 inches; white (10YR 8/2) silt loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure parting to strong fine subangular blocky; slightly hard, very friable; common very fine and fine roots and few medium roots; common very fine and fine vesicular and tubular pores; common moderately thick clay films on faces of peds; strongly effervescent; strongly alkaline; clear wavy boundary.
2Bk—21 to 31 inches; light gray (10YR 7/2) silt loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, very friable; common very fine vesicular and tubular pores; strongly effervescent; strongly alkaline; abrupt wavy boundary.
2Bkqm—31 to 40 inches; white (10YR 8/2), continuous, indurated duripan that has a very thin laminar cap; massive; extremely hard, very firm, brittle; 20 percent gravel; violently effervescent; clear wavy boundary.
2Ck—40 to 60 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; massive; 10

percent gravel; strongly effervescent; moderately alkaline.

Typical Pedon Location

Location in survey area: About 16 miles northwest of Reynolds; in the SW¼NW¼ of sec. 13, T. 1 S., R. 6 W.
Map unit in which located: Chilcott-Lamonta complex, 2 to 12 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—3 to 10 inches
Depth to calcium carbonates—10 to 30 inches
Depth to duripan—20 to 40 inches

E horizon:
Value—6 or 7 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—silty clay, silty clay loam, clay loam, or clay
Clay content—35 to 60 percent
Effervescence (lower part)—slight or strong
Reaction (lower part)—mildly alkaline to strongly alkaline

2Bk horizon:
Hue—7.5YR or 10YR
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 to 4 dry or moist
Texture—loam, silt loam, or fine sandy loam
Clay content—12 to 27 percent
Rock fragment content—0 to 10 percent
Effervescence—strong or violent
Reaction—mildly alkaline to strongly alkaline

Chinabutte Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Argixerolls

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Slow
Landforms: Foothills
Parent material: Kind—residuum and colluvium; source—andesite or rhyolite
Slope range: 3 to 45 percent
Elevation: 3,700 to 5,350 feet
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 125 days

Typical Pedon Description

A—0 to 5 inches; brown (10YR 5/3) very stony loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine interstitial pores; 35 percent gravel, 10 percent cobbles, and 15 percent stones; neutral; clear smooth boundary.
Bt1—5 to 8 inches; brown (10YR 4/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine tubular pores; few moderately thick clay films on faces of peds; 40 percent gravel and 15 percent cobbles; slightly acid; clear smooth boundary.
Bt2—8 to 15 inches; brown (10YR 5/3) extremely cobbly clay loam, brown (10YR 4/3) moist; weak very fine and fine subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; few very fine tubular pores; many moderately thick clay films on faces of peds; 30 percent gravel and 50 percent cobbles; slightly acid; abrupt wavy boundary.
R—15 inches; slightly fractured rhyolite.

Typical Pedon Location

Location in survey area: About 18 miles south of Murphy; in the NE¼SE¼ of sec. 26, T. 5 S., R. 2 W.
Map unit in which located: Chinabutte-Alibi very stony loams, 3 to 45 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—14 to 20 inches
Reaction—neutral or slightly acid

Particle-size control section (weighted average):
Clay content—27 to 34 percent
Rock fragment content—35 to 75 percent

A horizon:
Value—4 or 5 dry
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR

Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly clay loam, very cobbly clay loam, extremely cobbly clay loam, or extremely gravelly clay loam
Clay content—27 to 38 percent
Rock fragment content—35 to 80 percent

Cleavage Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Argixerolls

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Foothills and mountains
Parent material: Kind—residuum and colluvium; source—welded rhyolitic tuff
Slope range: 2 to 50 percent
Elevation: 4,800 to 6,800 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—38 to 45 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

A—0 to 3 inches; grayish brown (10YR 5/2) stony loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable; many very fine and fine roots; common very fine and fine interstitial and vesicular pores; 30 percent gravel and 1 percent stones; slightly acid; clear smooth boundary.
BA—3 to 8 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine tubular and vesicular pores; few thin clay films on faces of peds; 35 percent gravel; neutral; clear smooth boundary.
Bt1—8 to 13 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; common moderately thick clay films on faces of peds; 45 percent gravel; neutral; clear wavy boundary.
Bt2—13 to 18 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium angular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds; 55 percent gravel; neutral; abrupt wavy boundary.
R—18 inches; fractured welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 21 miles southeast of Silver City; in the $SE^1/_4SE^1/_4$ of sec. 2, T. 8 S., R. 2 W.
Map unit in which located: Cleavage-Avtable-Monasterio complex, 1 to 35 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—14 to 20 inches
Reaction—neutral or mildly alkaline

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly clay loam, very cobbly clay loam, or extremely cobbly clay loam
Clay content—27 to 35 percent
Rock fragment content—50 to 80 percent

Coonskin Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic Xerollic Durorthids

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Calderas and tablelands
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 20 percent
Elevation: 2,800 to 4,900 feet

Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—46 to 52 degrees F
Frost-free period—95 to 145 days

Typical Pedon Description

A—0 to 2 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable; many very fine and fine roots and few medium and coarse roots; many very fine and fine vesicular pores; 5 percent gravel; mildly alkaline; clear smooth boundary.
Bw—2 to 7 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/3) moist; moderate medium platy structure parting to weak fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine tubular pores; 5 percent gravel; mildly alkaline; clear smooth boundary.
Bk—7 to 16 inches; very pale brown (10YR 7/3) cobbly silt loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; 10 percent gravel and 10 percent cobbles; violently effervescent; moderately alkaline; clear wavy boundary.
Bkq—16 to 30 inches; white (10YR 8/2) discontinuous weakly cemented very cobbly fine sandy loam, very pale brown (10YR 7/4) moist; massive; hard, firm; few very fine and fine roots; few fine tubular pores; 20 percent gravel, mainly indurated duripan fragments, and 25 percent cobbles; violently effervescent; moderately alkaline; abrupt smooth boundary.
Bkqm—30 to 40 inches; very pale brown (10YR 7/3) to yellow (10YR 7/6) continuous indurated prominent siliceous laminae 1 to 2 centimeters thick over very pale brown (10YR 8/3) to light yellowish brown (10YR 6/4) continuous indurated very thick plates; violently effervescent; lime is segregated in common fine seams and pendants.

Typical Pedon Location

Location in survey area: About 27 miles northeast of Grasmere; in the SW$^1/_4$SE$^1/_4$ of sec. 10, T. 11 S., R. 9 E.
Map unit in which located: Owsel-Coonskin-Orovada complex, 1 to 5 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—7 to 15 inches
Depth to duripan—20 to 30 inches
Depth to bedrock—40 inches or more

Particle-size control section (weighted average):
Clay content—8 to 18 percent
Rock fragment content—35 to 60 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Reaction—mildly alkaline or moderately alkaline

Bw horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—14 to 22 percent
Rock fragment content—5 to 15 percent
Reaction—mildly alkaline to strongly alkaline

Bkq horizon:
Value—6 to 8 dry, 5 to 7 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly loam, very cobbly fine sandy loam, or very gravelly fine sandy loam
Rock fragment content—35 to 60 percent
Durinode content—0 to 40 percent
Reaction—moderately alkaline to very strongly alkaline

Coser Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Typic Palexerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Very slow
Landforms: Mountains and foothills
Parent material: Kind—residuum and slope alluvium; source—latite
Slope range: 5 to 25 percent
Elevation: 4,800 to 6,400 feet
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 95 days

Typical Pedon Description

A—0 to 4 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak medium and fine subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine roots and common medium roots; common very fine and fine

vesicular, interstitial, and tubular pores; 10 percent gravel and 5 percent cobbles; neutral; abrupt smooth boundary.

Bt1—4 to 13 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; strong fine prismatic structure parting to moderate fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine, fine, and medium roots; common very fine tubular pores; 5 percent gravel and 5 percent cobbles; many thick clay films on faces of peds and in pores; neutral; clear smooth boundary.

Bt2—13 to 19 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 3/4) moist; strong medium and fine angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine, fine, and medium roots; common very fine tubular pores; 5 percent gravel and 5 percent cobbles; many thick clay films on faces of peds and in pores; neutral; clear smooth boundary.

2Bt3—19 to 31 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine tubular pores; 15 percent gravel; common thin clay films on faces of peds and in pores; moderately alkaline; clear smooth boundary.

2Cr—31 inches; light gray (10YR 7/2) decomposing latite, light yellowish brown (10YR 6/4) moist; strongly alkaline; strongly effervescent.

Typical Pedon Location

Location in survey area: About 16 miles southwest of Silver City; in the NE¼NW¼ of sec. 5, T. 7 S., R. 5 W.

Map unit in which located: Sharesnout-Coser-Threek complex, 5 to 35 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—3 to 8 inches
Depth to soft bedrock—20 to 40 inches

Particle-size control section (weighted average):
Clay content—40 to 60 percent
Rock fragment content—5 to 20 percent

Bt horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—clay or gravelly clay
Clay content—40 to 55 percent
Rock fragment content—0 to 20 percent

2Bt horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Texture—clay or gravelly clay loam
Clay content—28 to 45 percent
Rock fragment content—10 to 25 percent
Reaction—neutral to moderately alkaline

Cottle Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Xerollic Haplargids

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Foothills
Parent material: Kind—residuum and colluvium; source—welded rhyolitic tuff or andesite
Slope range: 4 to 40 percent
Elevation: 2,800 to 5,100 feet
Climatic data (average annual):
Precipitation—9 to 13 inches
Air temperature—47 to 52 degrees F
Frost-free period—95 to 140 days

Typical Pedon Description

A—0 to 5 inches; light brownish gray (10YR 6/2) stony loam, dark grayish brown (10YR 4/2) moist; moderate thin platy structure parting to weak very fine granular; soft, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine vesicular and tubular pores; 35 percent gravel, 15 percent cobbles, and 5 percent stones; mildly alkaline; clear smooth boundary.

AB—5 to 8 inches; light brownish gray (10YR 6/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure parting to weak very fine granular; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and few fine tubular pores; 35 percent gravel, 10 percent cobbles, and 5 percent stones; neutral; clear wavy boundary.

Bt—8 to 11 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 4/3) moist; moderate very fine and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine roots and few medium roots;

common very fine tubular pores; few thin brown clay films on faces of peds and in pores; 35 percent gravel, 10 percent cobbles, and 10 percent stones; neutral; clear wavy boundary.

Btkq—11 to 16 inches; brown (7.5YR 4/4) extremely gravelly clay loam, dark brown (7.5YR 3/3) moist; moderate very fine and fine subangular blocky structure; very hard, firm, sticky and plastic; common fine roots; few very fine tubular pores; many thin and moderately thick clay films on faces of peds and in pores; 65 percent gravel, 10 percent cobbles, and 10 percent stones; thin coatings of carbonates and silica on rock fragments; mildly alkaline; abrupt broken boundary.

R—16 inches; rhyolite.

Typical Pedon Location

Location in survey area: About 1 mile northwest of Reynolds; in the SE$^1/_4$SE$^1/_4$ of sec. 30, T. 2 S., R. 3 W.

Map unit in which located: Mackey-Cottle association, 10 to 45 percent slopes

Range in Characteristics

Profile:

Depth to bedrock—10 to 20 inches

A horizon:

Value—6 to 8 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist

Bt and Btkq horizons:

Hue—7.5YR or 10YR
Value—4 to 8 dry, 3 to 6 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly loam, very gravelly clay loam, extremely gravelly loam, or extremely gravelly clay loam
Clay content—22 to 35 percent
Rock fragment content—35 to 85 percent
Reaction (upper part)—neutral or mildly alkaline

Dehana Series

Classification

Taxonomic class: Fine-loamy, mixed Argic Pachic Cryoborolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains
Parent material: Kind—slope alluvium and colluvium; source—extrusive rock and volcanic ash
Slope range: 2 to 35 percent
Elevation: 5,200 to 7,600 feet
Climatic data (average annual):
Precipitation—18 to 25 inches
Air temperature—36 to 40 degrees F
Frost-free period—30 to 60 days

Typical Pedon Description

A1—0 to 7 inches; dark brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to moderate fine granular; slightly hard, very friable; many very fine and fine roots, common medium roots, and few coarse roots; common very fine and fine tubular pores and few medium tubular pores; 30 percent gravel; moderately acid; clear smooth boundary.

A2—7 to 20 inches; dark brown (10YR 4/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine tubular pores and few medium tubular pores; 25 percent gravel; moderately acid; gradual smooth boundary.

Bt1—20 to 42 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; common thin clay films on faces of peds; 20 percent gravel; moderately acid; gradual wavy boundary.

Bt2—42 to 60 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; weak medium platy structure parting to moderate fine and medium angular blocky; hard, firm, sticky and plastic; few very fine and fine roots; common fine tubular pores; many moderately thick clay films on faces of peds; 20 percent gravel; moderately acid.

Typical Pedon Location

Location in survey area: About 9$^1/_2$ miles northeast of Cliffs; in the SE$^1/_4$SE$^1/_4$ of sec. 28, T. 8 S., R. 4 W.

Map unit in which located: Dehana-Nagitsy association, 2 to 50 percent slopes

Range in Characteristics

Profile:

Base saturation—60 to 75 percent
Reaction—slightly acid or moderately acid

Particle-size control section (weighted average):
Clay content—20 to 26 percent
Rock fragment content—20 to 35 percent

A horizon:
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist

Bt horizon:
Value—3 to 6 dry, 2 to 4 moist
Chroma—1 to 4 dry or moist
Texture—gravelly loam or gravelly clay loam
Clay content—18 to 30 percent
Rock fragment content—15 to 35 percent

Deshler Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Pachic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landforms: Pediments
Parent material: Kind—residuum; source—lacustrine deposits
Slope range: 3 to 15 percent
Elevation: 4,250 to 5,200 feet
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 120 days

Typical Pedon Description

A1—0 to 7 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; strong thick platy structure; slightly hard, very friable, slightly sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial and vesicular pores; 5 percent gravel; neutral; clear wavy boundary.
A2—7 to 15 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure parting to moderate fine granular; slightly hard, very friable, sticky and plastic; few very fine, fine, and medium roots; common very fine interstitial pores; neutral; clear wavy boundary.
BA—15 to 18 inches; grayish brown (10YR 5/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; common very fine interstitial pores; few thin clay films on faces of peds; neutral; abrupt wavy boundary.
Bt—18 to 30 inches; grayish brown (2.5Y 5/2) clay, very dark grayish brown (2.5Y 3/2) moist; strong medium prismatic structure; very hard, very firm, very sticky and very plastic; few very fine roots; common fine interstitial pores; many thick clay films on faces of peds and in pores; neutral; gradual wavy boundary.
BC—30 to 39 inches; light gray (2.5Y 7/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, sticky and plastic; few very fine roots; common fine interstitial pores; common thin clay films in pores; mildly alkaline; clear wavy boundary.
Cr—39 inches; semiconsolidated tuffaceous lacustrine material.

Typical Pedon Location

Location in survey area: About 11 miles northwest of Silver City; in the NW$^1/_4$SE$^1/_4$ of sec. 9, T. 4 S., R. 5 W.
Map unit in which located: Succor-Gooding-Deshler complex, 2 to 35 percent slopes

Range in Characteristics

Profile:
Depth to soft bedrock—20 to 40 inches

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—10YR or 2.5Y
Value—5 or 6 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, silty clay loam, or clay
Clay content—35 to 60 percent
Reaction—neutral or mildly alkaline

Deunah Series

Classification

Taxonomic class: Very-fine, montmorillonitic, frigid Abruptic Durixeralfs

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Very slow

Landforms: Tablelands
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 5 percent
Elevation: 5,200 to 6,150 feet
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days

Typical Pedon Description

E—0 to 3 inches; pale brown (10YR 6/3) very stony loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure parting to weak thin platy; slightly hard, very friable; many very fine and fine roots; common very fine tubular pores; 5 percent cobbles and 10 percent stones; moderately acid; clear smooth boundary.

EB—3 to 7 inches; pale brown (10YR 6/3) clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine interstitial and tubular pores; 5 percent cobbles and 5 percent stones; slightly acid; abrupt smooth boundary.

2Bt—7 to 22 inches; brown (10YR 5/3) clay, dark yellowish brown (10YR 4/4) moist; moderate coarse prismatic structure parting to strong medium subangular blocky; very hard, very firm, very sticky and very plastic; common very fine and fine roots and few medium roots; few very fine tubular pores; many thick clay films on faces of peds and in pores; 5 percent cobbles and 5 percent stones; neutral; clear smooth boundary.

2Bkq—22 to 25 inches; light yellowish brown (10YR 6/4) clay, strong brown (7.5YR 5/6) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; 5 percent cobbles and 5 percent stones; slightly effervescent; neutral; abrupt smooth boundary.

2Bkqm—25 to 28 inches; white (10YR 8/2) continuous indurated duripan; platy structure; extremely hard, very firm, brittle; slightly effervescent; abrupt wavy boundary.

3R—28 inches; slightly fractured basalt.

Typical Pedon Location

Location in survey area: About 19 miles northwest of Grasmere; in the NE¼SE¼ of sec. 14, T. 10 S., R. 2 E.
Map unit in which located: Deunah-Yatahoney-Lostvalley complex, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—2 to 10 inches
Depth to duripan—20 to 34 inches
Depth to bedrock—22 to 40 inches

E horizon:
Value—3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid to neutral

EB horizon:
Value—3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—silt loam, clay loam, or silty clay loam
Clay content—18 to 30 percent
Rock fragment content—0 to 15 percent
Reaction—slightly acid or neutral

2Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Clay content—60 to 70 percent
Rock fragment content—0 to 10 percent
Reaction—slightly acid to mildly alkaline

Diawell Series

Classification

Taxonomic class: Loamy, mixed, mesic, shallow Haploxerollic Durargids

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Fan piedmonts and fan terraces
Parent material: Kind—mixed alluvium; source—intermediate intrusive rock and vitric tuff
Slope range: 2 to 20 percent
Elevation: 3,200 to 4,300 feet
Climatic data (average annual):
Precipitation—8 to 11 inches
Air temperature—48 to 51 degrees F
Frost-free period—110 to 135 days

Typical Pedon Description

A—0 to 3 inches; pale brown (10YR 6/3) gravelly sandy clay loam, brown (10YR 4/3) moist; moderate fine granular structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine vesicular

pores; 25 percent gravel; neutral; clear smooth boundary.
BA—3 to 6 inches; pale brown (10YR 6/3) gravelly sandy clay loam, brown (10YR 4/3) moist; moderate medium granular structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine vesicular pores; 30 percent gravel; neutral; clear smooth boundary.
Bt—6 to 11 inches; light yellowish brown (10YR 6/4) gravelly sandy clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; many thin clay films on faces of peds and in pores; 30 percent gravel; neutral; clear smooth boundary.
Bkq—11 to 20 inches; very pale brown (10YR 7/3) gravelly fine sandy loam, pale brown (10YR 6/3) moist; weak medium subangular blocky structure; soft, very friable; few very fine, fine, and medium roots; few very fine tubular pores; 20 percent durinodes; 20 percent gravel; violently effervescent; mildly alkaline; abrupt smooth boundary.
Bkqm—20 to 22 inches; very pale brown (10YR 7/4) strongly cemented continuous duripan, yellowish brown (10YR 5/4) moist; massive; very hard, very firm; 35 percent gravel; violently effervescent; clear smooth boundary.
2Bk1—22 to 30 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable; 15 percent gravel; strongly effervescent; moderately alkaline; gradual smooth boundary.
2Bk2—30 to 50 inches; light yellowish brown (10YR 6/4) gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable; 15 percent gravel; strongly effervescent; moderately alkaline; gradual smooth boundary.
3Ck—50 to 60 inches; light yellowish brown (10YR 6/4) very gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable; 50 percent gravel; slightly effervescent; mildly alkaline.

Typical Pedon Location

Location in survey area: About 5 miles south of Murphy; in the SE$^1/_4$SE$^1/_4$ of sec. 21, T. 3 S., R. 2 W.
Map unit in which located: Diawell-McKeeth association, 2 to 20 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—10 to 14 inches
Depth to duripan—14 to 20 inches

Particle-size control section (weighted average):
Clay content—18 to 30 percent
Rock fragment content—15 to 35 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Bt horizon:
Value—5 or 6 dry
Chroma—3 or 4 dry or moist
Texture—gravelly sandy clay loam, gravelly clay loam, or clay loam
Clay content—27 to 35 percent
Rock fragment content—5 to 35 percent
Reaction—neutral or mildly alkaline

Bkq horizon:
Value—6 or 7 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—gravelly fine sandy loam or gravelly sandy loam
Clay content—10 to 18 percent
Rock fragment content—15 to 35 percent
Reaction—neutral or mildly alkaline

Bk horizon:
Value—6 or 7 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—stratified very gravelly loamy sand and gravelly sandy loam
Clay content—4 to 10 percent
Rock fragment content—15 to 50 percent
Reaction—mildly alkaline or moderately alkaline

Dishpan Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Aridic Calcic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Calderas and foothills
Parent material: Kind—alluvium and loess; source—basalt and volcanic ash

Slope range: 1 to 8 percent
Elevation: 5,300 to 5,950 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days

Typical Pedon Description

A—0 to 4 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine interstitial and vesicular pores; neutral; clear smooth boundary.
Bt—4 to 13 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; many very fine and fine tubular and interstitial pores; many thin clay films on faces of peds; neutral; clear smooth boundary.
Btk—13 to 16 inches; light yellowish brown (10YR 6/4) clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine roots and few very fine and medium roots; common very fine interstitial and tubular pores; common thin clay films on faces of peds; 5 percent gravel; violently effervescent; mildly alkaline; clear smooth boundary.
Bkq—16 to 28 inches; very pale brown (10YR 8/3) very cobbly fine sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable; few very fine, fine, and medium roots; 35 percent gravel and 20 percent cobbles; coatings of lime and silica as much as 1 centimeter thick on rock fragments; violently effervescent; moderately alkaline; abrupt wavy boundary.
2R—28 inches; fractured basalt; coatings of lime and silica.

Typical Pedon Location

Location in survey area: About 22 miles west of Three Creek; in the NW¼NE¼ of sec. 23, T. 15 S., R. 7 E.
Map unit in which located: Larioscamp-Dishpan-Brace loams, 1 to 12 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—10 to 20 inches
Depth to bedrock—20 to 40 inches

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Rock fragment content—0 to 10 percent
Reaction—neutral to mildly alkaline

Bt horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—clay loam, gravelly clay loam, or silty clay loam
Clay content—27 to 35 percent
Rock fragment content—5 to 20 percent
Reaction—neutral to moderately alkaline

Bkq horizon:
Value—6 to 8 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly fine sandy loam, very cobbly sandy loam, or very gravelly sandy loam
Rock fragment content—35 to 60 percent
Reaction—moderately alkaline or strongly alkaline

Dollarhide Series

Classification

Taxonomic class: Loamy-skeletal, mixed Lithic Cryoborolls

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Mountains
Parent material: Kind—residuum and colluvium; source—intermediate intrusive and quartzitic metamorphic rock
Slope range: 15 to 75 percent
Elevation: 6,000 to 7,800 feet
Climatic data (average annual):
Precipitation—16 to 18 inches
Air temperature—37 to 39 degrees F
Frost-free period—40 to 60 days

Typical Pedon Description

A—0 to 5 inches; dark grayish brown (10YR 4/2) very stony loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; soft, very friable; slightly sticky and slightly plastic; many very fine and fine interstitial pores; 25 percent gravel, 10 percent cobbles, and 10 percent stones; neutral; clear smooth boundary.
Bw1—5 to 10 inches; dark brown (10YR 4/3)

extremely cobbly loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure parting to moderate fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine interstitial pores and common fine tubular pores; 35 percent gravel and 25 percent cobbles; neutral; clear wavy boundary.

Bw2—10 to 13 inches; dark yellowish brown (10YR 4/4) extremely cobbly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine interstitial pores and few fine tubular pores; 40 percent gravel and 30 percent cobbles; neutral; abrupt irregular boundary.

R—13 inches; fractured quartzitic metamorphic rock.

Typical Pedon Location

Location in survey area: About 8 miles northeast of Cliffs; in the SE$^1/_4$SW$^1/_4$ of sec. 3, T. 8 S., R. 5 W.

Map unit in which located: Dollarhide-Rock outcrop complex, 15 to 75 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches
Reaction—neutral or mildly alkaline

Particle-size control section (weighted average):
Clay content—8 to 18 percent
Rock fragment content—50 to 75 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

B horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—extremely cobbly loam or extremely cobbly fine sandy loam

Doodlelink Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Pachic Ultic Haploxerolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains
Parent material: Kind—slope alluvium and colluvium; source—extrusive rock and volcanic ash
Slope range: 5 to 45 percent
Elevation: 5,000 to 7,200 feet
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—40 to 44 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

A—0 to 6 inches; dark grayish brown (10YR 4/2) gravelly loam, black (10YR 2/1) moist; weak thin platy structure parting to weak fine granular; slightly hard, very friable; many very fine and fine roots and common medium and coarse roots; many very fine and fine interstitial pores; 30 percent gravel; neutral; clear smooth boundary.

Bw1—6 to 14 inches; dark brown (10YR 4/3) very gravelly loam, very dark brown (10YR 2/2) moist; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; few very fine and fine tubular and interstitial pores; 35 percent gravel and 5 percent cobbles; neutral; clear wavy boundary.

Bw2—14 to 25 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine interstitial pores; 40 percent gravel and 5 percent cobbles; neutral; clear wavy boundary.

Bw3—25 to 40 inches; pale brown (10YR 6/3) very gravelly clay loam, brown (10YR 4/3) moist; moderate medium and fine subangular blocky structure; common very fine, fine, and medium roots; common very fine and fine tubular and interstitial pores; 40 percent gravel and 10 percent cobbles; few thin clay films on faces of peds; neutral; clear irregular boundary.

2C—40 to 60 inches; light yellowish brown (10YR 6/4) extremely gravelly clay loam, dark yellowish brown (10YR 4/4) moist; massive; sticky and plastic; few very fine and fine roots and common medium roots; common fine tubular pores; 50 percent gravel, 10 percent cobbles, and 5 percent stones; neutral.

Typical Pedon Location

Location in survey area: About 16 miles southeast of Riddle; in the SE$^1/_4$SE$^1/_4$ of sec. 19, T. 16 S., R. 5 E.

Map unit in which located: Doodlelink-Sharesnout-Parkay association, 3 to 50 percent slopes

Range in Characteristics

Profile:
Base saturation in upper 30 inches—55 to 75 percent

Particle-size control section (weighted average):
Clay content—20 to 30 percent
Rock fragment content—40 to 80 percent

A and Bw1 horizons:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist

Bw2, Bw3, and C horizons:
Value—4 to 6 dry, 3 or 4 moist
Chroma—1 to 4 dry or moist
Texture—very gravelly sandy loam, very gravelly loam, extremely gravelly loam, or extremely gravelly clay loam
Clay content—18 to 35 percent
Rock fragment content—40 to 80 percent

Dougal Series

Classification

Taxonomic class: Loamy, mixed, mesic Lithic Xerollic Haplargids

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Landforms: Structural benches and foothills
Parent material: Kind—residuum; source—welded rhyolitic tuff and andesite
Slope range: 2 to 20 percent
Elevation: 4,000 to 5,450 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—85 to 115 days

Typical Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) stony sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to weak thin platy; slightly hard, very friable, slightly sticky; many very fine and fine roots and few medium roots; common very fine and fine vesicular and interstitial pores; 5 percent gravel and 1 percent stones; neutral; clear smooth boundary.
AB—4 to 8 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and common fine and medium roots; common very fine and fine interstitial and tubular pores; few thin clay films on faces of peds; 5 percent gravel; slightly acid; clear smooth boundary.
Bt—8 to 16 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; strong medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine tubular and interstitial pores; common thin and moderately thick clay films on faces of peds and bridging sand grains; 10 percent gravel; slightly acid; abrupt wavy boundary.
R—16 inches; fractured welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 29 miles west of Grasmere; in the SW$^{1}/_{4}$SE$^{1}/_{4}$ of sec. 22, T. 12 S., R. 1 W.
Map unit in which located: Dougal-Bruncan stony sandy loams, 2 to 20 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—7 to 16 inches

A horizon:
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 or 3 dry

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6 dry or moist
Texture—sandy clay loam, gravelly sandy clay loam, or gravelly clay loam
Clay content—20 to 30 percent
Rock fragment content—10 to 35 percent

Dranyon Series

Classification

Taxonomic class: Fine-loamy, mixed Argic Pachic Cryoborolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains

Parent material: Kind—colluvium and slope alluvium; source—welded rhyolitic tuff
Slope range: 4 to 40 percent
Elevation: 5,850 to 7,600 feet
Climatic data (average annual):
Precipitation—20 inches or more
Air temperature—36 to 40 degrees F
Frost-free period—30 to 60 days

Typical Pedon Description

Oe—1 inch to 0; partially decomposed leaves and twigs.
A—0 to 8 inches; very dark grayish brown (10YR 3/2) gravelly loam, very dark brown (10YR 2/2) moist; strong medium granular structure; soft, very friable; many very fine and fine roots and few medium roots; many very fine and fine interstitial pores; 15 percent gravel; moderately acid; clear smooth boundary.
Bt1—8 to 18 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine, fine, and medium interstitial and tubular pores; 15 percent gravel; common thin clay films on faces of peds; slightly acid; gradual smooth boundary.
Bt2—18 to 28 inches; dark brown (10YR 4/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial and tubular pores; 25 percent gravel; many thin clay films on faces of peds; slightly acid; gradual smooth boundary.
Bt3—28 to 35 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial and tubular pores; 25 percent gravel; many thin to moderately thick clay films on faces of peds and in pores; slightly acid; clear smooth boundary.
C—35 to 60 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; few very fine, fine, and medium roots; 25 percent gravel; slightly acid.

Typical Pedon Location

Location in survey area: About 6 1/2 miles southeast of Three Creek; in the SE1/4NW1/4 of sec. 29, T. 16 S., R. 12 E.
Map unit in which located: Dranyon-Dehana gravelly loams, 2 to 40 percent slopes

Range in Characteristics

Profile:
Reaction—slightly acid or neutral

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5 dry
Chroma—1 to 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry
Chroma—2 or 3 dry or moist
Texture—gravelly loam or gravelly clay loam
Clay content—22 to 32 percent
Rock fragment content—15 to 35 percent

C horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—gravelly loam, cobbly loam, or very gravelly loam
Clay content—18 to 26 percent
Rock fragment content—15 to 50 percent

Duco Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Argixerolls

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Foothills
Parent material: Kind—residuum and colluvium; source—basalt and andesite
Slope range: 10 to 45 percent
Elevation: 4,000 to 5,350 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 115 days

Typical Pedon Description

A—0 to 4 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine interstitial pores; 15 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.

Bt1—4 to 8 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; many thin clay films on faces of peds; 15 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.

Bt2—8 to 16 inches; brown (7.5YR 5/4) very gravelly clay loam, dark brown (7.5YR 3/4) moist; moderate fine angular blocky structure; very hard, firm, sticky and plastic; few fine and medium roots; common very fine and fine tubular pores; continuous moderately thick clay films on faces of peds and in pores; 40 percent gravel and 10 percent cobbles; neutral; abrupt wavy boundary.

R—16 inches; fractured, moderately weathered andesite; few fine roots in fractures.

Typical Pedon Location

Location in survey area: About 6 miles north of Reynolds; in the SW$^1/_4$SE$^1/_4$ of sec. 35, T. 1 S., R. 4 W.

Map unit in which located: Duco-Chinabutte-Dougal complex, 5 to 45 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches
Reaction—slightly acid or neutral

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—gravelly clay loam or very gravelly clay loam in the upper part and very gravelly clay loam or very cobbly clay loam in the lower part
Clay content—27 to 35 percent
Rock fragment content—35 to 60 percent

Duric Natrargids

Setting

Depth class: Deep or very deep to a duripan
Drainage class: Moderately well drained
Permeability: Very slow
Landforms: Closed basins in calderas and tablelands
Parent material: Kind—alluvium; source—basalt and volcanic ash
Slope range: 0 to 2 percent
Elevation: 4,000 to 5,300 feet
Climatic data (average annual):
Precipitation—8 to 12 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 120 days

Example Pedon Description

A—0 to 4 inches; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium and thick platy structure; slightly hard, very friable, slightly sticky; many very fine and fine roots; abrupt smooth boundary.

Btn—4 to 15 inches; light gray (10YR 7/2) silty clay, dark grayish brown (10YR 4/2) moist; strong medium and coarse columnar structure parting to strong medium angular blocky; very hard, firm, very sticky and very plastic; common very fine and fine roots; many moderately thick clay films on faces of peds; moderately saline; slightly effervescent; abrupt smooth boundary.

Btkn—15 to 22 inches; light gray (2.5Y 7/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few thin clay films on faces of peds; strongly effervescent; moderately saline; clear smooth boundary.

Bkq—22 to 43 inches; white (2.5Y 8/2) silty clay loam, grayish brown (2.5Y 5/2) moist; massive; sticky and plastic; 25 percent small durinodes; slightly effervescent; clear smooth boundary.

C—43 to 60 inches; white (2.5Y 8/2) silty clay loam, grayish brown (2.5Y 5/2) moist; massive; sticky and plastic.

Example Pedon Location

Location in survey area: About 9 miles southeast of Grasmere; in the NW$^1/_4$NE$^1/_4$ of sec. 22, T. 13 S., R. 6 E.

Map unit in which located: Playas-Duric Natrargids association, nearly level

Range in Characteristics

Profile:
Depth to duripan—40 inches or more
Depth to abrupt textural change—1 to 5 inches

A horizon:
Hue—2.5Y or 10YR
Value—7 or 8 dry, 4 to 6 moist
Chroma—1 to 3 dry or moist
Effervescence—none or slight
Reaction—slightly alkaline or moderately alkaline

Btn horizon:
Texture—clay, silty clay, or silty clay loam
Clay content—30 to 45 percent
Salinity—slight to strong
Sodium absorption ratio—more than 13 percent
Effervescence—slight or strong
Reaction—moderately alkaline to very strongly alkaline

C and Bq horizons:
Texture—stratified silty clay loam to fine sandy loam
Cementation—weak or strong
Clay content—8 to 34 percent
Rock fragment content—0 to 5 percent
Durinode content—0 to 80 percent
Salinity—slight to strong
Effervescence—none to violent
Reaction—moderately alkaline to very strongly alkaline

Earcree Series

Classification

Taxonomic class: Coarse-loamy, mixed Pachic Cryoborolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Mountains
Parent material: Kind—colluvium and slope alluvium; source—intermediate intrusive and quartzitic metamorphic rock
Slope range: 10 to 40 percent
Elevation: 5,500 to 7,800 feet
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—36 to 40 degrees F
Frost-free period—30 to 65 days

Typical Pedon Description

A1—0 to 8 inches; dark grayish brown (10YR 4/2) gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak medium granular structure; soft, very friable; 20 percent gravel; moderately acid; gradual smooth boundary.
A2—8 to 23 inches; grayish brown (10YR 5/2) gravelly coarse sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to moderate medium granular; slightly hard, very friable; 15 percent gravel; slightly acid; gradual smooth boundary.
A3—23 to 34 inches; grayish brown (10YR 5/2) gravelly coarse sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable; 15 percent gravel; slightly acid; gradual smooth boundary.
C—34 to 60 inches; light yellowish brown (2.5Y 6/4) gravelly loamy coarse sand, olive brown (2.5Y 4/4) moist; massive; 20 percent gravel; neutral.

Typical Pedon Location

Location in survey area: About 9 miles north of Cliffs; in the $SE^1/_4NE^1/_4$ of sec. 33, T. 7 S., R. 5 W.
Map unit in which located: Povey-Earcree complex, 10 to 50 percent slopes

Range in Characteristics

Particle-size control section (weighted average):
Clay content—10 to 18 percent
Rock fragment content—15 to 35 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—moderately acid or slightly acid

C horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 4 to 6 moist
Chroma—2 to 4 dry or moist
Texture—gravelly loamy coarse sand, gravelly coarse sandy loam, or gravelly sandy loam
Rock fragment content—15 to 45 percent
Reaction—slightly acid or neutral

Enko Series

Classification

Taxonomic class: Coarse-loamy, mixed, mesic Durixerollic Camborthids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landforms: Alluvial fans and fan terraces
Parent material: Kind—alluvium; source—intermediate intrusive rock
Slope range: 2 to 10 percent
Elevation: 2,700 to 5,000 feet
Climatic data (average annual):
Precipitation—9 to 11 inches
Air temperature—46 to 52 degrees F
Frost-free period—100 to 140 days

Typical Pedon Description

A1—0 to 2 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable; many very fine and fine roots; many fine interstitial pores; 10 percent gravel; neutral; clear smooth boundary.

A2—2 to 5 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, very friable; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; 10 percent gravel; mildly alkaline; clear smooth boundary.

Bw1—5 to 14 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky; common very fine and fine roots and few medium roots; common very fine interstitial pores and few very fine tubular pores; 5 percent gravel; mildly alkaline; gradual smooth boundary.

Bw2—14 to 18 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky; common fine roots and few medium roots; common very fine interstitial pores; 10 percent gravel; mildly alkaline; gradual smooth boundary.

Bkq1—18 to 32 inches; very pale brown (10YR 7/4) sandy loam, light yellowish brown (10YR 6/4) moist; massive; few fine and medium roots; few very fine and fine interstitial pores; 20 percent durinodes; 10 percent gravel; violently effervescent; strongly alkaline; gradual smooth boundary.

Bkq2—32 to 60 inches; light yellowish brown (10YR 6/4) continuous weakly cemented gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; very hard, very firm, brittle; few fine roots; 15 percent gravel; violently effervescent; strongly alkaline.

Typical Pedon Location

Location in survey area: About 23 miles southeast of Silver City; in the NE$^1/_4$SE$^1/_4$ of sec. 8, T. 7 S., R. 1 E.
Map unit in which located: Hardtrigger-Enko complex, 2 to 15 percent slopes

Range in Characteristics

Profile:
Depth to weak cementation—14 to 32 inches
Clay content—10 to 18 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Reaction—neutral to moderately alkaline

Bw horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—loam, sandy loam, or fine sandy loam
Rock fragment content—0 to 10 percent
Reaction—neutral to moderately alkaline

Bkq horizon:
Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam or gravelly sandy loam
Rock fragment content—0 to 20 percent
Effervescence—strong or violent
Reaction—mildly alkaline to strongly alkaline

Escalante Series

Classification

Taxonomic class: Coarse-loamy, mixed, mesic Xerollic Calciorthids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Fan terraces
Parent material: Kind—alluvium and eolian sand; source—mixed sediment
Slope range: 1 to 12 percent
Elevation: 2,300 to 3,400 feet
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—50 to 52 degrees F
Frost-free period—125 to 150 days

Typical Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common fine interstitial pores and few fine vesicular pores; 5 percent gravel; slightly effervescent; mildly alkaline; clear smooth boundary.

BA—4 to 8 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; strongly effervescent; mildly alkaline; clear smooth boundary.

Bk1—8 to 13 inches; pale brown (10YR 6/3) 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 fine roots and few medium roots; common very fine and fine interstitial pores; violently effervescent; moderately alkaline; clear smooth boundary.

Bk2—13 to 36 inches; pale brown (10YR 6/3) sandy loam, grayish brown (10YR 5/2) moist; massive; common very fine roots and few fine and medium roots; common very fine and fine interstitial pores; 5 percent gravel; violently effervescent; moderately alkaline; gradual smooth boundary.

C—36 to 60 inches; light brownish gray (10YR 6/2) loamy sand, grayish brown (10YR 5/2) moist; massive; loose; few very fine, fine, and medium roots; few very fine and fine interstitial pores; strongly effervescent; moderately alkaline.

Typical Pedon Location

Location in survey area: About 3 miles northeast of Murphy; in the SW$^1/_4$SW$^1/_4$ of sec. 12, T. 2 S., R. 2 W.

Map unit in which located: Escalante sandy loam, 1 to 12 percent slopes

Range in Characteristics

Particle-size control section (weighted average):
Clay content—8 to 18 percent
Rock fragment content—0 to 5 percent

A horizon:
Reaction—mildly alkaline or moderately alkaline
Effervescence—none or slight

Bk horizon:
Value—6 or 7 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam or fine sandy loam
Clay content—5 to 15 percent
Rock fragment content—0 to 5 percent
Reaction—moderately alkaline or strongly alkaline

C horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Texture—coarse sandy loam or loamy sand
Clay content—3 to 8 percent
Rock fragment content—0 to 5 percent
Reaction—moderately alkaline or strongly alkaline

Fairylawn Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Abruptic Durixeralfs

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Very slow
Landforms: Tablelands and structural benches
Parent material: Kind—silty alluvium and loess; source—extrusive rock and volcanic ash
Slope range: 1 to 25 percent
Elevation: 4,300 to 5,400 feet
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—45 to 48 degrees F
Frost-free period—85 to 110 days

Typical Pedon Description

A—0 to 8 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; common very fine and fine vesicular and interstitial pores; mildly alkaline; abrupt smooth boundary.

Bt1—8 to 20 inches; brown (7.5YR 5/4) clay, dark brown (7.5YR 4/4) moist; strong fine prismatic structure parting to strong medium angular blocky; very hard, very firm, very sticky and very plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; continuous thick clay films on faces of peds and in pores; moderately alkaline; clear smooth boundary.

Bt2—20 to 25 inches; light brown (7.5YR 6/4) loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; hard, very friable,

slightly sticky and slightly plastic; few very fine, fine, and medium roots; few very fine and fine tubular pores; many moderately thick clay films on faces of peds and in pores; 10 percent gravel; strongly alkaline; abrupt wavy boundary.

Bkqm—25 to 40 inches; very pale brown (10YR 8/3) and reddish yellow (7.5YR 6/6) continuous indurated siliceous laminae 2 to 4 millimeters thick over very pale brown (10YR 7/3) to reddish yellow (7.5YR 8/6) continuous strongly cemented duripan; strong thick platy structure; extremely hard, very firm, brittle; strongly effervescent; abrupt wavy boundary.

2R—40 inches; basalt.

Typical Pedon Location

Location in survey area: About 6 miles south of Cliffs; in the NW¼NE¼ of sec. 14, T. 10 S., R. 6 W.

Map unit in which located: Fairylawn-Schnipper silt loams, 1 to 8 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—20 to 35 inches
Depth to duripan—20 to 35 inches
Depth to bedrock—21 to 40 inches

Particle-size control section (weighted average):
Clay content—35 to 55 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Reaction—neutral or mildly alkaline

Bt1 horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—clay, clay loam, or cobbly clay
Clay content—35 to 60 percent
Rock fragment content—0 to 20 percent
Reaction—mildly alkaline or moderately alkaline

Bt2 horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—loam, clay loam, or cobbly clay loam
Clay content—20 to 38 percent
Rock fragment content—5 to 30 percent
Reaction—mildly alkaline to strongly alkaline

Foxmount Series

Classification

Taxonomic class: Loamy-skeletal, mixed Typic Cryoborolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Mountains
Parent material: Kind—colluvium and residuum; source—rhyolite
Slope range: 10 to 50 percent
Elevation: 6,200 to 8,300 feet
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—36 to 40 degrees F
Frost-free period—30 to 50 days

Typical Pedon Description

Oi—1 inch to 0; slightly decomposed leaves and twigs.

A1—0 to 5 inches; dark brown (7.5YR 3/2) very gravelly loam, very dark brown (7.5YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable; many very fine and fine roots, common medium roots, and few coarse roots; many very fine and fine vesicular and interstitial pores; 45 percent gravel and 5 percent cobbles; slightly acid; clear smooth boundary.

A2—5 to 11 inches; brown (7.5YR 4/4) very gravelly loam, dark brown (7.5YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots, common medium roots, and few coarse roots; common very fine and fine tubular pores; 45 percent gravel and 5 percent cobbles; slightly acid; clear smooth boundary.

Bw—11 to 20 inches; light brown (7.5YR 6/4) very gravelly loam, brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine vesicular and interstitial pores; many thin clay films on faces of peds and on rock fragments; 50 percent gravel and 5 percent cobbles; slightly acid; clear wavy boundary.

C—20 to 36 inches; light brown (7.5YR 6/4) extremely cobbly loam, brown (7.5YR 4/4) moist; massive; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; few fine and medium vesicular and tubular pores; 20 percent gravel, 40 percent cobbles, and 5 percent stones; slightly acid; abrupt wavy boundary.
Cr—36 inches; weathered rhyolite.

Typical Pedon Location

Location in survey area: About 3 miles south of Silver City; in the SE¼NE¼ of sec. 20, T. 5 S., R. 3 W.
Map unit in which located: Foxmount-Povey-Rubbleland complex, 10 to 50 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—24 to 40 inches
Reaction—slightly acid or neutral

Particle-size control section (weighted average):
Clay content—10 to 20 percent
Rock fragment content—50 to 70 percent

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5 dry, 2 or 3 moist

Bw horizon:
Hue—7.5YR or 10YR
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Rock fragment content—35 to 60 percent

C horizon:
Hue—7.5YR or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Texture—very cobbly loam, extremely cobbly loam, or very cobbly sandy loam
Rock fragment content—45 to 85 percent

Frenchjohn Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Typic Palexerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landforms: Structural benches
Parent material: Kind—alluvium and residuum; source—rhyolite
Slope range: 3 to 25 percent
Elevation: 4,250 to 4,700 feet
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—47 to 49 degrees F
Frost-free period—95 to 115 days

Typical Pedon Description

A1—0 to 8 inches; grayish brown (10YR 5/2) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure parting to moderate fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots, common medium roots, and few coarse roots; many very fine and fine vesicular and interstitial pores and common medium vesicular and interstitial pores; 15 percent gravel; neutral; clear smooth boundary.
A2—8 to 11 inches; brown (10YR 5/3) gravelly silt loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine vesicular and interstitial pores and common medium vesicular and interstitial pores; few thin clay films on faces of peds; 15 percent gravel; mildly alkaline; abrupt smooth boundary.
Bt—11 to 22 inches; yellowish brown (10YR 5/4) very gravelly clay, brown (10YR 4/3) moist; weak medium prismatic structure parting to strong fine angular blocky; very hard, firm, very sticky and very plastic; few very fine roots and common fine roots; few fine tubular pores; many thick clay films on faces of peds and in pores; 40 percent gravel; mildly alkaline; clear smooth boundary.
Btq—22 to 29 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine angular blocky structure; very hard, firm, sticky and plastic; few very fine roots and common fine roots; few fine tubular pores; few moderately thick clay films on faces of peds; 45 percent gravel; coatings of silica on rock fragments; moderately alkaline; abrupt irregular boundary.
Bkq—29 to 36 inches; very pale brown (10YR 8/3) extremely gravelly sandy loam, very pale brown (10YR 7/4) moist; discontinuous distinct siliceous laminar cap l millimeter thick; massive; very hard,

very firm; 80 percent gravel; strongly effervescent; strongly alkaline; abrupt irregular boundary.
R—36 inches; fractured rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 11 miles southwest of Marsing; in the SW¼NW¼ of sec. 21, T. 1 N., R. 5 W.
Map unit in which located: Jumpcreek-Frenchjohn complex, 3 to 30 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—8 to 12 inches
Depth to calcium carbonates—20 to 30 inches
Depth to bedrock—24 to 40 inches

Particle-size control section (weighted average):
Clay content—35 to 55 percent
Rock fragment content—35 to 65 percent

A horizon:
Reaction—neutral or mildly alkaline

Bt horizon:
Hue—7.5YR or 10YR
Chroma—3 or 4 dry or moist
Texture—gravelly clay or very gravelly clay in upper part; very gravelly clay loam or extremely gravelly clay loam in lower part
Clay content—40 to 55 percent in upper part; 29 to 40 percent in lower part
Rock fragment content—20 to 45 percent in upper part; 45 to 75 percent in lower part
Reaction—neutral to moderately alkaline

Bkq horizon:
Hue—7.5YR or 10YR
Value—5 to 8 dry
Chroma—3 to 6 dry or moist
Texture—extremely gravelly sandy loam, very gravelly sandy clay loam, or very gravelly sandy loam
Clay content—12 to 25 percent
Rock fragment content—50 to 90 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Freshwater Series

Classification

Taxonomic class: Loamy, mixed, frigid, shallow Xerollic Durargids

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Structural benches and plug domes
Parent material: Kind—alluvium; source—extrusive rock
Slope range: 2 to 20 percent
Elevation: 5,200 to 6,000 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days

Typical Pedon Description

A—0 to 5 inches; pale brown (10YR 6/3) stony loam, dark brown (10YR 3/3) moist; weak thin and medium platy structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots, common medium roots, and few coarse roots; many very fine and fine interstitial pores; 5 percent gravel and 1 percent stones; neutral; clear smooth boundary.
Bt1—5 to 13 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; few thin clay films on faces of peds; 5 percent gravel and 5 percent cobbles; mildly alkaline; clear smooth boundary.
Bt2—13 to 18 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine angular blocky structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; common moderately thick clay films on faces of peds; 5 percent gravel; neutral; abrupt wavy boundary.
Bkqm—18 to 22 inches; pale brown (10YR 6/3) continuous indurated siliceous laminae 1 millimeter thick over very pale brown (10YR 7/3 to 10YR 8/3) slightly fractured strongly cemented duripan; strong thick platy structure; extremely hard, very firm, brittle when wet; strongly effervescent; abrupt irregular boundary.
2R—22 inches; weathered flow breccia.

Typical Pedon Location

Location in survey area: About 15 miles southeast of Riddle; in the NW1/4NW1/4 of sec. 35, T. 15 S., R. 5 E.
Map unit in which located: Roca-Freshwater stony loams, 2 to 20 percent slopes (fig. 14)

Figure 14.—Profile of Freshwater stony loam in an area of Roca-Freshwater stony loams, 2 to 20 percent slopes. A duripan is at a depth of about 18 inches and is underlain by bedrock.

Range in Characteristics

Profile:
Depth to duripan—12 to 20 inches
Depth to bedrock—16 to 40 inches
Reaction—neutral to moderately alkaline

Particle-size control section (weighted average):
Clay content—27 to 34 percent
Rock fragment content—5 to 35 percent

A horizon:
Value—5 or 6 dry, 2 to 4 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, gravelly clay loam, or gravelly silty clay loam

Fryingpan Series

Classification

Taxonomic class: Loamy, mixed, frigid Lithic Haploxeralfs

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Structural benches
Parent material: Kind—residuum; source—welded rhyolitic tuff
Slope range: 2 to 15 percent
Elevation: 5,100 to 5,700 feet
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—75 to 90 days

Typical Pedon Description

A—0 to 3 inches; pale brown (10YR 6/3) stony loam, brown (10YR 4/3) moist; weak thin and medium platy structure parting to weak fine subangular blocky; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots and few medium roots; many very fine and fine vesicular pores and few medium vesicular pores; 10 percent gravel and 1 percent stones; neutral; clear smooth boundary.
Bt1—3 to 9 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine tubular pores and few medium tubular pores; many thin clay films on faces of peds and in pores; 5 percent gravel; neutral; abrupt smooth boundary.
Bt2—9 to 16 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; strong fine and medium angular blocky structure; very hard, friable, sticky and plastic; common fine roots and few very fine and medium roots; common very fine tubular pores and few fine and medium tubular pores; many moderately thick clay films on faces of peds and in pores; 5 percent gravel; slightly acid; clear smooth boundary.
Btq—16 to 18 inches; light brown (7.5YR 6/4) loam, brown (7.5YR 4/4) moist; moderate fine and

medium angular blocky structure; very hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; common moderately thick clay films on faces of peds and in pores; 10 percent gravel; few fine masses of silica; slightly acid; abrupt wavy boundary.

2R—18 inches; welded rhyolitic tuff that has thin discontinuous silica laminae.

Typical Pedon Location

Location in survey area: About 27 miles west of Grasmere; in the SW¼NW¼ of sec. 12, T. 12 S., R. 1 W.

Map unit in which located: Fryingpan-Hat-Nipintuck complex, 1 to 30 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches
Reaction—neutral or slightly acid

Particle-size control section (weighted average):
Clay content—20 to 34 percent
Rock fragment content—5 to 25 percent

Bt horizon:
Texture—clay loam or cobbly clay loam

Fulcrum Series

Classification

Taxonomic class: Ashy-skeletal, frigid Vitrandic Haploxerolls

Setting

Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Landforms: Extrusive domes
Parent material: Kind—residuum and alluvium; source—vitric tuff and breccia
Slope range: 3 to 15 percent
Elevation: 5,700 to 6,200 feet
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—40 to 43 degrees F
Frost-free period—65 to 80 days

Typical Pedon Description

A1—0 to 3 inches; dark brown (10YR 3/3) stony sandy loam, black (10YR 2/1) moist; weak fine granular structure; soft, very friable; many very fine and fine roots and few medium roots; many very fine and fine interstitial pores; 10 percent gravel, 5 percent cobbles, and 1 percent stones; slightly acid; clear smooth boundary.

A2—3 to 11 inches; dark brown (10YR 3/3) gravelly sandy loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure parting to weak fine granular; soft, very friable; many very fine and fine roots and few medium roots; few very fine and fine tubular and vesicular pores; 10 percent gravel and 5 percent cobbles; slightly acid; clear smooth boundary.

Bw—11 to 21 inches; brown (10YR 4/3) very gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, very friable; common very fine and fine roots and few medium roots; common very fine and fine tubular and vesicular pores; common thin clay films in pores; 35 percent gravel and 5 percent cobbles; slightly acid; clear wavy boundary.

C—21 to 28 inches; yellowish brown (10YR 5/4) extremely cobbly loamy sand, brown (10YR 4/3) moist; massive; few very fine and fine roots; 35 percent gravel, 35 percent cobbles, and 15 percent stones; neutral; clear irregular boundary.

R—28 inches; moderately weathered vitric tuff.

Typical Pedon Location

Location in survey area: About 28 miles southeast of Silver City; in the NE¼NW¼ of sec. 36, T. 8 S., R. 1 W.

Map unit in which located: Fulcrum-Monasterio stony sandy loams,
1 to 20 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Reaction—slightly acid or neutral

Particle-size control section (weighted average):
Clay content—10 to 18 percent
Rock fragment content—35 to 70 percent

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 to 3 moist

Bw horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry, 2 or 3 moist
Clay content—12 to 20 percent
Rock fragment content—35 to 50 percent

C horizon:
Hue—7.5YR or 10YR
Value—4 to 7 dry, 3 to 6 moist
Chroma—3 to 6 dry or moist
Clay content—6 to 18 percent
Rock fragment content—50 to 90 percent

Gacey Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic, shallow Aridic Durixerolls

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Fan terraces
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 2 to 12 percent
Elevation: 4,400 to 5,050 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 110 days

Typical Pedon Description

A—0 to 4 inches; grayish brown (10YR 5/2) stony loam, very dark grayish brown (10YR 3/2) moist; moderate thick platy structure; slightly hard, very friable; common very fine and fine roots; common very fine and fine vesicular and interstitial pores and few medium vesicular and interstitial pores; 15 percent gravel and 2 percent stones; slightly acid; clear wavy boundary.

Bt—4 to 9 inches; light brownish gray (10YR 6/2) cobbly clay loam, dark grayish brown (10YR 4/2) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine roots and few fine roots; few very fine, fine, and medium tubular pores; common thin clay films on faces of peds; 10 percent gravel and 5 percent cobbles; slightly acid; abrupt wavy boundary.

Btq—9 to 16 inches; light yellowish brown (10YR 6/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse prismatic structure parting to moderate fine subangular blocky; hard, firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; many moderately thick clay films on faces of peds; 30 percent gravel and 20 percent cobbles; slightly acid; abrupt wavy boundary.

2Bqm1—16 to 21 inches; strongly cemented continuous duripan; massive; very hard, very firm; clear wavy boundary.

2Bqm2—21 to 27 inches; weakly cemented continuous duripan; massive, very hard, very firm; clear wavy boundary.

2C—27 to 60 inches; extremely gravelly loamy sand; single grain; loose; 55 percent gravel and 10 percent cobbles.

Typical Pedon Location

Location in survey area: About 13 miles northwest of Silver City; in the $SW^1/_4NW^1/_4$ of sec. 7, T. 4 S., R. 5 W.
Map unit in which located: Salisbury-Gacey-Barnard complex, 2 to 12 percent slopes

Range in Characteristics

Profile:
Depth to duripan—14 to 20 inches
Reaction—slightly acid or neutral

Particle-size control section (weighted average):
Clay content—35 to 45 percent
Rock fragment content—35 to 50 percent

Bt and Btq horizons:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 or 4 dry or moist
Clay content—27 to 50 percent
Rock fragment content—15 to 60 percent

Gaib Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Ultic Argixerolls

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains
Parent material: Kind—residuum; source—welded rhyolitic tuff
Slope range: 2 to 30 percent
Elevation: 5,050 to 6,600 feet
Climatic data (average annual):
Precipitation—15 to 18 inches

Air temperature—40 to 45 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

A1—0 to 3 inches; dark grayish brown (10YR 4/2) stony loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable; 15 percent gravel and 3 percent stones; slightly acid; clear smooth boundary.
A2—3 to 7 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; 10 percent gravel; slightly acid; clear smooth boundary.
Bt1—7 to 11 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 slightly plastic; common moderately thick clay films on faces of peds; 25 percent gravel and 10 percent cobbles; neutral; clear smooth boundary.
Bt2—11 to 18 inches; brown (7.5YR 5/4) very gravelly clay loam, dark brown (7.5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; many moderately thick clay films on faces of peds; 35 percent gravel and 10 percent cobbles; neutral; abrupt wavy boundary.
R—18 inches; slightly weathered welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 18 miles southeast of Cliffs; in the NE$^{1}/_{4}$NE$^{1}/_{4}$ of sec. 8, T. 12 S., R. 4 W.
Map unit in which located: Mulshoe-Squawcreek-Gaib association,
2 to 30 percent slopes

Range in Characteristics

Profile:
Base saturation—50 to 75 percent
Depth to bedrock—10 to 20 inches

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—very cobbly clay loam or very gravelly clay loam
Clay content—24 to 35 percent
Rock fragment content—35 to 60 percent
Reaction—moderately acid to neutral

Gariper Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Paleargids

Setting

Depth class: Deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Fan terraces
Parent material: Kind—alluvium; source—extrusive rock and volcanic ash
Slope range: 2 to 15 percent
Elevation: 3,500 to 5,300 feet
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 125 days

Typical Pedon Description

A1—0 to 3 inches; light brownish gray (10YR 6/2) loam, dark brown (10YR 4/3) moist; weak medium platy structure parting to moderate fine granular; slightly hard, very friable; common very fine and fine roots and few medium and coarse roots; many very fine and fine vesicular pores; 10 percent fine gravel; neutral; clear smooth boundary.
A2—3 to 9 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; few thin films lining pores; 10 percent fine gravel; neutral; abrupt smooth boundary.
Bt—9 to 18 inches; yellowish brown (10YR 5/3) clay, dark yellowish brown (10YR 4/4) moist; moderate fine prismatic structure parting to strong fine angular blocky; very hard, firm, very sticky and very plastic; common very fine, fine, and medium roots and few coarse roots; few fine tubular pores; many thick clay films on faces of peds and lining pores; common pressure faces; 5 percent fine gravel; mildly alkaline; clear wavy boundary.
Btq—18 to 22 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure parting to strong fine angular blocky; hard, friable; sticky and plastic; few very fine and fine roots; few very fine tubular pores; common moderately thick

clay films on faces of peds and lining pores; 5 percent gravel; few pendants of silica on undersides of gravel and peds; mildly alkaline; abrupt smooth boundary.

2Bkq—22 to 47 inches; very pale brown (10YR 7/3) gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; few very fine and fine roots; 25 percent gravel; many pendants of silica and calcium carbonates on rock fragments; violently effervescent; moderately alkaline; clear smooth boundary.

2Bkqm—47 to 60 inches; very pale brown (10YR 7/3) continuous strongly cemented duripan, yellowish brown (10YR 5/3) moist; massive; extremely hard, extremely firm, brittle; 15 percent gravel; strongly effervescent; common medium soft masses and seams of lime.

Typical Pedon Location

Location in survey area: About 20 miles southwest of Riddle; in the SW$^1/_4$SW$^1/_4$ of sec. 3, T. 16 S., R. 1 W.

Map unit in which located: Arbidge-Owsel-Gariper complex, 1 to 15 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—4 to 10 inches
Depth to duripan—40 to 60 inches
Duripan cementation—weak to strong

A horizon:
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—clay or clay loam
Clay content—35 to 50 percent
Rock fragment content—0 to 15 percent
Reaction—mildly alkaline or moderately alkaline

2Bkq horizon:
Value—6 or 7 dry, 4 to 6 moist
Chroma—3 to 6 dry or moist
Texture—gravelly loam, gravelly sandy loam, or very gravelly sandy loam
Clay content—10 to 25 percent
Rock fragment content—20 to 60 percent
Effervescence—strong or violent
Reaction—mildly alkaline to strongly alkaline

Gooding Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Paleargids

Setting

Depth class: Deep to a duripan
Drainage class: Well drained
Permeability: Very slow
Landforms: Fan terraces and pediments
Parent material: Kind—alluvium and loess; source—lacustrine deposits
Slope range: 2 to 20 percent
Elevation: 3,500 to 5,200 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 120 days

Typical Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate thick platy structure parting to moderate medium subangular blocky; slightly hard, very friable; many very fine roots and few fine and medium roots; many fine and medium vesicular pores and many very fine tubular pores; 5 percent gravel; neutral; abrupt wavy boundary.

E—4 to 7 inches; light gray (10YR 7/2) loam; grayish brown (10YR 5/2) moist; strong coarse subangular blocky structure; hard, very friable; common fine roots and few very fine and medium roots; many very fine and fine tubular pores; mildly alkaline; abrupt wavy boundary.

Bt1—7 to 17 inches; pale brown (10YR 6/3) clay, brown (10YR 4/3) moist; weak fine columnar structure parting to strong fine angular blocky; very hard, firm, sticky and very plastic; common fine roots and few very fine and medium roots; few very fine and fine tubular pores; continuous thick clay films on faces of peds and in pores; mildly alkaline; clear wavy boundary.

Btk—17 to 30 inches; pale brown (10YR 6/3) clay loam, yellowish brown (10YR 5/4) moist; strong fine angular blocky structure; hard, friable, sticky and plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; continuous moderately thick clay films on faces of peds and in pores; strongly effervescent; moderately alkaline; clear wavy boundary.

Bkq—30 to 57 inches; white (10YR 8/2) clay loam, light yellowish brown (10YR 6/4) moist; moderate very fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few thin clay films on faces of peds; 10 percent gravel; violently effervescent; moderately alkaline; abrupt smooth boundary.
Bkqm—57 to 60 inches; light gray (10YR 7/2) continuous weakly cemented duripan; massive; very hard, firm.

Typical Pedon Location

Location in survey area: About 16 miles northwest of Reynolds; in the SE¼NW¼ of sec. 12, T. 1 S., R. 6 W.
Map unit in which located: Gooding-Gariper loams, 2 to 20 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—3 to 8 inches
Depth to calcium carbonates—17 to 30 inches
Depth to duripan—40 to 60 inches

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

E horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—clay or clay loam
Clay content—35 to 50 percent
Rock fragment content—0 to 5 percent
Effervescence (lower part)—none or slight
Reaction—neutral or mildly alkaline

Btk and Bqk horizons:
Value—6 or 7 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—clay loam or gravelly clay loam
Clay content—27 to 35 percent
Rock fragment content—5 to 20 percent
Effervescence—strong or violent
Reaction—mildly alkaline or moderately alkaline

Goose Creek Series

Classification

Taxonomic class: Fine-loamy, mixed, mesic Cumulic Haploxerolls

Setting

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Landforms: Bottomlands
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 1 to 3 percent
Elevation: 2,350 to 5,350 feet
Climatic data (average annual):
Precipitation—8 to 13 inches
Air temperature—45 to 51 degrees F
Frost-free period—95 to 140 days

Typical Pedon Description

Ap—0 to 9 inches; dark gray (10YR 4/1) loam, black (10YR 2/1) moist; moderate medium and coarse granular structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few coarse roots; many very fine tubular pores and common fine and medium tubular pores; neutral; clear wavy boundary.
A2—9 to 17 inches; dark gray (10YR 4/1) loam, black (10YR 2/1) moist; weak coarse prismatic structure parting to weak medium and fine granular; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few coarse roots; many very fine tubular pores and common fine and medium tubular pores; mildly alkaline; clear smooth boundary.
A3—17 to 24 inches; dark gray (10YR 4/1) clay loam, black (10YR 2/1) moist; weak coarse prismatic structure parting to weak medium and fine subangular blocky; hard, firm, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine tubular pores and common fine and medium tubular pores; thin patchy clay films in pores; few veins of lime; mildly alkaline; clear wavy boundary.
Bk1—24 to 33 inches; gray (10YR 5/1) clay loam, very dark gray (10YR 3/1) moist; moderate medium

and fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; many fine and medium roots; many very fine tubular pores and common fine and medium tubular pores; slightly effervescent; many splotches of lime and few veins of lime; moderately alkaline; clear wavy boundary.

2Bk2—33 to 40 inches; dark gray (2.5Y 5/1) loam, very dark gray (10YR 3/1) moist; weak medium and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine and medium roots; many very fine tubular pores and common fine and medium tubular pores; slightly effervescent; common splotches and veins of lime; moderately alkaline; clear wavy boundary.

3C1—40 to 51 inches; grayish brown (2.5Y 5/2) loam, dark gray (10YR 4/1) moist; few fine prominent mottles that are dark brown (7.5YR 4/4) moist; weak medium and fine subangular blocky structure parting to weak fine and medium granular; hard, friable, slightly sticky and slightly plastic; few fine and medium roots; many very fine tubular pores and common fine and medium tubular pores; moderately alkaline; clear wavy boundary.

3C2—51 to 60 inches; grayish brown (2.5Y 5/2) loam, dark grayish brown (10YR 4/2) moist, few fine prominent mottles that are dark brown (7.5YR 4/4) moist; massive; slightly sticky and slightly plastic; few medium and coarse roots; many very fine and common fine tubular pores; moderately alkaline.

Typical Pedon Location

Location in survey area: About 1 mile west of Reynolds; in the $SE^1/_4SE^1/_4$ of sec. 35, T. 2 S., R. 4 W.

Map unit in which located: Hardtrigger-Goose Creek loams, 1 to 5 percent slopes

Range in Characteristics

Profile:
Depth to mottles—24 inches or more

Particle-size control section:
Texture—dominantly clay loam with thin strata of loamy fine sand, fine sandy loam, loam, silt loam, or clay commonly in the lower part
Clay content (weighted average)—20 to 30 percent

A horizon:
Hue—10YR or 2.5Y
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—neutral to mildly alkaline

Bk and C horizons:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 to 5 moist
Chroma—1 to 4 dry or moist
Effervescence—none to slight
Reaction—mildly alkaline or moderately alkaline

Graveya Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic Xerollic Camborthids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Foothills
Parent material: Kind—slope alluvium; source—welded rhyolitic tuff overlying mixed sediment
Slope range: 8 to 35 percent
Elevation: 2,400 to 3,600 feet
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—50 to 52 degrees F
Frost-free period—125 to 145 days

Typical Pedon Description

A1—0 to 3 inches; pale brown (10YR 6/3) stony loam, dark brown (10YR 3/3) moist; moderate thin platy structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine vesicular and interstitial pores and few medium vesicular and interstitial pores; 20 percent gravel, 5 percent cobbles, and 3 percent stones; neutral; clear smooth boundary.

A2—3 to 8 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; few very fine and fine tubular pores; 15 percent gravel; neutral; clear smooth boundary.

Bw1—8 to 14 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; few very fine, fine, and medium tubular pores; common thin

clay films in pores; 30 percent gravel; slightly acid; clear smooth boundary.
Bw2—14 to 22 inches; very pale brown (10YR 7/3) very gravelly clay loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; 40 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.
2Bkq1—22 to 42 inches; very pale brown (10YR 7/4) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; few very fine and fine roots; 50 percent gravel and 5 percent cobbles, coatings of lime and silica on rock fragments; strongly effervescent; strongly alkaline; clear wavy boundary.
2Bkq2—42 to 60 inches; very pale brown (10YR 7/4) extremely gravelly sandy loam, yellowish brown (10YR 5/4) moist; single grain; loose; 60 percent gravel and 10 percent cobbles, lime and silica pendants 1 millimeter to 5 millimeters thick around rock fragments; violently effervescent; strongly alkaline.

Typical Pedon Location

Location in survey area: About 7 miles southwest of Marsing; in the SE¼SE¼ of sec. 35, T. 2 N., R. 5 W.
Map unit in which located: Graveya-Ratsnest-Rock outcrop association, 3 to 35 percent slopes

Range in Characteristics

Profile:
Depth to lithologic discontinuity—10 to 25 inches
Depth to calcium carbonates—10 to 25 inches

Particle-size control section (weighted average):
Clay content—15 to 25 percent
Rock fragment content—35 to 60 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist

Bw horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—gravelly clay loam, very gravelly clay loam, or gravelly loam
Clay content—24 to 30 percent
Rock fragment content—25 to 50 percent
Reaction—slightly acid or neutral

2Bkq horizon:
Hue—10YR or 2.5Y
Value—7 or 8 dry, 5 to 7 moist
Texture—very gravelly sandy loam, very gravelly loam, or extremely gravelly sandy loam
Clay content—8 to 20 percent
Rock fragment content—35 to 70 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Graylock Series

Classification

Taxonomic class: Sandy-skeletal, mixed Typic Cryorthents

Setting

Depth class: Deep
Drainage class: Somewhat excessively drained
Permeability: Very rapid
Landforms: Mountains
Parent material: Kind—residuum and colluvium; source—intermediate intrusive rock
Slope range: 20 to 60 percent
Elevation: 5,000 to 7,600 feet
Climatic data (average annual):
Precipitation—25 to 40 inches
Air temperature—34 to 42 degrees F
Frost-free period—30 to 70 days

Typical Pedon Description

Oi—1 inch to 0; undecomposed needles and twigs.
A—0 to 4 inches; dark grayish brown (10YR 4/2) bouldery loamy sand, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable; common very fine and fine roots; few very fine and fine tubular pores; 15 percent gravel and 10 percent boulders; moderately acid; clear wavy boundary.
AB—4 to 7 inches; grayish brown (10YR 5/2) bouldery sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium and coarse subangular blocky structure; slightly hard, very friable; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; 20 percent gravel and 10 percent boulders; moderately acid; clear wavy boundary.
Bw—7 to 26 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable; many very fine and fine roots and common medium and coarse roots; 30 percent gravel, 5 percent cobbles, and 5 percent stones; moderately acid; gradual irregular boundary.
BC—26 to 41 inches; light yellowish brown (10YR 6/4) very gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; few fine roots,

common medium roots, and many coarse roots; 25 percent gravel, 15 percent cobbles, and 10 percent stones; moderately acid; abrupt broken boundary.
C—41 to 56 inches; very pale brown (10YR 7/4) extremely stony loamy coarse sand, yellowish brown (10YR 5/4) moist; single grain; few very fine and fine roots; 20 percent gravel, 25 percent cobbles, and 35 percent stones; strongly acid; abrupt wavy boundary.
R—56 inches; fractured granite.

Typical Pedon Location

Location in survey area: About 1 mile east of Silver City; in the NE¼NW¼ of sec. 5, T. 5 S., R. 3 W.
Map unit in which located: Graylock-Takeuchi association, 3 to 60 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches

Particle-size control section (weighted average):
Clay content—2 to 10 percent
Rock fragment content—35 to 60 percent

A horizon:
Value—4 to 6 dry, 3 to 5 moist
Chroma—2 or 3 dry or moist
Reaction—strongly acid or moderately acid

Bw and C horizons:
Value—6 to 8 dry, 4 to 7 moist
Chroma—3 or 4 dry or moist
Texture (Bw horizon)—very gravelly loamy coarse sand or very gravelly loamy sand
Texture (C horizon)—extremely stony loamy coarse sand or extremely stony coarse sand
Reaction—very strongly acid to moderately acid

Hades Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Pachic Argixerolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains
Parent material: Kind—colluvium and slope alluvium; source—extrusive rock
Slope range: 5 to 30 percent
Elevation: 5,000 to 6,600 feet
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—38 to 41 degrees F
Frost-free period—50 to 80 days

Typical Pedon Description

A1—0 to 5 inches; dark brown (10YR 3/3) loam, black (10YR 2/1) moist; moderate medium subangular blocky structure; slightly hard, very friable; many very fine and fine roots and few medium roots; many very fine tubular and interstitial pores; slightly acid; clear smooth boundary.
A2—5 to 20 inches; very dark grayish brown (10YR 3/2) loam, black (10YR 2/1) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few coarse roots; many very fine and fine tubular and interstitial pores; 5 percent gravel; slightly acid; gradual smooth boundary.
Bt1—20 to 40 inches; brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; many very fine interstitial pores and few fine tubular pores; 5 percent gravel; many thin clay films on faces of peds and in pores; slightly acid; gradual irregular boundary.
Bt2—40 to 60 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and fine subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; many very fine and fine tubular and interstitial pores; 5 percent gravel and 5 percent cobbles; many moderately thick clay films on faces of peds and in pores; slightly acid.

Typical Pedon Location

Location in survey area: About 6½ miles southwest of Reynolds; in the SE¼SE¼ of sec. 12, T. 3 S., R. 5 W.
Map unit in which located: Hades-Sharesnout complex, 5 to 35 percent slopes

Range in Characteristics

Profile:
Reaction—slightly acid or neutral

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist

Bt horizon:
Hue—7.5YR or 10YR

Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Clay content—27 to 35 percent
Rock fragment content—5 to 15 percent

Hardtrigger Series

Classification

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Haplargids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Calderas, fan terraces, and structural benches
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 1 to 35 percent
Elevation: 2,350 to 5,400 feet
Climatic data (average annual):
Precipitation—8 to 13 inches
Air temperature—45 to 52 degrees F
Frost-free period—90 to 150 days

Typical Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; weak fine and medium granular structure; soft, very friable; many very fine and fine roots and few medium roots; common very fine and fine interstitial pores; 15 percent gravel; mildly alkaline; clear smooth boundary.

BA—4 to 8 inches; very pale brown (10YR 7/3) gravelly loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular and interstitial pores; many thin clay films on faces of peds; 20 percent gravel; moderately alkaline; clear smooth boundary.

Bt—8 to 15 inches; very pale brown (10YR 7/4) clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure parting to moderate fine angular blocky; hard, friable, slightly sticky and slightly plastic; common fine roots and few very fine and medium roots; few very fine interstitial and tubular pores; common moderately thick clay films on faces of peds; 10 percent gravel; moderately alkaline; clear smooth boundary.

Btk—15 to 20 inches; very pale brown (10YR 7/4) gravelly clay loam, light yellowish brown (10YR 6/4) moist; weak medium and fine subangular blocky structure; hard, friable; common fine roots and few medium roots; few very fine tubular and interstitial pores; common thin clay films on faces of peds; 15 percent gravel; strongly effervescent; strongly alkaline; gradual smooth boundary.

Bk—20 to 28 inches; white (10YR 8/2) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, firm; few fine and medium roots; few very fine tubular pores; 20 percent gravel; violently effervescent; strongly alkaline; gradual smooth boundary.

Bkq—28 to 60 inches; white (10YR 8/2) very gravelly loamy sand, very pale brown (10YR 7/4) moist; massive; loose; few fine and medium roots; 40 percent gravel; 10 percent durinodes; violently effervescent; strongly alkaline.

Typical Pedon Location

Location in survey area: About 11 miles northwest of Grasmere; in the SE¼SW¼ of sec. 28, T. 10 S., R. 4 E.
Map unit in which located: Bruncan-Hardtrigger-Buncelvoir complex, 1 to 8 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—10 to 27 inches

A horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—4 to 7 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—gravelly sandy clay loam, clay loam, or gravelly clay loam
Clay content—22 to 34 percent
Rock fragment content—5 to 25 percent
Reaction—neutral to moderately alkaline

Bk horizon:
Value—6 to 8 dry, 4 to 7 moist
Chroma—2 to 4 dry or moist
Texture—gravelly sandy loam, gravelly coarse sandy loam, or sandy loam
Clay content—10 to 20 percent
Rock fragment content—10 to 35 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Bkq horizon (where present):
Value—7 or 8 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—very gravelly loamy sand, gravelly sandy loam, or very gravelly sandy loam
Clay content—4 to 12 percent
Rock fragment content—15 to 50 percent
Reaction—strongly alkaline or very strongly alkaline
Cementation—weak and discontinuous or 5 to 20 percent durinodes

Hat Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Mollic Haploxeralfs

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Structural benches and foothills
Parent material: Kind—residuum and colluvium; source—welded rhyolitic tuff
Slope range: 1 to 35 percent
Elevation: 4,800 to 6,800 feet
Climatic data (average annual):
Precipitation—13 to 18 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days

Typical Pedon Description

A—0 to 5 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure parting to weak medium granular; slightly hard, very friable; many very fine and fine roots and common medium roots; many very fine and fine vesicular and interstitial pores; 30 percent gravel; moderately acid; clear smooth boundary.
Bt1—5 to 12 inches; pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure parting to weak medium granular; hard, friable, slightly sticky and plastic; common very fine and fine roots and few medium and coarse roots; many very fine and fine tubular and interstitial pores; common thin clay films on faces of peds and in pores; 20 percent gravel; slightly acid; clear wavy boundary.
Bt2—12 to 19 inches; brown (10YR 5/3) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong fine and medium subangular blocky structure; very hard, firm, sticky and plastic; common very fine and fine roots; common very fine tubular pores; many moderately thick clay films on faces of peds, on rock fragments, and in pores; 35 percent gravel and 15 percent cobbles; slightly acid; gradual wavy boundary.
Bq—19 to 24 inches; yellowish brown (10YR 5/4) extremely cobbly clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine roots; common thin clay films and moderately thick silica coatings on rock fragments; 30 percent gravel and 50 percent cobbles; slightly acid; gradual irregular boundary.
R—24 inches; welded rhyolitic tuff; moderately thick coatings and pendants of silica in fractures.

Typical Pedon Location

Location in survey area: About 21 miles northwest of Grasmere; in the NE$^{1}/_{4}$NW$^{1}/_{4}$ of sec. 36, T. 9 S., R. 2 E.
Map unit in which located: Hat-Zecanyon complex, 1 to 20 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Reaction—neutral to moderately acid

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Reaction—moderately acid to neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Texture—gravelly clay loam, very gravelly clay loam, extremely gravelly clay loam, very cobbly loam, very gravelly loam, or extremely cobbly clay loam
Clay content—24 to 35 percent
Rock fragment content—35 to 65 percent

Hatpeak Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Typic Durixerolls

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Tablelands and fan piedmonts

Parent material: Kind—mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 2 to 8 percent
Elevation: 5,300 to 6,150 feet
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days

Typical Pedon Description

A—0 to 6 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure parting to weak fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine vesicular and interstitial pores; 10 percent gravel; neutral; clear smooth boundary.
Bt1—6 to 15 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate fine angular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; continuous moderately thick clay films on faces of peds and in pores; 5 percent gravel and 5 percent cobbles; neutral; abrupt smooth boundary.
Bt2—15 to 22 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; weak fine prismatic structure parting to moderate fine angular blocky; extremely hard, very firm, very sticky and very plastic; common very fine and fine roots; few very fine and fine tubular pores; continuous thick clay films on faces of peds and in pores; 5 percent gravel and 5 percent cobbles; mildly alkaline; clear smooth boundary.
Btq—22 to 26 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/6) moist; moderate fine subangular blocky structure; hard, friable, sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds and in pores; 5 percent gravel and 5 percent cobbles; 15 percent durinodes; mildly alkaline; abrupt smooth boundary.
Bkqm—26 to 35 inches; very pale brown (10YR 7/4) continuous indurated duripan; platy structure; extremely hard, brittle; strongly effervescent lime pendants on rock fragments; gradual wavy boundary.
Bqm—35 to 60 inches; very pale brown (10YR 7/4) strongly cemented duripan; massive; very hard, very firm, brittle.

Typical Pedon Location

Location in survey area: About 2 miles northeast of Three Creek; in the NE$^1/_4$SE$^1/_4$ of sec. 26, T. 15 S., R. 11 E.
Map unit in which located: Threek-Blackleg-Hatpeak complex, 2 to 20 percent slopes

Range in Characteristics

Profile:
Depth to duripan—20 to 30 inches

Particle-size control section (weighted average):
Clay content—35 to 50 percent
Rock fragment content—0 to 15 percent

A horizon:
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Value—3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam, silty clay, or clay
Reaction—neutral or mildly alkaline

Haw Series

Classification

Taxonomic class: Fine-loamy, mixed, mesic Aridic Calcic Argixerolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Stream terraces and fan terraces
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 1 to 20 percent
Elevation: 4,000 to 5,300 feet
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 115 days

Typical Pedon Description

A—0 to 6 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate thin platy structure parting to moderate fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; common very fine and fine vesicular and tubular pores; neutral; clear smooth boundary.

AB—6 to 9 inches; yellowish brown (10YR 5/4) loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and plastic; common very fine, fine, and medium roots; many very fine and fine interstitial and tubular pores; common thin clay films on faces of peds and in pores; neutral; clear smooth boundary.

Bt1—9 to 15 inches; yellowish brown (10YR 5/4) clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; few very fine, fine, and medium roots; common very fine, fine, and medium tubular pores; continuous moderately thick clay films on faces of peds and in pores; 5 percent gravel; neutral; clear smooth boundary.

Bt2—15 to 21 inches; light yellowish brown (10YR 6/4) clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; very hard, firm, sticky and very plastic; few very fine and fine roots; common very fine and fine tubular pores; continuous moderately thick clay films on faces of peds and in pores; 5 percent gravel; neutral; clear smooth boundary.

Bk1—21 to 42 inches; very pale brown (10YR 8/3) sandy loam, light yellowish brown (10YR 6/4) moist; massive; few very fine and fine roots; common very fine and fine tubular pores; 5 percent gravel; violently effervescent; mildly alkaline; clear smooth boundary.

Bk2—42 to 60 inches; very pale brown (10YR 8/3) sandy loam, light yellowish brown (10YR 6/4) moist; single grain; loose; few very fine and fine roots; 5 percent gravel, 5 percent cobbles, and 30 percent soft tuffaceous fragments; violently effervescent; moderately alkaline.

Typical Pedon Location

Location in survey area: About 12 miles northwest of Three Creek; in the NW¼NW¼ of sec. 16, T. 14 S., R. 10 E.

Map unit in which located: Haw-Renslow association, 0 to 4 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—22 to 38 inches

A horizon:
Chroma—1 to 3 dry or moist
Reaction—slightly acid to mildly alkaline

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—clay loam, sandy clay loam, or loam
Clay content—22 to 34 percent
Rock fragment content—0 to 5 percent
Reaction—slightly acid to mildly alkaline

Bk horizon:
Hue—10YR or 2.5Y
Value—5 to 8 dry, 4 to 7 moist
Chroma—2 to 4 dry or moist
Texture—coarse sandy loam, sandy loam, or loam
Clay content—10 to 25 percent
Rock fragment content—0 to 10 percent
Effervescence—slight to strong
Reaction—mildly alkaline to strongly alkaline

Heckison Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Aridic Durixerolls

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Calderas and plug domes
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 15 percent
Elevation: 5,000 to 5,800 feet
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—80 to 95 days

Typical Pedon Description

A—0 to 4 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine tubular and interstitial pores; neutral; clear smooth boundary.

Bt1—4 to 7 inches; yellowish brown (10YR 5/4) silty clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; many very fine and fine tubular pores; few thin clay films on faces of peds; neutral; clear smooth boundary.

Bt2—7 to 19 inches; yellowish brown (10YR 5/4) silty clay loam, dark brown (10YR 3/3) moist; strong fine and medium subangular blocky structure;

hard, friable, sticky and plastic; common very fine, fine, and medium roots and few coarse roots; many very fine, common fine, and few medium tubular pores; many moderately thick clay films on faces of peds and lining pores; 10 percent cobbles; neutral; clear wavy boundary.

Bk—19 to 29 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; massive; hard, firm; few very fine and fine roots; few very fine tubular pores; 10 percent lime-coated gravel; strongly effervescent; moderately alkaline; abrupt wavy boundary.

Bkqm—29 to 35 inches; yellowish brown (10YR 5/4) to white (10YR 8/2), continuous, indurated, prominent, siliceous laminae 2 millimeters thick over very pale brown (10YR 7/3) to white (10YR 8/2), continuous, indurated, faint, siliceous laminae; 15 percent cobbles; violently effervescent; abrupt wavy boundary.

2R—35 inches; basalt.

Typical Pedon Location

Location in survey area: About 12 miles north of Murphy Hot Springs; in the NE$^{1}/_{4}$SE$^{1}/_{4}$ of sec. 15, T. 14 S., R. 9 E.

Map unit in which located: Heckison-Bigflat silt loams, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—12 to 20 inches
Depth to duripan—21 to 36 inches
Depth to bedrock—22 to 40 inches

Particle-size control section (weighted average):
Clay content—24 to 35 percent

A horizon:
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—silt loam, loam, or silty clay loam
Rock fragment content—0 to 15 percent
Effervescence—none to strong
Reaction—neutral to moderately alkaline

Bk horizon:
Value—6 to 8 dry, 4 to 7 moist
Chroma—1 to 4 dry or moist
Texture—silt loam, very fine sandy loam, or gravelly silt loam
Rock fragment content—5 to 35 percent
Duripan fragment content—0 to 80 percent
Effervescence—strong or violent
Reaction—mildly alkaline to strongly alkaline

Hotcreek Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic, shallow Xerollic Durargids

Setting

Depth class: Very shallow or shallow to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Foothills
Parent material: Kind—residuum; source—vitric tuff and breccia
Slope range: 1 to 15 percent
Elevation: 3,900 to 4,550 feet
Climatic data (average annual):
Precipitation—9 to 12 inches
Air temperature—48 to 50 degrees F
Frost-free period—105 to 120 days

Typical Pedon Description

A—0 to 2 inches; light brownish gray (10YR 6/2) very stony sandy loam, dark brown (10YR 3/3) moist; strong thin platy structure; hard, friable, slightly sticky; few very fine, fine, and medium roots; many fine and medium vesicular pores; 35 percent gravel, 5 percent cobbles, and 5 percent stones; mildly alkaline; clear smooth boundary.

Btk—2 to 7 inches; light brownish gray (10YR 6/2) very gravelly clay loam, yellowish brown (10YR 5/4) moist; strong fine subangular blocky structure; hard, firm, very sticky and plastic; common very fine, fine, and medium roots; many fine and medium interstitial pores; many moderately thick clay films on faces of peds and on rock fragments; 50 percent gravel and 5 percent cobbles; strongly effervescent; moderately alkaline; abrupt wavy boundary.

Bkqm—7 to 11 inches; very pale brown (10YR 8/3) indurated duripan, light yellowish brown (10YR 6/4) moist; thick platy structure; extremely hard, extremely firm, brittle; roots matted between plates in upper part; 40 percent gravel and 5 percent cobbles; violently effervescent; abrupt wavy boundary.

R—11 inches; slightly weathered black vitric flow breccia.

Typical Pedon Location

Location in survey area: About 15 miles northeast of Grasmere; in the SW1/4NW1/4 of sec. 1, T. 10 S., R. 5 E.
Map unit in which located: Hotcreek-Troughs association, 1 to 15 percent slopes

Range in Characteristics

Profile:
Depth to duripan—6 to 12 inches
Depth to bedrock—8 to 14 inches

Particle-size control section (weighted average):
Clay content—20 to 34 percent
Rock fragment content—35 to 60 percent

A horizon:
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—mildly alkaline or moderately alkaline

Bt horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Texture—very gravelly clay loam, very cobbly clay loam, or very gravelly loam
Clay content—24 to 34 percent
Effervescence—none to strong
Reaction—moderately alkaline or strongly alkaline

Humdun Series

Classification

Taxonomic class: Coarse-loamy, mixed, frigid Durixerollic Camborthids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Fan terraces
Parent material: Kind—mixed alluvium; source—volcanic ash and extrusive rock
Slope range: 1 to 4 percent
Elevation: 5,250 to 5,450 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—43 to 45 degrees F
Frost-free period—70 to 95 days

Typical Pedon Description

A—0 to 4 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; moderate medium platy structure parting to moderate fine subangular blocky; slightly hard, very friable; many very fine and fine roots and few medium roots; many very fine and fine interstitial and vesicular pores; neutral; clear smooth boundary.
Bw1—4 to 12 inches; yellowish brown (10YR 5/4) loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; mildly alkaline; clear smooth boundary.
Bw2—12 to 25 inches; light yellowish brown (10YR 6/4) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; hard, friable; few very fine, fine, and medium roots; few very fine and fine tubular pores; mildly alkaline; clear smooth boundary.
Bkq1—25 to 30 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; few very fine, fine, and medium roots; 50 percent durinodes; violently effervescent; moderately alkaline; clear smooth boundary.
Bkq2—30 to 60 inches; light yellowish brown (7.5YR 6/4) very fine sandy loam, brown (7.5YR 4/4) moist; massive; 80 percent is weakly cemented; common fine violently effervescent seams of lime; moderately alkaline.

Typical Pedon Location

Location in survey area: About 3 miles northwest of Three Creek; in the SW1/4SE1/4 of sec. 19, T. 15 S., R. 11 E.
Map unit in which located: Arness-Humdun complex, 1 to 8 percent slopes

Range in Characteristics

Particle-size control section (weighted average):
Clay content—10 to 15 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bw horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—loam or very fine sandy loam
Reaction—neutral to moderately alkaline

Bkq horizon:
Hue—7.5YR or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—loam or very fine sandy loam
Clay content—8 to 15 percent

Durinode content—20 to 80 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Hunnton Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Durargids

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Tablelands
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 5 percent
Elevation: 4,900 to 5,450 feet
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 100 days

Typical Pedon Description

A—0 to 3 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure parting to weak thin platy; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and common fine tubular pores; neutral; clear smooth boundary.
AB—3 to 11 inches; light yellowish brown (10YR 6/4) silty clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; many very fine roots, common fine roots, and few medium roots; many very fine and few fine tubular pores; common thin clay films on faces of peds; neutral; abrupt wavy boundary.
Bt1—11 to 17 inches; light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 4/4) moist; weak fine prismatic structure parting to strong very fine angular blocky; very hard, firm, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and few fine tubular pores; continuous moderately thick clay films on faces of peds and in pores; mildly alkaline; clear wavy boundary.
Bt2—17 to 27 inches; light yellowish brown (10YR 6/4) clay, brown (7.5YR 5/4) moist; moderate fine prismatic structure parting to strong fine angular blocky; very hard, firm, sticky and very plastic; common very fine roots and few fine roots; few very fine and fine tubular pores; continuous thick clay films on faces of peds; mildly alkaline; clear wavy boundary.
2Bqm—27 to 30 inches; very pale brown (10YR 7/4) weakly cemented very gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; strong thin platy structure; very hard, firm; few very fine roots; mildly alkaline; abrupt smooth boundary.
2Bkqm—30 to 50 inches; white (10YR 8/2), continuous, indurated duripan; massive; extremely hard, extremely firm, brittle; violently effervescent.

Typical Pedon Location

Location in survey area: About 21 miles west of Riddle; in the NE¼SE¼ of sec. 36, T. 14 S., R. 2 W.
Map unit in which located: Arbidge-Hunnton silt loams, 1 to 8 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—19 to 32 inches
Depth to duripan—20 to 40 inches
Reaction—neutral to moderately alkaline

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—40 to 55 percent
Rock fragment content—0 to 5 percent

Hurryback Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Pachic Argixerolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Foothills and terrace and tableland escarpments
Parent material: Kind—slope alluvium and loess; source—volcaniclastic material
Slope range: 8 to 40 percent
Elevation: 4,600 to 6,300 feet
Climatic data (average annual):

Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—65 to 95 days

Typical Pedon Description

A—0 to 6 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine interstitial pores; 5 percent gravel; slightly acid; clear smooth boundary.

BA—6 to 24 inches; brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; common very fine tubular pores; common thin clay films on faces of peds; 5 percent gravel; neutral; clear smooth boundary.

Bt1—24 to 35 inches; dark yellowish brown (10YR 4/4) gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds and in pores; 15 percent gravel; neutral; clear wavy boundary.

Bt2—35 to 60 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; common very fine and few fine tubular pores; many moderately thick clay films on faces of peds and in pores; 5 percent gravel; neutral.

Typical Pedon Location

Location in survey area: About 13 miles northwest of Silver City; in the NE$^1/_4$SE$^1/_4$ of sec. 7, T. 4 S., R. 5 W.

Map unit in which located: Bieber-Hurryback association, 2 to 40 percent slopes

Range in Characteristics

Profile:
Reaction—slightly acid or neutral

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 or 2 moist

BA horizon:
Hue—7.5YR or 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Texture—loam, gravelly loam, or clay loam
Rock fragment content—5 to 20 percent

Bt horizon:
Hue—7.5YR or 10YR
Value—3 to 6 dry, 2 to 5 moist
Chroma—2 to 4 dry or moist
Texture—gravelly loam, clay loam, or gravelly clay loam
Clay content—24 to 35 percent
Rock fragment content—5 to 35 percent

Igert Series

Classification

Taxonomic class: Fine-loamy, mixed, mesic Durixerollic Haplargids

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Structural benches and foothills
Parent material: Kind—residuum and slope alluvium; source—welded rhyolitic tuff and breccia
Slope range: 2 to 20 percent
Elevation: 3,100 to 5,400 feet
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 130 days

Typical Pedon Description

A1—0 to 4 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure parting to moderate fine granular; slightly hard, very friable; many very fine and fine roots and few medium roots; many very fine and fine interstitial and vesicular pores; 20 percent gravel; slightly acid; clear smooth boundary.

A2—4 to 12 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable; many very fine and fine roots, common medium roots, and few coarse roots; common very fine and fine tubular and interstitial pores; 15 percent gravel; neutral; gradual smooth boundary.

BA—12 to 18 inches; yellowish brown (10YR 5/4) gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable; slightly sticky; many very fine and fine roots and common medium and coarse roots; many very fine and fine tubular pores; 15 percent gravel; neutral; clear wavy boundary.

Bt—18 to 23 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; many very fine and fine tubular and interstitial pores and few medium tubular and interstitial pores; many thin clay films on faces of peds and in pores; 20 percent gravel and 5 percent cobbles; mildly alkaline; clear wavy boundary.
Bkq—23 to 39 inches; very pale brown (10YR 7/3) discontinuous weakly cemented very gravelly loam, yellowish brown (10YR 5/4) moist; massive; hard, firm; few very fine and fine roots; common very fine and fine interstitial pores; 50 percent gravel and 5 percent cobbles; strongly effervescent; moderately alkaline; abrupt irregular boundary.
R—39 inches; fractured welded rhyolitic tuff ; common moderately thick coatings of silica and calcium carbonates in fractures.

Typical Pedon Location

Location in survey area: About 16 miles northwest of Grasmere; in the SW¼SW¼ of sec. 3, T. 10 S., R. 3 E.
Map unit in which located: Igert-Willhill-Hardtrigger gravelly loams,
1 to 25 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—12 to 23 inches
Depth to bedrock—25 to 40 inches

A horizon:
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Reaction—neutral to mildly alkaline

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Texture—clay loam, gravelly loam, or gravelly clay loam
Clay content—25 to 35 percent
Rock fragment content—10 to 25 percent
Reaction—neutral to moderately alkaline

Bkq horizon:
Hue—7.5YR or 10YR
Value—5 to 7 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—extremely gravelly loam, very gravelly loam, or gravelly loam
Clay content—12 to 20 percent
Rock fragment content—30 to 90 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline
Cementation—weak or strong

Insidert Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Abruptic Aridic Durixerolls

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Calderas
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 5 percent
Elevation: 5,300 to 5,900 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days

Typical Pedon Description

A—0 to 6 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; weak thin platy structure parting to moderate fine granular; soft, very friable, slightly sticky; many very fine and fine roots and common medium roots; many very fine and fine tubular and interstitial pores; 5 percent gravel; neutral; abrupt smooth boundary.
Bt1—6 to 9 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; moderate fine angular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; continuous moderately thick clay films on faces of peds and lining pores; 5 percent gravel; neutral; abrupt smooth boundary.
Bt2—9 to 13 inches; pale brown (10YR 6/3) clay, brown (10YR 4/3) moist; moderate fine prismatic structure parting to strong fine and medium angular blocky; very hard, firm, very sticky and very plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; continuous thick clay films on faces of peds and lining pores; 5 percent gravel; neutral; clear smooth boundary.

Bt3—13 to 17 inches; light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; very hard, firm, very sticky and very plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; continuous thick clay films on faces of peds and lining pores; moderately alkaline; clear smooth boundary.
Bkq—17 to 24 inches; white (10YR 8/2) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, very friable; few very fine and fine roots; few very fine and fine tubular pores; 10 percent gravel and 35 percent indurated duripan fragments; violently effervescent; moderately alkaline; abrupt smooth boundary.
Bkqm—24 to 27 inches; very pale brown (10YR 8/3) continuous very thin siliceous lamination over white (10YR 8/2) continuous indurated duripan; massive; 50 percent rock fragments; violently effervescent; abrupt wavy boundary.
2R—27 inches; basalt.

Typical Pedon Location

Location in survey area: About 9 1/2 miles northwest of Three Creek; in the NE1/4SW1/4 of sec. 27, T. 14 S., R. 10 E.
Map unit in which located: Heckison-Insidert-Bigflat silt loams, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—12 to 20 inches
Depth to duripan—20 to 37 inches
Depth to bedrock—21 to 40 inches

A horizon:
Chroma—3 or 4 dry, 2 or 3 moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—clay, clay loam, or silty clay loam
Clay content—35 to 50 percent
Rock fragment content—0 to 10 percent
Reaction—neutral to moderately alkaline

Bkq horizon:
Value—7 or 8 dry, 5 to 7 moist
Chroma—3 or 4 dry or moist
Texture—gravelly loam, gravelly sandy loam, or very gravelly sandy loam
Clay content—12 to 25 percent
Rock fragment content—5 to 20 percent
Duripan fragments—0 to 50 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Itca Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Argixerolls

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Slow
Landforms: Foothills and mountains
Parent material: Kind—residuum and colluvium; source—welded rhyolitic tuff
Slope range: 2 to 40 percent
Elevation: 4,600 to 6,900 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

A—0 to 4 inches; grayish brown (10YR 5/2) very stony loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine vesicular pores; 5 percent gravel, 15 percent cobbles, and 15 percent stones; neutral; clear smooth boundary.
Bt—4 to 13 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; weak fine prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, sticky and plastic, many very fine roots, common fine roots, and few medium roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds and in pores; 15 percent gravel, 30 percent cobbles, and 5 percent stones; neutral; clear smooth boundary.
Btq—13 to 16 inches; brown (10YR 5/3) extremely cobbly clay, dark brown (10YR 4/3) moist; moderate fine angular blocky structure; hard, firm, sticky and very plastic; common very fine and fine roots and few medium roots; few very fine tubular pores; continuous thick clay films on faces of peds and in pores; 25 percent gravel, 40 percent cobbles, and 10 percent stones; neutral; abrupt irregular boundary.
R—16 inches; fractured welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 2 miles southeast of Three Creek; in the SE¼NW¼ of sec. 11, T. 16 S., R. 11 E.
Map unit in which located: Vitale-Mulshoe-Itca complex, 2 to 40 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches
Reaction—neutral or mildly alkaline

A horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly clay loam or very stony clay loam
Clay content—35 to 40 percent
Rock fragment content—35 to 60 percent

Jenor Series

Classification

Taxonomic class: Coarse-loamy, mixed, mesic Typic Durorthids

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Calderas
Parent material: Kind—mixed alluvium; source—basalt and volcanic ash
Slope range: 1 to 4 percent
Elevation: 3,850 to 5,200 feet
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—45 to 50 degrees F
Frost-free period—95 to 120 days

Typical Pedon Description

A—0 to 5 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; weak thin platy structure parting to weak fine granular; slightly hard, very friable; common very fine and fine roots and few medium roots; many fine and medium vesicular and interstitial pores; moderately alkaline; clear smooth boundary.
Bw—5 to 15 inches; very pale brown (10YR 7/3) fine sandy loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky; few very fine, fine, and medium roots; few fine tubular pores; moderately alkaline; clear wavy boundary.
Bkq—15 to 21 inches; very pale brown (10YR 7/3) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable; few fine and medium roots; strongly alkaline; abrupt wavy boundary.
Bkqm—21 to 60 inches; light gray (10YR 7/2) continuous indurated duripan, pale brown (10YR 6/3) moist; platy structure; extremely hard, very firm, brittle; violently effervescent.

Typical Pedon Location

Location in survey area: About 17 miles northeast of Grasmere; in the NE¼NE¼ of sec. 2, T. 10 S., R. 6 E.
Map unit in which located: Troughs-Jenor-Laped association, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to duripan—20 to 30 inches
Reaction—moderately alkaline or strongly alkaline

Particle-size control section (weighted average):
Clay content—8 to 18 percent
Rock fragment content—0 to 15 percent

A horizon:
Value—6 or 7 dry, 4 or 5 moist

Bw horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam or loam

Bkq horizon:
Value—7 or 8 dry, 4 to 6 moist
Chroma—3 to 6 dry or moist
Texture—fine sandy loam or loam
Effervescence—strong or violent

Jumpcreek Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Durargidic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Structural benches
Parent material: Kind—slope alluvium and residuum; source—rhyolite
Slope range: 3 to 30 percent
Elevation: 4,250 to 4,700 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—47 to 49 degrees F
Frost-free period—95 to 115 days

Typical Pedon Description

A—0 to 6 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure parting to moderate fine and medium granular; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; many very fine and fine vesicular pores and few medium vesicular pores; 20 percent gravel; mildly alkaline; clear smooth boundary.
BA—6 to 12 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common fine tubular pores; common faint clay films on faces of peds; 35 percent gravel; neutral; clear smooth boundary.
Bt—12 to 21 inches; yellowish brown (10YR 5/4) very gravelly clay loam, brown (10YR 4/3) moist; moderate fine angular blocky structure; very hard, firm, very sticky and very plastic; few very fine and fine roots; common fine tubular pores; many moderately thick clay films on faces of peds and in pores; 50 percent gravel; neutral; clear wavy boundary.
Btq—21 to 30 inches; brown (7.5YR 5/4) extremely gravelly clay, dark brown (7.5YR 4/4) moist; strong fine angular blocky structure; very hard, very firm, very sticky and very plastic; few fine roots; few fine tubular pores; many thick clay films on faces of peds and in pores; 65 percent gravel; thin coatings of silica on underside of rock fragments; mildly alkaline; clear wavy boundary.
Bkq—30 to 36 inches; very pale brown (10YR 7/3) weakly cemented extremely gravelly sandy loam, yellowish brown (10YR 5/4) moist; discontinuous distinct siliceous laminar cap 1 millimeter thick; massive; very hard, firm; 75 percent gravel and 10 percent cobbles; strongly effervescent; strongly alkaline; gradual wavy boundary.
R—36 inches; fractured rhyolite.

Typical Pedon Location

Location in survey area: About 11 miles southwest of Marsing; in the NE¼NE¼ of sec. 27, T. 1 N., R. 5 W.
Map unit in which located: Jumpcreek-Frenchjohn complex, 3 to 30 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—22 to 40 inches

A horizon:
Value—2 or 3 moist
Chroma—2 or 3 dry and moist
Reaction—neutral or mildly alkaline

Bt horizon:
Hue—7.5YR or 10YR
Chroma—3 or 4 dry or moist
Texture—very gravelly clay loam, extremely gravelly clay loam, or extremely gravelly clay
Clay content—35 to 45 percent
Rock fragment content—35 to 70 percent
Reaction—neutral or mildly alkaline

Bkq horizon:
Value—5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—extremely gravelly sandy loam or very gravelly loam
Rock fragment content—50 to 90 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Kanlee Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Typic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains
Parent material: Kind—residuum and colluvium; source—intermediate intrusive rock
Slope range: 4 to 40 percent
Elevation: 4,600 to 7,000 feet

Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days

Typical Pedon Description

A—0 to 10 inches; very dark grayish brown (10YR 3/2) fine gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots and few medium and coarse roots; many very fine interstitial pores; 15 percent gravel; slightly acid; clear wavy boundary.

AB—10 to 14 inches; brown (10YR 4/3) fine gravelly coarse sandy loam, very dark brown (10YR 2/3) 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; many fine roots and few medium and coarse roots; many very fine interstitial and tubular pores; moderately micaceous; few thin clay films on faces of peds, in pores, and bridging particles; 15 percent gravel; neutral; clear wavy boundary.

Bt1—14 to 17 inches; brown (7.5YR 5/3) fine gravelly sandy clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure parting to weak fine and medium granular; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots and few coarse roots; many fine tubular pores; moderately micaceous; few thin slightly darker clay films in pores and common thin clay films on faces of peds; 15 percent gravel; neutral; clear broken boundary.

Bt2—17 to 24 inches; brown (7.5YR 5/4) fine gravelly sandy clay loam, dark brown (7.5YR 4/3) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine roots and few medium and coarse roots; common fine tubular pores; few thin clay films on faces of peds, in pores, and bridging particles; 15 percent gravel; moderately micaceous to strongly micaceous; neutral; clear irregular boundary.

Bt3—24 to 32 inches; brown (7.5YR 5/4) and light brown (7.5YR 6/5) fine gravelly sandy clay loam, dark brown (7.5YR 4/4) and brown (7.5YR 5/4) moist; moderate fine and very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; many very fine and fine tubular pores; common moderately thick and thin clay films on faces of peds, in pores, and bridging particles; at least one very thin horizontal clayey band (lamella); 30 percent gravel; neutral; clear irregular boundary.

Cr—32 to 45 inches; weathered granite with many brown stains; few pockets or streaks of fine gravelly sandy clay loam similar to that of the B3t horizon; at least one very thin horizontal clayey band (lamella); neutral; gradual broken boundary.

R—45 inches; fractured partially weathered granite.

Typical Pedon Location

Location in survey area: About $3^1/_2$ miles southwest of Reynolds; in the $NE^1/_4NE^1/_4$ of sec. 9, T. 3 S., R. 4 W.

Map unit in which located: Poisoncreek-Kanlee-Bauscher association, 4 to 45 percent slopes

Range in Characteristics

Profile:
Depth to soft bedrock—20 to 40 inches
Depth to hard bedrock—35 to 60 inches
Reaction—moderately acid to neutral

A horizon:
Value—3 to 5 dry, 1 to 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 2 to 5 moist
Chroma—2 to 5 dry or moist
Texture—sandy clay loam, coarse sandy clay loam, or fine gravelly sandy clay loam
Clay content—20 to 35 percent
Rock fragment content—5 to 35 percent

Kiyi Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Pachic Ultic Argixerolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Very slow
Landforms: Mountains and foothills
Parent material: Kind—residuum and slope alluvium; source—rhyolite
Slope range: 3 to 40 percent
Elevation: 5,100 to 6,600 feet
Climatic data (average annual):
Precipitation—16 to 20 inches

Air temperature—39 to 45 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

A—0 to 2 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine tubular pores; 15 percent gravel; neutral; clear smooth boundary.

AB—2 to 8 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; 15 percent gravel; neutral; gradual smooth boundary.

Bt1—8 to 16 inches; grayish brown (10YR 5/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; 20 percent gravel; common moderately thick clay films on faces of peds; slightly acid; gradual wavy boundary.

Bt2—16 to 25 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate medium and fine subangular blocky structure; very hard, firm, sticky and plastic; few very fine, fine, and medium roots; few very fine and fine tubular pores; 30 percent gravel and 10 percent cobbles; common moderately thick clay films on faces of peds and in pores; slightly acid; gradual smooth boundary.

Bt3—25 to 40 inches; pale brown (10YR 6/3) gravelly clay, brown (10YR 4/3) moist; strong fine and medium angular blocky structure; extremely hard, very firm, sticky and plastic; few fine roots; few very fine tubular pores; 20 percent gravel; continuous clay pressure faces on peds; slightly acid; gradual wavy boundary.

C—40 to 60 inches; very pale brown (10YR 7/3) very cobbly clay, brown (10YR 5/3) moist; weak fine angular blocky structure; extremely hard, extremely firm, sticky and plastic; few very fine pores; 30 percent gravel and 30 percent cobbles; continuous clay pressure faces on peds; slightly acid.

Typical Pedon Location

Location in survey area: About 8 miles northwest of Silver City; in the $SE^1/_4NW^1/_4$ of sec. 24, T. 4 S., R. 5 W.

Map unit in which located: Snell-Kiyi association, 3 to 40 percent slopes

Range in Characteristics

Particle-size control section (weighted average):
Clay content—35 to 50 percent
Rock fragment content—20 to 35 percent

A and AB horizons:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—neutral or slightly acid

Bt horizon (upper part):
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—gravelly clay loam or very gravelly clay loam
Clay content—28 to 38 percent
Rock fragment content—20 to 45 percent
Reaction—slightly acid or moderately acid

Bt horizon (lower part):
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—gravelly clay or cobbly clay
Clay content—40 to 55 percent
Rock fragment content—20 to 35 percent
Reaction—slightly acid or moderately acid

C horizon (where present):
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly clay, very cobbly sandy clay, or very stony clay
Clay content—35 to 55 percent
Rock fragment content—35 to 60 percent
Reaction—slightly acid or moderately acid

Lamonta Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Abruptic Aridic Durixerolls

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained

Permeability: Very slow
Landforms: Pediments
Parent material: Kind—alluvium and residuum; source—lacustrine deposits
Slope range: 2 to 12 percent
Elevation: 3,900 to 4,900 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—47 to 50 degrees F
Frost-free period—95 to 120 days

Typical Pedon Description

A—0 to 7 inches; dark grayish brown (10YR 4/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; weak thin and medium platy structure parting to weak fine granular; soft, very friable, sticky and plastic; common very fine, fine, and medium roots and few coarse roots; common very fine and fine vesicular and interstitial pores; 15 percent gravel and 5 percent cobbles; mildly alkaline; abrupt smooth boundary.

Bt—7 to 18 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; strong medium angular blocky structure; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots and few coarse roots; common very fine interstitial pores; continuous moderately thick clay films on faces of peds and in pores; mildly alkaline; clear smooth boundary.

Btkq—18 to 23 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; many moderately thick clay films on faces of peds; strongly effervescent; moderately alkaline; abrupt smooth boundary.

2Bkqm—23 to 24 inches; light gray (10YR 7/2) continuous indurated duripan that has a laminar cap, very pale brown (10YR 7/3) moist; moderate thin and medium platy structure; extremely hard, extremely firm, brittle; violently effervescent; abrupt smooth boundary.

2Bkq1—24 to 28 inches; pale brown (10YR 6/3) fractured strongly cemented duripan and weakly cemented very cobbly loamy sand, brown (10YR 5/3) moist; fractures 5 to 25 centimeters apart; massive; very hard, very firm, brittle; common very fine tubular pores; 25 percent gravel and 15 percent cobbles; strongly effervescent; strongly alkaline; abrupt smooth boundary.

3Bkq2—28 to 60 inches; light yellowish brown (10YR 6/4) weakly cemented very cobbly loamy sand, brown (10YR 4/3) moist; white (10YR 8/2) laminar cap 2 millimeters thick; moderate thick platy structure; hard, friable; common very fine tubular pores; 25 percent gravel and 15 percent cobbles; strongly effervescent; moderately alkaline.

Typical Pedon Location

Location in survey area: About 14 miles northwest of Reynolds; in the SW¼SE¼ of sec. 17, T. 1 S., R. 5 W.
Map unit in which located: Chilcott-Lamonta complex, 2 to 12 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—6 to 10 inches
Depth to duripan—20 to 30 inches

A horizon:
Value—4 or 5 dry
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—40 to 55 percent
Rock fragment content—5 to 15 percent
Effervescence (lower part)—none to strong
Reaction (lower part)—mildly alkaline or moderately alkaline

Laped Series

Classification

Taxonomic class: Loamy, mixed, mesic, shallow Typic Durargids

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Tablelands and calderas
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 5 percent
Elevation: 3,850 to 5,350 feet
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 120 days

Typical Pedon Description

A1—0 to 3 inches; light gray (10YR 7/2) stony silt loam, dark grayish brown (10YR 4/2) moist; weak

thin and medium platy structure parting to weak fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine interstitial and vesicular pores; 5 percent gravel, 25 percent cobbles, and 5 percent stones; moderately alkaline; clear smooth boundary.

A2—3 to 8 inches; very pale brown (10YR 7/3) gravelly silt loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; many very fine and fine roots; common very fine interstitial pores and few fine tubular pores; 15 percent gravel; moderately alkaline; clear smooth boundary.

Bt—8 to 12 inches; light yellowish brown (10YR 6/4) gravelly silty clay loam, yellowish brown (10YR 5/4) moist; strong fine subangular blocky structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots; many very fine tubular pores; 10 percent gravel and 5 percent cobbles; many moderately thick clay films on faces of peds and in pores; moderately alkaline; clear smooth boundary.

Btk—12 to 16 inches; light yellowish brown (10YR 6/4) gravelly silty clay loam, yellowish brown (10YR 5/4) moist; strong fine subangular blocky structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots; many very fine tubular pores; 15 percent gravel and 5 percent cobbles; many moderately thick clay films on faces of peds and in pores; slightly effervescent; strongly alkaline; clear wavy boundary.

Bkq—16 to 19 inches; very pale brown (10YR 7/3) gravelly loam, light yellowish brown (10YR 6/4) moist; moderate medium subangular blocky structure; hard, friable, nonsticky and slightly plastic; 15 percent gravel and 15 percent cobbles, dominantly duripan fragments; violently effervescent; strongly alkaline; clear wavy boundary.

Bkqm—19 to 22 inches; white (10YR 8/2) continuous indurated duripan; massive; extremely hard, very firm, brittle; violently effervescent; abrupt irregular boundary.

R—22 inches; fractured basalt.

Typical Pedon Location

Location in survey area: About 8 miles southeast of Grasmere; in the NE¼SW¼ of sec. 9, T. 13 S., R. 6 E.

Map unit in which located: Troughs-Jenor-Laped association, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to duripan—14 to 20 inches
Depth to bedrock—20 to 30 inches

Particle-size control section (weighted average):
Clay content—27 to 35 percent
Rock fragment content—15 to 35 percent

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist

Bt horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—4 to 6 dry or moist
Texture—gravelly clay loam or gravelly silty clay loam
Effervescence (lower part)—slight or strong
Reaction—moderately alkaline or strongly alkaline

Larioscamp Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Xerollic Durargids

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Calderas, foothills, and structural benches
Parent material: Kind—alluvium and loess; source—basalt and welded rhyolitic tuff
Slope range: 1 to 10 percent
Elevation: 5,300 to 5,950 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—70 to 90 days

Typical Pedon Description

A—0 to 3 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine vesicular pores; 5 percent gravel; slightly acid; clear smooth boundary.

Bt1—3 to 9 inches; yellowish brown (10YR 5/4) clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine

tubular and interstitial pores; many thin clay films on faces of peds and lining pores; 5 percent gravel; neutral; clear smooth boundary.
Bt2—9 to 15 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong fine and medium angular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 10 percent gravel; mildly alkaline; clear smooth boundary.
2Bkq—15 to 25 inches; very pale brown (10YR 8/4) very cobbly sandy loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable; few very fine, fine, and medium roots; 25 percent gravel and 30 percent cobbles; coatings of lime and silica as much as 2 centimeters thick on rock fragments; violently effervescent; moderately alkaline; clear wavy boundary.
2Bkqm—25 to 29 inches; white (10YR 8/2) indurated duripan; massive; extremely hard, brittle; violently effervescent; abrupt wavy boundary.
3R—29 inches; slightly fractured welded rhyolitic tuff; fractures filled with silica and lime.

Typical Pedon Location

Location in survey area: About 16 miles northwest of Murphy Hot Springs; in the SE$^1/_4$NE$^1/_4$ of sec. 34, T. 14 S., R. 7 E.
Map unit in which located: Larioscamp-Dishpan-Brace loams, 1 to 12 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—8 to 18 inches
Depth to duripan—20 to 36 inches
Depth to bedrock—21 to 40 inches

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid to mildly alkaline

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—clay loam, clay, or cobbly clay
Clay content—35 to 45 percent
Rock fragment content—0 to 25 percent
Reaction—neutral or mildly alkaline

Bkq horizon:
Value—6 to 8 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly sandy loam or very cobbly loam
Clay content—10 to 20 percent
Rock fragment content—35 to 60 percent
Reaction—moderately alkaline or strongly alkaline

Longcreek Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Lithic Argixerolls

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Slow
Landforms: Structural benches, foothills, and landslide deposits
Parent material: Kind—residuum and colluvium; source—extrusive rock
Slope range: 3 to 35 percent
Elevation: 2,800 to 5,500 feet
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 51 degrees F
Frost-free period—90 to 135 days

Typical Pedon Description

A—0 to 5 inches; brown (10YR 5/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and fine roots and common medium roots; few fine vesicular and interstitial pores; 25 percent gravel and 15 percent cobbles; neutral; clear smooth boundary.
BAt—5 to 11 inches; yellowish brown (10YR 5/4) very cobbly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and fine roots and common medium roots; common fine tubular pores; many moderately thick clay films on faces of peds and in pores; 20 percent gravel and 15 percent cobbles; neutral; clear smooth boundary.
Bt—11 to 19 inches; light brown (7.5YR 6/4) very cobbly clay, brown (7.5YR 4/4) moist; strong fine prismatic structure parting to strong fine and medium angular blocky; very hard, very firm, very sticky and very plastic; common very fine, fine, and medium roots; few very fine and fine tubular pores; continuous thick clay films on faces of peds

and in pores; 25 percent gravel and 30 percent cobbles; mildly alkaline; abrupt wavy boundary.
R—19 inches; fractured basalt.

Typical Pedon Location

Location in survey area: About 12 miles northwest of Reynolds; in the NW¼NE¼ of sec. 22, T. 1 S., R. 5 W.
Map unit in which located: Longcreek-Hurryback-Succor complex, 3 to 40 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—14 to 20 inches

A horizon:
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—very cobbly clay loam, very cobbly clay, or very stony clay
Clay content—35 to 50 percent
Rock fragment content—35 to 55 percent
Reaction—neutral or mildly alkaline

Loomis Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Lithic Xerollic Haplargids

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Slow
Landforms: Tablelands, fan terraces, and structural benches
Parent material: Kind—residuum; source—volcaniclastic material
Slope range: 2 to 35 percent
Elevation: 4,000 to 5,100 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 115 days

Typical Pedon Description

A—0 to 3 inches; light yellowish brown (10YR 6/4) very stony loam, dark yellowish brown (10YR 3/4) moist; moderate medium and thick platy structure; slightly hard, very friable, slightly plastic; common very fine and fine roots; many very fine, fine, and medium vesicular and interstitial pores; 15 percent gravel, 20 percent cobbles, and 10 percent stones; neutral; clear smooth boundary.
Bt1—3 to 7 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; common thin clay films on faces of peds; 20 percent gravel and 25 percent cobbles; neutral; abrupt smooth boundary.
Bt2—7 to 10 inches; pale brown (10YR 6/3) extremely cobbly clay, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; very hard, firm, sticky and very plastic; common very fine and fine roots; common very fine and fine tubular pores; continuous moderately thick clay films on faces of peds and in pores; 35 percent gravel and 40 percent cobbles; neutral; clear smooth boundary.
Bt3—10 to 14 inches; pale brown (10YR 6/3) extremely cobbly clay, dark yellowish brown (10YR 4/4) moist; moderate fine and medium angular blocky structure; very hard, firm, sticky and very plastic; few very fine and fine roots; common very fine tubular pores; many moderately thick clay films on faces of peds and in pores; 35 percent gravel and 40 percent cobbles; neutral; gradual smooth boundary.
2R—14 inches; fractured basalt.

Typical Pedon Location

Location in survey area: About 2½ miles southwest of Cliffs; in the NE¼SW¼ of sec. 26, T. 9 S., R. 6 W.
Map unit in which located: Loomis-Fairylawn complex, 1 to 15 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—8 to 14 inches
Reaction—neutral or mildly alkaline

Particle-size control section (weighted average):
Clay content—35 to 55 percent
Rock fragment content—35 to 75 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist
Texture—very cobbly clay loam, very gravelly clay loam, very cobbly clay, or extremely cobbly clay
Clay content—27 to 40 percent in upper part and 40 to 55 percent in lower part

Lostvalley Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Typic Palexeralfs

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Very slow
Landforms: Calderas and tablelands
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 10 percent
Elevation: 5,300 to 6,200 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days

Typical Pedon Description

A—0 to 2 inches; pale brown (10YR 6/3) very stony silt loam, dark brown (10YR 4/3) moist; weak medium platy structure parting to weak fine subangular blocky; slightly hard, very friable, slightly sticky; common very fine and fine roots; common very fine and fine vesicular pores; 10 percent stones; slightly acid; clear smooth boundary.
AB—2 to 6 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial and tubular pores; slightly acid; abrupt smooth boundary.
Bt1—6 to 14 inches; yellowish brown (10YR 5/4) clay, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to strong medium angular blocky; very hard, very firm, very sticky and very plastic; common very fine and fine roots and few medium roots; few very fine tubular pores; continuous thick clay films on faces of peds and in pores; neutral; clear smooth boundary.
Bt2—14 to 27 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; few very fine interstitial and tubular pores; many moderately thick clay films on faces of peds and in pores; moderately alkaline; clear smooth boundary.
Btkq—27 to 32 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; few very fine, fine, and medium roots; few very fine interstitial and tubular pores; many moderately thick clay films on faces of peds and in pores; 10 percent gravel and 5 percent cobbles; slightly effervescent; common fine and medium concretions and filaments of calcium carbonates and silica; moderately alkaline; abrupt wavy boundary.
R—32 inches; fractured basalt; strongly effervescent coatings of calcium carbonates in fractures.

Typical Pedon Location

Location in survey area: About 19 miles northwest of Grasmere; in the NE$^1/_4$SW$^1/_4$ of sec. 14, T. 10 S., R. 2 E.
Map unit in which located: Deunah-Yatahoney-Lostvalley complex, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—4 to 10 inches
Depth to bedrock—25 to 40 inches

A horizon:
Value—5 or 6 dry
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6 dry or moist
Texture—clay, silty clay, or cobbly clay
Clay content—40 to 55 percent
Rock fragment content—0 to 15 percent
Reaction—neutral to moderately alkaline

Mackey Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic Xerollic Camborthids

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Foothills
Parent material: Kind—colluvium and residuum; source—andesite and basalt
Slope range: 15 to 45 percent
Elevation: 3,000 to 4,800 feet
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—47 to 51 degrees F
Frost-free period—100 to 130 days

Typical Pedon Description

A—0 to 6 inches; pale brown (10YR 6/3) stony loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; 40 percent gravel, 5 percent cobbles, and 1 percent stones; mildly alkaline; clear smooth boundary.
Bw—6 to 12 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; 35 percent gravel and 10 percent cobbles; mildly alkaline; clear smooth boundary.
Bk—12 to 26 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and very plastic; common very fine and fine roots; 55 percent gravel and 10 percent cobbles; strongly effervescent; moderately alkaline; clear smooth boundary.
R—26 inches; moderately weathered andesite.

Typical Pedon Location

Location in survey area: About 12 miles south of Marsing; in the $SE^1/_4NW^1/_4$ of sec. 4, T. 1 S., R. 4 W.
Map unit in which located: Mackey-Cottle association, 10 to 45 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—8 to 20 inches
Depth to bedrock—20 to 40 inches

Particle-size control section (weighted average):
Clay content—12 to 24 percent
Rock fragment content—35 to 75 percent

A horizon:
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bw horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly loam or very gravelly clay loam
Clay content—24 to 32 percent
Rock fragment content—35 to 60 percent

Bk horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly sandy loam or extremely gravelly sandy loam
Clay content—7 to 15 percent
Rock fragment content—35 to 80 percent
Reaction—mildly alkaline or moderately alkaline

McKeeth Series

Classification

Taxonomic class: Fine-loamy, mixed, mesic Duric Haplargids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Fan piedmonts
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 2 to 8 percent
Elevation: 2,400 to 3,800 feet
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—50 to 52 degrees F
Frost-free period—120 to 150 days

Typical Pedon Description

E—0 to 5 inches; light gray (10YR 7/2) gravelly loam, dark grayish brown (10YR 4/2) moist; weak medium and thick platy structure; soft, very friable,

slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine and few medium vesicular pores; 10 percent gravel and 5 percent cobbles; slightly effervescent; moderately alkaline; clear wavy boundary.

Bt—5 to 12 inches; very pale brown (10YR 7/3) gravelly clay loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure parting to moderate fine angular blocky; slightly hard, friable, very sticky and very plastic; few very fine, fine, and medium roots; common very fine tubular pores; 20 percent gravel; many moderately thick clay films on faces of peds and in pores; strongly effervescent; moderately alkaline; clear wavy boundary.

Btk—12 to 16 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, sticky and plastic; common very fine roots and few fine roots; few very fine tubular pores; 25 percent gravel and 20 percent cobbles; common moderately thick clay films on faces of peds; strongly effervescent; moderately alkaline; abrupt wavy boundary.

2Bkq—16 to 20 inches; very pale brown (10YR 7/3) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak medium platy structure; discontinuous strongly cemented laminar cap; soft, very friable; few very fine roots; 30 percent gravel and 20 percent cobbles; violently effervescent; moderately alkaline; clear wavy boundary.

2C—20 to 60 inches; extremely gravelly loamy sand that is dark yellowish brown (10YR 4/6) moist; single grain; loose; few very fine roots; 50 percent gravel and 20 percent cobbles; violently effervescent; strongly alkaline.

Typical Pedon Location

Location in survey area: About 4 miles west of Murphy; in the SW¼SE¼ of sec. 36, T. 2 S., R. 3 W.

Map unit in which located: McKeeth-Veta gravelly loams, 2 to 15 percent slopes

Range in Characteristics

Profile:
Depth to cementation—10 to 19 inches

E horizon:
Value—6 or 7 dry
Chroma—2 or 3 dry or moist
Reaction—mildly alkaline or moderately alkaline

Bt horizon:
Value—5 to 7 dry, 3 or 4 moist
Texture—gravelly loam, gravelly sandy clay loam, or gravelly clay loam
Clay content—25 to 35 percent
Rock fragment content—20 to 35 percent
Effervescence—none or slight
Reaction—moderately alkaline or strongly alkaline

2Bk and 2C horizons:
Value—6 to 8 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly loamy sand, very gravelly sandy loam, extremely gravelly loamy sand, or extremely gravelly coarse sand
Clay content—2 to 8 percent
Rock fragment content—40 to 80 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Merlin Series

Classification

Taxonomic class: Clayey, montmorillonitic, frigid Lithic Argixerolls

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Very slow
Landforms: Calderas, tablelands, and plug domes
Parent material: Kind—residuum and slope alluvium; source—basalt and volcanic ash
Slope range: 2 to 12 percent
Elevation: 5,450 to 6,050 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 44 degrees F
Frost-free period—50 to 85 days

Typical Pedon Description

A—0 to 4 inches; grayish brown (10YR 5/2) very stony loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure parting to moderate fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine tubular and vesicular pores; 10 percent gravel, 10 percent cobbles, and 20 percent stones; slightly acid; clear smooth boundary.

Bt1—4 to 9 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate fine angular blocky; few very fine, fine, and medium roots; common very fine and fine tubular pores; many moderately

thick clay films on faces of peds and in pores; 10 percent gravel; neutral; clear smooth boundary.
Bt2—9 to 19 inches; yellowish brown (10YR 5/4) clay, brown (10YR 5/3) moist; strong fine and medium prismatic structure; extremely hard, very firm, very sticky and very plastic; few very fine and fine roots; few fine tubular pores; continuous thick clay films on faces of peds and in pores; 5 percent gravel and 5 percent cobbles; neutral; abrupt wavy boundary.
R—19 inches; slightly fractured basalt.

Typical Pedon Location

Location in survey area: About 6 1/2 miles northeast of Three Creek; in the SE1/4SE1/4 of sec. 36, T. 14 S., R. 11 E.
Map unit in which located: Merlin-Lostvalley-Chayson complex, 1 to 12 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches

A horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—clay loam or clay
Clay content—35 to 70 percent
Rock fragment content—0 to 15 percent
Reaction—neutral or mildly alkaline

Midraw Series

Classification

Taxonomic class: Clayey, montmorillonitic, mesic, shallow Xerollic Durargids

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Structural benches
Parent material: Kind—slope alluvium and colluvium; source—extrusive rock and volcanic ash
Slope range: 0 to 20 percent
Elevation: 3,200 to 4,800 feet
Climatic data (average annual):
Precipitation—8 to 12 inches
Air temperature—47 to 50 degrees F
Frost-free period—95 to 125 days

Typical Pedon Description

A—0 to 3 inches; light brownish gray (10YR 6/2) stony loam, very dark grayish brown (10YR 3/2) moist; moderate thin and medium platy structure parting to moderate fine subangular blocky; slightly hard, very friable, slightly sticky; many very fine and fine roots and few medium roots; common very fine and fine vesicular and tubular pores and few medium vesicular and tubular pores; 40 percent gravel, 5 percent cobbles, and 1 percent stones; neutral; clear smooth boundary.
Bt1—3 to 8 inches; pale brown (10YR 6/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; common moderately thick clay films on faces of peds and in pores; 25 percent gravel and 5 percent cobbles; neutral; abrupt smooth boundary.
Bt2—8 to 15 inches; light brownish gray (10YR 6/2) gravelly clay, dark brown (10YR 4/3) moist; moderate fine angular blocky structure; very hard, firm, sticky and very plastic; common fine roots and few very fine roots; few very fine and fine tubular pores; many thick clay films in pores; 20 percent gravel and 5 percent cobbles; mildly alkaline; clear smooth boundary.
Bkq—15 to 18 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few fine roots; common thin clay films in pores; 25 percent gravel and 5 percent cobbles; slightly effervescent; moderately alkaline; abrupt wavy boundary.
Bkqm—18 to 21 inches; very pale brown (10YR 7/3) continuous indurated duripan, brown (10YR 5/3) moist; platy structure; extremely hard, very firm, brittle; 50 percent rock fragments; violently effervescent; abrupt wavy boundary.
R—21 inches; slightly weathered rhyolite.

Typical Pedon Location

Location in survey area: About 17 miles southwest of Reynolds; in the NW1/4SW1/4 of sec. 36, T. 1 N., R. 6 W.
Map unit in which located: Hardtrigger-Cottle-Midraw complex, 3 to 35 percent slopes

Range in Characteristics

Profile:
Depth to duripan—14 to 20 inches
Depth to bedrock—20 to 35 inches

Particle-size control section (weighted average):
Clay content—35 to 45 percent
Rock fragment content—15 to 35 percent

A horizon:
Value—3 or 4 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—gravelly clay loam, gravelly silty clay loam, gravelly clay, or cobbly clay
Clay content—30 to 40 percent in upper part and 35 to 50 percent in lower part
Effervescence (lower part)—none to slight
Reaction—neutral to moderately alkaline

Minveno Series

Classification

Taxonomic class: Loamy, mixed, mesic, shallow Xerollic Durorthids

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Moderate
Landforms: Calderas and structural benches
Parent material: Kind—alluvium and loess; source—extrusive rock and volcanic ash
Slope range: 1 to 15 percent
Elevation: 4,200 to 5,000 feet
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—46 to 49 degrees F
Frost-free period—95 to 120 days

Typical Pedon Description

A—0 to 4 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; moderate thin platy structure parting to weak fine granular; soft, very friable; many very fine and fine roots and few medium roots; many very fine and fine vesicular pores; mildly alkaline; clear smooth boundary.
Bw1—4 to 12 inches; yellowish brown (10YR 5/4) silt loam, brown (10YR 4/3) moist; moderate medium and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and few medium tubular pores; few thin clay films on faces of peds; mildly alkaline; clear smooth boundary.
Bw2—12 to 16 inches; pale brown (10YR 6/3) silt loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; mildly alkaline; abrupt wavy boundary.
Bkq—16 to 19 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; hard, firm; common very fine and fine roots and few medium roots; few fine tubular pores; 5 percent gravel; 30 percent durinodes; strongly effervescent; moderately alkaline; gradual smooth boundary.
Bkqm—19 to 39 inches; indurated duripan that is very pale brown (10YR 8/3) moist; massive; extremely hard, very firm, brittle; few fine roots; 10 percent gravel; violently effervescent; gradual wavy boundary.
2R—39 inches; highly fractured black vitric tuff.

Typical Pedon Location

Location in survey area: About 27 miles north of Murphy Hot Springs; in the $SE^1/_4SE^1/_4$ of sec. 31, T. 11 S., R. 9 E.
Map unit in which located: Minveno-Roseworth silt loams, 1 to 5 percent slopes

Range in Characteristics

Profile:
Depth to duripan—10 to 20 inches
Depth to bedrock—20 to 40 inches

Particle-size control section (weighted average):
Clay content—10 to 18 percent
Rock fragment content—0 to 15 percent

A horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—silt loam or loam
Effervescence—none or slight
Reaction—mildly alkaline or moderately alkaline

Bkq horizon:
Value—6 to 8 dry, 4 to 6 moist

Chroma—2 or 3 dry or moist
Effervescence—strong or violent

Mollic Haploxeralfs

Setting

Depth class: Moderately deep or deep
Drainage class: Well drained
Permeability: Moderately slow or slow
Landforms: Tableland escarpments
Parent material: Kind—slope alluvium and colluvium; source—basalt and volcanic ash
Slope range: 15 to 50 percent
Elevation: 4,400 to 6,800 feet
Climatic data (average annual):
Precipitation—12 to 17 inches
Air temperature—40 to 48 degrees F
Frost-free period—60 to 110 days

Example Pedon Description

A—0 to 5 inches; light brownish gray (10YR 6/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure; soft, very friable; many very fine and fine roots; many very fine and fine vesicular and interstitial pores; 10 percent gravel and 10 percent cobbles; clear smooth boundary.

Bt1—5 to 9 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine vesicular and interstitial pores; common thin clay films on faces of peds; 15 percent gravel; abrupt wavy boundary.

Bt2—9 to 21 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 3/4) moist; strong medium and coarse prismatic structure; very hard, very firm, sticky and plastic; few fine roots and common very fine roots; common very fine and fine tubular pores; many thick clay films on faces of peds, in pores, and bridging sand grains; 10 percent gravel; abrupt wavy boundary.

Bt3—21 to 38 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium and fine angular blocky structure; very hard, very firm, sticky and plastic; few very fine roots; common thin clay films on faces of peds; 55 percent gravel; clear wavy boundary.

R—38 inches; highly fractured basalt.

Example Pedon Location

Location in survey area: About $1^1/_2$ miles southeast of Pleasant Valley School; in the $SE^1/_4SE^1/_4$ of sec. 24, T. 6 S., R. 6 W.
Map unit in which located: Mollic Haploxeralfs-Pachic Argixerolls complex, steep

Range in Characteristics

Profile:
Depth to bedrock—20 to 60 inches

A horizon:
Value—3 or 4 moist
Chroma—2 or 3 dry or moist

Bt horizon (upper part):
Texture—clay, clay loam, or gravelly clay loam
Clay content—30 to 45 percent
Rock fragment content—5 to 35 percent
Reaction—neutral or mildly alkaline

Bt horizon (lower part):
Texture—stratified cobbly clay to extremely stony loam
Clay content—18 to 45 percent
Rock fragment content—15 to 90 percent
Effervescence—none or slight
Reaction—neutral to moderately alkaline

Monasterio Series

Classification

Taxonomic class: Ashy-skeletal, frigid Vitrandic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Structural benches and foothills
Parent material: Kind—residuum and slope alluvium; source—vitric tuff and breccia
Slope range: 1 to 20 percent
Elevation: 4,800 to 6,500 feet
Climatic data (average annual):
Precipitation—13 to 18 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 95 days

Typical Pedon Description

A1—0 to 4 inches; dark grayish brown (10YR 4/2) stony sandy loam, black (10YR 2/1) moist;

moderate fine and medium granular structure; slightly hard, very friable; many very fine and fine roots; many very fine and fine interstitial pores; 15 percent gravel and 1 percent stones; moderately acid; clear smooth boundary.

A2—4 to 8 inches; dark grayish brown (10YR 4/2) sandy loam, black (10YR 2/1) moist; weak fine subangular blocky structure parting to moderate fine and medium granular; slightly hard, very friable; many very fine and fine roots and common medium roots; many very fine and fine interstitial pores; 10 percent gravel; neutral; clear smooth boundary.

BA—8 to 11 inches; brown (10YR 4/3) gravelly sandy loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots and common medium and coarse roots; many fine tubular and interstitial pores; neutral; 15 percent gravel; clear smooth boundary.

Bt1—11 to 17 inches; dark yellowish brown (10YR 4/4) very gravelly sandy loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine and medium tubular and interstitial pores; very few thin clay films on faces of peds; 30 percent gravel and 10 percent cobbles; neutral; clear wavy boundary.

Bt2—17 to 25 inches; brown (10YR 5/4) very cobbly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to strong medium angular blocky; very hard, firm, sticky and plastic; common very fine roots; common very fine and fine tubular pores; common moderately thick clay films on faces of peds and rock fragments; 30 percent gravel and 15 percent cobbles; neutral; clear wavy boundary.

Btq—25 to 28 inches; brown (10YR 5/4) extremely cobbly sandy clay loam, brown (7.5YR 4/4) moist; moderate fine angular blocky structure; very hard, firm, sticky and plastic; few very fine roots; few fine tubular pores; common thin clay films on faces of peds, in pores, and on rock fragments; 35 percent gravel, 25 percent cobbles, and 20 percent stones; interstices filled with secondary silica and common opalized silica pendants on underside of rock fragments; neutral; abrupt wavy boundary.

R—28 inches; weathered flow breccia.

Typical Pedon Location

Location in survey area: About 14 miles west of Grasmere; in the NW$^{1}/_{4}$NW$^{1}/_{4}$ of sec. 18, T. 12 S., R. 3 E.

Map unit in which located: Monasterio-Wickahoney complex, 1 to 20 percent slopes (fig. 15)

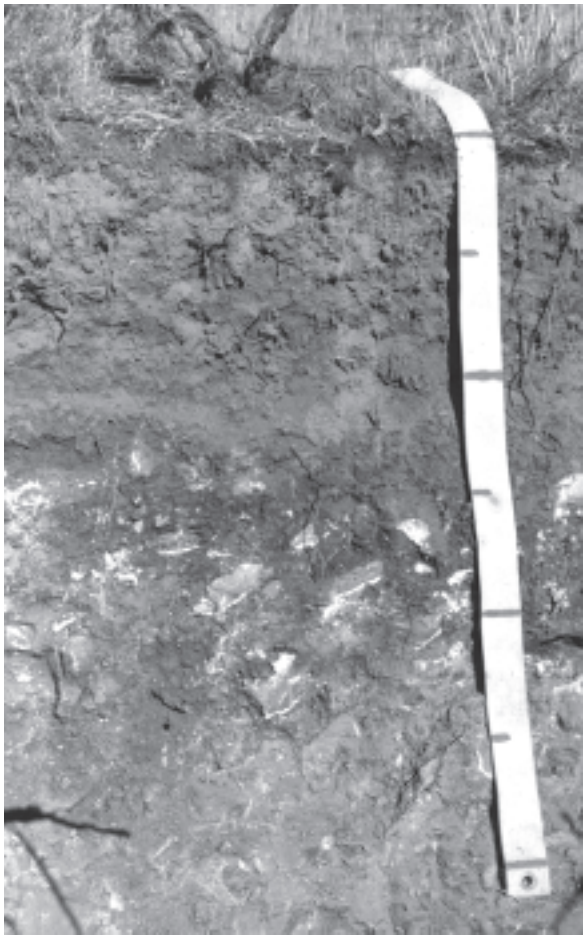


Figure 15.—Profile of Monasterio stony sandy loam in an area of Monasterio-Wickahoney complex, 1 to 20 percent slopes.

Range in Characteristics

Profile:

Depth to bedrock—20 to 40 inches

Volcanic glass content (very fine sand fraction)—45 to 70 percent

Base saturation—50 to 75 percent

A horizon:

Hue—7.5YR or 10YR

Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—moderately acid to neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—very cobbly sandy clay loam, very gravelly sandy clay loam, or very gravelly sandy loam
Clay content—18 to 30 percent
Rock fragment content—35 to 60 percent
Reaction—slightly acid or neutral

Btq horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 6 dry or moist
Texture—extremely cobbly sandy clay loam, extremely cobbly sandy loam, or extremely stony sandy clay loam
Clay content—18 to 32 percent
Rock fragment content—60 to 90 percent
Reaction—slightly acid or neutral

Mulshoe Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Ultic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains
Parent material: Kind—residuum and slope alluvium; source—welded rhyolitic tuff
Slope range: 4 to 25 percent
Elevation: 5,200 to 6,900 feet
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—40 to 44 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

A—0 to 4 inches; dark grayish brown (10YR 4/2) very stony sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, very friable; many very fine and fine roots and few medium roots; many very fine and fine interstitial pores; 20 percent gravel, 15 percent cobbles, and 15 percent stones; slightly acid; clear smooth boundary.

BA—4 to 9 inches; grayish brown (10YR 5/2) very stony loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine interstitial and tubular pores; few thin clay films on faces of peds; 20 percent gravel, 15 percent cobbles, and 15 percent stones; slightly acid; clear wavy boundary.

Bt—9 to 21 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial and tubular pores; few thin clay films on faces of peds; 20 percent gravel, 20 percent cobbles, and 10 percent stones; slightly acid; gradual wavy boundary.

Cr—21 to 24 inches; weathered welded rhyolitic tuff; pale brown (10YR 6/3) clay loam that is brown (10YR 4/3) when moist in about 10 percent of fractures; moderate and strong very fine and fine subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine, fine, and medium roots; many moderately thick clay films on faces of peds and in pores; neutral; clear wavy boundary.

R—24 inches; slightly fractured welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 4 miles southeast of Three Creek; in the $SE^1/_4SE^1/_4$ of sec. 7, T. 16 S., R. 12 E.
Map unit in which located: Vitale-Mulshoe-Itca complex, 2 to 40 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Base saturation—50 to 75 percent

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very stony clay loam, very cobbly clay loam, or very gravelly clay loam
Clay content—28 to 35 percent
Rock fragment content—35 to 60 percent

Murphill Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Calciorthids

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Foothills and structural benches
Parent material: Kind—residuum; source—vitric tuff and basalt
Slope range: 2 to 35 percent
Elevation: 2,300 to 4,500 feet
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 53 degrees F
Frost-free period—105 to 150 days

Typical Pedon Description

A—0 to 3 inches; light yellowish brown (2.5Y 6/4) very gravelly fine sandy loam, olive brown (2.5Y 4/4) moist; moderate thin platy structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine vesicular and interstitial pores; 30 percent gravel and 5 percent cobbles; strongly effervescent; mildly alkaline; clear smooth boundary.

Bk1—3 to 9 inches; yellowish brown (10YR 5/4) very gravelly fine sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure parting to moderate fine granular; slightly hard, very friable; few very fine and fine roots; common very fine and fine vesicular and interstitial pores; 40 percent gravel; violently effervescent; moderately alkaline; clear wavy boundary.

Bk2—9 to 14 inches; yellowish brown (10YR 5/4) extremely gravelly loamy sand, dark yellowish brown (10YR 3/4) moist; massive; few very fine and fine roots; 70 percent gravel and 10 percent cobbles; violently effervescent, lime segregated in common fine seams; moderately alkaline; clear wavy boundary.

R—14 inches; moderately fractured vitric tuff; most fractures filled with lime and silica.

Typical Pedon Location

Location in survey area: About 3 miles south of Walter's Ferry; in the NE¼NE¼ of sec. 31, T. 1 S., R. 2 W.

Map unit in which located: Briabbit-Murphill complex, 2 to 35 percent slopes

Range in Characteristics

Profile:
Hue—10YR or 2.5Y
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Depth to bedrock—10 to 20 inches

A horizon:
Effervescence—none to strong
Reaction—neutral or mildly alkaline

Bk horizon:
Texture—very gravelly fine sandy loam, extremely gravelly loamy sand, or very gravelly sandy loam
Clay content—7 to 18 percent
Rock fragment content—40 to 80 percent
Reaction—mildly alkaline or moderately alkaline

Nagitsy Series

Classification

Taxonomic class: Loamy-skeletal, mixed Pachic Cryoborolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Mountains and foothills
Parent material: Kind—residuum and colluvium; source—igneous and quartzitic metamorphic rock
Slope range: 3 to 60 percent
Elevation: 5,200 to 8,400 feet
Climatic data (average annual):
Precipitation—15 to 25 inches
Air temperature—34 to 39 degrees F
Frost-free period—25 to 60 days

Typical Pedon Description

A1—0 to 7 inches; dark brown (10YR 3/3) very gravelly loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots, common medium roots, and few coarse roots; common very fine and fine tubular and vesicular pores; 45 percent gravel; neutral; clear smooth boundary.

A2—7 to 20 inches; brown (10YR 4/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly

hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; 45 percent gravel and 10 percent cobbles; neutral; clear smooth boundary.

AB—20 to 27 inches; pale brown (10YR 6/3) extremely gravelly loam, dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; 35 percent gravel and 30 percent cobbles; neutral; clear smooth boundary.

Bw—27 to 37 inches; light yellowish brown (10YR 6/4) extremely gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, sticky and slightly plastic; few very fine and fine roots; few very fine and fine tubular pores; 35 percent gravel and 30 percent cobbles; neutral; abrupt wavy boundary.

R—37 inches; fractured rhyolite.

Typical Pedon Location

Location in survey area: About 2 miles southeast of Silver City; in the NW1/4NW1/4 of sec. 16, T. 5 S., R. 3 W.

Map unit in which located: Nagitsy-Rock outcrop-Parkay complex, 3 to 30 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches

Particle-size control section (weighted average):
Clay content—18 to 27 percent
Rock fragment content—35 to 80 percent

A horizon:
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bw horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—very gravelly loam or extremely gravelly loam

Naz Series

Classification

Taxonomic class: Coarse-loamy, mixed Pachic Cryoborolls

Setting

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Mountains
Parent material: Kind—colluvium and residuum; source—intermediate intrusive and quartzitic metamorphic rock
Slope range: 10 to 60 percent
Elevation: 6,000 to 7,400 feet
Climatic data (average annual):
Precipitation—25 to 35 inches
Air temperature—34 to 39 degrees F
Frost-free period—30 to 60 days

Typical Pedon Description

Oi—2 inches to 1 inch; undecomposed needles and twigs.

Oe—1 inch to 0; partially decomposed needles and twigs.

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) loam, black (10YR 2/1) moist; strong fine and medium granular structure; soft, very friable; 5 percent gravel; moderately acid; gradual smooth boundary.

A2—5 to 24 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure parting to strong medium granular; soft, very friable; 5 percent gravel; slightly acid; gradual smooth boundary.

C1—24 to 45 inches; dark grayish brown (10YR 4/2) coarse sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure parting to strong fine and medium granular; soft, very friable; 10 percent gravel; slightly acid; clear smooth boundary.

C2—45 to 50 inches; pale brown (10YR 6/3) gravelly coarse sandy loam, dark brown (10YR 4/3) moist; massive; 20 percent gravel; slightly acid; abrupt smooth boundary.

Cr—50 inches; weathered granite.

Typical Pedon Location

Location in survey area: About 9 1/2 miles northeast of Cliffs; in the NW1/4SW1/4 of sec. 35, T. 7 S., R. 5 W.

Map unit in which located: Nazaton-Naz complex, 10 to 60 percent slopes

Range in Characteristics

Profile:
Base saturation (upper 40 inches)—50 to 65 percent
Depth to soft bedrock—40 to 60 inches

Particle-size control section (weighted average):
Clay content—5 to 13 percent
Rock fragment content—5 to 20 percent

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—neutral to moderately acid

C horizon:
Hue—7.5YR or 10YR
Value—4 to 8 dry, 3 to 6 moist
Chroma—2 or 3 dry or moist
Texture—coarse sandy loam, gravelly sandy loam, cobbly coarse sandy loam, or gravelly coarse sandy loam
Reaction—neutral to strongly acid

Nazaton Series

Classification

Taxonomic class: Loamy-skeletal, mixed Pachic Cryoborolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Mountains
Parent material: Kind—colluvium; source—intermediate intrusive and quartzitic metamorphic rock
Slope range: 20 to 60 percent
Elevation: 6,000 to 7,400 feet
Climatic data (average annual):
Precipitation—24 to 30 inches
Air temperature—38 to 40 degrees F
Frost-free period—45 to 60 days

Typical Pedon Description

Oi—1 inch to 0; partially decomposed leaves and twigs.
A1—0 to 5 inches; dark grayish brown (10YR 4/2) stony loam, very dark brown (10YR 2/2) moist; moderate to strong medium granular structure; soft, very friable, slightly sticky and slightly plastic; 15 percent gravel, 5 percent cobbles, and 1 percent stones; moderately acid; clear smooth boundary.
A2—5 to 15 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure parting to strong medium granular; soft, very friable, slightly sticky and slightly plastic; 10 percent gravel and 10 percent cobbles; slightly acid; gradual smooth boundary.
AB—15 to 27 inches; grayish brown (10YR 5/2) very cobbly loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to moderate medium granular; slightly hard, very friable, slightly sticky and slightly plastic; 15 percent gravel and 25 percent cobbles; slightly acid; gradual smooth boundary.
Bw—27 to 34 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 3/3) moist; weak to moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; 20 percent gravel and 35 percent cobbles; slightly acid; gradual smooth boundary.
C—34 to 60 inches; pale brown (10YR 6/3) very cobbly loam, light brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; 20 percent gravel and 35 percent cobbles; neutral.

Typical Pedon Location

Location in survey area: About 9 miles northeast of Cliffs; in the NW$^1/_4$NW$^1/_4$ of sec. 3, T. 8 S., R. 5 W.
Map unit in which located: Nazaton-Naz complex, 10 to 60 percent slopes

Range in Characteristics

Particle-size control section (weighted average):
Clay content—15 to 25 percent
Rock fragment content—35 to 60 percent

A horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid or slightly acid

Bw horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—extremely gravelly loam, extremely gravelly sandy loam, or very cobbly loam
Reaction—slightly acid or neutral

Nicholflat Series

Classification

Taxonomic class: Clayey, montmorillonitic, frigid, shallow Abruptic Durixeralfs

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Alluvial flats
Parent material: Kind—mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 1 to 8 percent
Elevation: 5,300 to 5,600 feet
Climatic data (average annual):
Precipitation—13 to 15 inches
Air temperature—43 to 45 degrees F
Frost-free period—70 to 90 days

Typical Pedon Description

E—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots, common fine roots, and few medium roots; common very fine and fine vesicular pores; 5 percent gravel; slightly acid; clear smooth boundary.

BE—3 to 7 inches; light brownish gray (10YR 6/2) silt loam, dark brown (10YR 3/3) moist; light gray (10YR 7/2) skeletans on faces of peds; moderate very fine angular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; common very fine tubular pores; 5 percent gravel; moderately acid; abrupt smooth boundary.

Bt—7 to 18 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong fine columnar structure parting to strong fine angular blocky; extremely hard, very firm, sticky and plastic; common very fine roots and few fine roots; few very fine tubular pores; continuous thick clay films on faces of peds and in pores; 5 percent gravel; slightly acid; abrupt smooth boundary.

Bkqm—18 to 40 inches; thin white (10YR 8/1) continuous indurated laminar cap over very pale brown (10YR 8/3) strongly cemented duripan, yellow (10YR 7/6) moist; massive; very hard, very firm, brittle; 15 percent gravel; slightly effervescent; clear smooth boundary.

Bqm—40 to 60 inches; very pale brown (10YR 8/4) strongly cemented duripan, light yellowish brown (10YR 6/4) moist; massive; brittle; 10 percent gravel.

Typical Pedon Location

Location in survey area: About 13 miles northwest of Riddle; in the SW¼NW¼ of sec. 28, T. 12 S., R. 2 E.
Map unit in which located: Yatahoney-Nicholflat association, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—5 to 12 inches
Depth to duripan—14 to 20 inches

Particle-size control section (weighted average):
Rock fragment content—0 to 10 percent

A horizon:
Value—6 or 7 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid to neutral

Bt horizon:
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Clay content—40 to 50 percent
Reaction—slightly acid or neutral

Bkqm horizon:
Effervescence—none or slight in upper part

Nipintuck Series

Classification

Taxonomic class: Loamy-skeletal, mixed, nonacid, frigid Lithic Xeric Torriorthents

Setting

Depth class: Very shallow
Drainage class: Somewhat excessively drained
Permeability: Moderate
Landforms: Foothills and mountains
Parent material: Kind—residuum; source—welded rhyolitic tuff
Slope range: 2 to 30 percent
Elevation: 4,800 to 6,750 feet
Climatic data (average annual):
Precipitation—10 to 14 inches
Air temperature—40 to 45 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

A—0 to 2 inches; yellowish brown (10YR 5/4) stony coarse sandy loam, dark yellowish brown (10YR

3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable; common very fine and fine roots; many very fine and fine vesicular pores; 30 percent gravel, 5 percent cobbles, and 2 percent stones; slightly acid; clear wavy boundary.

C—2 to 6 inches; yellowish brown (10YR 5/4) very cobbly loam, dark yellowish brown (10YR 3/4) moist; massive; few very fine and fine roots; few very fine and fine interstitial pores; 30 percent gravel and 20 percent cobbles; slightly acid; abrupt irregular boundary.

R—6 inches; fractured welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 8 miles northeast of Riddle; in the SE$^1/_4$SE$^1/_4$ of sec. 32, T. 8 S., R. 4 W.

Map unit in which located: Nipintuck-Rock outcrop complex, 2 to 30 percent slopes

Range in Characteristics

Profile:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Depth to bedrock—4 to 10 inches

Reaction—slightly acid or neutral

C horizon:

Texture—gravelly loam, very gravelly loam, or very cobbly loam

Clay content—15 to 25 percent

Rock fragment content—20 to 60 percent

Northcastle Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Typic Durixerolls

Setting

Depth class: Moderately deep to a duripan

Drainage class: Well drained

Permeability: Moderately slow

Landforms: Fan terraces and stream terraces

Parent material: Kind—mixed alluvium; source—volcaniclastic material

Slope range: 1 to 8 percent

Elevation: 5,000 to 5,900 feet

Climatic data (average annual):

Precipitation—12 to 16 inches

Air temperature—41 to 45 degrees F

Frost-free period—70 to 95 days

Typical Pedon Description

A1—0 to 7 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly plastic; many very fine and fine roots; common very fine and fine vesicular and interstitial pores; slightly acid; abrupt smooth boundary.

A2—7 to 16 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; strong medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine vesicular and interstitial pores; 10 percent gravel; slightly acid; clear smooth boundary.

Bt—16 to 34 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; strong fine prismatic structure parting to moderate very fine subangular blocky; hard, friable, slightly sticky and slightly plastic; common very fine roots and few fine roots; common very fine tubular pores; many moderately thick clay films on faces of peds; 25 percent gravel; slightly acid; clear wavy boundary.

Bqm—34 to 60 inches; white (10YR 8/2) to very pale brown (10YR 7/4) continuous indurated duripan; massive; extremely hard, very firm, brittle; 50 percent gravel; clear smooth boundary.

C—60 to 72 inches; very pale brown (10YR 7/3) gravelly sandy loam, dark brown (10YR 3/3) moist; common medium strong brown (7.5YR 5/6) mottles; massive; many very fine interstitial pores; 20 percent gravel; slightly acid.

Typical Pedon Location

Location in survey area: About 12 miles southeast of Silver City; in the NW$^1/_4$NE$^1/_4$ of sec. 32, T. 6 S., R. 2 W.

Map unit in which located: Paynecreek-Northcastle-Blackwell association, 0 to 8 percent slopes

Range in Characteristics

Profile:

Depth to duripan—21 to 40 inches

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 to 3 dry or moist

Reaction—slightly acid or neutral

Bt horizon:

Value—5 to 7 dry, 2 to 4 moist

Chroma—3 or 4 dry or moist
Texture—sandy clay loam, clay loam, or gravelly clay loam
Clay content—24 to 35 percent
Rock fragment content—0 to 25 percent
Reaction—slightly acid or neutral

C horizon:
Value—5 to 8 dry, 3 to 6 moist
Chroma—3 or 4 dry or moist
Texture—gravelly loamy sand, gravelly sandy loam, loamy sand, or sandy loam
Rock fragment content—0 to 30 percent
Reaction—slightly acid to moderately alkaline

Ola Series

Classification

Taxonomic class: Coarse-loamy, mixed, frigid Pachic Haploxerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Mountains
Parent material: Kind—colluvium and residuum; source—intermediate intrusive and quartzitic metamorphic rock
Slope range: 8 to 50 percent
Elevation: 4,800 to 6,500 feet
Climatic data (average annual):
Precipitation—14 to 20 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 90 days

Typical Pedon Description

A1—0 to 5 inches; brown (10YR 5/3) coarse sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to moderate medium granular; soft, very friable; many very fine and fine roots, common medium roots, and few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; slightly acid; clear smooth boundary.
A2—5 to 12 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate medium granular; soft, very friable; many very fine and fine roots, common medium roots, and few coarse roots; many very fine and fine interstitial pores; 10 percent gravel; slightly acid; clear smooth boundary.
A3—12 to 18 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable; many very fine and fine roots and common medium roots; common very fine and fine interstitial pores; 10 percent gravel; slightly acid; clear smooth boundary.
AC—18 to 28 inches; brown (10YR 5/3) coarse sandy loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, very friable; common very fine, fine, and medium roots; common very fine and fine interstitial pores; 10 percent gravel; slightly acid; gradual smooth boundary.
C—28 to 35 inches; pale brown (10YR 6/3) gravelly coarse sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, very friable; common very fine roots and few fine and medium roots; few very fine and fine interstitial pores; 15 percent gravel; neutral; clear wavy boundary.
Cr—35 to 38 inches; partially decomposed granite; gradual wavy boundary.
R—38 inches; unweathered granite.

Typical Pedon Location

Location in survey area: About 10 miles northeast of Cliffs; in the NW$^1/_4$SE$^1/_4$ of sec. 35, T. 7 S., R. 5 W.
Map unit in which located: Ola-Earcree association, 10 to 50 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Reaction—slightly acid or neutral

Particle-size control section (weighted average):
Clay content—7 to 15 percent
Rock fragment content—0 to 15 percent

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist

C horizon:
Value—5 to 8 dry, 2 to 6 moist
Chroma—2 or 3 dry or moist
Texture—coarse sandy loam or gravelly coarse sandy loam

Ornea Series

Classification

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Haplargids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow over very rapid
Landforms: Fan terraces and pediments
Parent material: Kind—mixed alluvium; source—lacustrine deposits and volcaniclastic material
Slope range: 1 to 5 percent
Elevation: 2,300 to 3,400 feet
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—51 to 53 degrees F
Frost-free period—125 to 150 days

Typical Pedon Description

A—0 to 3 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; strong medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine vesicular and interstitial pores and few medium vesicular and interstitial pores; 5 percent gravel; mildly alkaline; clear smooth boundary.

AB—3 to 7 inches; very pale brown (10YR 7/3) gravelly silt loam, dark yellowish brown (10YR 4/4) moist; strong thick platy structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores and few medium tubular pores; 15 percent gravel; many thin clay films on faces of peds; mildly alkaline; clear smooth boundary.

Bt—7 to 12 inches; very pale brown (10YR 7/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to moderate fine subangular blocky; hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores and few medium tubular pores; 20 percent gravel; many moderately thick clay films on faces of peds and in pores; mildly alkaline; clear smooth boundary.

Bq—12 to 16 inches; light yellowish brown (10YR 6/4) gravelly loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure parting to weak fine granular; slightly hard, very friable; few very fine and fine roots; few very fine and fine tubular pores; 25 percent gravel and 5 percent cobbles; common thin silica pendants on rock fragments; few thin clay films bridging sand grains; mildly alkaline; abrupt smooth boundary.

2Bkq—16 to 24 inches; white (10YR 8/2) extremely gravelly loamy sand, light yellowish brown (10YR 6/4) moist; single grain; loose; very hard, very firm, brittle; few very fine and fine roots; 65 percent gravel and 10 percent cobbles, common thick silica and lime pendants on fragments and few very hard, very firm, brittle lenses of sand; violently effervescent; moderately alkaline; clear wavy boundary.

2C—24 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loamy sand, light yellowish brown (10YR 6/4) moist; massive; few very fine and fine roots; 60 percent gravel and 10 percent cobbles; strongly effervescent; moderately alkaline.

Typical Pedon Location

Location in survey area: About 9 miles west of Marsing; in the SE$^{1}/_{4}$NW$^{1}/_{4}$ of sec. 6, T. 2 N., R. 5 W.
Map unit in which located: Ratsnest-Ornea complex, 1 to 12 percent slopes

Range in Characteristics

Profile:
Depth to lithologic discontinuity—10 to 20 inches

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist

Bt and Btk horizons:
Value—6 to 8 dry, 5 or 6 moist
Chroma—2 to 4 dry or moist
Texture—gravelly loam, gravelly sandy clay loam, or gravelly clay loam
Clay content—24 to 32 percent
Rock fragment content—15 to 35 percent
Reaction—mildly alkaline or moderately alkaline

2Bkq and 2C horizons:
Texture—stratified extremely gravelly coarse sand to very gravelly loamy sand
Clay content (average)—2 to 8 percent
Rock fragment content (average)—35 to 80 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Orovada Series

Classification

Taxonomic class: Coarse-loamy, mixed, mesic Durixerollic Camborthids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate

Landforms: Calderas and draws
Parent material: Kind—alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 5 percent
Elevation: 3,800 to 5,000 feet
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 50 degrees F
Frost-free period—100 to 125 days

Typical Pedon Description

A—0 to 5 inches; pale brown (10YR 6/3) very fine sandy loam, dark yellowish brown (10YR 3/4) moist; weak thick platy structure parting to moderate fine granular; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; common very fine and fine vesicular and interstitial pores; neutral; abrupt wavy boundary.
Bw—5 to 10 inches; light yellowish brown (10YR 6/4) loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; common fine tubular pores; neutral; clear wavy boundary.
Bk—10 to 18 inches; light yellowish brown (10YR 6/4) loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; common fine tubular pores; strongly effervescent; moderately alkaline; gradual wavy boundary.
Bkq1—18 to 24 inches; very pale brown (10YR 8/3) loam, yellowish brown (10YR 5/4) moist; weak medium platy structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; few fine tubular pores; 30 percent durinodes; violently effervescent; strongly alkaline; clear wavy boundary.
Bkq2—24 to 60 inches; very pale brown (10YR 7/4) gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 10 percent gravel, dominantly duripan fragments; violently effervescent; strongly alkaline.

Typical Pedon Location

Location in survey area: About 28 miles north of Murphy Hot Springs; in the $SW^1/_4SW^1/_4$ of sec. 27, T. 11 S., R. 9 E.
Map unit in which located: Owsel-Coonskin-Orovada complex, 1 to 5 percent slopes

Range in Characteristics

Particle-size control section (weighted average):
Clay content—5 to 18 percent
Rock fragment content—0 to 15 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Reaction—neutral or mildly alkaline

Bw horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam or loam

Bkq horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—stratified fine sandy loam to silt loam
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Owsel Series

Classification

Taxonomic class: Fine-silty, mixed, mesic Durixerollic Haplargids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Calderas and fan terraces
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 10 percent
Elevation: 3,850 to 5,300 feet
Climatic data (average annual):
Precipitation—8 to 13 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 120 days

Typical Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak medium and fine subangular blocky structure parting to moderate fine granular; soft, very friable; many very fine and fine roots and few medium roots; many very fine, fine, and medium vesicular pores; 5 percent gravel; neutral; clear wavy boundary.
BA—4 to 10 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common

very fine, fine, and medium roots; common very fine and fine interstitial and tubular pores; few thin clay films on faces of peds; 5 percent gravel; mildly alkaline; clear wavy boundary.
Bt1—10 to 19 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 5/4) moist; moderate medium and fine subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; many very fine and fine interstitial and tubular pores; many moderately thick clay films on faces of peds and in pores; 5 percent gravel; mildly alkaline; clear wavy boundary.
Bt2—19 to 23 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 5/4) moist; moderate medium and fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; many thin clay films on faces of peds and in pores; 5 percent gravel; mildly alkaline; clear wavy boundary.
Bkq1—23 to 45 inches; very pale brown (10YR 7/4) fine sandy loam, light yellowish brown (10YR 6/4) moist; weak medium subangular blocky structure; hard, friable; few very fine and fine roots; few fine tubular pores; 20 percent durinodes; 5 percent gravel; strongly effervescent; strongly alkaline; broken irregular boundary.
Bkq2—45 to 60 inches; very pale brown (10YR 7/4) fine sandy loam, light yellowish brown (10YR 6/4) moist; single grain; loose; few very fine and fine roots; 50 percent thick platy duripan fragments; 5 percent gravel; violently effervescent; strongly alkaline.

Typical Pedon Location

Location in survey area: About 22 miles southwest of Riddle; in the SW¼SW¼ of sec. 5, T. 16 S., R. 1 W.
Map unit in which located: Arbidge-Owsel-Gariper complex, 1 to 15 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—14 to 30 inches

Particle-size control section (weighted average):
Clay content—28 to 35 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam or clay loam
Reaction—neutral or mildly alkaline

Bkq horizon:
Value—6 or 7 dry
Chroma—2 to 4 dry or moist
Texture—loam, fine sandy loam, sandy loam, or very fine sandy loam
Clay content—10 to 20 percent
Reaction—moderately alkaline or strongly alkaline

Pachic Argixerolls

Setting

Depth class: Deep or very deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Canyons and fan piedmont escarpments
Parent material: Kind—slope alluvium and colluvium; source—welded rhyolitic tuff
Slope range: 20 to 50 percent
Elevation: 3,500 to 6,800 feet
Climatic data (average annual):
Precipitation—13 to 18 inches
Air temperature—38 to 49 degrees F
Frost-free period—60 to 120 days

Example Pedon Description

A1—0 to 10 inches; dark grayish brown (10YR 4/2) stony loam, black (10YR 2/1) moist; soft, very friable; many very fine and fine roots; many very fine tubular and interstitial pores; 15 percent gravel, 20 percent cobbles, and 1 percent stones; gradual smooth boundary.
A2—10 to 20 inches; dark grayish brown (10YR 4/2) very cobbly loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable; many very fine and fine roots; many very fine tubular pores; 20 percent gravel and 25 percent cobbles; clear smooth boundary.
Bt—20 to 60 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine roots and common fine roots; many very fine and medium tubular pores; many thin clay films on faces of peds and in pores; 25 percent gravel and 25 percent cobbles.

Example Pedon Location

Location in survey area: About 4 miles northwest of Murphy Hot Springs; in the NE¼SW¼ of sec. 32, T. 15 S., R. 9 E.

Map unit in which located: Rubbleland-Rock outcrop-Pachic Argixerolls complex, very steep

Range in Characteristics

Profile:
Depth to soft bedrock—40 inches or more

Particle-size control section (weighted average):
Clay content—20 to 40 percent
Rock fragment content—0 to 50 percent

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—slightly acid or neutral

Parkay Series

Classification

Taxonomic class: Loamy-skeletal, mixed Argic Pachic Cryoborolls

Setting

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains and tableland escarpments
Parent material: Kind—slope alluvium and residuum; source—extrusive rock
Slope range: 5 to 50 percent
Elevation: 5,200 to 8,400 feet
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—36 to 42 degrees F
Frost-free period—30 to 70 days

Typical Pedon Description

A1—0 to 1 inch; very dark grayish brown (10YR 3/2) cobbly loam, black (10YR 2/1) moist; moderate medium platy structure; slightly hard, very friable; many very fine, fine, and medium roots; 10 percent gravel and 10 percent cobbles; neutral; clear smooth boundary.

A2—1 inch to 3 inches; dark brown (10YR 4/3) cobbly loam, very dark brown (10YR 2/2) moist; moderate medium platy structure; slightly hard, very friable; many very fine and fine roots and common medium and coarse roots; common very fine and fine tubular pores; 10 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.

BA—3 to 9 inches; brown (10YR 5/3) cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine and fine interstitial and tubular pores; 10 percent gravel, 10 percent cobbles, and 5 percent stones; neutral; clear wavy boundary.

Bt1—9 to 21 inches; brown (10YR 5/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and common coarse roots; many very fine and fine tubular pores; few thin clay films on faces of peds; 10 percent gravel, 15 percent cobbles, and 10 percent stones; neutral; clear irregular boundary.

Bt2—21 to 31 inches; pale brown (10YR 6/3) very cobbly clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine roots and common medium roots; many very fine and fine tubular pores; common thin clay films on faces of peds and in pores; 15 percent gravel, 35 percent cobbles, and 10 percent stones; neutral; clear irregular boundary.

C—31 to 60 inches; light brownish gray (10YR 6/2) extremely cobbly sandy clay loam, brown (10YR 4/3) moist; moderate medium and fine subangular blocky structure; hard, very friable; common very fine, fine, and medium roots; common very fine and fine tubular pores; 25 percent gravel, 25 percent cobbles, and 20 percent stones; neutral; clear wavy boundary.

R—60 inches; weathered welded tuff.

Typical Pedon Location

Location in survey area: About 16 miles southwest of Riddle; in the $SW^1/_4SW^1/_4$ of sec. 16, T. 16 S., R. 5 E.
Map unit in which located: Doodlelink-Sharesnout-Parkay association, 3 to 50 percent slopes

Range in Characteristics

Profile:
Depth to soft bedrock—40 to 60 inches

Particle-size control section (weighted average):
Clay content—27 to 35 percent
Rock fragment content—35 to 60 percent

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR

Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—cobbly loam, very cobbly loam, very cobbly clay loam, or very gravelly clay loam
Clay content—24 to 35 percent
Rock fragment content—25 to 70 percent

C horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—extremely cobbly sandy clay loam or very gravelly loam
Clay content—20 to 27 percent
Rock fragment content—35 to 75 percent

Paynecreek Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Typic Argixerolls

Setting

Depth class: Deep or very deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Stream terraces
Parent material: Kind—mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 1 to 8 percent
Elevation: 5,100 to 5,900 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

A—0 to 4 inches; brown (10YR 5/3) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable; many very fine and fine roots; many very fine and fine tubular and interstitial pores; 20 percent gravel; neutral; clear smooth boundary.
BA—4 to 8 inches; brown (10YR 5/3) gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular and interstitial pores; 30 percent gravel; neutral; clear smooth boundary.
Bt1—8 to 14 inches; yellowish brown (10YR 5/4) sandy clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common very fine, fine, and medium roots; many very fine and fine tubular and interstitial pores and common medium tubular and interstitial pores; common thin clay films on faces of peds; 5 percent gravel; neutral; gradual wavy boundary.
Bt2—14 to 29 inches; light yellowish brown (10YR 6/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; strong medium subangular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds and in pores; 20 percent gravel; neutral; gradual wavy boundary.
C—29 to 60 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; loose; few very fine and fine roots; many very fine interstitial pores; 50 percent gravel; neutral.

Typical Pedon Location

Location in survey area: About 5 1/2 miles northwest of Riddle; in the SW1/4SW1/4 of sec. 30, T. 13 S., R. 3 E.
Map unit in which located: Paynecreek-Northcastle complex, 1 to 8 percent slopes

Range in Characteristics

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—sandy clay loam, gravelly clay loam, gravelly sandy clay loam, clay loam, or loam
Clay content—24 to 34 percent
Rock fragment content—0 to 20 percent
Reaction—neutral or mildly alkaline

C horizon:
Texture—sandy loam, gravelly sandy loam, very gravelly sandy loam, or very gravelly loamy coarse sand
Rock fragment content—0 to 50 percent
Reaction—neutral or mildly alkaline

Perla Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Aridic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained

Permeability: Slow
Landforms: Tablelands and structural benches
Parent material: Kind—alluvium and loess; source—extrusive rock and volcanic ash
Slope range: 2 to 12 percent
Elevation: 4,000 to 5,150 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 120 days

Typical Pedon Description

A—0 to 3 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure parting to moderate fine granular; slightly hard, very friable; many very fine and fine roots; common very fine and fine vesicular and interstitial pores; 5 percent gravel; neutral; clear smooth boundary.
BA—3 to 8 inches; dark brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine roots and common coarse roots; common very fine and fine tubular pores; many thin clay films on faces of peds; 10 percent gravel; neutral; clear smooth boundary.
Bt1—8 to 16 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; moderate medium and fine angular blocky structure; very hard, firm, sticky and very plastic; common very fine and fine roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds; 10 percent gravel; neutral; clear smooth boundary.
Bt2—16 to 23 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist; moderate fine angular blocky structure; very hard, firm, sticky and plastic; few very fine roots; many thick clay films on faces of peds; 25 percent gravel and 5 percent cobbles; neutral; clear wavy boundary.
R—23 inches; slightly weathered basalt.

Typical Pedon Location

Location in survey area: About 21 miles southeast of Cliffs; in the SE¼NW¼ of sec. 4, T. 12 S., R. 3 W.
Map unit in which located: Perla-Ruclick complex, 2 to 12 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches

A horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—clay, clay loam, or gravelly clay loam
Clay content—35 to 55 percent
Rock fragment content—5 to 35 percent
Reaction—moderately acid to neutral

Piline Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Aquic Chromoxererts

Setting

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Very slow
Landforms: Alluvial flats
Parent material: Kind—mixed alluvium; source—basalt and volcanic ash
Slope range: 0 to 2 percent
Elevation: 4,800 to 5,300 feet
Climatic data (average annual):
Precipitation—10 to 12 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 110 days

Typical Pedon Description

A1—0 to 4 inches; light gray (10YR 7/2) silty clay loam, dark grayish brown (10YR 4/2) moist; strong medium and thick platy structure; slightly hard, very friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; many very fine and fine vesicular and interstitial pores and common medium vesicular and interstitial pores; vertical cracks ½ to 1 inch wide and 5 to 6 inches apart extend to depth of 48 inches; neutral; clear smooth boundary.
A2—4 to 10 inches; light gray (10YR 7/2) silty clay loam, dark brown (10YR 4/3) moist; few fine faint mottles that are dark yellowish brown (10YR 4/4) moist; moderate medium and thin platy structure; hard, friable, very sticky and very plastic; few very fine, fine, medium, and coarse roots; many very fine and fine tubular and interstitial pores; neutral; clear smooth boundary.
Cssg1—10 to 16 inches; light gray (10YR 7/2) silty clay, brown (10YR 4/3) moist; common medium distinct mottles that are yellowish brown (10YR

5/4) moist; weak fine prismatic structure parting to moderate medium and fine angular blocky; extremely hard, very firm, very sticky and very plastic; few very fine, fine, medium, and coarse roots; common very fine and fine tubular pores; few slickensides; neutral; abrupt smooth boundary.

Cssg2—16 to 30 inches; pale brown (10YR 6/3) clay, brown (10YR 4/3) moist; common medium distinct mottles that are yellowish brown (10YR 5/6) moist; strong medium and fine prismatic structure; extremely hard, very firm, very sticky and very plastic; common fine roots and few very fine and medium roots; few very fine and fine tubular and vesicular pores; few slickensides; neutral; clear smooth boundary.

Cssg3—30 to 48 inches; very pale brown (10YR 7/3) clay loam, brown (10YR 5/3) moist; common large prominent mottles that are dark yellowish brown (10YR 3/4) moist; weak thin platy structure parting to moderate medium and fine angular blocky; very hard, very firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular and interstitial pores; common slickensides; mildly alkaline; clear smooth boundary.

C4—48 to 60 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium platy structure; very hard, firm; few very fine roots; few very fine and fine tubular and interstitial pores; mildly alkaline.

Typical Pedon Location

Location in survey area: About 12 miles northwest of Three Creek; in the NE¼SE¼ of sec. 9, T. 14 S., R. 10 E.

Map unit in which located: Babbington-Piline association, 0 to 3 percent slopes

Range in Characteristics

Profile:

Vertical cracks—1 centimeter to 3 centimeters wide
Hue—10YR or 2.5Y
Value—6 or 7 dry, 4 to 6 moist
Chroma—2 or 3 dry or moist

Particle-size control section (weighted average):

Clay content—35 to 50 percent

Cssg horizon:

Texture—clay or silty clay in upper part and loam or clay loam in lower part
Iron mottles—few to many, fine to medium
Reaction—neutral or mildly alkaline

Pixley Series

Classification

Taxonomic class: Loamy, mixed, frigid, shallow Argic Durixerolls

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Fan terraces
Parent material: Kind—mixed alluvium and loess; source—extrusive rock and volcanic ash
Slope range: 2 to 10 percent
Elevation: 4,800 to 5,450 feet
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—44 to 45 degrees F
Frost-free period—80 to 95 days

Typical Pedon Description

A1—0 to 2 inches; light brownish gray (10YR 6/2) silt loam, dark brown (10YR 3/3) moist; moderate medium platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine vesicular pores and few medium vesicular pores; 5 percent gravel; neutral; abrupt smooth boundary.

A2—2 to 6 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure parting to weak thin platy; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; common very fine and fine tubular pores; neutral; clear smooth boundary.

Bt—6 to 9 inches; brown (10YR 5/3) silty clay loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds and in pores; 5 percent fine durinodes; neutral; abrupt wavy boundary.

Btq—9 to 18 inches; light gray (10YR 7/2) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; very hard, firm, sticky and plastic; common very fine and fine roots and few medium

roots; common thick clay films on faces of peds; 30 percent gravel-sized durinodes and duripan fragments; neutral; abrupt smooth boundary.
Bqm—18 to 34 inches; light gray (10YR 7/2) continuous strongly cemented duripan, yellowish brown (10YR 5/4) moist; moderate thick platy structure; extremely hard, very firm; clear smooth boundary.
Bq—34 to 60 inches; white (10YR 8/2) weakly cemented fine sandy loam, yellowish brown (10YR 5/4) moist; massive; extremely hard, very firm; 70 percent durinodes; mildly alkaline.

Typical Pedon Location

Location in survey area: About 14 miles southeast of Silver City; in the NW¼NW¼ of sec. 7, T. 7 S., R. 2 W.
Map unit in which located: Pixley-Barkley complex, 2 to 10 percent slopes

Range in Characteristics

Profile:
Depth to duripan—14 to 20 inches

A horizon:
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam, gravelly silty clay loam, or gravelly clay loam
Clay content—27 to 35 percent
Rock fragment content—5 to 25 percent
Reaction—neutral or mildly alkaline

Bqm horizon:
Effervescence—none to strong

Plush Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic Xerollic Haplargids

Setting

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Foothills
Parent material: Kind—colluvium and slope alluvium; source—welded rhyolitic tuff
Slope range: 25 to 50 percent
Elevation: 3,000 to 5,250 feet
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 51 degrees F
Frost-free period—90 to 135 days

Typical Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) very stony sandy loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable; many very fine roots and common fine roots; many very fine interstitial pores; 25 percent gravel, 15 percent cobbles, and 10 percent stones; neutral; clear smooth boundary.
BA—4 to 11 inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular and interstitial pores; 20 percent gravel and 10 percent cobbles; neutral; clear smooth boundary.
Bt—11 to 20 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine roots and few fine roots; many very fine tubular pores; many thin clay films on faces of peds and in pores; 35 percent gravel and 15 percent cobbles; mildly alkaline; clear smooth boundary.
C—20 to 48 inches; very pale brown (10YR 7/4) extremely gravelly loam, dark yellowish brown (10YR 4/4) moist; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine roots; many very fine tubular pores; 40 percent gravel and 25 percent cobbles; mildly alkaline; abrupt wavy boundary.
R—48 inches; fractured welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 30 miles northwest of Grasmere; in the SW¼SE¼ of sec. 3, T. 8 S., R. 2 E.
Map unit in which located: Plush-Rubbleland-Rock outcrop association, 25 to 50 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches

Bt horizon:
Value—5 or 6 dry
Chroma—3 or 4 dry or moist
Texture—very gravelly clay loam or very cobbly clay loam

Clay content—27 to 35 percent
Rock fragment content—35 to 60 percent
Reaction—neutral or mildly alkaline

C horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly loam, extremely gravelly loam, or extremely cobbly loam
Clay content—18 to 27 percent
Rock fragment content—50 to 85 percent
Reaction—neutral or mildly alkaline

Poisoncreek Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Argixerolls

Setting

Depth class: Shallow
Drainage class: Well drained or somewhat excessively drained
Permeability: Moderate
Landforms: Mountains and foothills
Parent material: Kind—residuum; source—intermediate intrusive rock
Slope range: 1 to 45 percent
Elevation: 4,600 to 7,000 feet
Climatic data (average annual):
Precipitation—13 to 18 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 95 days

Typical Pedon Description

A—0 to 3 inches; grayish brown (10YR 5/2) gravelly coarse sandy loam, very dark gray (10YR 3/1) moist; weak medium and fine subangular blocky structure; slightly hard, very friable; many very fine and fine roots; many very fine interstitial pores; 15 percent fine gravel; neutral; clear smooth boundary.

Bt—3 to 6 inches; brown (10YR 5/3) very gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; many very fine and fine roots; many very fine interstitial and tubular pores; common thin clay films on faces of peds and in pores; 30 percent gravel and 20 percent cobbles; neutral; clear smooth boundary.

C/Bt—6 to 12 inches; 60 percent C material and 40 percent Bt material; yellowish brown (10YR 5/6) extremely gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, friable, sticky and plastic; many very fine and fine roots and few medium roots; many moderately thick and thick clay films in fractures; 45 percent gravel and 40 percent cobbles; neutral; clear wavy boundary.

Cr—12 to 16 inches; white (10YR 8/2) weathered granite, light yellowish brown (10YR 6/4) moist; yellowish brown (10YR 5/8) iron stains; rock structure; fractures more than 4 inches apart; some illuviated soil material and few very fine and fine roots in fractures; gradual wavy boundary.

R—16 inches; slightly fractured granite.

Typical Pedon Location

Location in survey area: About 23 miles southeast of Silver City; in the NE$^1/_4$SW$^1/_4$ of sec. 9, T. 8 S., R. 1 W.
Map unit in which located: Kanlee-Poisoncreek-Ola association, 1 to 45 percent slopes

Range in Characteristics

Profile:
Depth to soft bedrock—10 to 14 inches
Depth to hard bedrock—14 to 20 inches

Particle-size control section (weighted average):
Clay content—20 to 30 percent
Rock fragment content—35 to 75 percent

A horizon:
Value—4 or 5 dry
Chroma—2 or 3 dry, 1 to 3 moist

Bt horizon:
Hue—10YR or 2.5Y
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—very gravelly sandy clay loam, very cobbly clay loam, or very gravelly loam
Clay content—24 to 34 percent
Rock fragment content—35 to 60 percent

Povey Series

Classification

Taxonomic class: Loamy-skeletal, mixed Pachic Cryoborolls

Setting

Depth class: Deep or very deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Mountains
Parent material: Kind—colluvium; source—igneous and quartzitic metamorphic rock

Slope range: 4 to 50 percent
Elevation: 5,600 to 8,300 feet
Climatic data (average annual):
Precipitation—18 to 24 inches
Air temperature—35 to 40 degrees F
Frost-free period—30 to 70 days

Typical Pedon Description

A1—0 to 6 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; soft, very friable; 35 percent gravel; neutral; clear smooth boundary.
A2—6 to 17 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure parting to moderate medium granular; soft, very friable; 30 percent gravel and 5 percent cobbles; slightly acid; clear smooth boundary.
Bw1—17 to 25 inches; brown (10YR 4/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak and moderate, fine and medium subangular blocky structure; slightly hard, friable, slightly sticky; few thin clay films on faces of peds; 25 percent gravel and 10 percent cobbles; slightly acid; clear wavy boundary.
Bw2—25 to 32 inches; dark yellowish brown (10YR 4/4) extremely cobbly loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky; few thin clay films on faces of peds; 20 percent gravel and 40 percent cobbles; slightly acid; clear wavy boundary.
C—32 to 60 inches; yellowish brown (10YR 5/4) extremely cobbly sandy loam, brown (10YR 4/3) moist; massive; 25 percent gravel and 50 percent cobbles; neutral.

Typical Pedon Location

Location in survey area: About 6 1/2 miles north of Cliffs; in the NW1/4NE1/4 of sec. 14, T. 8 S., R. 5 W.
Map unit in which located: Povey-Earcree complex, 10 to 50 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—40 inches or more

Particle-size control section (weighted average):
Clay content—10 to 18 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist

Bw horizon:
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 or 4 dry, 1 to 4 moist
Texture—very gravelly loam, extremely gravelly loam, very cobbly loam, or extremely cobbly loam
Clay content—10 to 20 percent
Rock fragment content—35 to 75 percent
Reaction—slightly acid to mildly alkaline

C horizon:
Value—3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—extremely cobbly loam, extremely cobbly sandy loam, or very cobbly loam
Clay content—8 to 18 percent
Rock fragment content—50 to 75 percent
Reaction—neutral or mildly alkaline

Quicksilver Series

Classification

Taxonomic class: Loamy, mixed, frigid Lithic Haploxerolls

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Mountains
Parent material: Kind—residuum and colluvium; source—intermediate intrusive rock
Slope range: 3 to 50 percent
Elevation: 4,600 to 6,800 feet
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 95 days

Typical Pedon Description

A—0 to 4 inches; brown (10YR 5/3) bouldery coarse sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; loose; few fine and medium roots; 25 percent gravel and 5 percent stones and boulders; neutral; clear smooth boundary.
Bw—4 to 9 inches; brown (10YR 5/3) gravelly coarse sandy loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky; few fine and medium roots; 20 percent gravel and 5 percent stones and boulders; neutral; clear smooth boundary.
BC—9 to 15 inches; pale brown (10YR 6/3) gravelly coarse sandy loam, brown (10YR 4/3) moist; weak

fine and medium subangular blocky structure; slightly hard, very friable; few fine and medium roots; 25 percent gravel; slightly acid; clear smooth boundary.
C—15 to 18 inches; pale brown (10YR 6/3) very gravelly coarse sandy loam, brown (10YR 5/3) moist; massive; few fine and medium roots; 35 percent gravel; slightly acid; abrupt smooth boundary.
R—18 inches; weathered granodiorite.

Typical Pedon Location

Location in survey area: About 7 1/2 miles south of Silver City; in the SW1/4SE1/4 of sec. 12, T. 6 S., R. 3 W.
Map unit in which located: Quicksilver-Takeuchi-Rock outcrop association, 3 to 50 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches
Reaction—slightly acid or neutral

Particle-size control section (weighted average):
Clay content—6 to 15 percent
Rock fragment content—10 to 35 percent

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—coarse sandy loam or gravelly coarse sandy loam
Rock fragment content—10 to 30 percent

C horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—gravelly coarse sandy loam, gravelly loamy coarse sand, or very gravelly coarse sandy loam
Rock fragment content—20 to 40 percent

Ratsnest Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Typic Haplargids

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landforms: Pediments and foothills
Parent material: Kind—residuum and alluvium; source—lacustrine deposits
Slope range: 3 to 12 percent
Elevation: 2,350 to 3,600 feet
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—50 to 53 degrees F
Frost-free period—125 to 150 days

Typical Pedon Description

A—0 to 2 inches; light gray (10YR 7/2) gravelly silt loam, brown (10YR 4/3) moist; moderate medium platy structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine vesicular and tubular pores and few medium vesicular and tubular pores; 20 percent gravel; mildly alkaline; abrupt smooth boundary.
Bt1—2 to 4 inches; pale brown (10YR 6/3) silty clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine vesicular and tubular pores and few medium vesicular and tubular pores; common moderately thick clay films on faces of peds and in pores; 5 percent gravel; moderately alkaline; abrupt smooth boundary.
Bt2—4 to 10 inches; light yellowish brown (10YR 6/4) clay, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to strong fine angular blocky; very hard, very firm, very sticky and very plastic; few very fine, fine, and medium roots; few very fine and fine tubular pores; continuous thick clay films on faces of peds and in pores; moderately alkaline; abrupt smooth boundary.
Btk—10 to 25 inches; light yellowish brown (10YR 6/4) silty clay loam, brownish yellow (10YR 6/8) moist; moderate fine and medium subangular blocky structure; hard, friable, very sticky and very plastic; few very fine and fine roots; few very fine and fine tubular pores; continuous moderately thick clay films on faces of peds and in pores; strongly effervescent; moderately alkaline; clear wavy boundary.
Bk—25 to 33 inches; pale yellow (2.5Y 7/4) silty clay loam, light olive brown (2.5Y 5/6) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; few thin clay films in pores; slightly effervescent; mildly alkaline; clear wavy boundary.
C—33 to 39 inches; 90 percent highly fractured tuff, and 10 percent light gray (10YR 7/2) silt loam, very pale brown (10YR 7/3) moist, between soft rock fragments; massive; soft, friable, slightly

sticky and slightly plastic; few very fine roots; neutral; gradual smooth boundary.
Cr—39 inches; slightly weathered tuff.

Typical Pedon Location

Location in survey area: About 6 miles southwest of Marsing; in the SW¼NW¼ of sec. 26, T. 2 N., R. 5 W.
Map unit in which located: Ratsnest-Ornea complex, 1 to 12 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—10 to 21 inches
Depth to soft rock—30 to 40 inches

A horizon:
Value—6 or 7 dry
Chroma—3 or 4 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam, clay, or silty clay
Clay content—27 to 35 percent in upper part and 35 to 45 percent in lower part
Rock fragment content—0 to 5 percent
Reaction—mildly alkaline or moderately alkaline

Bk horizon:
Hue—10YR or 2.5Y
Value—5 or 6 moist
Chroma—3 to 6 dry or moist
Texture—silty clay loam, silt loam, or gravelly silt loam
Clay content—15 to 30 percent
Rock fragment content—0 to 20 percent
Reaction—mildly alkaline or moderately alkaline

Renslow Series

Classification

Taxonomic class: Coarse-silty, mixed, mesic Aridic Calcic Argixerolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Stream terraces
Parent material: Kind—silty alluvium; source—basalt and volcanic ash
Slope range: 0 to 2 percent
Elevation: 4,850 to 5,300 feet
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 47 degrees F
Frost-free period—90 to 105 days

Typical Pedon Description

A1—0 to 6 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium platy structure parting to moderate fine granular; soft, very friable; many very fine and fine roots; common very fine and fine vesicular and tubular pores; neutral; clear smooth boundary.
A2—6 to 18 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; weak medium and fine subangular blocky structure; slightly hard, very friable, slightly sticky; common very fine, fine, medium, and coarse roots; common very fine and fine tubular pores; neutral; gradual smooth boundary.
BA—18 to 28 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate medium and fine subangular blocky structure; hard, friable, slightly sticky and slightly 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; mildly alkaline; gradual smooth boundary.
Bt—28 to 38 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate coarse subangular blocky structure parting to moderate fine and medium subangular blocky; hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine and fine tubular pores; many thin clay films on faces of peds and in pores; moderately alkaline; clear smooth boundary.
Bkq—38 to 60 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; few very fine and fine tubular pores; strongly effervescent; strongly alkaline.

Typical Pedon Location

Location in survey area: About 13 miles north of Three Creek; in the SW¼SE¼ of sec. 30, T. 13 S., R. 11 E.

Map unit in which located: Haw-Renslow association, 0 to 4 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—20 to 44 inches

A horizon:
Chroma—2 to 4 dry, 2 or 3 moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—12 to 18 percent
Reaction—neutral to moderately alkaline

Bkq horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Effervescence—slight or strong
Reaction—mildly alkaline to strongly alkaline

Roca Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Xerollic Haplargids

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Very slow
Landforms: Structural benches
Parent material: Kind—residuum and slope alluvium; source—welded rhyolitic tuff
Slope range: 4 to 20 percent
Elevation: 5,200 to 5,850 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days

Typical Pedon Description

A—0 to 3 inches; pale brown (10YR 6/3) stony loam, dark brown (10YR 4/3) moist; moderate fine and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine vesicular pores; 15 percent gravel and 1 percent stones; neutral; clear smooth boundary.
BA—3 to 6 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure parting to moderate fine and medium granular; slightly hard, friable, slightly sticky and plastic; many very fine and fine roots and common medium roots; many very fine tubular pores; 15 percent gravel; neutral; clear smooth boundary.
Bt1—6 to 13 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong very fine and fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; many very fine tubular pores; continuous moderately thick clay films on faces of peds; 50 percent gravel; neutral; clear wavy boundary.
Bt2—13 to 22 inches; yellowish brown (10YR 5/6) very cobbly clay, dark yellowish brown (10YR 4/6) moist; strong fine and medium angular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine roots; common very fine tubular pores; continuous thick clay films on faces of peds and in pores; 10 percent gravel and 40 percent cobbles; neutral; clear irregular boundary.
R—22 inches; welded rhyolitic tuff; brownish yellow (10YR 6/6) clay, dark yellowish brown (10YR 4/6) moist, and white (10YR 8/1) silica coatings in fractures.

Typical Pedon Location

Location in survey area: About 14 miles south of Grasmere; in the NE¼SE¼ of sec. 27, T. 14 S., R. 5 E.
Map unit in which located: Roca-Freshwater stony loams, 2 to 20 percent slopes (see fig. 16, next page)

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Reaction—neutral or mildly alkaline

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—very gravelly clay loam or very cobbly clay
Clay content—35 to 50 percent
Rock fragment content—35 to 50 percent

Figure 16.—Profile of Roca stony loam in an area of Roca-Freshwater stony loams, 2 to 20 percent slopes. Fractured bedrock is at a depth of about 22 inches.

Roseworth Series

Classification

Taxonomic class: Loamy, mixed, mesic, shallow Xerollic Durargids

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Draws and structural benches
Parent material: Kind—silty alluvium and loess; source—extrusive rock and volcanic ash
Slope range: 1 to 5 percent
Elevation: 3,800 to 5,000 feet
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—46 to 50 degrees F
Frost-free period—95 to 120 days

Typical Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate medium platy structure; slightly hard, very friable; many very fine and fine roots and few medium roots; many very fine and fine vesicular pores; neutral; clear smooth boundary.

Bt—4 to 9 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate fine angular blocky structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots and few coarse roots; common very fine and fine tubular pores; common thin and moderately thick clay films on faces of peds and in pores; neutral; clear smooth boundary.

Bq—9 to 13 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; few fine slightly effervescent soft masses of lime; mildly alkaline; abrupt smooth boundary.

2Bkqm—13 to 16 inches; very pale brown (10YR 7/3), continuous, indurated duripan that has a laminar cap, yellowish brown (10YR 5/4) moist; platy structure; extremely hard, extremely firm, brittle; roots matted on surface of plates; violently effervescent; clear smooth boundary.

2Bkq—16 to 31 inches; very pale brown (10YR 7/3) weakly cemented sandy loam, yellowish brown (10YR 5/4) moist; massive; very hard, firm, brittle; violently effervescent; moderately alkaline; clear wavy boundary.

3Bkqmb—31 to 60 inches; very pale brown (10YR 7/3), continuous, strongly cemented duripan, yellowish brown (10YR 5/4) moist; massive; extremely hard, extremely firm, brittle; violently effervescent.

Typical Pedon Location

Location in survey area: About 29 miles north of Three Creek; in the NE$^{1}/_{4}$NW$^{1}/_{4}$ of sec. 7, T. 11 S., R. 12 E.
Map unit in which located: Minveno-Roseworth silt loams, 1 to 5 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—6 to 13 inches
Depth to duripan—10 to 20 inches
Depth to bedrock—50 inches or more

Particle-size control section (weighted average):
Clay content—18 to 27 percent

A horizon:
Value—3 or 4 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Chroma—2 to 4 dry or moist
Clay content—24 to 27 percent
Reaction—neutral or mildly alkaline

Bq horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 to 4 dry or moist
Clay content—13 to 22 percent
Reaction—mildly alkaline or moderately alkaline

Royal Series

Classification

Taxonomic class: Coarse-loamy, mixed, mesic Xerollic Camborthids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Fan terraces
Parent material: Kind—mixed alluvium and eolian sand; source—mixed sediment
Slope range: 1 to 15 percent
Elevation: 2,300 to 3,350 feet
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—51 to 53 degrees F
Frost-free period—125 to 150 days

Typical Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; mildly alkaline; clear smooth boundary.
Bw1—4 to 11 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, very friable; common very fine and fine roots and few medium roots; common very fine and fine interstitial and tubular pores; mildly alkaline; clear smooth boundary.
Bw2—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; soft, very friable, slightly sticky; common very fine and fine roots and few medium roots; common very fine and fine interstitial and tubular pores; mildly alkaline; gradual smooth boundary.
Bk1—21 to 29 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; massive; slightly sticky and slightly plastic; few very fine, fine, and medium roots; few very fine tubular pores; strongly effervescent; moderately alkaline; gradual smooth boundary.
Bk2—29 to 36 inches; very pale brown (10YR 7/3) very fine sandy loam, pale brown (10YR 6/3) moist; massive; few very fine, fine, and medium roots; few very fine tubular pores; violently effervescent; moderately alkaline; gradual smooth boundary.
C—36 to 60 inches; very pale brown (10YR 7/3) loamy very fine sand, pale brown (10YR 6/3) moist; massive; strongly effervescent; strongly alkaline.

Typical Pedon Location

Location in survey area: About 8 1/2 miles southeast of Murphy; in the SE1/4SE1/4 of sec. 23, T. 3 S., R. 1 W.
Map unit in which located: Tindahay-Royal-Badlands complex, 1 to 90 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—10 to 44 inches
Reaction—mildly alkaline to strongly alkaline

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bw horizon:
Value—5 to 7 dry, 3 to 6 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, fine sandy loam, or very fine sandy loam
Clay content—8 to 15 percent

Bk and C horizons:
Value—5 to 7 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—stratified very fine sandy loam to loamy sand
Clay content—5 to 15 percent
Rock fragment content—0 to 5 percent
Effervescence—slight to violent

Ruclick Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Aridic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow

Landforms: Foothills and tablelands
Parent material: Kind—alluvium and residuum; source—basalt and volcanic ash
Slope range: 2 to 25 percent
Elevation: 4,000 to 5,050 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 120 days

Typical Pedon Description

A—0 to 5 inches; brown (10YR 4/3) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine vesicular pores; 5 percent gravel and 10 percent cobbles; mildly alkaline; clear smooth boundary.
BA—5 to 10 inches; brown (10YR 5/3) cobbly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and fine roots and common medium roots; common very fine and fine tubular pores; 10 percent gravel and 10 percent cobbles; moderately alkaline; clear smooth boundary.
Bt1—10 to 21 inches; pale brown (10YR 6/3) very gravelly clay, dark brown (10YR 4/3) moist; strong medium angular blocky structure; very hard, firm, very sticky and very plastic; few very fine and fine roots; common very fine and fine tubular pores; continuous thick clay films on faces of peds; 30 percent gravel and 15 percent cobbles; moderately alkaline; gradual smooth boundary.
Bt2—21 to 29 inches; pale brown (10YR 6/3) extremely gravelly clay, dark brown (10YR 4/3) moist; moderate fine and medium angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots; few fine tubular pores; continuous thick clay films on faces of peds; 45 percent gravel and 30 percent cobbles; moderately alkaline; abrupt irregular boundary.
R—29 inches; fractured weathered basalt; clay in fractures.

Typical Pedon Location

Location in survey area: About 24 miles southeast of Cliffs; in the NE$^{1}/_{4}$NE$^{1}/_{4}$ of sec. 21, T. 12 S., R. 3 W.
Map unit in which located: Perla-Ruclick complex, 2 to 12 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid to mildly alkaline

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—very gravelly clay, very gravelly clay loam, or extremely gravelly clay
Clay content—35 to 50 percent
Rock fragment content—35 to 75 percent
Reaction—neutral to moderately alkaline

Salisbury Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Abruptic Durixerolls

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Fan terraces
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 2 to 8 percent
Elevation: 4,400 to 5,050 feet
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 110 days

Typical Pedon Description

A—0 to 5 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium and thick platy structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine vesicular and interstitial pores; slightly acid; clear wavy boundary.
AB—5 to 10 inches; grayish brown (10YR 5/2) 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 and few medium roots; many very fine and fine vesicular and interstitial pores; neutral; clear smooth boundary.
Bt1—10 to 16 inches; brown (10YR 5/3) clay, dark yellowish brown (10YR 4/4) moist; strong medium and coarse prismatic structure; very hard, very firm, very sticky and very plastic; common very

fine and fine roots; common very fine and fine tubular and interstitial pores; many moderately thick clay films on faces of peds; neutral; clear smooth boundary.

Bt2—16 to 24 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; strong medium and coarse angular blocky structure; very hard, firm, sticky and plastic; common very fine and fine roots; common very fine and fine tubular and interstitial pores; many thick clay films on faces of peds; 5 percent gravel; mildly alkaline; clear wavy boundary.

Bq—24 to 30 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; moderate medium platy structure; very hard, friable; few very fine and fine roots; 10 percent gravel; neutral; clear wavy boundary.

2Bkqm—30 to 46 inches; very pale brown (10YR 7/4) continuous indurated duripan; massive; extremely hard, extremely firm, brittle; 70 percent rock fragments; strongly effervescent; clear wavy boundary.

3Bqm—46 to 60 inches; light yellowish brown (10YR 6/4) continuous strongly cemented duripan; massive; extremely hard, extremely firm, brittle.

Typical Pedon Location

Location in survey area: About 15 miles north of Cliffs; in the SW¼NW¼ of sec. 33, T. 6 S., R. 5 W.

Map unit in which located: Salisbury-Gacey-Barnard complex, 2 to 12 percent slopes

Range in Characteristics

Profile:
Depth to duripan—20 to 40 inches

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—clay or clay loam
Clay content—35 to 50 percent
Rock fragment content—0 to 15 percent

Saturday Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Vitrandic Argixerolls

Setting

Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Mountains and foothills
Parent material: Kind—residuum and colluvium; source—vitric tuff and welded rhyolitic tuff
Slope range: 5 to 25 percent
Elevation: 5,700 to 6,800 feet
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—39 to 43 degrees F
Frost-free period—60 to 80 days

Typical Pedon Description

Oi—1 inch to 0; undecomposed leaves and twigs; discontinuous.

A1—0 to 2 inches; very dark brown (10YR 2/2) stony loam, black (10YR 2/1) moist; moderate fine granular structure; soft, very friable; many very fine and fine roots; many very fine and fine vesicular pores; 10 percent gravel, 5 percent cobbles, and 5 percent stones; slightly acid; clear smooth boundary.

A2—2 to 9 inches; very dark grayish brown (10YR 3/2) gravelly loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable; many very fine and fine roots and few medium and coarse roots; few very fine and fine tubular and interstitial pores; 15 percent gravel and 5 percent cobbles; slightly acid; abrupt smooth boundary.

Bt—9 to 24 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, friable, sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores and few medium tubular pores; many thin clay films on faces of peds, in pores, and on rock fragments; 35 percent gravel and 15 percent cobbles; slightly acid; clear wavy boundary.

C—24 to 56 inches; reddish brown (5YR 5/3) extremely cobbly sandy loam, reddish brown (5YR 4/3) moist; single grain; loose; common very fine and fine roots and few medium roots; 50 percent gravel, 20 percent cobbles, and 15 percent stones; slightly acid; gradual irregular boundary.

R—56 inches; highly weathered welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 27 miles east of Cliffs; in the SE¼SE¼ of sec. 33, T. 8 S., R. 1 W.

Map unit in which located: Monasterio-Cleavage-Saturday association, 1 to 25 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Base saturation—50 to 75 percent
Reaction—moderately acid or slightly acid

A horizon:
Hue—10YR or 7.5YR
Value—2 to 4 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly loam or very gravelly clay loam
Clay content—22 to 35 percent
Rock fragment content—35 to 60 percent

C horizon:
Hue—10YR to 5YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 6 dry or moist
Texture—extremely cobbly loam, extremely cobbly sandy loam, or very cobbly loam
Clay content—12 to 25 percent
Rock fragment content—50 to 90 percent

Schnipper Series

Classification

Taxonomic class: Fine-loamy, mixed, mesic Aridic Durixerolls

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Tablelands and fan terraces
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 8 percent
Elevation: 4,450 to 5,400 feet
Climatic data (average annual):
Precipitation—12 to 13 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 110 days

Typical Pedon Description

A1—0 to 5 inches; yellowish brown (10YR 5/4) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin and medium platy structure parting to moderate fine granular; slightly hard, very friable; many very fine and fine roots; few very fine and fine vesicular and interstitial pores; neutral; clear smooth boundary.
A2—5 to 12 inches; brown (10YR 5/3) silt 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 and few medium roots; few very fine and fine vesicular and interstitial pores; neutral; clear smooth boundary.
Bt1—12 to 20 inches; yellowish brown (10YR 5/4) silty clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; many thin clay films on faces of peds; mildly alkaline; clear smooth boundary.
Bt2—20 to 26 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds; mildly alkaline; clear smooth boundary.
Bkq—26 to 36 inches; light yellowish brown (10YR 6/4) discontinuous weakly cemented loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; very hard, firm; very few very fine and fine roots in cracks; common very fine and fine tubular pores; 5 percent gravel and 5 percent cobbles; 30 percent durinodes; many moderately thick clay films on faces of peds; many fine strongly effervescent segregated seams of lime; moderately alkaline; clear smooth boundary.
Bkqm—36 to 60 inches; continuous weakly cemented duripan that is strong brown (7.5YR 5/8) moist; thin indurated laminar cap; massive; very hard, very firm, brittle; strongly effervescent.

Typical Pedon Location

Location in survey area: About 6 miles southwest of Cliffs; in the $SW^1/_4SW^1/_4$ of sec. 11, T. 10 S., R. 6 W.
Map unit in which located: Fairylawn-Schnipper silt loams, 1 to 8 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—9 to 26 inches
Depth to duripan—20 to 40 inches

Particle-size control section (weighted average):
Clay content—18 to 34 percent
Rock fragment content—0 to 5 percent

A horizon:
Chroma—2 to 4 dry, 2 or 3 moist

Bt horizon:
Value—5 or 6 dry
Chroma—2 to 4 dry or moist
Texture—silty clay loam or clay loam
Clay content—27 to 35 percent

Bkq horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—loam or very fine sandy loam
Clay content—18 to 27 percent
Rock fragment content—0 to 10 percent
Durinode content—0 to 25 percent
Effervescence—strong or violent
Reaction—moderately alkaline or strongly alkaline

Scism Series

Classification

Taxonomic class: Coarse-silty, mixed, mesic Haploxerollic Durorthids

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderate
Landforms: Calderas, tablelands, and draws
Parent material: Kind—loess and mixed alluvium; source—basalt, volcanic ash, and lacustrine deposits
Slope range: 1 to 20 percent
Elevation: 2,800 to 5,000 feet
Climatic data (average annual):
Precipitation—8 to 11 inches
Air temperature—46 to 52 degrees F
Frost-free period—100 to 145 days

Typical Pedon Description

A—0 to 2 inches; light gray (2.5Y 7/2) very fine sandy loam, olive brown (2.5Y 4/4) moist; moderate thick platy structure; slightly hard, friable; common very fine, fine, and medium roots; many very fine and few medium vesicular pores; mildly alkaline; abrupt smooth boundary.
Bk1—2 to 7 inches; pale yellow (2.5Y 7/4) silt loam, olive brown (2.5Y 4/4) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable; common very fine and fine roots and few medium roots; common very fine and fine tubular pores and few medium tubular pores; 5 percent gravel; 15 percent hard, firm cicada krotovinas; violently effervescent; moderately alkaline; abrupt wavy boundary.
Bk2—7 to 24 inches; pale yellow (2.5Y 7/4) very fine sandy loam, olive brown (2.5Y 4/4) moist; massive; few very fine and fine roots; few fine tubular pores; 15 percent hard, firm cicada krotovinas; violently effervescent; moderately alkaline; abrupt smooth boundary.
Bkqm—24 to 40 inches; light yellowish brown (2.5Y 6/4) continuous weakly cemented duripan, olive brown (2.5Y 4/4) moist; massive; very hard, very firm, brittle; few very fine and fine roots; 50 percent very hard, very firm durinodes; violently effervescent; abrupt smooth boundary.
2C—40 to 60 inches; white (2.5Y 8/2) loam, light yellowish brown (2.5Y 6/4) moist; massive; 10 percent gravel; violently effervescent; strongly alkaline.

Typical Pedon Location

Location in survey area: About 3 miles east of Murphy; in the SW$^1/_4$NW$^1/_4$ of sec. 29, T. 2 S., R. 1. W.
Map unit in which located: Scism very fine sandy loam, 1 to 12 percent slopes

Range in Characteristics

Profile:
Depth to duripan—20 to 40 inches

Particle-size control section:
Texture—silt loam or very fine sandy loam
Clay content (weighted average)—12 to 18 percent

A horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Reaction—mildly alkaline or moderately alkaline

Bk horizon:
Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—3 to 5 dry or moist
Reaction—moderately alkaline or strongly alkaline

2C horizon:
Hue—10YR or 2.5Y
Value—6 to 8 dry, 4 to 6 moist
Chroma—3 to 5 dry or moist
Texture—loam or sandy loam
Clay content—12 to 18 percent

Rock fragment content—0 to 10 percent
Salinity—low or moderate
Reaction—moderately alkaline or strongly alkaline

Sharesnout Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Typic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landforms: Foothills and mountains
Parent material: Kind—slope alluvium and residuum; source—extrusive rock and volcanic ash
Slope range: 3 to 35 percent
Elevation: 4,800 to 7,200 feet
Climatic data (average annual):
Precipitation—13 to 17 inches
Air temperature—38 to 45 degrees F
Frost-free period—55 to 95 days

Typical Pedon Description

A—0 to 4 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common fine and few medium vesicular pores; 20 percent gravel; neutral; clear smooth boundary.
BA—4 to 10 inches; brown (10YR 5/3) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common fine tubular pores; 15 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.
Bt1—10 to 15 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; many moderately thick clay films on faces of peds and in pores; 30 percent gravel and 10 percent cobbles; neutral; clear smooth boundary.
Bt2—15 to 22 inches; yellowish brown (10YR 5/4) extremely cobbly clay, brown (10YR 4/3) moist; moderate medium prismatic structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots; few fine tubular pores; many thick clay films on faces of peds and in pores; 25 percent gravel, 30 percent cobbles, and 5 percent stones; neutral; clear smooth boundary.
R—22 inches; fractured welded rhyolitic tuff; silica and clay fill most voids in fractures.

Typical Pedon Location

Location in survey area: About 18 miles southeast of Riddle; in the NW$^1/_4$SE$^1/_4$ of sec. 13, T. 16 S., R. 5 E.
Map unit in which located: Thacker-Cleavage-Sharesnout complex, 2 to 40 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 30 inches

Particle-size control section (weighted average):
Clay content—35 to 50 percent
Rock fragment content—40 to 75 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry, 2 or 3 moist
Reaction—slightly acid or neutral

Bt1 horizon:
Hue—7.5YR to 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—3 or 4 dry, 2 or 3 moist
Texture—very gravelly clay loam, extremely gravelly clay loam, or very cobbly clay loam
Reaction—slightly acid to mildly alkaline

Bt2 horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 2 to 4 moist
Chroma—3 to 6 dry or moist
Texture—extremely gravelly clay, extremely cobbly clay, or extremely gravelly clay loam
Reaction—neutral or mildly alkaline

Shoofly Series

Classification

Taxonomic class: Loamy, mixed, mesic, shallow Typic Durargids

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Fan piedmonts
Parent material: Kind—mixed alluvium; source—extrusive rock

Slope range: 0 to 4 percent
Elevation: 3,400 to 4,000 feet
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—49 to 51 degrees F
Frost-free period—115 to 130 days

Typical Pedon Description

A—0 to 2 inches; very pale brown (10YR 7/3) gravelly loam, brown (10YR 4/3) moist; weak thin platy structure parting to moderate fine and medium granular; slightly hard, very friable; few very fine roots; many very fine, fine, and medium vesicular pores; 30 percent gravel; moderately alkaline; clear smooth boundary.
AB—2 to 7 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; common very fine and fine roots; common very fine and fine tubular pores; few thin clay films in pores; 15 percent gravel; moderately alkaline; clear smooth boundary.
Bt—7 to 12 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine and fine tubular pores; common thin clay films on faces of peds and in pores; 20 percent gravel; 15 percent strongly effervescent gravel-sized duripan fragments; strongly alkaline; clear smooth boundary.
Bkqm—12 to 14 inches; white (10YR 8/2), mostly continuous, indurated duripan, light brownish gray (10YR 6/2) moist; platy structure; extremely hard, extremely firm, brittle; few very fine matted roots; 35 percent gravel; violently effervescent; clear wavy boundary.
2Bkq1—14 to 39 inches; very pale brown (10YR 7/3) extremely gravelly coarse sand, pale brown (10YR 6/3) moist; several stacked weakly cemented pans; 75 percent gravel; violently effervescent; strongly alkaline; gradual wavy boundary.
2Bkq2—39 to 60 inches; variegated sand and gravel; single grain; loose; violently effervescent; strongly alkaline.

Typical Pedon Location

Location in survey area: About 26 miles northwest of Grasmere; in the SW¼NE¼ of sec. 16, T. 8 S., R. 3 E.
Map unit in which located: Shoofly gravelly loam, 0 to 4 percent slopes

Range in Characteristics

Profile:
Depth to duripan—9 to 14 inches
Reaction—mildly alkaline to strongly alkaline

Particle-size control section (weighted average):
Clay content—25 to 35 percent
Rock fragment content—10 to 25 percent

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—clay loam, gravelly clay loam, or silty clay loam
Clay content—30 to 35 percent
Rock fragment content—5 to 20 percent

2Bkq horizon:
Texture—very gravelly coarse sand or extremely gravelly coarse sand
Rock fragment content—40 to 75 percent

Snell Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Pachic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains
Parent material: Kind—colluvium and residuum; source—basalt
Slope range: 5 to 40 percent
Elevation: 4,800 to 6,750 feet
Climatic data (average annual):
Precipitation—14 to 17 inches
Air temperature—40 to 45 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

A—0 to 10 inches; dark grayish brown (10YR 4/2) stony loam, very dark brown (10YR 2/2) 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 roots and common medium roots; few

very fine and fine vesicular and interstitial pores; 35 percent gravel and 1 percent stones; neutral; clear smooth boundary.
Bt1—10 to 22 inches; dark grayish brown (10YR 4/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds and on rock fragments; 35 percent gravel and 10 percent cobbles; neutral; clear smooth boundary.
Bt2—22 to 39 inches; brown (10YR 5/3) very cobbly clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and very plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; common moderately thick clay films on faces of peds and on rock fragments; 30 percent gravel and 25 percent cobbles; neutral; abrupt wavy boundary.
R—39 inches; fractured basalt.

Typical Pedon Location

Location in survey area: About 6 1/2 miles west of Reynolds; in the NE 1/4 NE 1/4 of sec. 25, T. 2 S., R. 5 W.
Map unit in which located: Snell-Sharesnout complex, 5 to 40 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Reaction—slightly acid or neutral

Particle-size control section (weighted average):
Clay content—35 to 45 percent
Rock fragment content—35 to 60 percent

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly clay loam, very cobbly clay loam, very cobbly clay, or extremely cobbly clay
Clay content—27 to 50 percent
Rock fragment content—35 to 75 percent

Snowmore Series

Classification

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Durargids

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Calderas, structural benches, and foothills
Parent material: Kind—loess and mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 1 to 10 percent
Elevation: 4,700 to 5,500 feet
Climatic data (average annual):
Precipitation—8 to 12 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 110 days

Typical Pedon Description

A—0 to 3 inches; pale brown (10YR 6/3) stony silt loam, dark brown (10YR 3/3) moist; weak thin platy structure parting to moderate fine and medium granular; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores and few very fine and fine vesicular pores; 10 percent gravel and 1 percent stones; neutral; clear smooth boundary.
Bt1—3 to 6 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine interstitial pores; few thin clay films on faces of peds; 10 percent gravel; mildly alkaline; clear smooth boundary.
Bt2—6 to 11 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, very sticky and plastic; common fine roots and few very fine and medium roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds; 5 percent gravel; mildly alkaline; clear smooth boundary.
Bkq1—11 to 25 inches; light yellowish brown (10YR 6/4) gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium

subangular blocky structure; hard, firm, slightly sticky; common fine roots and few very fine and medium roots; few very fine tubular pores; 10 percent durinodes; 15 percent gravel; strongly effervescent; strongly alkaline; gradual wavy boundary.

Bkq2—25 to 31 inches; very pale brown (10YR 7/4) gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; massive; few very fine, fine, and medium roots; 10 percent durinodes; 15 percent gravel; violently effervescent; strongly alkaline; abrupt wavy boundary.

Bkqm—31 to 36 inches; very pale brown (10YR 8/3) continuous indurated duripan, white (10YR 8/2) moist; massive; extremely hard, extremely firm, brittle; violently effervescent; clear wavy boundary.

R—36 inches; black welded vitric tuff.

Typical Pedon Location

Location in survey area: About 18 miles southeast of Grasmere; in the NW¼NW¼ of sec. 11, T. 14 S., R. 7 E.

Map unit in which located: Snowmore-Troughs complex, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to duripan—20 to 34 inches
Depth to bedrock—21 to 40 inches

Particle-size control section (weighted average):
Clay content—20 to 35 percent
Rock fragment content—0 to 15 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 or 6 dry
Chroma—3 or 4 dry or moist
Texture—loam or clay loam
Clay content—24 to 35 percent
Rock fragment content—0 to 15 percent
Reaction—mildly alkaline or moderately alkaline

Bkq horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—gravelly fine sandy loam, cobbly fine sandy loam, or gravelly loam
Clay content—10 to 20 percent
Rock fragment content—15 to 25 percent
Effervescence—slight or strong
Reaction—moderately alkaline or strongly alkaline

Southmount Series

Classification

Taxonomic class: Fine-loamy, mixed Argic Pachic Cryoborolls

Setting

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Landforms: Mountains
Parent material: Kind—slope alluvium and colluvium; source—basalt
Slope range: 5 to 40 percent
Elevation: 5,800 to 7,400 feet
Climatic data (average annual):
Precipitation—22 to 36 inches
Air temperature—35 to 38 degrees F
Frost-free period—30 to 60 days

Typical Pedon Description

Oi—1 inch to 0; partially decomposed needles and twigs.

A—0 to 5 inches; dark brown (10YR 3/3) silt loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure parting to moderate fine granular; slightly hard, very friable, slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine vesicular and interstitial pores; 10 percent gravel; neutral; clear wavy boundary.

Bt1—5 to 13 inches; dark brown (10YR 4/3) cobbly silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and plastic; many very fine, fine, and medium roots and few coarse roots; common very fine and fine tubular pores; many thin clay films on faces of peds and lining pores; 10 percent gravel and 10 percent cobbles; moderately acid; clear smooth boundary.

Bt2—13 to 18 inches; brown (10YR 4/3) gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots and few coarse roots; common very fine and fine tubular pores; many moderately thick clay films on faces of peds and lining pores; 10 percent gravel and 5 percent cobbles; strongly acid; clear wavy boundary.

2Bt3—18 to 42 inches; brownish yellow (10YR 6/6) gravelly clay loam, dark yellowish brown (10YR 4/6) moist; few fine distinct strong brown (7.5YR

5/6) mottles; moderate medium angular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; common thin clay films on faces of peds; trace manganese concretions; 20 percent gravel; strongly acid; gradual irregular boundary.

2C—42 to 60 inches; light yellowish brown (2.5Y 6/4) sandy loam, olive brown (2.5Y 4/4) moist; few medium prominent yellow (2.5Y 7/6) mottles; massive; very hard, friable; few very fine and fine tubular pores; trace manganese concretions; 5 percent gravel; strongly acid.

Typical Pedon Location

Location in survey area: About 10 miles northeast of Cliffs; in the NE¼SW¼ of sec. 6, T. 8 S., R. 4 W.

Map unit in which located: Southmount-Booneville complex, 5 to 40 percent slopes

Range in Characteristics

Profile:
Depth to mottles—18 to 40 inches

Particle-size control section (weighted average):
Clay content—24 to 32 percent
Rock fragment content—0 to 20 percent

A horizon:
Value—3 or 4 dry
Chroma—1 to 3 dry or moist
Reaction—slightly acid or neutral

Bt1 horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—cobbly silt loam, loam, or silt loam
Reaction—moderately acid or slightly acid

Bt2 horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—cobbly clay loam or clay loam
Reaction—strongly acid to slightly acid

Squawcreek Series

Classification

Taxonomic class: Clayey, montmorillonitic, frigid Lithic Mollic Haploxeralfs

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Slow
Landforms: Foothills, structural benches, and mountains
Parent material: Kind—residuum; source—welded rhyolitic tuff
Slope range: 1 to 20 percent
Elevation: 4,900 to 6,650 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—65 to 95 days

Typical Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) very stony silt loam, dark brown (10YR 3/3) moist; weak medium platy structure parting to weak fine granular; slightly hard, very friable; many very fine and fine roots and few medium and coarse roots; many very fine and fine vesicular pores; 10 percent gravel, 10 percent cobbles, and 10 percent stones; slightly acid; clear smooth boundary.

Bt1—4 to 8 inches; yellowish brown (10YR 5/4) gravelly clay loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular and vesicular pores; common thin clay films on faces of peds and in pores; 10 percent gravel and 5 percent cobbles; slightly acid; clear wavy boundary.

Bt2—8 to 12 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark brown (7.5YR 4/4) moist; strong fine and medium subangular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine roots and few medium roots; many very fine and fine tubular and interstitial pores; common moderately thick clay films on faces of peds and in pores; 15 percent gravel and 5 percent cobbles; neutral; abrupt wavy boundary.

Bt3—12 to 18 inches; yellowish brown (10YR 5/4) gravelly clay, dark brown (7.5YR 4/4) moist; strong fine and medium prismatic structure parting to fine angular blocky; extremely hard, extremely firm, sticky and plastic; few very fine and fine roots; common very fine tubular pores; continuous thick clay films on faces of peds and in pores; 10 percent gravel and 5 percent cobbles; neutral; abrupt wavy boundary.

R—18 inches; fractured welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 14 miles east of Cliffs; in the NW¼SE¼ of sec. 6, T. 10 S., R. 2 W.

Map unit in which located: Squawcreek-Avtable-Wagonbox complex, 1 to 15 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—11 to 20 inches
Reaction—slightly acid or neutral

Particle-size control section (weighted average):
Clay content—35 to 50 percent
Rock fragment content—5 to 25 percent

A horizon:
Value—5 or 6 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6 dry or moist
Texture—clay loam or gravelly clay loam in upper part and clay, gravelly clay, or cobbly clay in lower part
Clay content—30 to 40 percent in upper part and 40 to 55 percent in lower part

Strickland Series

Classification

Taxonomic class: Fine-loamy, mixed Pachic Cryoborolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Mountains
Parent material: Kind—colluvium and alluvium; source—basalt
Slope range: 5 to 30 percent
Elevation: 6,300 to 7,600 feet
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—35 to 40 degrees F
Frost-free period—30 to 50 days

Typical Pedon Description

A—0 to 4 inches; very dark grayish brown (10YR 3/2) loam, black (10YR 2/1) moist; weak thin platy structure parting to weak fine granular; slightly hard, very friable; many very fine and fine roots and common medium roots; many very fine and fine interstitial pores; 5 percent gravel; strongly acid; clear smooth boundary.

AB—4 to 14 inches; dark brown (10YR 3/3) loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; slightly hard, very friable; many very fine and fine roots and common medium roots; common very fine and fine tubular and interstitial pores; 5 percent gravel and 5 percent cobbles; strongly acid; clear smooth boundary.

Bt1—14 to 20 inches; dark brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common fine tubular pores; few thin clay films on faces of peds; 5 percent gravel and 5 percent cobbles; strongly acid; clear smooth boundary.

Bt2—20 to 29 inches; yellowish brown (10YR 5/4) loam, dark brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots and few very fine and medium roots; common very fine and fine tubular pores; common thin clay films on faces of peds; 5 percent gravel and 5 percent cobbles; strongly acid; gradual smooth boundary.

2R—29 inches; weathered basalt.

Typical Pedon Location

Location in survey area: About 13 miles southeast of Riddle; in the NE¼SE¼ of sec. 27, T. 16 S., R. 4 E.

Map unit in which located: Strickland-Dehana-Parkay association, 5 to 35 percent slopes

Range in Characteristics

Profile:
Base saturation—50 to 75 percent
Depth to bedrock—20 to 40 inches
Reaction—slightly acid to strongly acid

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 to 4 dry, 1 or 2 moist

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 to 4 moist
Chroma—3 or 4 dry or moist
Texture—loam or cobbly loam
Clay content—18 to 27 percent
Rock fragment content—5 to 30 percent

Succor Series

Classification

Taxonomic class: Fine, montmorillonitic, mesic Typic Palexerolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landforms: Pediments
Parent material: Kind—mixed alluvium; source—volcaniclastic material and lacustrine deposits
Slope range: 3 to 35 percent
Elevation: 4,250 to 5,500 feet
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—45 to 49 degrees F
Frost-free period—90 to 115 days

Typical Pedon Description

A1—0 to 2 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure parting to weak fine subangular blocky; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine discontinuous vesicular pores; 20 percent gravel; neutral; abrupt smooth boundary.
A2—2 to 5 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure parting to weak very fine subangular blocky; soft, very friable, sticky and plastic; common very fine, fine, and medium roots; common very fine and fine discontinuous vesicular pores; 15 percent gravel; neutral; abrupt smooth boundary.
Bt1—5 to 18 inches; brown (10YR 5/3) clay, dark brown (10YR 3/3) moist; strong medium prismatic structure parting to strong fine and medium angular blocky; very hard, firm, very sticky and very plastic; common very fine, fine, and medium roots; many thick clay films on faces of peds; 10 percent gravel; neutral; clear smooth boundary.
Bt2—18 to 22 inches; light yellowish brown (10YR 6/4) clay loam, brown (10YR 4/3) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, sticky and plastic; few fine tubular pores; many moderately thick clay films on faces of peds and in pores; 5 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.
Bq1—22 to 33 inches; pale yellow (2.5Y 7/4) sandy loam, olive (5Y 5/4) moist; moderate medium platy structure parting to fine and very fine angular blocky; few very fine roots; common moderately thick coatings of silica on faces of peds; 5 percent gravel; neutral; clear smooth boundary.
Bq2—33 to 60 inches; light gray (2.5Y 7/2) loam, olive (5Y 5/3) moist; massive; hard, firm; few very fine roots; common fine seams of silica; neutral.

Typical Pedon Location

Location in survey area: About 14 miles west of Reynolds; in the NE$^{1}/_{4}$NW$^{1}/_{4}$ of sec. 26, T. 2 S., R. 6 W.
Map unit in which located: Succor-Gooding-Deshler complex, 2 to 35 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—5 to 14 inches
Reaction—neutral or mildly alkaline

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist

Bt horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—clay or clay loam
Clay content—35 to 50 percent
Rock fragment content—0 to 15 percent

Bq horizon:
Hue—10YR to 5Y
Value—4 to 7 dry, 4 or 5 moist
Chroma—2 to 6 dry or moist
Texture—sandy loam, loam, or gravelly loam
Rock fragment content—5 to 35 percent
Effervescence—none or slight

Sugarcreek Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic Durixerollic Camborthids

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Structural benches
Parent material: Kind—residuum and colluvium; source—vitric tuff and breccia
Slope range: 3 to 30 percent
Elevation: 3,500 to 5,000 feet

Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—46 to 50 degrees F
Frost-free period—90 to 125 days

Typical Pedon Description

A—0 to 4 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (10YR 3/3) moist; weak medium platy structure parting to weak fine granular; soft, very friable, nonsticky and nonplastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine vesicular pores; 15 percent gravel; mildly alkaline; clear smooth boundary.

Bw—4 to 13 inches; yellowish brown (10YR 5/4) gravelly loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots and few coarse roots; common very fine and fine tubular pores and few medium tubular pores; 15 percent gravel; mildly alkaline; clear smooth boundary.

Bk—13 to 21 inches; pale brown (10YR 6/3) gravelly loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and nonplastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores and few medium tubular pores; 30 percent gravel; strongly effervescent; moderately alkaline; clear smooth boundary.

Bkq1—21 to 28 inches; white (10YR 8/2) very gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; brittle thin discontinuous indurated laminae throughout; common very fine and fine roots concentrated in fractures and on laminae; few very fine and fine vesicular pores; 45 percent gravel and 5 percent cobbles; thin discontinuous coatings of lime and silica on rock fragments; violently effervescent; moderately alkaline; clear wavy boundary.

Bkq2—28 to 39 inches; white (10YR 8/2) extremely gravelly loamy sand, light yellowish brown (10YR 6/4) moist; single grain; loose; common very fine and fine roots; 65 percent gravel and 15 percent cobbles; thin discontinuous coatings of secondary lime and silica on rock fragments; violently effervescent; moderately alkaline; abrupt wavy boundary.

R—39 inches; moderately fractured black vitrophyric breccia.

Typical Pedon Location

Location in survey area: About 29 miles north of Three Creek; in the NE$^1/_4$NE$^1/_4$ of sec. 12, T. 11 S., R. 11 E.

Map unit in which located: Sugarcreek gravelly loam, 3 to 30 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—7 to 14 inches
Depth to bedrock—20 to 40 inches

Particle-size control section (weighted average):
Clay content—12 to 22 percent clay
Rock fragment content—35 to 70 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Reaction—neutral or mildly alkaline

Bw horizon:
Value—5 or 6 dry
Chroma—3 or 4 dry or moist
Texture—gravelly loam or very gravelly loam
Clay content—18 to 25 percent
Rock fragment content—20 to 45 percent
Reaction—mildly alkaline or moderately alkaline

Bkq horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly sandy loam or extremely gravelly loamy sand
Clay content—5 to 18 percent
Rock fragment content—35 to 85 percent
Effervescence—strong or violent
Reaction—moderately alkaline to very strongly alkaline

Takeuchi Series

Classification

Taxonomic class: Coarse-loamy, mixed, frigid Typic Haploxerolls

Setting

Depth class: Moderately deep
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Landforms: Mountains

Parent material: Kind—slope alluvium and residuum; source—intermediate intrusive rock
Slope range: 3 to 60 percent
Elevation: 4,600 to 7,600 feet
Climatic data (average annual):
Precipitation—14 to 22 inches
Air temperature—40 to 45 degrees F
Frost-free period—55 to 95 days

Typical Pedon Description

A1—0 to 4 inches; dark grayish brown (10YR 4/2) fine gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak thin platy structure parting to moderate very fine granular; slightly hard, very friable, slightly sticky and nonplastic; many fine roots; many very fine pores; 15 percent gravel; slightly acid; clear smooth boundary.
A2—4 to 12 inches; dark grayish brown (10YR 4/2) fine gravelly coarse sandy loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure parting to moderate very fine granular; soft, very friable, slightly sticky and nonplastic; many fine roots and common medium and coarse roots; many very fine tubular pores; 15 percent gravel; slightly acid; clear wavy boundary.
Bt—12 to 18 inches; brown (10YR 4/3) fine gravelly coarse sandy loam, dark brown (10YR 3/3) moist; moderate medium and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine tubular pores; few thin clay films on faces of peds, in pores, and bridging sand grains; 20 percent fine gravel; few krotovinas; slightly acid; clear wavy boundary.
BC—18 to 26 inches; brown (10YR 5/3) fine gravelly coarse sandy loam, dark brown (10YR 3/3) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; many very fine tubular pores; 20 percent fine gravel; slightly acid; clear irregular boundary.
Cr—26 to 36 inches; moderately weathered granite or quartz-monzonite; many dark mineral grains and mica particles; common brown (7.5YR 5/4) and light yellowish brown (10YR 6/4) stains and few reddish brown (5YR 5/4) and yellowish red (5YR 5/6) stains; hard or very hard; breaks in hand to very fine gravel, very coarse sand, and coarse sand; few dark grayish brown (10YR 4/2) clay films and few fine roots in some cracks; slightly acid; gradual broken boundary.
R—36 inches; somewhat fractured and slightly weathered granite or quartz-monzonite.

Typical Pedon Location

Location in survey area: About 4 miles southwest of Reynolds; in the NW$^1/_4$SW$^1/_4$ of sec. 23, T. 3 S., R. 4 W.
Map unit in which located: Takeuchi-Quicksilver association, 3 to 50 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Reaction—moderately acid to neutral

Particle-size control section (weighted average):
Clay content—5 to 18 percent
Rock fragment content—15 to 30 percent

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt and BC horizons:
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—fine gravelly coarse sandy loam, gravelly coarse sandy loam, or fine gravelly sandy loam
Clay content—6 to 18 percent
Rock fragment content—15 to 35 percent

Tanner Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Aridic Durixerolls

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Calderas and plug domes
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 8 percent
Elevation: 5,250 to 5,900 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 95 days

Typical Pedon Description

A—0 to 3 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium platy structure parting to moderate fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots

and few medium roots; many very fine and fine vesicular pores and few medium vesicular pores; neutral; clear smooth boundary.
Bt1—3 to 10 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate fine angular blocky structure; hard, firm, sticky and plastic; many very fine and fine roots and common medium roots; few fine tubular pores; common thin clay films on faces of peds and in pores; neutral; clear smooth boundary.
Bt2—10 to 20 inches; pale brown (10YR 6/3) silty clay, brown (10YR 4/3) moist; weak medium prismatic structure parting to strong fine angular blocky; extremely hard, firm, very sticky and very plastic; common very fine and fine roots; few fine tubular pores; many moderately thick clay films on faces of peds and in pores; 5 percent gravel; neutral; gradual smooth boundary.
Bkq—20 to 36 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; weak medium and fine subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; few fine roots; few fine tubular pores; 5 percent gravel; 10 percent durinodes; violently effervescent; mildly alkaline; clear wavy boundary.
Bkqm—36 to 51 inches; white (10YR 8/2) continuous indurated duripan; platy structure; extremely hard, extremely firm, brittle; few roots matted on surface of plates; 10 percent gravel and 10 percent cobbles; violently effervescent; gradual wavy boundary.
R—51 inches; fractured basalt.

Typical Pedon Location

Location in survey area: About 12 miles northeast of Three Creek; in the SW¼SW¼ of sec. 4, T. 14 S., R. 12 E.
Map unit in which located: Tanner silt loam, 2 to 8 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—12 to 25 inches
Depth to duripan—20 to 40 inches
Depth to bedrock—40 to 60 inches

Particle-size control section (weighted average):
Clay content—35 to 45 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt1 horizon:
Chroma—2 or 3 dry or moist
Clay content—30 to 38 percent
Reaction—slightly acid or neutral

Bt2 horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—silty clay or cobbly silty clay
Clay content—40 to 48 percent
Rock fragment content—0 to 20 percent

Bkq horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—loam, gravelly loam, or silt loam
Clay content—16 to 26 percent
Rock fragment content—5 to 25 percent
Effervescence—strong or violent
Reaction—mildly alkaline or moderately alkaline

Thacker Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Abruptic Durixeralfs

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Very slow
Landforms: Foothills, piedmonts, and fan terraces
Parent material: Kind—mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 2 to 12 percent
Elevation: 4,800 to 7,100 feet
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 90 days

Typical Pedon Description

E1—0 to 3 inches; light brownish gray (10YR 6/2) stony silt loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to weak fine granular; slightly hard, very friable; many very fine and fine roots and common medium roots; common very fine vesicular pores and many very fine and fine tubular pores; 5 percent gravel, 15 percent cobbles, and 1 percent stones; slightly acid; clear smooth boundary.
E2—3 to 8 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable; many very fine and fine roots and common medium roots; many very fine and fine

vesicular pores; 5 percent gravel; neutral; clear smooth boundary.
EB—8 to 12 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; strong fine subangular blocky structure; hard, very friable, slightly plastic; common very fine, fine, and medium roots; many very fine and fine vesicular pores; few thin clay films on faces of peds and in pores; 5 percent gravel; slightly acid; abrupt smooth boundary.
Bt1—12 to 20 inches; pale brown (10YR 6/3) clay, dark yellowish brown (10YR 4/4) moist; strong medium and coarse prismatic structure; extremely hard, very firm, very sticky and very plastic; few very fine and fine roots and few medium roots; common fine tubular pores; many thick clay films on faces of peds and in pores; neutral; clear smooth boundary.
Bt2—20 to 26 inches; light yellowish brown (10YR 6/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium and fine angular blocky structure; very hard, firm, sticky and plastic; few very fine and fine roots; common fine tubular pores; many moderately thick clay films on faces of peds and in pores; neutral; abrupt smooth boundary.
2Bt3—26 to 39 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; moderate medium and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; few thin clay films on faces of peds; 5 percent fine gravel; moderately alkaline; abrupt wavy boundary.
2Bkqm—39 to 56 inches; very pale brown (10YR 7/3) continuous strongly cemented duripan, yellowish brown (10YR 5/4) moist; massive; very hard, very firm, brittle; 5 percent gravel; slightly effervescent; lime segregated in veins; gradual smooth boundary.
2Cq—56 to 60 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; 50 percent durinodes.

Typical Pedon Location

Location in survey area: About 9 miles southeast of Riddle; in the NE¼SE¼ of sec. 11, T. 15 S., R. 4 E.
Map unit in which located: Wickahoney-Blackleg-Thacker association, 2 to 30 percent slopes

Range in Characteristics

Profile:
Depth to abrupt textural change—7 to 15 inches
Depth to duripan—20 to 40 inches

E horizon:
Value—6 or 7 dry, 3 to 5 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Clay content—40 to 55 percent
Rock fragment content—0 to 10 percent
Reaction—slightly acid to moderately alkaline

Threek Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Typic Argixerolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landforms: Outwash terraces
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 2 to 40 percent
Elevation: 4,800 to 6,000 feet
Climatic data (average annual):
Precipitation—12 to 17 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 95 days

Typical Pedon Description

A1—0 to 3 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine vesicular pores; 25 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.
A2—3 to 7 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; 20 percent gravel; neutral; clear smooth boundary.
Bt1—7 to 13 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine angular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common very fine

and fine tubular pores; many moderately thick clay films on faces of peds and in pores; 35 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.

Bt2—13 to 31 inches; light yellowish brown (10YR 6/4) very gravelly clay, yellowish brown (10YR 5/4) moist; strong fine angular blocky structure; very hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine and fine tubular pores; continuous thick clay films on faces of peds and in pores; 50 percent gravel and 5 percent cobbles; neutral; clear wavy boundary.

2Bq—31 to 60 inches; reddish yellow (7.5YR 6/6) discontinuous weakly cemented extremely gravelly sandy loam, brown (7.5YR 4/4) moist; massive; hard, friable; few fine roots; few fine tubular pores; 60 percent gravel and 10 percent cobbles; neutral.

Typical Pedon Location

Location in survey area: About 3 1/2 miles east of Three Creek; in the NW1/4SE1/4 of sec. 31, T. 15 S., R. 12 E.

Map unit in which located: Threek-Blackleg-Hatpeak complex, 2 to 20 percent slopes

Range in Characteristics

Profile:
Depth to lithologic discontinuity—24 to 40 inches

Particle-size control section (weighted average):
Clay content—35 to 50 percent
Rock fragment content—35 to 60 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly clay loam or very cobbly clay loam in upper part and very gravelly clay or extremely gravelly clay in lower part
Clay content—28 to 40 percent in upper part and 40 to 55 percent in lower part
Reaction—neutral or mildly alkaline

Bq horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 4 or 5 moist
Chroma—4 to 6 dry or moist
Texture (fine-earth fraction)—sandy loam, fine sandy loam, loamy sand, or loamy fine sand
Rock fragment content—10 to 70 percent
Reaction—neutral to moderately alkaline

Tindahay Series

Classification

Taxonomic class: Sandy, mixed, mesic Xeric Torriorthents

Setting

Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Landforms: Fan terraces
Parent material: Kind—mixed alluvium and eolian sand; source—mixed sediment
Slope range: 1 to 12 percent
Elevation: 2,300 to 4,500 feet
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 53 degrees F
Frost-free period—105 to 150 days

Typical Pedon Description

A1—0 to 3 inches; light brownish gray (10YR 6/2) loamy fine sand, dark grayish brown (10YR 4/2) moist; weak very thick platy structure; soft, very friable; common very fine, fine, medium, and coarse roots; neutral; clear smooth boundary.

A2—3 to 14 inches; light brownish gray (10YR 6/2) loamy fine sand, brown (10YR 4/3) moist; weak medium and thick platy structure; soft, very friable; few very fine and fine roots and common medium and coarse roots; neutral; clear wavy boundary.

A3—14 to 24 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable; few very fine and fine roots and common medium roots; neutral; clear smooth boundary.

AC—24 to 30 inches; light gray (2.5Y 7/2) loamy sand, olive brown (2.5Y 4/4) moist; weak medium subangular blocky structure; slightly hard, very friable; few very fine, fine, and medium roots; neutral; clear smooth boundary.

C—30 to 42 inches; light gray (2.5Y 7/2) sand, light olive brown (2.5Y 5/4) moist; single grain; loose; few very fine, fine, and medium roots; 5 percent gravel; mildly alkaline; clear smooth boundary.

Ck—42 to 60 inches; light gray (2.5Y 7/2) fine gravelly coarse sand, light olive brown (2.5Y 5/4) moist; single grain; loose; few very fine roots; 25 percent gravel; slightly effervescent; mildly alkaline.

Typical Pedon Location

Location in survey area: About 7 1/2 miles northwest of Murphy; in the NW1/4NE1/4 of sec. 35, T. 1 S., R. 3 W.
Map unit in which located: Hardtrigger-Briabbit-Tindahay complex, 1 to 15 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—20 inches or more

Particle-size control section (weighted average):
Clay content—4 to 10 percent
Rock fragment content—0 to 25 percent

A horizon:
Hue—10YR or 2.5Y
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

C horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 3 to 6 moist
Chroma—2 to 4 dry or moist
Texture—sand, loamy sand, loamy coarse sand, or fine gravelly coarse sand
Clay content—0 to 8 percent
Reaction—neutral to moderately alkaline

Troughs Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic, shallow Xerollic Durargids

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Calderas and structural benches
Parent material: Kind—silty alluvium and loess; source—extrusive rock and volcanic ash
Slope range: 0 to 25 percent
Elevation: 3,500 to 5,500 feet
Climatic data (average annual):
Precipitation—8 to 12 inches
Air temperature—45 to 50 degrees F
Frost-free period—90 to 125 days

Typical Pedon Description

A—0 to 2 inches; very pale brown (10YR 7/3) very stony loam, grayish brown (10YR 5/2) moist; moderate medium platy structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine vesicular pores; 5 percent gravel, 10 percent cobbles, and 10 percent stones; mildly alkaline; clear smooth boundary.
Bt—2 to 8 inches; pale brown (10YR 6/3) cobbly clay loam, brown (10YR 5/3) moist; moderate very fine and fine subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine tubular pores; few thin clay films on faces of peds; 10 percent gravel and 20 percent cobbles; moderately alkaline; clear smooth boundary.
Bkq—8 to 15 inches; very pale brown (10YR 7/3) extremely cobbly loam, yellowish brown (10YR 5/4) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; few very fine tubular pores; 65 percent indurated, dominantly cobble-sized duripan fragments; strongly effervescent; strongly alkaline; gradual smooth boundary.
Bkqm—15 to 30 inches; white (10YR 8/2) indurated duripan, very pale brown (10YR 7/3) moist; massive or strong medium and thick platy structure; extremely hard, extremely firm, brittle; opalized laminations 1/8 inch to 2 inches thick; 20 percent angular cobbles and stones; violently effervescent; abrupt wavy boundary.
2R—30 inches; basalt.

Typical Pedon Location

Location in survey area: About 1 1/2 miles north of Grasmere; in the NW1/4NW1/4 of sec. 9, T. 12 S., R. 5 E.
Map unit in which located: Troughs-Owsel complex, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—6 to 14 inches
Depth to duripan—12 to 20 inches
Depth to bedrock—20 to 40 inches

Particle-size control section (weighted average):
Clay content—27 to 35 percent

A horizon:
Value—4 to 7 dry, 3 to 5 moist
Chroma—2 or 3 dry or moist
Reaction—mildly alkaline or moderately alkaline

Bt horizon:
Value—6 or 7 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist
Texture—cobbly clay loam, very cobbly clay loam, or very gravelly clay loam
Rock fragment content—25 to 50 percent
Effervescence—none to strong
Reaction—mildly alkaline to strongly alkaline

Bkq horizon:
Hue—7.5YR or 10YR
Value—7 or 8 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Rock fragment content—50 to 90 percent
Effervescence—slight to violent
Reaction—moderately alkaline to very strongly alkaline

Tucker Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Cumulic Haploxerolls

Setting

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Slow
Landforms: Bottomlands
Parent material: Kind—mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 1 to 4 percent
Elevation: 4,600 to 5,850 feet
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—42 to 45 degrees F
Frost-free period—75 to 90 days

Typical Pedon Description

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; slightly hard, friable, sticky and plastic; neutral; clear smooth boundary.
ABss—5 to 16 inches; dark gray (10YR 4/1) silty clay loam, black (10YR 2/1) moist; weak medium and coarse prismatic structure parting to moderate medium subangular blocky; very hard, very firm, sticky and plastic; common thick slickensides; mildly alkaline; clear smooth boundary.
Bwss1—16 to 26 inches; grayish brown (10YR 5/2) silty clay, very dark grayish brown (10YR 3/2) moist; common medium prominent mottles; moderate fine and medium angular blocky structure; very hard, very firm, very sticky and very plastic; many thick slickensides; neutral; clear smooth boundary.
Bwss2—26 to 32 inches; dark grayish brown (10YR 4/2) silty clay, very dark grayish brown (10YR 3/2) moist; common medium distinct mottles; weak medium subangular blocky structure; very hard, very firm, very sticky and very plastic; common moderately thick slickensides; mildly alkaline; clear smooth boundary.
C—32 to 60 inches; light brownish gray (10YR 6/2) clay loam, dark grayish brown (2.5Y 4/2) moist; few medium faint mottles; massive; sticky and plastic; mildly alkaline.

Typical Pedon Location

Location in survey area: About 11 miles northeast of Cliffs; in the $SE^1/_4NW^1/_4$ of sec. 31, T. 7 S., R. 4 W.
Map unit in which located: Tucker-Zola silt loams, 0 to 4 percent slopes

Range in Characteristics

Profile:
Depth to mottles—10 to 20 inches

Particle-size control section (weighted average):
Clay content—35 to 50 percent

A and AB horizons:
Value—4 or 5 dry
Chroma—1 or 2 dry or moist
Reaction—neutral or mildly alkaline

Bw horizon:
Hue—10YR or 2.5Y
Value—3 to 5 dry, 2 to 4 moist
Chroma—1 or 2 dry or moist
Texture—silty clay loam or silty clay
Clay content—30 to 50 percent
Reaction—neutral or mildly alkaline

C horizon:
Hue—10YR or 2.5Y
Value—5 or 6 dry, 2 to 4 moist
Chroma—1 to 3 dry or moist
Clay content—27 to 40 percent
Reaction—neutral to moderately alkaline

Typic Haploxerolls

Setting

Depth class: Moderately deep or deep
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Fan piedmont escarpments
Parent material: Kind—slope alluvium and loess; source—volcaniclastic material
Slope range: 25 to 60 percent

Elevation: 3,500 to 5,300 feet
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—44 to 50 degrees F
Frost-free period—85 to 120 days

Example Pedon Description

A—0 to 3 inches; brown (10YR 4/3) very gravelly loamy sand, dark brown (10YR 3/3) moist; single grain; loose; 40 percent gravel and 15 percent cobbles; clear wavy boundary.
Bw1—3 to 10 inches; brown (10YR 5/3) gravelly sandy clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few thin clay films bridging sand grains; 25 percent gravel; clear wavy boundary.
Bw2—10 to 22 inches; light yellowish brown (2.5Y 6/4) very cobbly sandy clay loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common thin clay films bridging sand grains; 20 percent gravel and 35 percent cobbles; clear wavy boundary.
Cr—22 inches; soft tuff; 50 percent hard rock fragments.

Example Pedon Location

Location in survey area: About 12 miles west of Reynolds; in the SE¼NE¼ of sec. 1, T. 3 S., R. 6 W.
Map unit in which located: Typic Haploxerolls-Pachic Argixerolls-Badlands complex, very steep

Range in Characteristics

Profile:
Depth to soft bedrock—20 to 60 inches
Reaction—slightly acid or neutral

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bw horizon:
Texture—stratified gravelly sandy loam to very gravelly sandy clay loam
Clay content—7 to 27 percent
Rock fragment content—15 to 60 percent

Typic Torrifluvents

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid to very rapid
Landforms: Bottomlands
Parent material: Kind—mixed alluvium; source—mixed sediment
Slope range: 1 to 4 percent
Elevation: 2,200 to 4,100 feet
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—49 to 53 degrees F
Frost-free period—115 to 150 days

Example Pedon Description

A1—0 to 4 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak medium platy structure parting to weak medium subangular blocky; slightly hard, very friable; common very fine, fine, and medium roots and few coarse roots; few fine and medium vesicular pores; 5 percent gravel; clear smooth boundary.
A2—4 to 8 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 4/3) moist; moderate medium and thin platy structure; slightly hard, very friable; common very fine and fine roots and few medium roots; few fine vesicular and tubular pores; 5 percent gravel; clear smooth boundary.
A3—8 to 13 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak thick platy structure parting to weak medium subangular blocky; slightly hard, very friable; common very fine and fine roots and few medium roots; few fine vesicular and tubular pores; 10 percent gravel; abrupt smooth boundary.
2C1—13 to 23 inches; pale brown (10YR 6/3) very gravelly loamy sand, brown (10YR 4/3) moist; single grain; loose; common very fine and fine roots; 45 percent gravel and 10 percent cobbles; thin coatings of lime on underside of rock fragments; clear smooth boundary.
2C2—23 to 36 inches; pale brown (10YR 6/3) very cobbly loamy sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; 25 percent gravel and 30 percent cobbles; clear broken boundary.
2C3—36 to 45 inches; pale brown (10YR 6/3) very gravelly loamy coarse sand, brown (10YR 4/3) moist; single grain; loose; few very fine and fine roots; 45 percent gravel and 10 percent cobbles; thin coatings of lime on underside of rock fragments; clear wavy boundary.
2C4—45 to 60 inches; brown (10YR 5/3) very gravelly loamy sand, dark brown (10YR 3/3) moist; single grain; loose; few very fine and fine roots; 40 percent gravel and 15 percent cobbles; thin coatings of lime on underside of rock fragments.

Example Pedon Location

Location in survey area: About 12 miles northwest of Murphy; in the SE$^1/_4$SE$^1/_4$ of sec. 3, T. 1 S., R. 3 W.
Map unit in which located: Typic Torripsamments-Typic Torrifluvents complex, gently sloping

Range in Characteristics

A horizon:
Hue—10YR or 2.5Y
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Reaction—neutral or mildly alkaline

C horizon:
Texture—stratified fine sandy loam to very gravelly sand
Clay content—2 to 18 percent
Rock fragment content—10 to 60 percent
Effervescence—none or slight
Reaction—moderately alkaline or strongly alkaline

Typic Torriorthents

Setting

Depth class: Moderately deep or deep
Drainage class: Well drained or somewhat excessively drained
Permeability: Moderately slow or moderately rapid
Landforms: Tableland and terrace escarpments and structural benches
Parent material: Kind—eolian sand and residuum; source—basalt and lacustrine deposits
Slope range: 1 to 60 percent
Elevation: 2,250 to 4,000 feet
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—48 to 53 degrees F
Frost-free period—110 to 150 days

Example Pedon Description

A—0 to 3 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate thick platy structure parting to weak thin platy; soft, very friable, slightly sticky and plastic; violently effervescent; clear smooth boundary.
AC—3 to 10 inches; very pale brown (10YR 8/3) silt loam, pale brown (10YR 6/3) moist; moderate medium subangular blocky structure parting to strong fine angular blocky; slightly hard, very friable, sticky and plastic; violently effervescent; clear smooth boundary.
C1—10 to 21 inches; very pale brown (10YR 8/3) silt loam, pale brown (10YR 6/3) moist; massive; sticky and plastic; violently effervescent; gradual smooth boundary.
C2—21 to 45 inches; very pale brown (10YR 7/3) silt loam; massive; slightly sticky and slightly plastic; violently effervescent; gradual smooth boundary.
Cr—45 inches; highly weathered mudstone.

Example Pedon Location

Location in survey area: About 12 miles southeast of Murphy; in the NW$^1/_4$NW$^1/_4$ of sec. 33, T. 3 S., R. 1 E.
Map unit in which located: Badlands-Typic Torriorthents-Xeric Torriorthents complex, very steep

Range in Characteristics

Profile:
Depth to soft bedrock—20 to 60 inches

Particle-size control section (weighted average):
Clay content—7 to 30 percent
Rock fragment content—0 to 50 percent

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Reaction—mildly alkaline to strongly alkaline
Effervescence—slight to violent

Typic Torripsamments

Setting

Depth class: Moderately deep to very deep
Drainage class: Somewhat excessively drained
Permeability: Very rapid
Landforms: Bottomlands and structural benches
Parent material: Kind—mixed alluvium and eolian sand; source—mixed sediment
Slope range: 1 to 8 percent
Elevation: 2,200 to 4,100 feet
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—49 to 53 degrees F
Frost-free period—115 to 150 days

Example Pedon Description

A—0 to 4 inches; light yellowish brown (2.5Y 6/4) loamy fine sand, olive brown (2.5Y 4/4) moist; weak thick platy structure; soft, very friable; common very fine, fine, medium, and coarse roots; slightly effervescent; abrupt wavy boundary.
AC—4 to 8 inches; light yellowish brown (2.5Y 6/4) loamy fine sand, olive brown (2.5Y 4/4) moist; moderate thick platy structure parting to moderate

medium and fine subangular blocky; slightly hard, very friable; few very fine and fine roots and common medium and coarse roots; common very fine tubular pores; abrupt wavy boundary.
C—8 to 18 inches; light yellowish brown (2.5Y 6/4) loamy fine sand, olive brown (2.5Y 4/4) moist; massive; few very fine and fine roots and common medium roots; common very fine tubular pores; slightly effervescent; abrupt wavy boundary.
Ck1—18 to 48 inches; light yellowish brown (2.5Y 6/4) loamy fine sand, olive brown (2.5Y 4/4) moist; massive; few very fine and fine roots and common medium roots; few very fine and fine tubular pores; strongly effervescent matrix and few fine irregular soft masses of lime; clear wavy boundary.
Ck2—48 to 60 inches; light yellowish brown (2.5Y 6/4) loamy fine sand, olive brown (2.5Y 4/4) moist; massive; few very fine, fine, and medium roots; 5 percent gravel; strongly effervescent matrix and few fine irregular soft masses of lime.

Example Pedon Location

Location in survey area: About 6 miles north of Murphy; in the NE$^{1}/_{4}$SW$^{1}/_{4}$ of sec. 28, T. 1 S., R. 2 W.
Map unit in which located: Typic Torripsamments-Typic Torrifluvents complex, gently sloping

Range in Characteristics

Profile:
Depth to soft bedrock—20 inches or more
Reaction—mildly alkaline or moderately alkaline

A horizon:
Hue—10YR or 2.5Y
Value—4 or 5 moist
Chroma—2 to 4 dry or moist
Effervescence—none or slight

C horizon:
Texture—stratified loamy fine sand to very gravelly sand
Clay content—2 to 8 percent
Rock fragment content—0 to 45 percent
Effervescence—slight to violent

Upcreek Series

Classification

Taxonomic class: Fine-loamy over sandy or sandy-skeletal, mixed, frigid Cumulic Haploxerolls

Setting

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Landforms: Bottomlands
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 1 to 3 percent
Elevation: 4,400 to 6,400 feet
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—40 to 45 degrees F
Frost-free period—60 to 95 days

Typical Pedon Description

A—0 to 5 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine tubular pores; slightly acid; clear smooth boundary.
Bw1—5 to 16 inches; dark grayish brown (10YR 4/2) clay loam, very dark brown (10YR 2/2) moist; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, slightly sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores and few medium tubular pores; 10 percent gravel; slightly acid; clear smooth boundary.
Bw2—16 to 29 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; common fine and medium faint mottles that are dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 10 percent gravel; neutral; clear smooth boundary.
2C1—29 to 33 inches; light brownish gray (10YR 6/2) gravelly sand, very dark grayish brown (10YR 3/2) moist; single grain; loose; common very fine roots; 15 percent fine gravel; neutral; clear smooth boundary.
2C2—33 to 41 inches; light brownish gray (10YR 6/2) very gravelly loamy sand, dark grayish brown (10YR 4/2) moist; common fine prominent mottles that are strong brown (7.5YR 5/6) moist; single grain; loose; few very fine roots; 35 percent gravel

and 25 percent cobbles; neutral; clear smooth boundary.
2C3—41 to 60 inches; light gray (2.5Y 7/2) very gravelly loamy sand, grayish brown (2.5Y 5/2) moist; single grain; loose; few very fine roots; 25 percent gravel and 25 percent cobbles; neutral.

Typical Pedon Location

Location in survey area: About 11 miles west of Silver City; in the NE¼NE¼ of sec. 28, T. 4 S., R. 5 W.
Map unit in which located: Upcreek-Riverwash complex, 0 to 4 percent slopes

Range in Characteristics

Profile:
Depth to lithologic discontinuity—20 to 36 inches
Reaction—slightly acid or neutral

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist

Bw horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Mottles—few or common and fine or medium
Texture—clay loam or loam
Clay content—20 to 30 percent
Rock fragment content—0 to 15 percent

2C horizon:
Hue—7.5YR to 2.5Y
Value—5 to 7 dry, 2 to 5 moist
Chroma—1 to 4 dry or moist
Texture—stratified sand to very gravelly loamy sand
Rock fragment content—5 to 60 percent

Veta Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic Xerollic Camborthids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Landforms: Fan terraces
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 4 to 15 percent
Elevation: 2,400 to 3,800 feet
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—50 to 53 degrees F
Frost-free period—120 to 150 days

Typical Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) gravelly loam, brown (10YR 4/3) moist; moderate thin platy structure parting to weak fine granular; slightly hard, very friable; many very fine and fine roots and few medium and coarse roots; common very fine and fine vesicular and interstitial pores; 25 percent gravel; neutral; clear smooth boundary.
Bw1—4 to 10 inches; very pale brown (10YR 7/3) gravelly loam, yellowish brown (10YR 5/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; few very fine and fine tubular pores; common thin clay films on faces of peds; 20 percent gravel; mildly alkaline; clear smooth boundary.
Bw2—10 to 20 inches; very pale brown (10YR 7/4) very gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; moderate fine subangular blocky structure; slightly hard, friable; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; few thin clay films on faces of peds; 40 percent gravel; neutral; clear smooth boundary.
C—20 to 31 inches; light yellowish brown (10YR 6/4) very gravelly fine sandy loam, dark yellowish brown (10YR 4/4) moist; single grain; loose; few very fine and fine roots; 55 percent gravel; neutral; clear wavy boundary.
Ck—31 to 60 inches; very pale brown (10YR 7/3) stratified very gravelly loamy sand to sandy loam, yellowish brown (10YR 5/4) moist; single grain; loose; strongly effervescent; mildly alkaline.

Typical Pedon Location

Location in survey area: About 6½ miles southwest of Marsing; in the SE¼NE¼ of sec. 35, T. 2 N., R. 5 W.
Map unit in which located: McKeeth-Veta gravelly loams, 2 to 15 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—28 to 40 inches

Particle-size control section (weighted average):

Clay content—5 to 15 percent
Rock fragment content—35 to 60 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Reaction—neutral or mildly alkaline

Bw horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—gravelly loam, very gravelly loam, or very gravelly fine sandy loam
Clay content—5 to 18 percent
Rock fragment content—20 to 60 percent
Reaction—neutral or mildly alkaline

C and Ck horizons:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—stratified extremely gravelly loamy sand to very gravelly loam
Clay content—2 to 15 percent
Rock fragment content—35 to 75 percent
Effervescence (lower part)—slight or strong
Reaction—neutral to moderately alkaline

Vickery Series

Classification

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Durorthids

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderate
Landforms: Calderas
Parent material: Kind—silty alluvium and loess; source—basalt and volcanic ash
Slope range: 1 to 5 percent
Elevation: 4,700 to 5,100 feet
Climatic data (average annual):
Precipitation—9 to 10 inches
Air temperature—46 to 48 degrees F
Frost-free period—100 to 110 days

Typical Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate medium and fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; neutral; clear smooth boundary.
Bw—4 to 12 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, very sticky and very plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial pores; neutral; clear smooth boundary.
Bkq1—12 to 19 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; massive; hard, firm, slightly sticky and slightly plastic; common fine roots and few very fine and medium roots; few very fine interstitial and tubular pores; 5 percent gravel; pockets of weak silica cementation; strongly effervescent; moderately alkaline; gradual smooth boundary.
Bkq2—19 to 25 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; massive; hard, friable; slightly sticky and slightly plastic; common fine roots and few very fine and medium roots; 10 percent gravel; thin coatings of silica on underside of rock fragments; violently effervescent; moderately alkaline; abrupt wavy boundary.
Bkqm—25 to 40 inches; white (10YR 8/2), continuous, indurated duripan; massive; extremely hard, very firm, brittle; violently effervescent.

Typical Pedon Location

Location in survey area: About 21 miles east of Grasmere; in the $SW^1/_4NW^1/_4$ of sec. 13, T. 12 S., R. 8 E.
Map unit in which located: Hardtrigger-Snowmore-Vickery complex, 1 to 5 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—12 to 32 inches
Depth to duripan—20 to 40 inches

Particle-size control section (weighted average):
Clay content—18 to 25 percent
Rock fragment content—0 to 5 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Reaction—neutral to moderately alkaline

Bw horizon:
Chroma—2 or 3 dry or moist
Texture—silt loam or loam
Clay content—18 to 27 percent
Reaction—neutral to moderately alkaline

Bkq horizon:
Value—6 or 7 dry, 4 to 6 moist
Chroma—2 or 3 dry or moist

Texture—loam, silt loam, or very fine sandy loam
Clay content—18 to 22 percent
Durinode content—0 to 20 percent
Rock fragment content—0 to 10 percent
Reaction—mildly alkaline or moderately alkaline

Vipont Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Pachic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Mountains and foothills
Parent material: Kind—residuum and colluvium; source—intermediate intrusive and quartzitic metamorphic rock
Slope range: 15 to 60 percent
Elevation: 5,000 to 6,150 feet
Climatic data (average annual):
Precipitation—14 to 18 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days

Typical Pedon Description

A—0 to 4 inches; dark grayish brown (10YR 4/2) stony loam, very dark brown (10YR 2/2) moist; weak thin platy structure parting to weak very fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine roots; common very fine interstitial pores; 25 percent gravel and 1 percent stones; slightly acid; clear wavy boundary.
AB—4 to 10 inches; grayish brown (10YR 6/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and few fine roots; many very fine tubular pores and common very fine and fine interstitial pores; 20 percent gravel; slightly acid; clear wavy boundary.
Bt1—10 to 21 inches; olive brown (2.5Y 4/4) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots and few fine roots; common very fine and fine interstitial and vesicular pores; common moderately thick clay films on faces of peds; 20 percent gravel and 35 percent cobbles; neutral; clear wavy boundary.
Bt2—21 to 36 inches; yellowish brown (10YR 5/4) extremely cobbly sandy clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine interstitial pores; common moderately thick clay films on faces of peds and in pores; 20 percent gravel and 60 percent cobbles; neutral; gradual wavy boundary.
R—36 inches; fractured quartzite.

Typical Pedon Location

Location in survey area: About 11 miles north of Cliffs; in the $SW^1/_4SE^1/_4$ of sec. 21, T. 7 S., R. 5 W.
Map unit in which located: Vipont-Bauscher association, 8 to 60 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—2.5Y or 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Texture—very cobbly clay loam, extremely cobbly sandy clay loam, or very gravelly clay loam
Clay content—28 to 35 percent
Rock fragment content—35 to 70 percent
Reaction—neutral or mildly alkaline

Vitale Series

Classification

Taxonomic class: Loamy-skeletal, mixed, frigid Typic Argixerolls

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Foothills and mountains
Parent material: Kind—residuum and colluvium; source—rhyolite and welded rhyolitic tuff
Slope range: 5 to 60 percent
Elevation: 4,800 to 6,900 feet
Climatic data (average annual):
Precipitation—13 to 18 inches
Air temperature—39 to 45 degrees F
Frost-free period—55 to 90 days

Typical Pedon Description

A—0 to 5 inches; dark grayish brown (10YR 4/2) very stony loam, very dark brown (10YR 2/2) moist; moderate and strong medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine interstitial pores; 30 percent gravel and 3 percent stones; slightly acid; gradual smooth boundary.

Bt1—5 to 16 inches; dark grayish brown (10YR 4/2) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine tubular and interstitial pores; common thin clay films on faces of peds; 35 percent gravel; slightly acid; clear smooth boundary.

Bt2—16 to 28 inches; light yellowish brown (10YR 6/4) very cobbly clay loam, yellowish brown (10YR 5/4) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial and tubular pores; many thin clay films on faces of peds; 25 percent gravel and 10 percent cobbles; slightly acid; gradual wavy boundary.

C—28 to 34 inches; very pale brown (10YR 7/3) extremely cobbly loam, brown (10YR 5/3) moist; massive; slightly sticky; few very fine and fine roots; 40 percent gravel and 30 percent cobbles; slightly acid; abrupt wavy boundary.

R—34 inches; slightly fractured welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 6 miles southeast of Three Creek; in the NE$^{1}/_{4}$SW$^{1}/_{4}$ of sec. 21, T. 16 S., R. 12 E.

Map unit in which located: Vitale very stony loam, 5 to 40 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Reaction—slightly acid or neutral

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 moist or dry
Texture—very gravelly clay loam or very cobbly clay loam
Clay content—28 to 35 percent
Rock fragment content—35 to 60 percent

Wagonbox Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid, shallow Typic Durixeralfs

Setting

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Structural benches and tablelands
Parent material: Kind—residuum and alluvium; source—basalt, vitric tuff, and breccia
Slope range: 1 to 8 percent
Elevation: 5,100 to 6,300 feet
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—41 to 45 degrees F
Frost-free period—75 to 90 days

Typical Pedon Description

A—0 to 3 inches; yellowish brown (10YR 5/4) extremely stony loam, dark brown (10YR 3/3) moist; weak medium platy structure parting to moderate fine granular; slightly hard, very friable, slightly sticky; common very fine and fine roots and few medium roots; common very fine and fine vesicular pores; 10 percent cobbles and 15 percent stones; slightly acid; abrupt smooth boundary.

Bt1—3 to 8 inches; yellowish brown (10YR 5/4) very stony clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; many very fine tubular pores and common very fine interstitial pores; many thin clay films on faces of peds; 15 percent cobbles and 20 percent stones; slightly acid; abrupt smooth boundary.

Bt2—8 to 14 inches; brown (7.5YR 5/4) very stony clay, dark brown (7.5YR 4/4) moist; moderate coarse prismatic structure parting to strong medium subangular blocky; extremely hard, very firm, sticky and plastic; continuous thick clay films on faces of peds and in pores; 15 percent cobbles

structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; many very fine tubular pores and common very fine interstitial pores; many thin clay films on faces of peds; 15 percent cobbles and 20 percent stones; slightly acid; abrupt smooth boundary.

Bt2—8 to 14 inches; brown (7.5YR 5/4) very stony clay, dark brown (7.5YR 4/4) moist; moderate coarse prismatic structure parting to strong medium subangular blocky; extremely hard, very firm, sticky and plastic; continuous thick clay films on faces of peds and in pores; 15 percent cobbles and 20 percent stones; neutral; abrupt wavy boundary.

Bqm—14 to 20 inches; very pale brown (10YR 8/4) indurated duripan; massive; extremely hard, extremely firm, brittle; abrupt smooth boundary.

R—20 inches; fractured basalt.

Typical Pedon Location

Location in survey area: About 25 miles northwest of Riddle; in the SE¼SE¼ of sec. 14, T. 11 S., R. 1 W.

Map unit in which located: Wickahoney-Wagonbox-Rubbleland complex, 1 to 8 percent slopes

Range in Characteristics

Profile:
Depth to duripan—11 to 20 inches
Depth to bedrock—12 to 23 inches

Particle-size control section (weighted average):
Clay content—35 to 55 percent
Rock fragment content—35 to 60 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 4 or 5 moist
Chroma—4 to 6 dry or moist
Texture—very stony clay, very cobbly clay, or very cobbly clay loam
Reaction—slightly acid to mildly alkaline

Bqm horizon:
Effervescence—none or slight

Wareagle Series

Classification

Taxonomic class: Loamy-skeletal, mixed Typic Cryoborolls

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Mountains
Parent material: Kind—slope alluvium and colluvium; source—rhyolite and welded rhyolitic tuff
Slope range: 15 to 50 percent
Elevation: 5,050 to 8,200 feet
Climatic data (average annual):
Precipitation—22 to 32 inches
Air temperature—34 to 39 degrees F
Frost-free period—less than 60 days

Typical Pedon Description

Oi—2 inches to ½ inch; slightly decomposed needles, twigs, and cones.

Oe—½ inch to 0; moderately decomposed needles, twigs, and cones.

A—0 to 7 inches; dark brown (10YR 3/3) very gravelly loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable; many very fine and fine roots, common medium roots, and few coarse roots; common very fine and fine tubular and vesicular pores and few medium tubular and vesicular pores; 35 percent gravel; slightly acid; clear smooth boundary.

BA—7 to 10 inches; dark brown (10YR 4/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots, common medium roots, and few coarse roots; common very fine and fine tubular pores and few medium tubular pores; 40 percent gravel; slightly acid; clear wavy boundary.

Bw—10 to 15 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very

fine, fine, and medium roots and few coarse roots; few very fine and fine tubular pores; few thin clay films on faces of peds; 40 percent gravel and 5 percent cobbles; moderately acid; clear wavy boundary.

C—15 to 60 inches; very pale brown (10YR 7/3) extremely gravelly loam, yellowish brown (10YR 5/4) moist; massive; hard, firm; few very fine, fine, and medium roots; common very fine, fine, and medium vesicular pores; 55 percent gravel and 10 percent cobbles; slightly acid.

Typical Pedon Location

Location in survey area: About 1 1/2 miles west of Silver City; in the SW1/4SW1/4 of sec. 1, T. 5 S., R. 4 W.
Map unit in which located: Wareagle-Povey association, 15 to 50 percent slopes

Range in Characteristics

Particle-size control section (weighted average):
Clay content—17 to 23 percent
Rock fragment content—40 to 70 percent

A horizon:
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 or 2 moist
Reaction—slightly acid or neutral

Bw horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—very gravelly loam or very cobbly loam
Rock fragment content—35 to 60 percent
Reaction—moderately acid or slightly acid

C horizon:
Hue—7.5YR or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 to 6 dry or moist
Texture—extremely gravelly loam, extremely cobbly loam, or extremely cobbly sandy loam
Rock fragment content—60 to 80 percent
Reaction—moderately acid or slightly acid

Weash Series

Classification

Taxonomic class: Ashy, mesic, shallow Vitrixerandic Camborthids

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Foothills and lacustrine terraces
Parent material: Kind—residuum and loess; source—volcanic ash
Slope range: 1 to 35 percent
Elevation: 4,500 to 5,050 feet
Climatic data (average annual):
Precipitation—11 to 13 inches
Air temperature—45 to 48 degrees F
Frost-free period—90 to 110 days

Typical Pedon Description

A—0 to 3 inches; light gray (10YR 7/1) loam, dark grayish brown (10YR 4/2) moist; moderate medium and thick platy structure parting to moderate fine granular; slightly hard, very friable, sticky and plastic; common very fine, fine, medium, and coarse roots; many very fine and fine vesicular and interstitial pores and few medium vesicular and interstitial pores; 5 percent gravel; neutral; clear wavy boundary.

Bw—3 to 12 inches; light brownish gray (2.5Y 6/2) loam, very dark grayish brown (2.5Y 3/2) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable, sticky and plastic; few very fine and fine roots and common medium and coarse roots; few very fine and fine tubular pores; many thin clay films on faces of peds; 15 percent gravel-sized masses of consolidated ashy material; neutral; clear irregular boundary.

Cr—12 to 60 inches; light gray (2.5Y 7/2), slightly fractured, consolidated ashy material, olive brown (2.5Y 4/4) moist; strong thick platy structure; very hard, very firm, sticky and plastic; few very fine and fine roots and common medium and coarse roots in fractures and matted between plates; strongly effervescent.

Typical Pedon Location

Location in survey area: About 15 miles west of Silver City; in the SE1/4NW1/4 of sec. 14, T. 5 S., R. 6 W.
Map unit in which located: Weash-Ruclick complex, 5 to 35 percent slopes

Range in Characteristics

Profile:
Depth to soft bedrock—10 to 20 inches

A horizon:
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Reaction—neutral or mildly alkaline

Bw horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—sandy clay loam, clay loam, or loam

Clay content—20 to 30 percent
Reaction—neutral to moderately alkaline

Welch Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Cumulic Haplaquolls

Setting

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderately slow
Landforms: Bottomlands
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 0 to 1 percent
Elevation: 4,400 to 6,400 feet
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—40 to 44 degrees F
Frost-free period—45 to 90 days

Typical Pedon Description

A1—0 to 9 inches; gray (10YR 5/1) loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky and plastic; many very fine and fine roots; many very fine tubular pores; 5 percent gravel; slightly acid; clear smooth boundary.
A2—9 to 20 inches; grayish brown (10YR 5/2) clay loam, black (10YR 2/1) moist; weak medium subangular blocky structure; slightly hard, firm, sticky and plastic; few very fine and fine roots; many very fine tubular pores; slightly acid; clear smooth boundary.
A3—20 to 30 inches; grayish brown (10YR 5/2) clay loam, black (10YR 2/1) moist; weak medium prismatic structure; slightly hard, firm, sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; slightly acid; abrupt wavy boundary.
Cg1—30 to 42 inches; light gray (2.5Y 7/2) loam, dark grayish brown (2.5Y 4/2) moist; common fine faint mottles that are olive brown (2.5Y 4/4) moist; massive; soft, friable, slightly sticky and slightly plastic; common very fine and fine tubular pores; neutral; clear wavy boundary.
Cg2—42 to 51 inches; light grayish brown (2.5Y 6/2) sandy loam, very dark grayish brown (2.5Y 3/2) moist; common fine faint mottles that are olive brown (2.5Y 4/4) moist; massive; soft, very friable; 5 percent gravel; neutral; clear wavy boundary.
2Cg3—51 to 60 inches; grayish brown (2.5Y 5/2) gravelly coarse sandy loam, very dark grayish brown (2.5Y 3/2) moist; massive; loose; 30 percent gravel; neutral.

Typical Pedon Location

Location in survey area: About 2 miles west of Riddle; in the NW¼NE¼ of sec. 30, T. 14 S., R. 3 E.
Map unit in which located: Welch loam, 0 to 1 percent slopes

Range in Characteristics

Particle-size control section (weighted average):
Clay content—27 to 35 percent
Rock fragment content—0 to 5 percent

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—slightly acid or neutral

Cg horizon:
Hue—10YR or 2.5Y
Value—5 to 8 dry, 3 to 5 moist
Chroma—1 or 2 dry or moist
Mottles—common or many, fine or medium, and faint or distinct
Texture—stratified sandy loam to silty clay loam
Clay content—18 to 35 percent
Rock fragment content—0 to 35 percent
Reaction—slightly acid to mildly alkaline

Wholan Series

Classification

Taxonomic class: Coarse-silty, mixed, mesic Typic Camborthids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Draws
Parent material: Kind—loess and silty alluvium; source—lacustrine deposits
Slope range: 1 to 4 percent
Elevation: 3,800 to 5,000 feet
Climatic data (average annual):
Precipitation—7 to 9 inches
Air temperature—46 to 51 degrees F
Frost-free period—100 to 120 days

Typical Pedon Description

A—0 to 4 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; moderate thin platy structure parting to weak fine granular; slightly hard, very friable; common very fine and fine roots and few medium roots; many very fine and fine vesicular pores; moderately alkaline; clear smooth boundary.

Bw—4 to 12 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 4/3) moist; moderate coarse subangular structure; hard, very friable; common very fine and fine roots and few medium roots; many very fine and fine tubular pores; mildly alkaline; clear smooth boundary.

Bk1—12 to 18 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; massive; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; strongly effervescent; strongly alkaline; clear wavy boundary.

Bk2—18 to 43 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; massive; common very fine and fine roots; few very fine and fine tubular pores; 5 percent durinodes; strongly effervescent; strongly alkaline; gradual smooth boundary.

Bk3—43 to 60 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable; common very fine and fine roots; common very fine and fine tubular pores; violently effervescent matrix and few fine filaments of lime; strongly alkaline.

Typical Pedon Location

Location in survey area: About 18 miles northeast of Grasmere; in the NE¼NE¼ of sec. 1, T. 10 S., R. 6 E.

Map unit in which located: Orovada-Roseworth-Wholan complex, 1 to 5 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—11 to 24 inches
Texture—silt loam or very fine sandy loam
Reaction—mildly alkaline to strongly alkaline

Particle-size control section (weighted average):
Clay content—5 to 15 percent

A and Bw horizons:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist

Bk horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Durinode content—0 to 5 percent
Salinity—slight or moderate
Effervescence—slight to violent

Wickahoney Series

Classification

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Mollic Haploxeralfs

Setting

Depth class: Shallow
Drainage class: Well drained
Permeability: Slow
Landforms: Foothills, mountains, and tablelands
Parent material: Kind—residuum and colluvium; source—extrusive rock and volcanic ash
Slope range: 1 to 45 percent
Elevation: 4,900 to 7,350 feet
Climatic data (average annual):
Precipitation—13 to 18 inches
Air temperature—39 to 45 degrees F
Frost-free period—60 to 95 days

Typical Pedon Description

A—0 to 5 inches; light brownish gray (10YR 6/2) stony loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to weak medium granular; slightly hard, very friable; many very fine and fine roots and few medium roots; many very fine and fine vesicular and interstitial pores; 20 percent gravel and 2 percent stones; neutral; clear smooth boundary.

Bt1—5 to 12 inches; pale brown (10YR 6/3) cobbly clay loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to moderate medium granular; hard, very friable, sticky and plastic; many very fine and fine tubular and interstitial pores; many thin clay films on faces of peds; 15 percent gravel, 10 percent cobbles, and 5 percent stones; neutral; abrupt wavy boundary.

Bt2—12 to 19 inches; dark yellowish brown (10YR 4/4) very cobbly clay, dark brown (7.5YR 5/4) moist; strong fine and medium angular blocky structure; extremely hard, extremely firm, very sticky and very plastic; few very fine, fine, and medium roots; common fine tubular pores; continuous thick clay films on faces of peds, on rock fragments, and in pores; 25 percent gravel, 15 percent cobbles, and 10 percent stones; mildly alkaline; abrupt irregular boundary.

R—19 inches; fractured welded rhyolitic tuff; clay and thin coatings of silica in fractures.

Typical Pedon Location

Location in survey area: About 7 miles southwest of Grasmere; in the SE¼NW¼ of sec. 24, T. 13 S., R. 4 E.
Map unit in which located: Wickahoney-Zecanyon complex, 3 to 45 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches

A horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 2 to 4 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt2 horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly clay, very gravelly clay, or very gravelly clay loam
Clay content—35 to 55 percent
Rock fragment content—35 to 60 percent
Reaction—slightly acid to mildly alkaline

Willhill Series

Classification

Taxonomic class: Loamy-skeletal, mixed, mesic Durixerollic Haplargids

Setting

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landforms: Foothills
Parent material: Kind—slope alluvium and residuum; source—welded rhyolitic tuff
Slope range: 3 to 25 percent
Elevation: 2,800 to 5,500 feet
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—45 to 51 degrees F
Frost-free period—85 to 140 days

Typical Pedon Description

A—0 to 3 inches; pale brown (10YR 6/3) stony loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky; common very fine and fine roots and few medium roots; common very fine and fine vesicular and interstitial pores and few medium vesicular and interstitial pores; 20 percent gravel and 2 percent stones; neutral; clear smooth boundary.
Bt1—3 to 7 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine and fine roots and few medium roots; common very fine and few fine interstitial pores; common thin clay films on faces of peds; 25 percent gravel; mildly alkaline; clear wavy boundary.
Bt2—7 to 10 inches; very pale brown (10YR 7/4) very gravelly clay loam, yellowish brown (10YR 5/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine roots and few very fine and medium roots; 40 percent gravel; mildly alkaline; clear wavy boundary.
Bkq1—10 to 15 inches; very pale brown (10YR 7/4) extremely gravelly loam, yellowish brown (10YR 5/4) moist; massive; few very fine and fine roots; 50 percent gravel and 30 percent cobbles; moderately thick (1 to 3 millimeters) coatings of silica and carbonates on bottom and sides of rock fragments; violently effervescent; moderately alkaline; clear irregular boundary.
Bkq2—15 to 22 inches; white (10YR 8/2) extremely cobbly loam; discontinuous fractured duripan that has a moderately thick (1 to 3 millimeters) laminar cap; fractures 2 to 14 inches apart; moderately thick or thick (2 to 8 millimeters) pendants of silica and carbonates on rock fragments; massive; very firm, brittle; few very fine and fine roots; 30 percent gravel and 50 percent cobbles; violently effervescent; moderately alkaline; gradual wavy boundary.
R—22 inches; highly fractured welded rhyolitic tuff.

Typical Pedon Location

Location in survey area: About 13 miles northwest of Grasmere; in the NE¼NE¼ of sec. 15, T. 10 S., R. 4 E.
Map unit in which located: Willhill-Cottle association, 3 to 35 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—21 to 40 inches

Particle-size control section (weighted average):
Clay content—27 to 35 percent
Rock fragment content—35 to 60 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 to 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly clay loam, gravelly clay loam, or very cobbly clay loam
Clay content—27 to 35 percent
Rock fragment content—25 to 50 percent
Reaction—neutral or mildly alkaline

Bkq horizon:
Rock fragment content—60 to 80 percent
Effervescence—slight to violent
Reaction—moderately alkaline or strongly alkaline

Xeric Torriorthents

Setting

Depth class: Moderately deep to very deep
Drainage class: Well drained
Permeability: Moderate
Landforms: Tableland and terrace escarpments
Parent material: Kind—colluvium and slope alluvium; source—basalt and lacustrine deposits
Slope range: 10 to 45 percent
Elevation: 2,250 to 4,000 feet
Climatic data (average annual):
Precipitation—8 to 10 inches
Air temperature—48 to 53 degrees F
Frost-free period—110 to 150 days

Example Pedon Description

A—0 to 4 inches; brown (10YR 5/3) stony loam, dark brown (10YR 4/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; 10 percent gravel and 5 percent stones; strongly effervescent; clear smooth boundary.
AC—4 to 15 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky; 5 percent gravel; strongly effervescent; clear smooth boundary.
C1—15 to 30 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; massive; 5 percent gravel and 5 percent c obbles; violently effervescent; clear smooth boundary.
2C2—30 to 60 inches; extremely cobbly very fine sandy loam; violently effervescent.

Example Pedon Location

Location in survey area: About 12 miles southeast of Murphy; in the SW¼NW¼ of sec. 27, T. 3 S., R. 1 E.
Map unit in which located: Xeric Torriorthents-Typic Torriorthents-Badlands complex, very steep

Range in Characteristics

Profile:
Depth to bedrock—30 inches or more

Particle-size control section (weighted average):
Clay content—10 to 25 percent
Rock fragment content—5 to 50 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Reaction—mildly alkaline to strongly alkaline
Effervescence—slight to strong

Xerollic Haplargids

Setting

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate or moderately slow
Landforms: Canyons and tableland escarpments
Parent material: Kind—colluvium and slope alluvium; source—basalt or welded rhyolitic tuff
Slope range: 15 to 60 percent
Elevation: 2,300 to 6,000 feet
Climatic data (average annual):
Precipitation—8 to 13 inches
Air temperature—40 to 50 degrees F
Frost-free period—70 to 140 days

Example Pedon Description

A—0 to 6 inches; pale brown (10YR 6/3) stony loam, dark brown (10YR 3/3) moist; moderate medium and fine granular structure; slightly hard, very friable; many very fine and fine roots; many very fine interstitial and tubular pores; 40 percent gravel and 10 percent cobbles, 1 percent stones; clear smooth boundary.
Bt—6 to 12 inches; pale brown (10YR 7/3) very gravelly loam, brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common

very fine and fine roots; common very fine tubular pores; many thin clay films on faces of peds and in pores; 35 percent gravel and 5 percent cobbles; clear smooth boundary.
BC—12 to 17 inches; very pale brown (10YR 7/3) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; weak fine granular structure; soft, very friable; common very fine and fine roots; many very fine interstitial pores; 55 percent gravel; clear smooth boundary.
Ck—17 to 60 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, brown (10YR 5/3) moist; single grain; loose; common very fine and fine roots; many very fine interstitial pores; 60 percent gravel; strongly effervescent.

Example Pedon Location

Location in survey area: About 16 miles northwest of Murphy Hot Springs; in the NW¼SE¼ of sec. 5, T. 14 S., R. 8 E.
Map unit in which located: Rock outcrop-Xerollic Haplargids complex, very steep

Range in Characteristics

Profile:
Depth to calcium carbonates—4 to 36 inches

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Reaction—neutral or slightly alkaline

Bt horizon:
Texture—very gravelly loam, gravelly loam, very gravelly sandy clay loam, or gravelly silty clay loam
Clay content—20 to 32 percent
Rock fragment content—10 to 45 percent
Effervescence—none to strong
Reaction—neutral to strongly alkaline

C horizon:
Texture—stratified extremely gravelly sand to very gravelly loam
Clay content—2 to 15 percent
Rock fragment content—20 to 60 percent
Effervescence—slight to violent
Reaction—mildly alkaline to strongly alkaline

Xerollic Paleargids

Setting

Depth class: Moderately deep to very deep
Drainage class: Well drained
Permeability: Slow
Landforms: Tableland escarpments
Parent material: Kind—colluvium and slope alluvium; source—basalt
Slope range: 8 to 35 percent
Elevation: 3,600 to 5,950 feet
Climatic data (average annual):
Precipitation—10 to 13 inches
Air temperature—43 to 49 degrees F
Frost-free period—80 to 125 days

Example Pedon Description

A—0 to 4 inches; pale brown (10YR 6/3) very stony silt loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, very friable, sticky and slightly plastic; 20 percent gravel and 10 percent stones; abrupt smooth boundary.
Bt1—4 to 7 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 4/3) moist; moderate medium and fine subangular blocky structure; hard, friable, very sticky and very plastic; common moderately thick clay films on faces of peds; 25 percent gravel; clear smooth boundary.
Bt2—7 to 14 inches; very pale brown (10YR 7/3) very gravelly clay, brown (10YR 5/3) moist; weak medium prismatic structure parting to strong fine and medium subangular blocky; very hard, very firm, very sticky and very plastic; many thick clay films on faces of peds and in pores; 35 percent gravel; clear smooth boundary.
Bt3—14 to 22 inches; very pale brown (10YR 6/3) very gravelly clay, yellowish brown (10YR 5/4) moist; strong medium and fine angular blocky structure; very hard, very firm, sticky and very plastic; many thick clay films on faces of peds and in pores; 35 percent gravel and 5 percent cobbles; clear wavy boundary.
R—22 inches; weathered tuff.

Example Pedon Location

Location in survey area: About 31 miles west of Riddle; in the SE¼SE¼ of sec. 29, T. 13 S., R. 3 W.
Map unit in which located: Xerollic Haplargids-Xerollic Paleargids-Rubbleland complex, steep

Range in Characteristics

Profile:
Depth to abrupt textural change—3 to 10 inches
Depth to bedrock—20 inches or more

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Texture—clay, gravelly clay loam, or very gravelly clay
Clay content—33 to 50 percent
Rock fragment content—10 to 50 percent
Reaction—neutral to moderately alkaline

Yatahoney Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Typic Durixeralfs

Setting

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landforms: Tablelands and fan terraces
Parent material: Kind—mixed alluvium; source—extrusive rock and volcanic ash
Slope range: 1 to 10 percent
Elevation: 5,200 to 6,150 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 90 days

Typical Pedon Description

A—0 to 3 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/3) moist; moderate thin and medium platy structure; slightly hard, very friable; common very fine and fine roots; common very fine and fine vesicular pores; neutral; clear smooth boundary.

AB—3 to 9 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and common fine, medium, and coarse roots; common very fine and few fine tubular and vesicular pores; neutral; clear wavy boundary.

Bt1—9 to 22 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; strong very fine and fine angular blocky structure; very hard, firm, sticky and plastic; many very fine roots and common fine roots; few very fine tubular pores; continuous moderately thick clay films on faces of peds and in pores; neutral; clear wavy boundary.

Bt2—22 to 26 inches; yellowish brown (10YR 5/6) clay, dark yellowish brown (10YR 3/6) moist; strong fine prismatic structure parting to strong very fine angular blocky; very hard, very firm, sticky and plastic; common very fine roots; few very fine tubular pores; continuous thick clay films on faces of peds and in pores; mildly alkaline; abrupt smooth boundary.

Bkqm—26 to 38 inches; very pale brown (10YR 8/4) continuous indurated siliceous laminae over pale brown (10YR 6/3) continuous indurated duripan; massive; brittle; slightly effervescent; neutral; abrupt wavy boundary.

2R—38 inches; fractured basalt.

Typical Pedon Location

Location in survey area: About 13 miles northwest of Riddle; in the SW¼NW¼ of sec. 33, T. 13 S., R. 1 E.
Map unit in which located: Deunah-Yatahoney-Lostvalley complex, 1 to 10 percent slopes

Range in Characteristics

Profile:
Depth to duripan—20 to 38 inches
Depth to bedrock—24 to 40 inches

Particle-size control section (weighted average):
Clay content—35 to 50 percent
Rock fragment content—0 to 15 percent

A horizon:
Value—5 to 7 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Texture—clay, clay loam, or gravelly clay loam
Clay content—25 to 55 percent
Rock fragment content—0 to 25 percent
Reaction—neutral or mildly alkaline

Bqm horizon:
Effervescence—none to strong

Zecanyon Series

Classification

Taxonomic class: Fine, montmorillonitic, frigid Mollic Haploxeralfs

Setting

Depth class: Moderately deep
Drainage class: Well drained

Permeability: Slow
Landforms: Foothills, structural benches, and tablelands
Parent material: Kind—residuum and slope alluvium; source—extrusive rock and volcanic ash
Slope range: 1 to 20 percent
Elevation: 4,950 to 6,050 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 95 days

Typical Pedon Description

A—0 to 3 inches; light brownish gray (10YR 6/2) gravelly loam, dark brown (10YR 3/3) moist; weak thin platy structure parting to weak fine granular; slightly hard, very friable; many very fine and fine roots and few medium and coarse roots; many very fine and fine vesicular pores; 20 percent gravel; slightly acid; clear smooth boundary.
BA—3 to 10 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; moderate medium and fine subangular blocky structure; slightly hard, friable; slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; common very fine and fine tubular and interstitial pores; very few thin clay films on faces of peds; 15 percent gravel; slightly acid; clear smooth boundary.
Bt1—10 to 18 inches; light yellowish brown (10YR 6/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium and fine subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular and interstitial pores; common moderately thick clay films on faces of peds and on rock fragments; 15 percent gravel and 10 percent cobbles; neutral; gradual smooth boundary.
Bt2—18 to 24 inches; yellowish brown (10YR 5/4) cobbly clay, dark brown (7.5YR 4/4) moist; strong medium and fine angular blocky structure; very hard, very firm, sticky and plastic; common very fine and fine roots; few very fine and fine tubular and interstitial pores; continuous moderately thick clay films on faces of peds, in pores, and on rock fragments; 10 percent gravel and 15 percent cobbles; neutral; gradual irregular boundary.
Bq—24 to 37 inches; light yellowish brown (10YR 6/4) extremely gravelly clay loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and slightly plastic; few very fine and fine roots; few thin clay films on faces of peds and on rock fragments; 60 percent gravel and 25 percent cobbles; thin and moderately thick pendants of silica on rock fragments; neutral; abrupt wavy boundary.
R—37 inches; fractured, densely welded rhyolitic tuff; common thin coatings of calcium carbonates and silica in fractures.

Typical Pedon Location

Location in survey area: About 13 miles northwest of Grasmere; in the NW$^1/_4$SW$^1/_4$ of sec. 10, T. 11 S., R. 3 E.
Map unit in which located: Wickahoney-Zecanyon complex, 3 to 45 percent slopes

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches

A horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—clay, clay loam, gravelly clay, gravelly clay loam, cobbly clay, or cobbly clay loam
Clay content—35 to 50 percent
Rock fragment content—5 to 25 percent
Reaction—neutral or mildly alkaline

Bq horizon:
Hue—5YR to 10YR
Value—5 or 6 dry, 4 to 6 moist
Chroma—4 to 6 dry or moist
Texture—extremely gravelly clay loam, extremely gravelly sandy clay loam, very gravelly clay loam, very gravelly loam, or very cobbly clay loam
Clay content—24 to 32 percent
Rock fragment content—40 to 85 percent
Reaction—neutral to moderately alkaline

Zola Series

Classification

Taxonomic class: Fine-loamy, mixed, frigid Cumulic Haploxerolls

Setting

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Landforms: Bottomlands
Parent material: Kind—mixed alluvium; source—volcaniclastic material
Slope range: 0 to 2 percent
Elevation: 4,400 to 5,850 feet
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—41 to 45 degrees F
Frost-free period—70 to 95 days

Typical Pedon Description

Oi—2 inches to 0; undecomposed and partially decomposed grass and other organic material.
A—0 to 4 inches; brown (10YR 4/3) silt loam, very dark brown (10YR 2/2) moist; moderate medium and thin platy structure parting to moderate fine subangular blocky; slightly hard, very friable; many very fine and fine roots and common medium roots; many fine and medium interstitial and vesicular pores; neutral; abrupt smooth boundary.
AB—4 to 13 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium and thin platy structure parting to moderate medium and fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots, common fine roots, and few medium roots; common very fine interstitial pores; neutral; clear smooth boundary.
Bk1—13 to 27 inches; grayish brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse angular blocky structure; hard, firm, sticky and plastic; common very fine roots and few fine roots; common very fine and fine interstitial pores and few very fine and fine tubular pores; common fine violently effervescent soft masses of lime; moderately alkaline; strongly effervescent matrix; diffuse smooth boundary.
Bk2—27 to 41 inches; pale brown (10YR 6/3) clay loam, dark grayish brown (10YR 4/2) moist; moderate very fine and fine subangular blocky structure; hard, very firm, sticky and plastic; ommon very fine roots and few fine roots; common very fine interstitial pores and few very fine tubular pores; common fine violently effervescent soft masses of lime, strongly effervescent matrix; moderately alkaline; diffuse wavy boundary.
C—41 to 60 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; common medium faint mottles that are dark yellowish brown (10YR 3/4) moist; hard, very friable, sticky and plastic; few very fine roots; many very fine interstitial pores and few very fine tubular pores; moderately alkaline.

Typical Pedon Location

Location in survey area: About 17 miles north of Cliffs; in the SW$^1/_4$SE$^1/_4$ of sec. 23, T. 6 S., R. 6 W.
Map unit in which located: Zola-Welch complex, 0 to 2 percent slopes

Range in Characteristics

Profile:
Depth to calcium carbonates—12 to 28 inches
Depth to mottles—36 to 54 inches

Particle-size control section (weighted average):
Clay content—28 to 33 percent

A and AB horizons:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist

Bk horizon:
Hue—10YR or 2.5Y
Value—4 to 6 dry, 3 or 4 moist
Chroma—1 to 4 dry or moist
Clay content—27 to 35 percent
Effervescence—slight or strong
Reaction—mildly alkaline or moderately alkaline

Formation of the Soils

Soil is a variable and dynamic mixture of rocks and minerals, organic matter, water, and air, and it usually is characterized by distinct layers, or horizons. This natural material that mantles the land surface is a fundamental part of the ecosystem. Even though soil generally is perceived to be one of the more stable components of our environment, it constitutes a complex open system that undergoes countless reactions to any single change.

Soil forms as a result of the interaction of time, climate, living organisms, parent material, and relief. Soils differ according to the degree to which they have been influenced by each of these five soil-forming factors. Although one factor can be dominant and influence the properties of a soil more than the other four, a unique combination of all of the factors determines each particular soil profile.

Each of the five soil-forming factors are discussed separately in this section, and their effects on the soils in this survey area are illustrated with examples.

Time

In general, a soil acquires its properties over long periods of time measured in hundreds and thousands of years. Change is continuous from the time a new surface is exposed by erosion or created by deposition. The relative age of a soil is expressed in features or diagnostic characteristics that develop and change at varying rates *(6)*. The accumulation of organic matter in a mollic epipedon approaches dynamic equilibrium at a relatively rapid rate (less than 10,000 years) compared to that of an argillic horizon (more than 10,000 years) *(16)*.

Typically, mature soils are on the oldest, most stable landforms. Soils such as those of the Lostvalley series (Palexeralfs), Wickahoney series (Haploxeralfs), and Yatahoney series (Durixeralfs) are on undulating tablelands in the central part of the area and are very strongly developed. They have a pronounced argillic horizon that commonly exhibits an abrupt upper boundary with an intensely leached horizon immediately above it.

The soil profiles tend to be less developed in other parts of the survey area. In the mountains, slopes are steeper and less stable and the cold temperatures slow chemical and biological processes. Soils, such as those of the Parkay series (Cryoborolls), that formed in basaltic and rhyolitic material have a weakly developed argillic horizon. However, soils of similar age that formed in resistant granitic material, such as those of the Earcree series (Cryoborolls) and Graylock series (Cryorthents), are still immature.

Generally, the drier climatic conditions at the lower elevations slow weathering and limit leaching. The majority of the soils in the area, however, are old enough and stable enough to have formed an argillic horizon. Examples include soils of the Bruncan series (Durargids), Dishpan series (Argixerolls), Gariper series (Paleargids), Hardtrigger series (Haplargids), and Heckison series (Durixerolls). At the low elevations near the Snake River, the soils have less profile development, partly because of the younger parent material. Soils of the Briabbit series (Camborthids) and Scism series (Durorthids) are examples of upland soils at low elevations that have altered, but not yet well defined, horizons.

The youngest soils in the area are on fan terraces, on fluvial bottoms, and in basins that have received recent deposits of alluvium or eolian sand. Soils of the Beetville series (Haploxerolls), Boulder Lake series (Chromoxererts), Escalante series (Calciorthids), Tindahay series (Torriorthents), and Welch series (Haplaquolls) are examples.

Climate

Climate is the most active of the soil-forming factors. The two most frequently considered climatic factors are precipitation and temperature, but other factors such as wind and relative humidity interrelate to affect many soil features. Over time there have been significant changes in the climate of the survey area. The older soils in the area probably have been influenced by prehistoric climatic conditions, but the impact of those conditions can only be speculated. The central tablelands show striking evidence of purported periglacial processes, where frost churning created an extensive and regular pattern of mounds. Pluvial periods occurred during the Ice Age, but since

then the climate has become warmer and drier. The present climate in the survey area is continental, and it is characterized by hot, dry summers; cold, moist winters; light winds; and low relative humidity. Typically, the soils in the area almost completely dry out in summer.

Water is the main agent of rock weathering and mineral transformation in soils. It also distributes and removes soil material, such as carbonates, basic cations, and clay, in the soil profile. The availability and flux of water within the soil profile determine the soil-moisture regime. The content of water in a soil has a profound effect on living organisms. Generally, greater amounts of precipitation result in a higher content of biomass.

The well drained soils in this survey area have either an aridic or xeric moisture regime, and the average annual precipitation is about 8 to 13 inches or more than 13 inches, respectively. Some of the driest soils in the area include those of the Jenor series (Durorthids), Laped series (Durargids), Murphill series (Calciorthids), Ornea series (Haplargids), and Wholan series (Camborthids). These soils are characterized by sparse vegetation and a light-colored surface layer. Annual precipitation increases as elevation increases. Soils on north- and east-facing side slopes of mountains, such as those of the Southmount series (Cryoborolls), typically receive the most precipitation. These soils support conifer woodland. The average annual precipitation is more than 50 inches in areas that receive considerable amounts of drifting snow. Wind, temperature (solar radiation), and relative humidity exert a less evident influence on the water balance in a soil profile by affecting the rate of evapotranspiration.

Soil temperature regime is determined by the average soil temperature at a depth of 20 inches (50 centimeters). The main impact of soil temperature is its effect on living organisms, which determine the type and amount of organic matter in a soil. Accumulation of organic matter is aided by cool temperatures, which slow microbial breakdown. The deep, dark-colored surface layer of the soils in the Bauscher series (Argixerolls), Doodlelink series (Haploxerolls), and Povey series (Cryoborolls) is evidence of this condition. Although it depends partly on aspect, generally soils below 5,200 feet in elevation have a mesic temperature regime and those above this elevation have a frigid temperature regime. Soils on north aspects of mountains and those above about 6,200 feet in elevation, such as those of the Graylock series (Cryorthents) and Nagitsy series (Cryoborolls), stay cool in summer and have a cryic temperature regime.

Wind directly affects soil formation by transporting and distributing suspended material, which commonly consists of silt-sized particles deposited on the upper back slopes on the leeward side of rims and ridges.

Living Organisms

Besides climate, the other active soil-forming factor is the soil biota, which consists of lower plants (fungi, bacteria, algae, lichens, and mosses), higher plants, and animals. Organic matter content and distribution, structure, and bulk density are the soil properties most noticeably influenced by living organisms.

Many biochemical processes that involve the cycling of different elements are closely related to soil formation. The dynamics of both nitrogen and carbon in the biosphere begin with the interaction of organisms and soil. The nitrogen cycle is interrelated with the carbon cycle, and the rate of nitrogen cycling is closely related to the productivity of the ecosystem. Accumulations of organic matter and products resulting from decomposition have a profound influence on soil formation *(16)*. Bacteria and fungi not only release bound nutrients, but they also affect rock and mineral decomposition. Algae can cause minerals to become soluble, while lichens and moss contribute to the weathering of rock through both physical and chemical processes.

Conditions that contribute to the accumulation of organic matter are low microbial activity and high annual production. In this survey area, the greatest accumulations are in soils where oxygen is low because of a high water table, such as those of the Welch series (Haplaquolls), or in soils that are subject to cold air temperatures, such as those of the Dranyon series (Cryoborolls).

Higher plants make up the major portion of the total biomass. The kind and amount of primary producers in the survey area are largely dependent on climatic factors. Productivity is quite limited along the Snake River, where the average annual precipitation is only about 8 inches. The average annual production of the potential natural plant communities on soils such as those of the Hotcreek series (Durargids), McKeeth series (Haplargids), Murphill series (Calciorthids), Tindahay series (Torriorthents), and Wholan series (Camborthids) commonly is less than 500 pounds per acre. Extremes in productivity occur in the mountainous areas. Soils that receive extra moisture from drifting snow, such as those of the Nagitsy series (Cryoborolls), or from runoff, such as those of the Tucker series (Haploxerolls), commonly produce more than 2,000 pounds per acre per year. Soils on ridges and other exposed positions, such as those of the

Bregar series (Haplargids) and Nipintuck series (Torriorthents), commonly produce only 200 pounds per acre per year. If the vegetation is altered, horizons can degrade or develop in a relatively short period.

Over time plant succession also has an effect on soil development. In the west-central part of the survey area, seral juniper has invaded hundreds of thousands of acres. Climax sites are on rocky ridges and knolls in areas where trees are rooted in cracks and are protected from wildfires. Over the last century, juniper has readily invaded surrounding soils such as those of the Hat series (Haploxeralfs), Kanlee series (Argixerolls), and Quicksilver series (Haploxerolls). The most obvious soil change is the accumulation of an organic layer as much as 6 inches thick. This has resulted in a small increase in the organic matter content of the original surface layer. Cation exchange capacity, exchangeable calcium content, and reaction (pH) increase, particularly in the upper part of the profile, as the content of organic matter increases. The big sagebrush and bunchgrasses typically supported by these soils have been virtually eliminated over time as the overstory canopy has closed. The lack of ground cover has resulted in accelerated erosion of the steeper areas.

Cicadas, ants, earthworms, and rodents and other mammals mix, loosen, and compact soils. Krotovinas, which are tunnels, passageways, and nests filled with soil, are common throughout the survey area. Man's contribution to reworking the soil surface is evident in plowed fields and in areas of pits and dumps associated with mining.

Parent Material

The properties of a soil are largely dependent on the kind of parent material from which the soil has formed. In this survey area, the soils are derived from either residual or transported material. In areas where rock deposits have weathered in place (residuum), other material moved by water (alluvium), wind (eolian sand and loess), or gravity (colluvium) generally has been incorporated into the soil.

The minerals in a soil are either directly inherited (primary) from the parent material or are formed during the natural processes of soil development (secondary). Quartz, a primary mineral, is common in soils that are derived from granite. These soils tend to be sandy, and they develop relatively slowly. Montmorillonite, which is inherited from volcaniclastic material, occurs in clay-sized particles and is translocated from the surface to the subsoil during soil development. Layers of significant clay accumulation, or argillic horizons, are common throughout the survey area.

Silica-cemented horizons, called duripans, also are common, except on mountains and in areas of recently deposited sediment. These pans form at the depth to which wetting commonly occurs, where soluble silica and sometimes carbonates are deposited. The silica is readily released from weathering volcanic ash and pyroclastic rock. The many soils in this survey area that have a duripan include those of the Coonskin series (Durorthids), Freshwater series (Durargids), Nicholflat series (Durixeralfs), and Northcastle series (Durixerolls). Soils of the Jumpcreek series (Argixerolls) and Willhill series (Haplargids) are examples of those that occur on less stable slopes and have discontinuous silica cementation.

Appreciable accumulations of calcium carbonates and sodium are less common in the survey area. Soils of the Bigflat series (Palexerolls) have both. It is presumed that these accumulations are mainly eolian material derived from lacustrine and fluvial material deposited along the Snake River.

Minerals are more highly weathered in the mountainous areas. The minerals released as a result of weathering are susceptible to leaching because of the higher precipitation in these areas. The low base saturation of the soils in these areas is evidence of the loss of calcium, magnesium, sodium, and potassium. Soils of the Doodlelink series (Haploxerolls), Naz series (Cryoborolls), and Saturday series (Argixerolls) are examples.

Nearly all of the soils in the survey area contain at least a few rock fragments. Shallow residual soils, such as those of the Cleavage series (Argixerolls) and Cottle series (Haplargids), typically contain large amounts of unattached, angular fragments of parent rock. Alluvial soils, such as those of the Paynecreek series (Argixerolls) and Upcreek series (Haploxerolls), typically are very deep. These soils contain rounded rock fragments, the content of which varies from layer to layer.

Igneous rock, including basalt, welded rhyolitic tuff, flow-breccia, andesite, latite, rhyolite, and intermediate intrusive rock such as granodiorite *(5, 10)*, is the primary source of parent material in the survey area. The relatively thin deposits of volcanic ash commonly associated with basalt flows are the main source of parent material for soils such as those of the Arbidge series (Durargids), Bigflat series (Palexerolls), Buncelvoir series (Haplargids), Fairylawn series (Durixeralfs), Lostvalley series (Palexeralfs), and Schnipper series (Durixerolls).

Soils such as those of the Loomis series

(Haplargids), Merlin series (Argixerolls), and Strickland series (Cryoborolls) formed in material weathered primarily from late Miocene Banbury basalt. This is the most extensive source of parent material in the survey area. Many thin flows of this vesicular, fine-grained olivine basalt interfinger and overlap to form lava fields of various sizes throughout the area. The largest area, called the Bruneau-Jarbidge eruptive center, covers nearly all of the eastern part of the survey area *(7)*. The underlying caldera is marked by at least 30 plug domes from which the basalt extruded.

The basaltic eruptions were relatively small compared to the previous rhyolitic volcanic activity that formed the huge caldera in the area and subsequently filled it *(7)*. Several of the rhyolite lava flows in the area are much larger than in most other areas in the world. The largest flow, Sheep Creek rhyolite, is very likely more than 200 cubic kilometers, which is enough to bury all of Ada and Canyon Counties in Idaho under 150 feet of lava *(4)*. To the west of this rhyolite is a large, slightly older area of ash-flow tuff and ignimbrite, called the Juniper Mountain volcanic center. Spectacular canyons have been carved into these flows, exposing considerable amounts of Rock outcrop. Soils such as those of the Avtable series (Haploxeralfs), Dougal series (Haplargids), Dranyon series (Cryoborolls), Gaib series (Argixerolls), and Nipintuck series (Torriorthents) formed in material weathered primarily from this silicic flow rock.

Brecciated vitrophyre commonly is exposed at the margins and upper parts of the areas of flow-layered and flow-banded rhyolite and welded tuff throughout the area. Soils of the Fulcrum series (Haploxerolls) and Monasterio series (Argixerolls) formed in this type of material. These soils contain large amounts of volcanic glass. Areas of Rubbleland consisting of loose, tabular fragments of welded rhyolitic tuff produced from sheeting joints occur as stripes of rock debris on hillsides and as talus at the base of cliffs.

The oldest rhyolite and tuff, about 16 million years old, are in the Silver City Range *(5)*. A lower basalt and latite sequence that extends to the South Mountain area is the same age as the Columbia River basalt group. Andesite (Oligocene) and rhyodacitic tuff (Eocene) along the northeastern part of the Silver City Range are the oldest exposed extrusive volcanics in the area *(5)*.

The underlying pre-Tertiary granitic basement rock exposed in the Owyhee Mountains is mainly quartz-diorite, quartz-monzonite, and granodiorite. This rock is considered to be of the Idaho Batholith. The wide range of soils that formed in this material include those of the Enko series (Camborthids), Graylock series (Cryorthents), Nazaton series (Cryoborolls), Poisoncreek series (Argixerolls), and Takeuchi series (Haploxerolls).

The Paleozoic metamorphic rock of South Mountain is the oldest parent material in the survey area. The interbedded schist, quartzite, and marble probably originally were typical miogeosynclinal limestone, sandstone, and shale *(15)*. Soils that formed in this material have a thick, dark-colored surface layer but only a weakly developed subsoil. Soils of the Ola series (Haploxerolls) and Povey series (Cryoborolls) are examples.

Sediment of nonwelded vitric tuff interbedded with arkosic or tuffaceous sandstone, cobble conglomerate, lacustrine diatomite, or siltstone is in basins and occurs as outcroppings near escarpments. Although this sediment is throughout the survey area, it is particularly extensive in the northwestern part *(5)*. The oldest of these beds are remnants of Lake Bruneau, which covered the area early in the Miocene *(15)*. The extensive Sucker Creek Formation, which is along the western part of the Silver City Range, is an example. Soils that formed in this sediment include those of the Chilcott series (Durargids), Deshler series (Argixerolls), Gooding series (Paleargids), Lamonta series (Durixerolls), and Succor series (Palexerolls).

During the Pliocene and Pleistocene, similar deposits accumulated in smaller, more confined basins such as that of Lake Idaho, which formed as a result of the Snake River downwarp *(5, 8)*. Areas of Badlands, which are barren exposures of these deposits, commonly are on erosional scarps. Soils of the Escalante series (Calciorthids), Ratsnest series (Haplargids), and Royal series (Camborthids) are examples of those that formed in these dominantly lacustrine deposits. At the higher elevations adjacent to mountain fronts, mixed volcaniclastic material formed high outwash terraces and fan piedmonts during the same periods. Soils of the Alzola series (Haplargids), Blackleg series (Durixerolls), Brunzell series (Haploxerolls), Shoofly series (Durargids), and Threek series (Argixerolls) are examples of those that formed in these fluvial deposits.

The youngest parent material in the area is of the Holocene. It includes loess, eolian sand, landslide deposits, and recent alluvium. The landslide deposits and alluvium are intrinsically localized and reflect older, adjacent parent material, except in areas along the Snake River. In these areas the catastrophic flooding from Lake Bonneville markedly reworked the lower terraces and in places deposited basalt boulders that are as much as 10 feet in diameter *(8)*. Periodically, alluvial material is still reworked or deposited on bottomlands and alluvial flats. Landslides typically occur at the edges of lava flows, where

exposed underlying sediment erodes. Recent deposits of eolian sand or silt (loess) are most common on nearly level or undulating basalt flows in areas that have low precipitation. Soils of the Scism series (Durorthids) formed in these areas.

Relief

Relief is the contour of the land surface that may be a result of erosion, deposition, or tectonic activity. Aspect, shape of slope, and steepness of slope directly affect runoff, soil moisture, erosion, and deposition. Relief influences soil formation primarily through its effect on temperature and water.

The soils on mountains most dramatically exhibit the influences of relief; however, the relief of microtopographic landforms, such as the regular pattern of mounds on gently sloping tablelands, also significantly influences soil development. Soils of the Budlewis series (Durixerolls) and Wickahoney series (Haploxeralfs) are examples of those in complex mound-intermound areas. Obvious differences in soil moisture content occur in areas where snow is blown from south- and west-facing slopes to north- and east-facing slopes. Similarly, aspect affects soil temperature. North-facing slopes, particularly those that are also steep, receive less direct sun than other aspects and are therefore colder. Examples of soils that exhibit these effects of aspect include those of the Gaib series (Argixerolls), Wareagle series (Cryoborolls), Wickahoney series (Haploxeralfs), and Doodlelink series (Haploxerolls).

Throughout the survey area, the distribution and movement of water on and in the soils are governed largely by relief *(16)*. The hazard of erosion and rate of runoff increase as slope increases. Broad summits, the most stable landscape, are characterized by slow runoff and a high rate of water retention. Runoff tends to converge in concave positions, such as foot slopes, and diverge in convex positions, such as shoulder slopes. Mass movement and surface wash combine to transport material downward on side slopes, making them relatively unstable. In areas of low precipitation, even a slight change in the shape of the slope can have a dramatic effect on soil properties. For example, soils of the McKeeth series (Haplargids) are on slightly convex, stable summits. These soils are characterized by a shallow argillic horizon, a thin leached surface layer, and strongly expressed layers of calcium carbonate and silica accumulation. Intermingled with the McKeeth soils are soils of the Veta series (Camborthids), which are in concave swales that are dominantly constructional and relatively unstable. These soils have a weakly developed subsoil and a cambic horizon. Because these soils receive extra moisture from runoff, plant production is higher and thus the surface layer is darker colored.

Basins and fluvial bottoms are unstable because of their dominantly constructional nature. The soils on these positions are highly variable, reflecting periodic flooding and multiple sources of parent material *(16)*. Groundwater commonly is an important factor of soil formation in these areas. If the soil is saturated, many physical and chemical processes are altered. Anaerobic activity is dominant in these soils because the amount of oxygen is insufficient for bacteria to grow. These soils tend to be cooler than soils subject to aerobic conditions. Soils of the Blackwell series (Cryaquolls), Boulder Lake series (Chromoxererts), Piline series (Chromoxererts), and Welch series (Haplaquolls) are most affected by groundwater. Other soils, such as those of the Babbington series (Argixerolls) and Tucker series (Haploxerolls), are less affected because only the lower horizons are saturated.

References

(1) Adams, Mildretta. 1986. Sagebrush post offices: A history of the Owyhee country. Idaho State Univ. Press, Pocatello, Idaho.

(2) American Association of State Highway and Transportation Officials. 1982. Standard specifications for highway materials and methods of sampling and testing. Ed. 13, 2 vols.

(3) American Society for Testing and Materials. 1985. Standard test method for classification of soils for engineering purposes. ASTM Stand. D 2487.

(4) Bonnichsen, Bill. 1982. Rhyolite lava flows in the Bruneau-Jarbidge eruptive center, southwestern Idaho. *In* Cenozoic Geology of Idaho. Idaho Bur. Mines and Geol. Bull. 26, pp. 283-320.

(5) Ekren, E.B., D.H. McIntyre, E.H. Bennett, and H.E. Malde. 1981. Geologic map of Owyhee County, Idaho, west of longitude 116 degrees W. U.S. Geol. Surv. Misc. Invest. Map I-1256.

(6) Hawley, J.W., and R. B. Parsons. 1984. Glossary of selected geomorphic terms for western soil surveys. U.S. Dep. Agric., Soil Conserv. Serv.

(7) Idaho Bureau of Mines and Geology. 1981. Southwest Idaho volcanic center identified. Gem State Geol. Rev., vol. 4, pp. 1, 18-20.

(8) Malde, H. E., and H. A. Powers. 1962. Upper Cenozoic stratigraphy of Western Snake River Plain, Idaho. Geol. Soc. Am. Bull., vol. 73, pp. 1197-1220.

(9) Portland Cement Association. 1962. PCA soil primer.

(10) Rember, W. C., and E. H. Bennett. 1979. Geologic map of the Twin Falls quadrangle, Idaho. Idaho Bur. Mines and Geol.

(11) Stephenson, Gordon R. (editor). 1977. Soil-geology-vegetation inventories for Reynolds Creek Watershed. Univ. Idaho Agric. Exp. Sta., Moscow, Idaho.

(12) United States Department of Agriculture, Soil Conservation Service. 1951. Soil survey manual. U.S. Dep. Agric. Handb. 18. [Supplements replacing pp. 173-188 issued May 1962]

(13) United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Dep. Agric. Handb. 210.

(14) United States Department of Agriculture, Soil Conservation Service. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. U.S. Dep. Agric. Handb. 436.

(15) Warner, M. M. 1980. S. Idaho, N. Nevada, southeastern Oregon—prime exploration target. Oil and Gas J., pp. 325-341.

(16) Wilding, L. P., N. E. Smeck, and G. F. Hall (editors). 1983. Pedogenesis and soil taxonomy. Elsevier Sci. Publ. B.V., Amsterdam.

Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial fan. 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.

Alluvial flat. A nearly level, graded alluvial surface.

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.

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 2.5
Low	2.5 to 3.7
Medium	3.75 to 5.0
High	5.0 to 7.5
Very high	more than 7.5

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.

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 general term for an intermontane area, a bolson, a semibolson, an area of centripetal drainage, or a structural depressional area.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench (or structural bench). A platform-type, nearly

level to gently sloping erosional surface developed on resistant strata in areas where valleys are cut in alternating strong and weak layers with an essentially horizontal attitude. Structural benches, in contrast to stream terraces, have no geomorphic implication of former, partial erosion cycles and base-level controls, nor do they represent a stage of floodplain development following an episode of valley trenching.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Breccia. A coarse-grained, clastic rock composed of angular rock fragments (larger than 2 millimeters) commonly cemented together in a finer-grained matrix of varying composition and origin. The consolidated equivalent of rubble.

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.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caldera. A large, basin-shaped, volcanic depression that is more or less circular of cirquelike. The diameter is many times greater than that of the included volcanic vent or vents regardless of the steepness of the walls or the form of the floor. Three major types of calderas are—explosion, collapse, and erosion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

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.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse 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 has 35 to 60 percent of these rock fragments, and

extremely cobbly soil material has more than 60 percent.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over a restrictive layer. Very deep soils are more than 60 inches deep over a restrictive layer; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Desert pavement. On a desert surface, a layer of gravel or larger fragments that was emplaced by upward movement of the underlying sediments or that remains after finer particles have been removed by running water or the wind.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of

the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Duripan. A subsurface horizon cemented with silica to the degree that fragments do not slake during prolonged soaking in water or hydrochloric acid.

Effervescence. The quality of a soil measured when drops of diluted (1:10) hydrochloric acid (HCl) are added to the soil. The ratings are as follows:

Very slightly effervescent	few bubbles
Slightly effervescent	bubbles readily
Strongly effervescent	bubbles form low foam
Violently effervescent	bubbles form thick foam quickly

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. 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.

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.

Esker. A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Excess alkali (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Excess sodium (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fan piedmont. The most extensive major landform of most piedmont slopes. It is formed by the lateral coalescence of mountainfront alluvial fans into one generally smooth slope and by accretion of fan aprons. Fan piedmonts commonly are complexes of many component landforms.

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.

Fine textured soil. Sandy clay, silty clay, or clay.

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.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

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.

Glacial outwash. Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glaciofluvial deposits. Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A 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.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet 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 potential. The soil properties that influence this potential are those

that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

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.

Kame. An irregular, short ridge or hill of stratified glacial drift.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

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 wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Major landform. A subdivision of the piedmont slope or basin floor major physiographic part that reflects a major morphogenetic process taking place over a long period of time or that is the result of a special erosional or depositional

process. Many major landforms are dissected, and their original area is made up of component landforms.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesa. A broad, nearly flat topped and commonly isolated upland mass characterized by summit widths that are more than the heights of bounding erosional scarps.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Outcrop. The part of a geologic formation that is exposed at the surface of the earth.

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.

Patterned ground. The more or less symmetrical forms, such as circles, polygons, nets, stripes, garlands, and steps, that are characteristic of, but not confined to, mantles subjected to intense front action, as in periglacial environments. It is classified according to the type of pattern and the presence or absence of sorting. Patterned ground occurs principally in polar, subpolar, and arctic regions, but it is also in tropical and subtropical areas. Stone polygons generally form on slopes of less than 8 percent, while garlands and stripes occur on slopes of 8 to 15 percent and more than 15 percent, respectively.

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. A gently sloping erosional surface developed at the foot of a receding hill or mountain slope. Earth material that extends beneath

adjacent uplands may be exposed or a thin mantle of alluvium and colluvium, ultimately in transit from upland front to the basin or valley lowlands, may be on the surface.

Pedisediment. A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher lying areas of the erosion surface.

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.

Permafrost. Layers of soil, or even bedrock, occurring in arctic or subarctic regions, in which a temperature below freezing has existed continuously for a long time.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	0.01 to 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

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.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

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.

Plug dome. A smooth, rounded hill of lava and pyroclastic rock that is built up around and over a volcanic vent.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, 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.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants

and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs 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:

Ultra acid	less than 3.5
Extremely acid	3.5 to 4.4
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relict. Old, or remaining from previous times; in the present context, of Pleistocene age.

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.

Ridge. A long, narrow elevation of the land surface that usually is sharpcrested and has steep sides and forms an extended upland between valleys. This term is used in areas of both hills and mountains.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

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.

Ponded.—Little of the precipitation and runon escapes as runoff, and free water stands on the surface for significant periods. The amount of water that must be removed from ponded areas by movement through the soil, by plants, or by evaporation is usually greater than the total rainfall. Ponding normally occurs in level to nearly level depressional areas, and the water depth may fluctuate greatly.

Very slow.—Surface water flows away slowly, and free water stands on the surface for long periods or immediately enters the soil. Most of the water passes through the soil, is used by plants, or evaporates. The soils commonly are level or nearly level or are very open and porous.

Slow.—Surface water flows away slowly enough that free water stands on the surface for moderate periods or enters the soil rapidly. Most of the water passes through the soil, is used by plants, or evaporates. The soils commonly are either nearly level or very gently sloping or they are streeper but absorb precipitation very rapidly.

Medium.—Surface water flows away fast enough that free water stands on the surface for only short periods. Part of the precipitation enters the soil and is used by plants, is lost by evaporation, or moves into underground channels. The soils commonly are either nearly level or gently sloping and absorb precipitation at a moderate rate or they are steeper but absorb water rapidly.

Rapid.—Surface water flows away fast enough

that the period of concentration is brief and free water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly moderately steep or steep, and they have a moderate to slow rate of absorption.

Very rapid.—Surface water flows away so fast that the period of concentration is very brief and fee water does not stand on the surface. Only a small part of the water enters the soil. The soils are mainly steep or very steep, and they absorb precipitation slowly.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Salinity. The degree to which a soil is affected by soluble salts. Salinity is expressed as the electrical conductivity (EC) of a saturation extract, or millimhos per centimeter (MMHOS/CM). The degrees of salinity are:

Low	Less than 4
Moderate	4 to 8
High	More than 8

Salty water (in tables). Water that is too salty for consumption by livestock.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saprolite. Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

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.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The geomorphic component that forms the uppermost inclined surface at the top of a hillside. It comprises the transition zone from the backslope to the summit of an upland. The surface is dominantly convex and is erosional in origin.

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.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils,

where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slope alluvium. Sediment gradually transported on mountain or hill slopes primarily by alluvial processes and characterized by particle sorting. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of coarse fragments and may be separated by stone lines. Sorting of rounded or subrounded pebbles or cobbles, and burnished peds contrast with unsorted colluvial deposits.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 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 adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are:

Low	less than 13:1
Moderate	13-30:1
High	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 material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stoniness (or boulderiness). The relative proportion of larger rock fragments in or on the surface layer. Used to modify the surface layer texture of soils containing sufficient amounts of stones or boulders to significantly restrict use and management. This class does not necessarily reflect the kind of rock fragments that are most abundant nor is it used to modify the texture of the lower horizons in a profile description. In this survey three classes are recognized:

Stony.—The areas have enough stones at or near the surface to be a continuing nuisance during operations that mix the surface layer, but they do not make most of these operations impractical. Conventional wheeled vehicles can move with reasonable freedom over the areas. Stones may damage equipment that mixes the soil and the vehicles that move on the surface. Stones or boulders cover about 0.01 to 3 percent of the surface.

Very stony.— The areas have so many stones at or near the surface that operations that mix the

surface layer either require heavy equipment or use of implements that can operate between the larger stones. Tillage with conventionally powered farm equiment is impractical. Wheeled tractors and vehicles with high clearance can operate on carefully chosen routes over and around the stones. Stones or boulders cover about 3 to 15 percent of the surface.

Extremely stony.—The areas have so many stones at or near the surface that wheeled powered equipment, other than some special types, can operate only along selected routes. Tracked vehicles may be used in most places, although some routes have to be cleared. Usually, these areas have class 4 stoniness. Stones or boulders cover more than 15 percent of the surface.

Stony soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter. Very stony soil material is 35 to 60 percent of these rock fragments, and extremely stony soil material is more than 60 percent.

Stream terrace. A transversely level erosional remnant of a former axial stream or major desert stream flood plain that slopes in the same direction as the adjacent, incised stream, that is underlain by well-sorted stratified sand and gravel or by loamy or clayey sediment.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

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.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. The top of an erosional fan remnant, hill, mountain, or other landform. The term is used for both a landform element and a slope component.

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.”

Tableland. A general term for a broad upland that has a large, nearly level or undulating summit and steep sideslopes descending to surrounding lowlands. (See Plateau and Mesa.)

Talus. Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace. 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). 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.

Too arid (in tables). The soil is dry most of the time, and vegetation is difficult to establish.

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.

Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

Tuffite. A tuff containng both pyroclastic and detrital material, but dominantly pyroclastic material.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Valley. An elongated depressional area cut by stream erosion and the associated water erosion of its side slopes (stream valley). Also used for intermontane basins.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Volcaniclastic. Pertaining to a clastic rock containing volcanic material in any proportion and without regard to its origin or environment.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Water table. The upper level of ground water or that level below which the soil is saturated.

Water table (perched). The water table of a saturated layer of soil that is separated from an underlying saturated layer by an unsaturated layer.

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.

Windthrow. The uprooting and tipping over of trees by the wind.